

# PRB Monitoring Report 2018

## Annex II – Member States’ detailed analysis for experts

The 2018 monitoring consists of five reports:

- PRB Monitoring Report 2018
- Annex I – Union-wide detailed analysis for experts
- **Annex II – Member States’ detailed analysis for experts**
- Annex III – Safety Report
- Annex IV – CAPEX Report

October 2019



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## 1 Introduction

This report presents some more detailed information per State or FAB. This information is structured into four main parts:

- a safety part;
- an en-route capacity part;
- an airport capacity part; and,
- a cost-efficiency part.

The information contained in the first three parts is self-explanatory. However, the PRU considered that the cost-efficiency part deserved a reader's guide to assist stakeholders in the reading and the understanding of PRU's analysis.

This reader's guide is presented in the following section.

## 2 Cost-efficiency monitoring at State level: Reader's Guide

### 2.1 Introduction

- 2.1.1 The objective of this section is to facilitate the understanding of the analysis made in the cost-efficiency monitoring reports at State level.
- 2.1.2 The source of the data used for the cost-efficiency monitoring are the June 2019 En-route and Terminal Reporting Tables provided by the states for each CZ.
- 2.1.3 The analysis is structured into three main parts: en-route, terminal and gate-to-gate ANS cost-efficiency monitoring. Common templates and analytical frameworks are used for both en-route and terminal ANS, and for the States having several en-route (Spain) or terminal (Belgium, Italy, France and Poland) charging zones the framework is replicated for each charging zone.
- 2.1.4 Graphs, tables and comments are displayed into "boxes", with each box focusing on a particular aspect of the monitoring analysis. Section 2.2 below provides explanations on the content of each box constituting the en-route and the terminal analysis. Section 2.3 presents the content of the gate-to-gate analysis and of the technical notes provided at the end of the report when specific issues need to be documented.

### 2.2 En-route and terminal ANS analysis

1. En-route (or terminal) contextual economic information
<p>Box 1 presents information on the State's share in SES ANS determined costs in 2018, the name of the main Air Traffic Service Provider (ATSP), FAB membership, national currency and the 2009 exchange rate against the €.</p> <p>For Terminal Charging Zones (TCZs) box 1 also indicates the number of airports in the TCZ (with a classification per number of air transport movements) and whether the traffic risk sharing applies in the TCZ.</p>
2. En-route (or terminal) DUC monitoring at Charging Zone level
<p>Box 2 identifies whether the actual DUC is lower (improvement of the performance indicator) or higher (deterioration of the performance indicator) than the DUC target set in the Performance Plan (PP), and what were the drivers for the improvement or deterioration.</p> <p>It provides transparency on the different steps required to undertake the monitoring of the DUC, showing:</p> <ul style="list-style-type: none"> <li>• the planned performance (based on RP2 PP data);</li> <li>• the actual performance (based on the June 2019 Reporting Tables for the year 2018); and</li> </ul>

- the differences between actual and planned performance.

To ensure consistency with the determined costs data provided in the adopted PP, actual costs are expressed in 2009 prices. Planned and actual inflation indices are also shown in box 3.

### 3. Focus on en-route (or terminal) at State/Charging Zone level

Box 3 contains graphical summaries (right-hand side) of the differences in costs, traffic, and DUCs for all years of RP2, as well as comments (left-hand side) on the situation observed for the year 2018.

The comments provide an analysis and general conclusions on the 2018 DUC at State/Charging zone level, including:

- Comparison of actual and planned DUC, and if the actual DUC is higher than the planned DUC, comments on whether the NSA Monitoring Report provides specific information on the definition and application of corrective measures designed to rectify the situation.
- Comparison of actual costs and traffic to the costs and traffic in the PP.
- Comments on the application of the traffic risk sharing mechanism in the State: whether the 2018 difference between actual and planned traffic falls within the  $\pm 2\%$  dead band or the  $\pm 10\%$  threshold.
- Comments on which entity is driving the difference between actual and planned costs (excluding ATSPs costs, which are analysed in box 12).
- A note on the costs exempted from cost-sharing reported by the State (see box 6).

### 4. En-route (or terminal) traffic monitoring (Actual 2015-2019 TSUs compared to PP)

Box 4 reviews the traffic situation in the Charging Zone, comparing planned with actual values and showing how the actual trend develops over RP2. It also helps visualise (with error bars) the  $\pm 2\%$  dead band and the  $\pm 10\%$  threshold of the traffic risk sharing mechanism. This provides an indication on the likelihood of activation of the traffic alert mechanism during RP2.

### 5. En-route (or terminal) costs monitoring (2018 actuals compared to PP)

Box 5 shows a comparison between the actual and the planned costs by entity at State level and by nature at ATSP level. The comparison is made both in absolute terms (in M€<sub>2009</sub>) and in %. This helps identify the main elements driving the differences between the actual and the planned costs.

The upper chart shows the situation by entity (ATSP, other ANSPs, METSP, NSA/EUROCONTROL). The ATSP is the “main” ATSP of the State concerned (as identified in box 1). The other ANSPs are the other services providers in the Charging Zone, if any (e.g. MUAC in Germany, Netherlands and Belgium/Luxembourg, ITAF in Italy, etc.).

The bottom chart shows the situation for the main ATSP with a breakdown of cost differences by nature (staff, other operating costs, depreciation, cost of capital, exceptional costs and VFR exempted flights). The chart supports the analysis provided in box 12.

Both charts follow the same logic, on the left side the displayed bars for each element show the difference when the actual costs are lower than the planned and on the right side the higher than the planned. VFR exempted flights costs follow the invers logic since these costs entail a deduction from the total cost. (e.g. lower actual VFR exempted flights costs involve a lower deduction and consequently an increase effect on the actual total cost compared with the planned)

### 6. En-route (or terminal) costs exempted from cost-sharing

Box 6 contains a table listing all the costs reported by the State (in the June 2019 Reporting Table) as being exempted from cost-sharing. Costs are listed by item and by entity, (in €<sub>2009</sub>, using the actual inflation index for 2018 as shown in box 2). The total costs exempted from cost-sharing are summed at the bottom of the table. If the total is negative, the costs are to be recovered from airspace users in future years; if costs are positive, they are to be reimbursed.

These costs will be eligible for carry-over to the following reference period(s) in part or in whole, if

deemed allowed by the European Commission (EC) after verification on the basis of the NSA report establishing and justifying these exemptions.

### 7. En-route (or terminal) DUC 2018 vs. 2018 unit rate charged to users

Box 7 shows all the adjustments required to calculate the Chargeable Unit Rate (CUR) starting from the DUC (in national currency in nominal terms). The bar on the left-hand side of the chart presents the 2018 DUC, and each bar moving to right shows the contribution (in nominal terms) of each adjustment to reach the 2018 CUR (the last bar on right-hand side). The rationale for the different adjustments is provided below:

- **Other revenues:** to reflect the fact that in some States “other revenues” (such as commercial revenues or income from grants) are deducted from the DUC to calculate the CUR.
- **Inflation adjustment:** to reflect the impact of a higher/lower than planned inflation index in the year “N-2”, and the subsequent charging/reimbursement to airspace users in year “N”.
- **Traffic risk sharing adjustment:** to reflect the gain/loss in revenues due to higher/lower traffic than planned in the year “N-2” which is reimbursed/charged to airspace users in year “N”.
- **Traffic adjustment:** to reflect the fact that, for the costs not subject to traffic risk sharing, over/under recoveries due to higher/lower traffic than planned in the year “N-2” are fully reimbursed/charged to airspace users in year “N”.
- **Bonus/penalty:** to reflect the fact that the achievement (or the failure to achieve) capacity and environment targets in year “N-2” triggers the charging of a financial bonus (or penalty) in year “N”.
- **Costs exempt from cost-sharing:** to reflect the elements of costs incurred by the States in RP1 (when deemed eligible) which are charged/reimbursed to airspace users in 2018.
- **Over/under recovery up to 2011:** to reflect the fact that over/under recoveries incurred before the introduction of the Performance Scheme are carried-over to 2018.

For the calculation of unit costs in box 7, all cost categories listed above are divided by the forecast TSUs for 2018 as laid out in the PP. Note that both the DUC and the CUR presented in this box are before the addition of the administrative unit rate for the billing and collection of route charges on a regional basis.

The right-hand side of box 7 contains a short comment on the main drivers for the difference between the DUC and the CUR.

### 8. En-route (or terminal) DUC 2018 vs. 2018 actual unit cost for users

Box 8 shows all the adjustments required to calculate the Actual Unit Cost for airspace Users (AUC-U) for 2018 (also referred to as the “true cost for users”) starting from the DUC (in national currency in nominal terms). This reflects the unit cost that airspace users genuinely incur in respect of the activities performed in 2018.

The bar on the left-hand side of the chart presents the 2018 DUC and each bar moving to the right shows the contribution (in nominal terms) of each adjustment to reach the 2018 AUC-U (the last bar on right-hand side). The rationale for the different adjustments is provided below:

- **Other revenues:** to reflect the fact that in some States “other revenues” are deducted from the DUC to calculate the amounts charged in 2018.
- **Inflation adjustment:** to reflect the impact of higher/lower inflation index in year “N” which will be charged/reimbursed to airspace users in year “N+2”. Although the cash flow does not take place in year “N”, it is considered as part of the 2018 AUC-U.
- **Traffic risk sharing adjustment:** to reflect the gain/loss in revenues due to higher/lower traffic than planned in year “N”, which will be reimbursed/charged to airspace users in year “N+2”. Although the cash flow does not take place in year “N”, it is considered as part of the 2018 AUC-U.
- **Traffic adjustment:** to reflect the fact that, for the costs not subject to traffic risk sharing, over/under recoveries due to higher/lower traffic than planned in year “N” will be fully

reimbursed/charged to airspace users in year “N+2”. Although the cash flow does not take place in year “N”, it is considered as part of the 2018 AUC-U.

- **Bonus/penalty:** to reflect the fact that the achievement (or the failure to achieve) capacity and environment targets in year “N” will trigger the charging of a financial bonus (or penalty) in year “N+2”. Although the cash flow does not take place in year “N”, it is considered as part of the 2018 AUC-U.
- **Costs exempt from cost-sharing:** to reflect the elements of costs incurred in 2018 (if deemed eligible) which will be charged/reimbursed to airspace users in future Reference Period(s). Although the cash flow does not take place in year “N”, it is considered as part of the 2018 AUC-U.

For the calculation of unit costs in box 8, all cost categories listed above are divided by the actual TSUs for 2018. To assess the impact of other revenues (OR) adjustment on AUC-U, actual OR (=forecast OR as reported in the reporting tables adjusted for actual traffic) are divided by the actual TSUs, as well. Optionally forecast OR (as reported in the RTs) can be used. In that case, it is divided by the forecast TSU. The resulting adjustment is the same in both cases.

The right-hand side of box 8 contains a short comment of the main drivers for the difference between the DUC and the AUC-U.

### 9. Focus on ATSP: net ATSP gain/loss on en-route (or terminal) activity

Box 9 focuses on the main ATSP net gain/loss on ANS activities. A graphical illustration of this analysis is also shown on the left-hand side of box 11. The main ATSP is the most significant contributor to the State’s costs and the only (or main) entity subject to costs and traffic risk sharing mechanisms foreseen by the Charging Regulation.

The net gain/loss calculated in the bottom line of box 9 results from the combination of three distinct items:

1. The outcome of the cost-sharing mechanism to be retained by the ATSP (including the impact of costs exempted from cost-charging that will be recovered from or reimbursed to users, under the assumption that they will be deemed eligible by the EC).
2. The outcome of the traffic risk sharing mechanism.
3. The outcome of the financial incentive mechanism for capacity and environment targets (expressed in €2009, and in % of revenues in the year).

For the calculation of the gain/loss to be retained in respect of cost-sharing (item 1 above), the following elements are taken into account:

- The difference between determined and actual costs, using:
  - determined costs as presented in the PP for 2018 for the main ATSP, converted into €<sub>2009</sub> using the inflation index of the PP (as shown in box 2); and,
  - actual 2018 costs for the main ATSP, as reported in the June 2019 Reporting Tables, converted into €<sub>2009</sub> using the actual inflation index (as shown in box 2).

This calculation ensures that the inflation adjustment carried-over by ATSPs is taken into account in the cost-sharing gain/loss.

- Any amounts reported as costs exempted from cost-sharing for the ATSP, as shown in box 6, that are to be recovered from (+) reimbursed to (-) airspace users, provided they are deemed eligible by the EC.

As the confirmation by the EC of the eligibility of costs exempted from cost-sharing arising in 2018 has not yet taken place, there is uncertainty on whether the reported exemptions will be allowed or not. For this reason, the results without taking into account the costs exempted from cost-sharing is also presented in the ATSP analysis in box 12 (for those ATSPs having reported considerable exempted amounts likely to change the results significantly).

For the calculation of the gain/loss to be retained in respect of traffic risk sharing (item 2 above), the

following elements are taken into account:

- The difference in total service units (actual vs. PP) in percentage terms.
- The determined costs of the main ATSP in 2018 after deduction of costs for exempted VFR flights, as these are the basis for the calculation of the traffic risk sharing. These are expressed in €<sub>2009</sub>, using the 2018 actual inflation index (as shown in box 2) due to the fact that the gain/loss retained by the ATSP for the current year is an actual gain/loss, so converting this value into €<sub>2009</sub> has to be done using the actual inflation rate.
- The features of traffic risk sharing mechanism: if actual traffic is  $\pm 2\%$  compared to the PP, the gain/loss in revenues is borne entirely by the ATSP; between 2% and 10% (higher or lower) than the PP it is shared between the ATSP (30%) and airspace users (70%); and if the difference between actual and planned traffic exceeds  $\pm 10\%$ , the gain/loss relating to traffic beyond  $\pm 10\%$  is entirely borne by the airspace users and has therefore no impact on the ATSP gain/loss from traffic risk sharing.

The amounts of financial incentives on capacity and environment targets (item 3 above) correspond to the amounts reported in the June 2019 Reporting Tables in respect of the performance achieved in 2018. These are expressed in €<sub>2009</sub>, using the 2018 actual inflation index and in % of revenues in the year. The revenues in the year are estimated by multiplying the ATSP component of the unit rate (item 5.9 in the Reporting Tables) with the actual number of TSUs in 2018, in line with the European Commission instructions.

The net gain/loss referred to in box 9 considers the total determined and actual ATSP costs and treats them as “genuine costs” although a fraction of the cost of capital corresponds to the ATSP return on equity and is a source of profit. Therefore, and as was the case in RP1 monitoring reports, the ATSP analysis is completed using the notion of estimated surplus, which is documented in box 10.

#### 10. Focus on ATSP: En-route (or terminal) ATSP estimated surplus

Box 10 uses the notion of overall estimated surplus, and provides continuity with the analyses developed in RP1. It is important to emphasise that this analysis focuses on the ATSP results entitled to the ANS activity in the year. It is therefore different from the net accounting profit disclosed in ATSPs financial statements. Indeed, the latter include revenues from other activities (e.g. consultancy services) which are not financed through user charges, as well as revenues and costs pertaining to other years of activity.

The overall estimated surplus combines two elements:

- the main ATSP net gain/loss on ANS activities (see box 9); and
- the estimated actual surplus embedded in the cost of capital.

The estimated actual surplus embedded in the cost of capital corresponds to the return on equity, which is a source of profit. For an ATSP which is 100% financed through debt, the estimated surplus embedded in the cost of capital will be null, while for an ATSP which 100% financed through equity, the entire cost of capital will be considered as the estimated surplus.

Box 10 is structured in two parts. A first table shows how the estimated surplus embedded in the determined cost of capital is calculated, and a second table shows how the estimated surplus embedded in the actual cost of capital is calculated. In both tables, additional indicators are calculated: the estimated surplus in percent of en-route revenues and the estimated ex-ante (determined) or ex-post (actual) return on equity (in %).

The estimated surplus, when expressed in % of the revenues, can be associated to a “profit margin” generated by the ATSP with respect to the activity of the year, but it is not comparable to the profit margin that would be calculated straight from ATSPs financial statements.

The elements taken into account to calculate the estimated surplus embedded in the determined and the actual cost of capital are:

- a. The total asset base, as reported in the PP and the June 2019 Reporting Tables.



- b. The estimated proportion of financing through equity (in %), which is calculated based on information reported by ATSPs in the PP and the June 2019 Reporting Tables, with  $b = (f / a - g) / (i - g)$ .
- c. The estimated proportion of financing through equity (in value), with  $c = a \times b$ .
- d. The estimated proportion of financing through debt (in %), with  $d = 1 - b$ .
- e. The estimated proportion of financing through debt (in value), with  $e = a \times d$ .
- f. The cost of capital pre-tax (in value), as reported in the PP and in the June 2019 Reporting Tables.
- g. The average interest on debt (%), as reported in the PP and in the June 2019 Reporting Tables.
- h. The interest on debt (in value), with  $h = e \times g$ .
- i. The determined RoE (pre-tax) in %, as reported in the PP and in the June 2019 Reporting Tables (with the actual RoE % expected to match the determined RoE % from the PP).

The actual estimated surplus embedded in the cost of capital is then calculated as the determined RoE (pre-tax) rate multiplied by equity. Referring to the items listed above it is equal to  $c \times i$ .

### 11. Focus on ATSP: Summary of ATSP gain/loss on en-route (or terminal) activity and estimated surplus

Box 11 provides:

- On the left-hand side, a graphical summary of the ATSP net gain/loss for the year 2018 arising from variations in costs, traffic, and bonus/penalty from incentives (see box 9).
- On the right-hand side, a bar chart comparing the planned and actual overall estimated surplus, both in value (€2009) and in % of the en-route revenue (see box 10).

The notion of revenue used in box 10, 11 and 12 corresponds to the revenue arising from the activity in the year, and is different from that used when expressing the bonus/penalty from incentives (box 9) where the ATSP component of the unit rate (therefore including adjustments from previous years carry-over to 2018) is used.

### 12. Focus on en-route (or terminal) ATSP: General conclusions

Box 12 contains comments on the ATSP cost-efficiency performance for the year 2018. The determined and actual costs for the main ATSP include ATM, Communication, Navigation, Surveillance and MET services, if applicable. The comments mainly focus on:

- The deviation between actual and determined costs, looking at the difference per cost category (staff, other operating costs, depreciation, cost of capital and exceptional items) and using the explanations provided in the NSA Monitoring Report and in the Additional Information to the Reporting Tables).
- The presence and nature of costs exempted from cost-sharing for the ATSP.
- The financial effect of the Traffic Risk Sharing on the ATSP.
- The financial effect of incentives (bonus/penalty) on the ATSP.
- The situation in relation to the asset base and the financing structure.
- The net ATSP gain/loss for the en-route (or terminal) activities.
- The ATSP overall estimated surplus (i.e. including the surplus embedded in the cost of capital).



## 2.3 Gate-to-gate ANS analysis and technical notes

<b>1. Monitoring of gate-to-gate ANS costs</b>
Box 1 presents an aggregation of en-route and terminal costs (in € <sub>2009</sub> ) as well as the share of en-route costs in total gate-to-gate costs. It also shows the difference between actual and planned data measured at gate-to-gate level (in € <sub>2009</sub> and in %).
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>
The right-hand side of box 2 shows a graphical presentation of the planned and actual split of gate-to-gate costs between en-route and terminal. It helps identify possible changes in cost-allocation methodology. Comments and conclusions are provided on the left-hand side of box 2.
<b>Technical notes on en-route and terminal information provided by the State</b>
These notes, if any, explain specific issues affecting the analysis and possibly requiring additional information from the States to be gathered during the “fact validation”.

## 2.4 Monitoring of CAPEX

The objective of this section is to present factual information provided by the ANSPs in relation to their Capex investments. More precisely, it shows per ANSP:

- Data from RP2 National Performance Plan related to Total Capex, Main Capex and Real Gate to Gate ANSP costs
- Actual data from the FAB Monitoring Reports related Total Capex, Main Capex and Real Gate to Gate ANSP costs
- The difference between Actual and Planned Capex data in absolute value and in percentage
- A bar chart comparing the Planned and Actual Total Capex

The planned and actual Capex data are presented in both nominal and real terms (i.e. €2009).

It should be noted that this section of the report, is a factual presentation of Capex data, and it is based on the data and information provided by Member States through their annual FAB Monitoring reports. It does not consist of an analysis of the deferment of Capex.



Union Wide En-route charging zones

Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual information: en-route air navigation services

Commission Decision 2014/132 of 11 March 2014 sets the Union-wide targets for the cost-efficiency Key Performance Area covering RP2 (i.e. the period 2015-2019). These targets, are expressed in average DUC for en-route ANS and correspond to an average DUC decrease of -3.3% p.a. between 2014 (starting point based on the RP1 Determined Costs (DCs) for 2014 i.e. 58.09 €2009) and 2019.

The aggregation of the individual national cost-efficiency targets for the 30 SES States that corresponds to 30 en-route Charging Zones (CZ) (Belgium and Luxembourg share one CZ and Spain has two CZs) is shown below. In 2016, Malta, Poland and Bulgaria requested the Commission to revise their RP2 en-route cost-efficiency targets for the years 2018 to 2019. The figures for these three States show the amended Performance Plan (Commission Decision (EU) 2017/2376 of 15 December 2017). In 2017, Romania and Portugal submitted a request to the European Commission to revise their RP2 en-route cost-efficiency target DUC for the years 2018 to 2019. This report includes the amended figures for these States as reflected in the revised Performance Plan (EC Decision 2018/2021 of 17 December 2018).

2. En-route DUC monitoring at Charging Zone level

SES States - Data as per EC Decision on Union-wide targets for RP2	2015	2016	2017	2018	2019
Real en-route costs (determined costs 2015-2019) - (in EUR2009)	6 147 905 000	6 055 686 000	5 904 294 000	5 756 687 000	5 612 769 000
Total en-route Service Units	108 541 000	110 196 000	111 436 000	112 884 000	114 305 000
<b>Real en-route unit costs per Service Unit - (in EUR2009)</b>	<b>56.64</b>	<b>54.95</b>	<b>52.98</b>	<b>51.00</b>	<b>49.10</b>
Data from RP2 Performance Plan (EC Decision 2018/2021 of 17 December 2018)	2015D	2016D	2017D	2018D	2019D
Real en-route costs (EUR2009)	6 235 113 277	6 195 878 072	6 164 525 008	6 153 524 516	6 059 092 064
Total en-route Service Units	112 687 532	115 027 116	117 494 197	122 148 732	124 649 261
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>55.33</b>	<b>53.86</b>	<b>52.47</b>	<b>50.38</b>	<b>48.61</b>

Union Wide Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Real en-route costs (EUR2009)	6 079 182 547	6 060 358 280	6 002 727 481	6 086 284 260	
Total en-route Service Units	114 994 014	120 135 471	126 856 192	133 959 583	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>52.87</b>	<b>50.45</b>	<b>47.32</b>	<b>45.43</b>	

Difference between Actuals and EC Decision on Union-wide targets	2015	2016	2017	2018	2019
Real en-route costs (EUR2009) in value	68 722 453	-4 672 280	-98 433 481	-329 597 260	
in %	1.1%	-0.1%	-1.6%	-5.4%	
Total en-route Service Units in value	4 146 532	4 831 116	6 058 197	9 264 732	
in %	5.9%	9.0%	13.8%	18.7%	
Real en-route unit cost per Service Unit (EUR2009) in value	-3.78	-4.51	-5.66	-5.56	
in %	-6.7%	-8.2%	-10.7%	-10.9%	

Difference between Actuals and EC Decision from Performance Plans	2015	2016	2017	2018	2019
Real en-route costs (EUR2009) in value	-155 930 730	-135 519 792	-161 797 527	-67 240 256	
in %	-2.5%	-2.2%	-2.6%	-1.1%	
Total en-route Service Units in value	2 306 482	5 108 355	9 361 996	11 810 851	
in %	2.0%	4.4%	8.0%	9.7%	
Real en-route unit cost per Service Unit (EUR2009) in value	-2.47	-3.42	-5.15	-4.94	
in %	-4.5%	-6.3%	-9.8%	-9.8%	

3. Focus on en-route at State/Charging Zone level

En-route unit cost (see box 2)

In 2018 the Union-wide actual en-route unit cost (45.43 €2009) was -9.8% lower than planned in the RP2 PPs (50.38 €2009). This is because in 2018 actual en-route costs were -1.1% (-67.2 M€2009) lower than the DCs reported in the PPs (6 153.5 M€2009), while the actual number of Total Service Units (TSUs) was +9.7% higher than planned. In addition, the Union-wide actual en-route unit cost (45.43 €2009) was -10.9% lower than the Union-wide target for 2018 (51.0 €2009) adopted by the Commission in 2014. The overall deviation of En-route unit costs observed at Union-wide level masks different situations across the 30 CZs as shown in the table at the final page of this en-route, Union Wide view summary, costs efficiency Monitoring report.

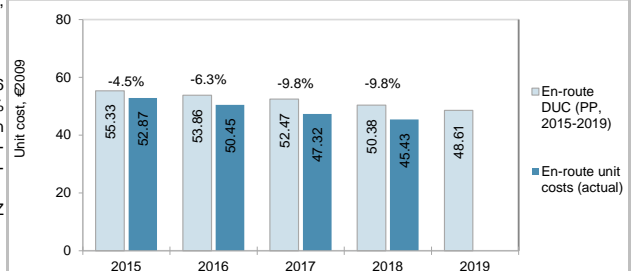
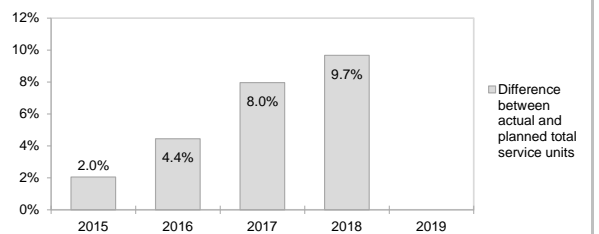
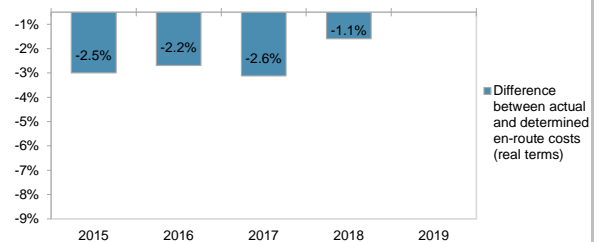
En-route service units (see box 4)

In 2018, Union-wide actual Total Service Units (TSUs) were +9.7% higher than planned in the adopted PPs. The traffic alert threshold of ±10% was reached for the second consecutive year at Union-wide level. Actual en-route Service Units in 2018 were +18.7% higher than the planned 2018 value in Annex 1 of Commission Decision 2014/132/EU. It must be noted that this situation is due to the fact that Union-wide targets for RP2 have been based on the STATFOR low case scenario (September 2013).

For the year 2019, as shown in Figure 16 below, the STATFOR February 2019 traffic outlook for the rest of RP2 remains significantly above the forecasts of the PPs. It must be noted that if any of the three scenarios of STATFOR February 2019 forecasts materialise, the traffic will be substantially higher than planned for the rest of RP2 (2019). The traffic is expected to greatly exceed the ±2% dead-band foreseen in the traffic risk-sharing mechanism. In fact, it would exceed the 10% alert threshold in any of the three scenarios. (see chapter 7 Alert Thresholds, on the Union wide view Monitoring report)

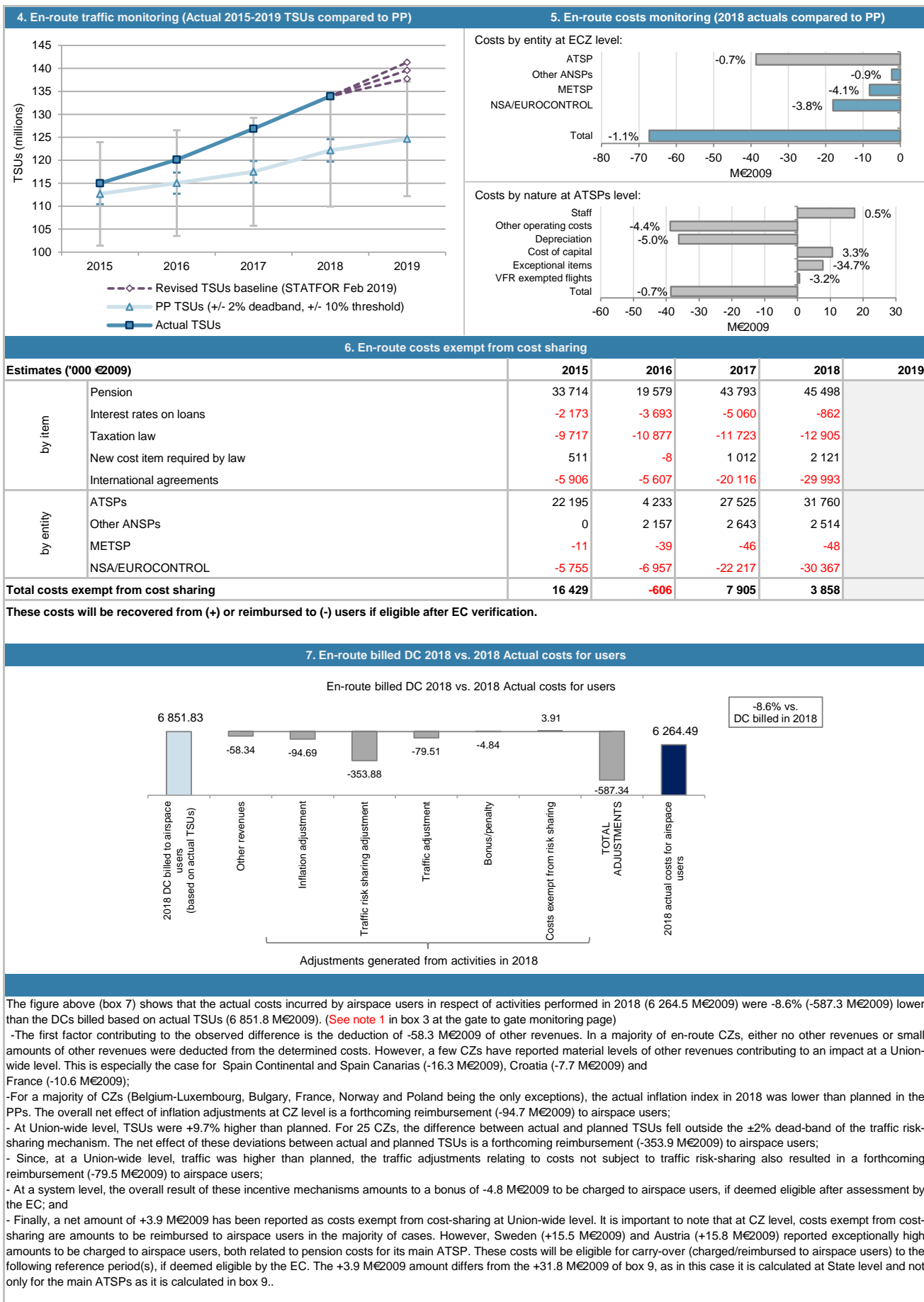
En-route costs (see box 5)

Actual en-route costs in 2018 were lower than planned for the main ATSPs (-0.7% or -38.6 M€2009), the NSA/EUROCONTROL (-3.8% or -18.1 €2009) the MET service providers (-4.1% or -8.3 M€2009) and for the other ANSPs (-0.9% or -2.3 M€2009). Due to their relative size in the CZs in terms of costs, most of the deviation observed for the total en-route ANS costs (-38.6 M€2009) is due to the main ATSPs (i.e. the main designated ATSP subject to traffic risk-sharing arrangements). A detailed analysis at ATSP level is provided in box 12. More details on the deviation between the DUC and actual en-route unit cost for 2018 at CZ level are available in the local level view part of the 2018 Annual Monitoring Report.



Union Wide En-route charging zones

Monitoring of en-route COST-EFFICIENCY for 2018



## Union-wide En-route ATSPs

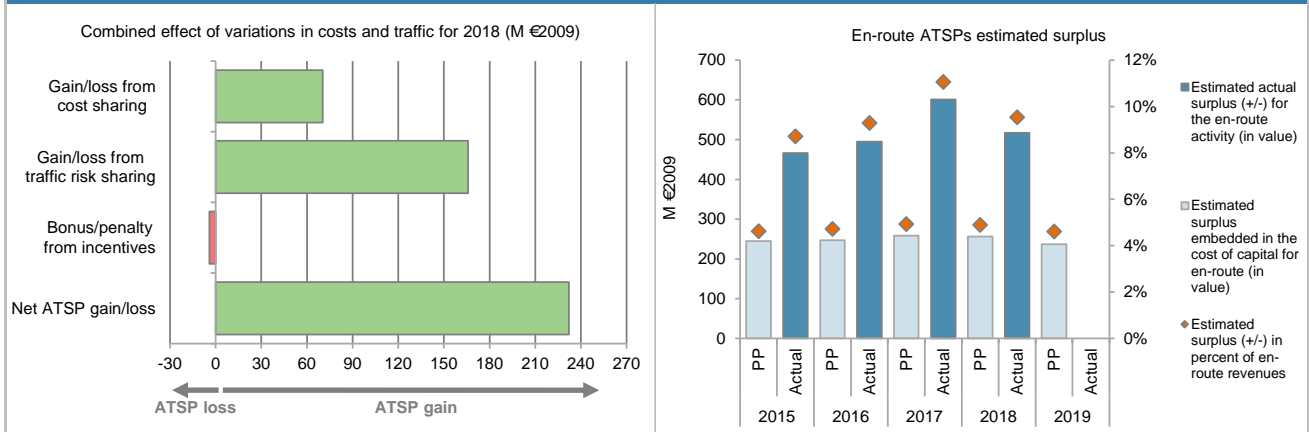
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSPs: Net ATSPs gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSPs (PP) - based on planned inflation	5 289 228	5 225 457	5 249 455	5 233 089	
Actual costs for the ATSPs	5 147 242	5 093 510	5 109 924	5 194 465	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSPs	141 986	131 946	139 530	38 624	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	22 195	4 233	27 525	31 760	
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of cost sharing</b>	<b>164 181</b>	<b>136 179</b>	<b>167 056</b>	<b>70 385</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	2.0%	4.4%	8.0%	9.7%	
Determined costs for the ATSPs (PP) - based on actual inflation	5 319 561	5 314 633	5 316 694	5 269 263	
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of traffic risk sharing</b>	<b>31 689</b>	<b>97 558</b>	<b>154 580</b>	<b>165 789</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of incentives (bonus/penalty)</b>	<b>9 708</b>	<b>3 158</b>	<b>2 961</b>	<b>-4 108</b>	
<b>Net ATSPs gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>205 578</b>	<b>236 895</b>	<b>324 597</b>	<b>232 065</b>	
10. Focus on ATSPs: En-route ATSPs estimated surplus *					
* This calculation of the economic surplus retained by the ATSPs is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSPs estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	6 321 739	6 208 733	6 132 025	5 980 428	5 801 714
Estimated proportion of financing through equity (in %)	55.9%	57.2%	58.6%	59.6%	61.1%
Estimated proportion of financing through equity (in value)	3 534 295	3 551 321	3 595 444	3 564 812	3 544 181
Estimated proportion of financing through debt (in %)	44.1%	42.8%	41.4%	40.4%	38.9%
Estimated proportion of financing through debt (in value)	2 787 444	2 657 412	2 536 581	2 415 615	2 257 533
Cost of capital pre-tax (in value)	330 739	328 002	336 148	324 000	300 116
Average interest on debt (in %)	3.1%	3.1%	3.0%	2.8%	2.8%
Interest on debt (in value)	86 205	81 236	77 349	67 914	63 331
Determined RoE pre-tax rate (in %)	6.9%	6.9%	7.2%	7.2%	6.7%
Estimated surplus embedded in the cost of capital for en-route (in value)	244 534	246 767	258 799	256 087	236 785
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>244 534</b>	<b>246 767</b>	<b>258 799</b>	<b>256 087</b>	<b>236 785</b>
<b>Revenue/costs for the en-route activity</b>	<b>5 289 228</b>	<b>5 225 457</b>	<b>5 249 455</b>	<b>5 233 089</b>	<b>5 135 840</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>4.6%</b>	<b>4.7%</b>	<b>4.9%</b>	<b>4.9%</b>	<b>4.6%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.9%</b>	<b>6.9%</b>	<b>7.2%</b>	<b>7.2%</b>	<b>6.7%</b>
ATSPs estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	6 356 267	6 338 468	6 077 412	5 901 476	
Estimated proportion of financing through equity (in %)	58.5%	58.4%	63.3%	67.4%	
Estimated proportion of financing through equity (in value)	3 718 580	3 703 737	3 848 179	3 975 228	
Estimated proportion of financing through debt (in %)	41.5%	41.6%	36.7%	32.6%	
Estimated proportion of financing through debt (in value)	2 637 687	2 634 731	2 229 232	1 926 247	
Cost of capital pre-tax (in value)	333 180	325 105	316 958	334 631	
Average interest on debt (in %)	2.7%	2.5%	1.8%	2.6%	
Interest on debt (in value)	72 290	66 744	40 360	49 172	
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.2%	7.2%	
Estimated surplus embedded in the cost of capital for en-route (in value)	260 890	258 362	276 599	285 459	
Net ATSPs gain(+)/loss(-) on en-route activity	205 578	236 895	324 597	232 065	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>466 468</b>	<b>495 257</b>	<b>601 196</b>	<b>517 524</b>	
<b>Revenue/costs for the en-route activity</b>	<b>5 352 820</b>	<b>5 330 405</b>	<b>5 434 521</b>	<b>5 426 530</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>8.7%</b>	<b>9.3%</b>	<b>11.1%</b>	<b>9.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>12.5%</b>	<b>13.4%</b>	<b>15.6%</b>	<b>13.0%</b>	

Union-wide En-route ATSPs

Monitoring of en-route COST-EFFICIENCY for 2018

11. Focus on ATSPs: Summary of ATSPs gain/loss on en-route activity and estimated surplus



12. Focus on en-route ATSPs: General conclusions

**Actual 2018 ATSPs en-route costs vs. PP** (see box 5)

The actual en-route costs, for the main ATSPs' were lower than planned in 2018 (-38.6 M€2009). This results mainly from a combination of:

- higher staff costs (+0.5% or +17.4 M€2009); a large proportion of the deviation observed is due to two ATSPs, Austrocontrol (Austria) with +8.9%, or +9.2 M€2009 and NATS (United Kingdom) with +13.1%, or +30.2 M€2009;
- lower other operating costs (-4.5% or -38.8 M€2009), a large proportion of the deviation observed is due to two ATSPs, DFS (Germany) with -26.1%, or -19.6 M€ and ENAV (Italy) with -27.3%, or -22.4 M€2009;
- lower depreciation costs (-5.0% or -36.2 M€2009), This is mainly due to (1) the postponement or delays in capital expenditures (CAPEX), (2) delays in entry into service of the purchased equipment, and (3) in some cases the non-realisation of planned CAPEX and (3) in some cases the non-realisation of planned CAPEX.
- higher costs of capital (+3.3% or +10.6 M€2009).

More details of the main drivers underlying the deviation between actual and Determined Costs for each of these costs categories are available at CZ level in the local level view part of this report.

**Net gain/loss on en-route activity in 2018** (see box 9)

The analysis of the main ATSPs' results in 2018 shows that, at Union-wide level, a net gain of 232.1 M€2009 was generated on the en-route activity. This result is due to the combination of three distinct elements:

- a gain resulting from the cost-sharing mechanism of +70.4 M€2009, corresponding to the difference between actual 2018 costs and the determined costs from the adopted PPs for the (main) ATSPs, and reported amounts for costs exempt from cost-sharing;
- a net gain resulting from the traffic risk-sharing mechanism of +165.8 M€2009 for the (main) ATSPs. It is important to note that this is a completely different situation compared to RP1 when actual traffic was consistently lower than planned in the PPs, which resulted in a net loss for the main ATSPs. Additionally, it can be noted that during the previous RP2 years the difference between actual and planned traffic has been higher each year (+2.0%, +4.4%, +8.0% and +9.7% in 2015, 2016, 2017 and 2018 respectively), and the corresponding net gain has also significantly increased. In 2015 the net gain resulting from the traffic risk-sharing mechanism was +31.7 M€2009, in 2016 it amounted to +97.6 M€2009, +154.6 M€2009 in 2017 and +165.8 M€2009 in 2018 i.e. a fivefold increase from 2015; and
- a net loss resulting from the financial incentive mechanism relating to capacity performance amounting to -4.1 M€2009 (see paragraph 5.6.5 below for details).

**Overall estimated surplus for the en-route activity** (see box 10 and 11)

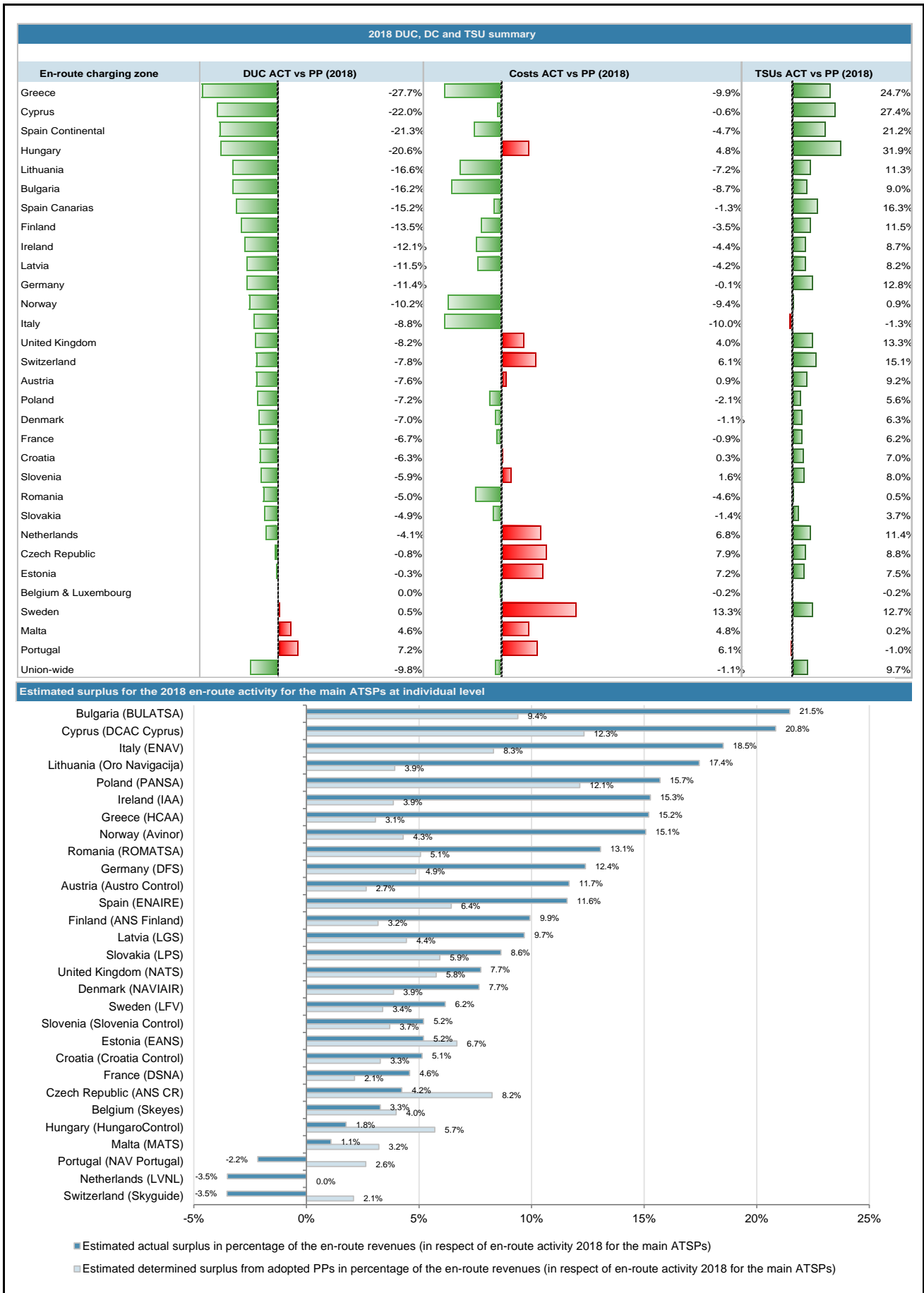
The actual estimated surplus for the en-route activity in 2018 amounts to 517.5 M€2009. This figure comprises the surplus embedded in the actual cost of capital (285.4 M€2009) and the net gain/loss generated in respect of the en-route activity in 2018 (232.1M€2009).

The estimated surplus at Union-wide level represents 9.5% of 2018 en-route revenues, which is higher than planned in the PPs (4.9%). This corresponds to a (weighted average) ex-post actual RoE of 13.0%, which is also higher than planned in the PPs (7.2%).

The actual estimated surplus includes the amounts reported for costs exempt from cost-sharing for main ATSPs (i.e. 31.8 M€2009) in 2018. These amounts to be recovered from (+) or reimbursed to (-) the airspace users will be eligible for carry-over to the following reference period(s), if allowed by the EC. Should these costs be deemed not eligible by the EC, the actual estimated surplus in 2018 would be lower (i.e. 485.6 M€2009, compared to 517.5 M€2009).

Union Wide En-route charging zones

Monitoring of en-route COST-EFFICIENCY for 2018



Union-wide Terminal charging zones

Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services

Although there are no Union-wide cost-efficiency targets for terminal ANS, 2018 is the fourth year in which terminal ANS cost-efficiency performance has been monitored according to the requirements of Article 18 of the Performance Regulation. The terminal cost-efficiency KPI is the result of the ratio between the determined costs and the forecast Terminal Navigation Service Units (TNSUs) contained in the PPs. Each State has adopted local cost-efficiency targets at Terminal Charging Zone (TCZ) level for RP2 with the same risk-sharing arrangements than for en-route except that traffic risk-sharing exemptions can apply for TCZs including airports with less than 225 000 movements.

A total of 38 TCZs have been reported (generally one per State, but two for Italy, France Poland, United Kingdom and five for Belgium) covering a total of 174 airports. The two TCZs reported by UK have been excluded from the Union wide analysis for the following reasons:

- information relating to UK TCZ B (nine airports) should be reported to the EC on a confidential basis in accordance with the requirements related to market conditions and;
- UK TCZ C (London Approach) is not directly comparable with other TCZs since the service provided is of a hybrid nature, making the transition between en-route and terminal services for the five London Airports (which are also part of TCZ B).

It should be noted that the 2018 cost-efficiency monitoring analysis for UK TCZ C is available in the accompanying CZ view shown in the local level view part of the 2018 Annual Monitoring Report.

In 2016, Malta requested the Commission to revise their RP2 terminal DUC for the years 2017 to 2019. The figures for this State show the amended Performance Plan (Commission Implementing Decision (EU) 2017/2376 of 15 December 2017). In 2017, Romania and Portugal submitted a request to the European Commission to revise their RP2 terminal cost-efficiency targets DUC for the years 2018 to 2019. This report includes the amended figures for these States as reflected in the revised Performance Plan (EC Decision 2018/2021 of 17 December 2018

2. Terminal DUC monitoring at Charging Zone level

Data from RP2 Performance Plan		2015D	2016D	2017D	2018D	2019D
Real terminal costs (EUR2009)		1 117 713 492	1 103 962 617	1 066 100 758	1 064 115 512	1 059 985 630
Total terminal Service Units		6 181 013	6 331 707	6 430 770	6 645 093	6 786 564
<b>Real average terminal unit cost per Service Unit (EUR2009)</b>		<b>180.83</b>	<b>174.35</b>	<b>165.78</b>	<b>160.14</b>	<b>156.19</b>

Actual data from Reporting Tables		2015A	2016A	2017A	2018A	2019A
Real terminal costs (EUR2009)		1 084 292 299	1 096 452 312	1 088 023 758	1 104 896 907	
Total terminal Service Units		6 318 950	6 621 834	6 890 820	7 215 315	
<b>Real average terminal unit cost per Service Unit (EUR2009)</b>		<b>171.59</b>	<b>165.58</b>	<b>157.89</b>	<b>153.13</b>	

Difference between Actuals and Planned		2015	2016	2017	2018	2019
Real terminal costs (EUR2009)	in value	-33 421 193	-7 510 304	21 923 000	40 781 395	
	in %	-3.0%	-0.7%	2.1%	3.8%	
Total terminal Service Units	in value	137 937	290 127	460 050	570 222	
	in %	2.2%	4.6%	7.2%	8.6%	
<b>Real average terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>-9.24</b>	<b>-8.77</b>	<b>-7.89</b>	<b>-7.00</b>	
	in %	<b>-5.1%</b>	<b>-5.0%</b>	<b>-4.8%</b>	<b>-4.4%</b>	

3. Focus on terminals at Union-wide/Charging Zone level

Terminal unit cost (see box 2)

In 2018, the Union-wide actual terminal unit cost (153.13 €2009) was some -4.4% lower than planned in the RP2 PPs. This variation results from the combination of higher than planned TNSUs (+8.6%) and higher than planned terminal costs (+3.8%, or +40.8 M€2009). The overall deviation of terminal unit costs observed at Union-wide level masks different situations across the 36 TCZs as shown in the table at the final page of this terminal costs efficiency Monitoring report.

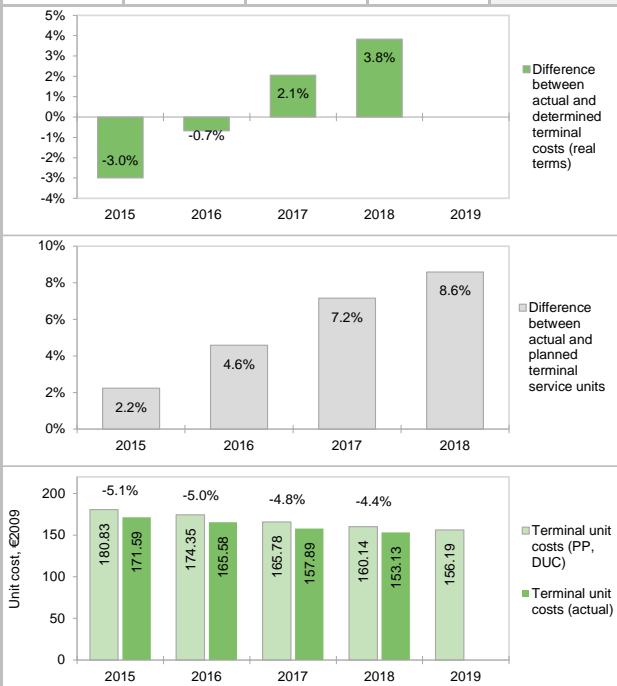
It should be noted that is the second time, taking in to account RP1 and RP2, that the total terminal ANS actual costs were higher than planned, i.e. +2.1% or +21.9 M€2009 in 2017 and +3.8% or +40.8 M€2009 in 2018. Neither en-route nor terminal had shown higher actual costs than planned in any of the years of RP1 and RP2 (2015 and 2016). In absolute terms, most of the deviation observed is due to two TCZ (Germany with +30.8 M€2009 and Netherland with +10.0 M€2009).

Terminal service units (see box 4)

TNSU forecasts used in the PPs are consistently below the actual values and the low scenario of the STATFOR forecast (February 2019) for the rest of RP2 (2019). Indeed, if any of three STATFOR 2019 scenarios materialise, the traffic is expected to exceed the ±2% dead-band foreseen in the traffic risk-sharing mechanism and in the high case would exceed by +10% in the year 2019. It must be noted that that only 18 out of the 36 original TCZ are applying traffic risk-sharing.

Terminal costs (see box 5)

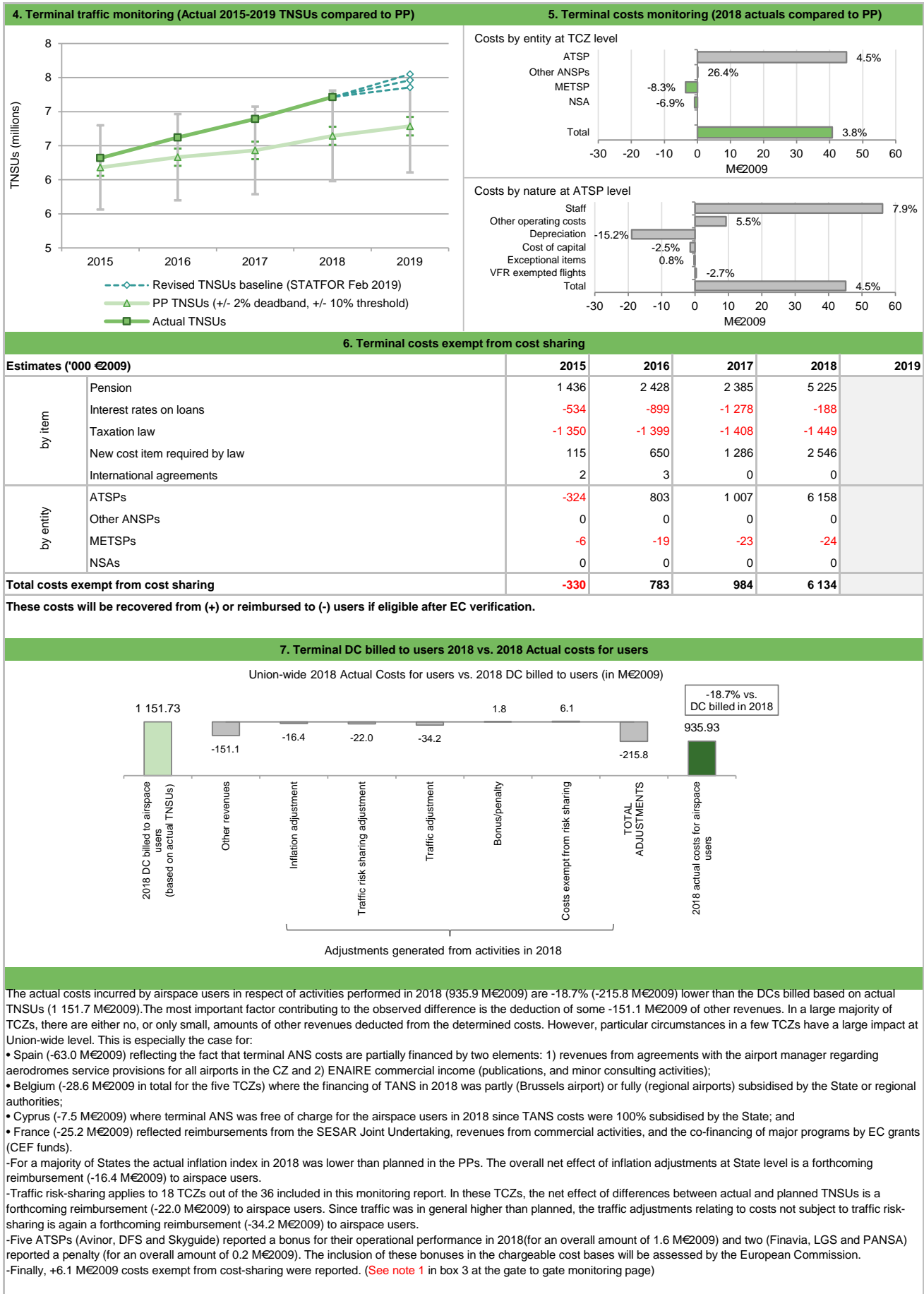
At SES level actual terminal costs were lower than planned for the MET service providers (-8.3% or -3.6 M€2009) and the NSAs (-6.9% or -0.8 M€2009). On the other side the terminal cost for the main ATSPs were higher (+4.5% or 45.1€). Due to their relative size in the CZs, most of the deviation observed for the total terminal ANS costs (+3.8% or +40.8 M€2009) was due to the main ATSPs. Details on the main drivers underlying the deviation between actual and determined costs for each of these costs categories are available at TCZ level in the local level view part of this 2018 Annual Monitoring Report.





Union-wide Terminal charging zones

Monitoring of terminals COST-EFFICIENCY for 2018


Local level view
15
Union wide view summary

## Union-wide Terminal ATSPs

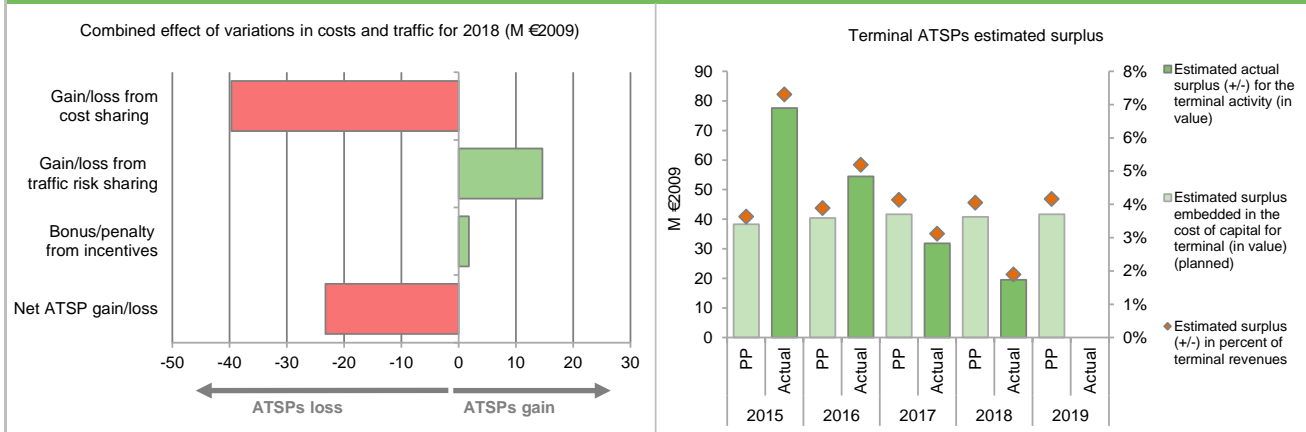
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSPs: Net ATSPs gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSPs (PP) - based on planned inflation	1 054 043	1 039 188	1 006 478	1 004 614	
Actual costs for the ATSPs	1 023 562	1 036 614	1 033 309	1 050 465	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSPs	30 481	2 574	-26 831	-45 851	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-324	803	1 007	6 158	
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of cost sharing</b>	<b>30 156</b>	<b>3 377</b>	<b>-25 824</b>	<b>-39 693</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.5%	4.0%	6.1%	7.0%	
Determined costs for the ATSPs (PP) - based on actual inflation	847 361	835 087	798 652	789 811	
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of traffic risk sharing</b>	<b>6 379</b>	<b>6 933</b>	<b>10 964</b>	<b>14 625</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSPs in respect of incentives (bonus/penalty)</b>	<b>1 072</b>	<b>1 816</b>	<b>1 464</b>	<b>1 809</b>	
<b>Net ATSPs gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>37 608</b>	<b>12 125</b>	<b>-13 397</b>	<b>-23 260</b>	
10. Focus on ATSPs: Terminal ATSPs estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSPs estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 181 200	1 180 904	1 179 185	1 163 545	1 156 472
Estimated proportion of financing through equity (in %)	53.6%	55.4%	54.5%	55.0%	56.3%
Estimated proportion of financing through equity (in value)	633 536	653 686	642 375	639 527	650 719
Estimated proportion of financing through debt (in %)	46.4%	44.6%	45.5%	45.0%	43.7%
Estimated proportion of financing through debt (in value)	547 665	527 218	536 810	524 018	505 753
Cost of capital pre-tax (in value)	56 347	58 015	59 454	56 544	56 664
Average interest on debt (in %)	3.3%	3.3%	3.3%	3.0%	3.0%
Interest on debt (in value)	18 075	17 595	17 780	15 763	15 014
Determined RoE pre-tax rate (in %)	6.0%	6.2%	6.5%	6.4%	6.4%
Estimated surplus embedded in the cost of capital for terminal (in value)	38 272	40 420	41 674	40 780	41 650
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>38 272</b>	<b>40 420</b>	<b>41 674</b>	<b>40 780</b>	<b>41 650</b>
<b>Revenue/costs for the terminal activity</b>	<b>1 054 281</b>	<b>1 039 499</b>	<b>1 006 845</b>	<b>1 005 041</b>	<b>1 000 988</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>3.6%</b>	<b>3.9%</b>	<b>4.1%</b>	<b>4.1%</b>	<b>4.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.0%</b>	<b>6.2%</b>	<b>6.5%</b>	<b>6.4%</b>	<b>6.4%</b>
ATSPs estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	1 121 846	1 163 951	1 146 748	1 056 158	
Estimated proportion of financing through equity (in %)	57.0%	56.8%	59.4%	63.0%	
Estimated proportion of financing through equity (in value)	639 746	660 763	681 135	664 912	
Estimated proportion of financing through debt (in %)	43.0%	43.2%	40.6%	37.0%	
Estimated proportion of financing through debt (in value)	482 101	503 187	465 613	391 246	
Cost of capital pre-tax (in value)	53 468	56 275	54 487	55 289	
Average interest on debt (in %)	2.8%	2.8%	2.0%	3.2%	
Interest on debt (in value)	13 502	13 904	9 269	12 510	
Determined RoE pre-tax rate (in %)	6.2%	6.4%	6.6%	6.4%	
Estimated surplus embedded in the cost of capital for terminal (in value)	39 966	42 371	45 217	42 780	
Net ATSPs gain(+)/loss(-) on terminal activity	37 608	12 125	-13 397	-23 260	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>77 574</b>	<b>54 496</b>	<b>31 820</b>	<b>19 520</b>	
<b>Revenue/costs for the terminal activity</b>	<b>1 061 170</b>	<b>1 048 739</b>	<b>1 019 912</b>	<b>1 027 206</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>7.3%</b>	<b>5.2%</b>	<b>3.1%</b>	<b>1.9%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>12.1%</b>	<b>8.2%</b>	<b>4.7%</b>	<b>2.9%</b>	

Union-wide Terminal ATSPs

Monitoring of terminal COST-EFFICIENCY for 2018

11. Focus on ATSPs: Summary of ATSP gain/loss on terminal activity and estimated surplus



12. Focus on terminal ATSPs: General conclusions

Actual 2018 ATSPs terminal costs vs. PP (see box 5)

The observed higher actual costs compared to the DCs for the main ATSPs masks different situations across the different costs categories in 2018. The main driver is higher staff costs (+7.9% or +56.2 M€2009) and higher operational costs (+5.5% or +9.3 M€2009) partially compensated by lower depreciation costs (-15.2% or -19.0 M€2009) and lower cost of capital (-2.5% or -1.5 M€2009).

Details on the main drivers underlying the deviation between actual and determined costs for each of these costs categories are available at TCZ level in the local level view part of this 2018 Annual Monitoring Report.

Net gain/loss on terminal activity in 2018 ( see box 9)

In 2018, the main ATSPs collectively generated a net loss of -23.3 M€2009 on the terminal activity. This is a combination of three elements:

- a loss of -39.7 M€2009 arising from the cost-sharing mechanism;
- a gain of +14.6 M€2009 arising from the traffic risk-sharing mechanism (applied in 18 out of 36 TCZs included in this analysis); and
- a gain of +1.8 M€2009, corresponding to a bonus from the capacity incentive mechanism.

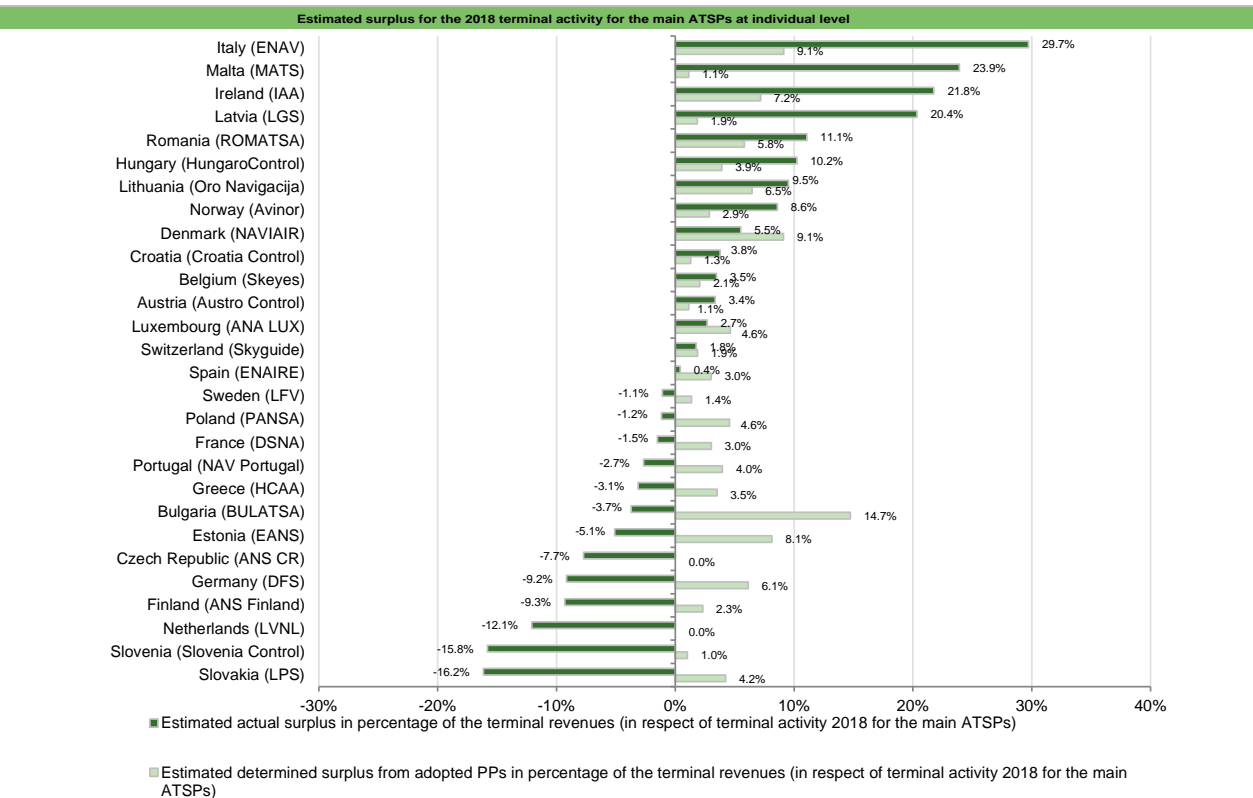
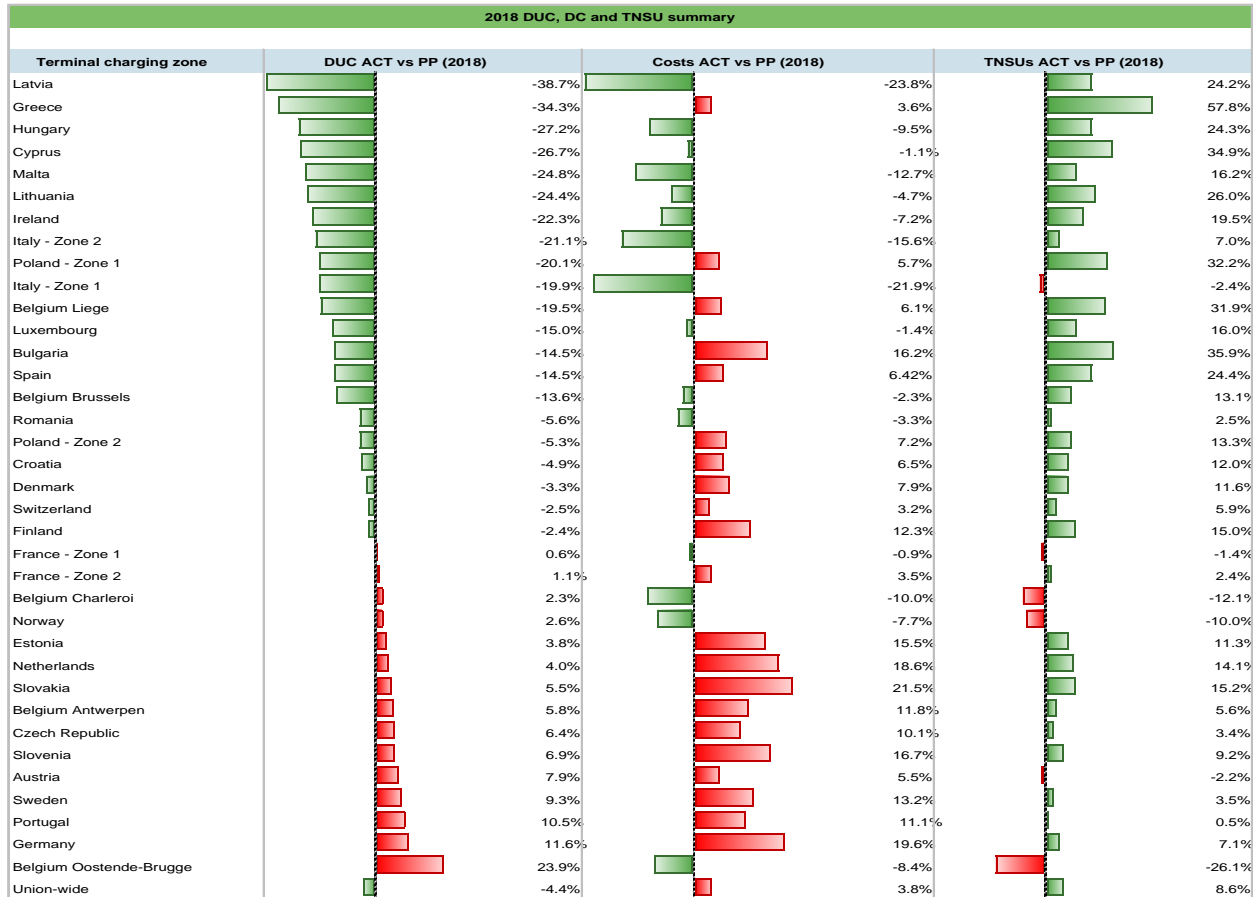
Five ATSPs (Avinor, DFS, Skyguide, ENAV and LVNL) reported a bonus for their operational performance in 2018 (for an overall amount of 2.0 M€2009) and three (Finavia, LGS and PANSA) reported a penalty (for an overall amount of 0.2 M€2009). The inclusion of these bonuses in the chargeable cost base is still being assessed by the European Commission.

Overall estimated surplus for the terminal activity (see box 10 and 11)

Ex-post, the overall estimated surplus taking into account the net loss from the terminal activity mentioned above (-23.3 M€2009) and the surplus embedded in the actual cost of capital (42.8 M€2009) amounts to 19.5 M€2009 (1.9% of the 2018 terminal revenues). At Union-wide level, the resulting ex-post rate of return on equity (RoE) is 2.9%, which is lower than the 6.4% planned in the PPs. Many TCZs are very small (for RP2 123 out of 174 airports were below the 70 000 threshold of air transport movements per year) and in many cases the asset base reported for the TCZ is also very small. The RoE expressed in terms of percentage should therefore be interpreted with caution since relatively high/low values do not necessarily reflect very large gains/losses in absolute values (see note 2 in box 3 at the gate to gate monitoring page).

Union-wide Terminal charging zones

Monitoring of terminal COST-EFFICIENCY for 2018



## Union-wide Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Data from RP2 Performance Plan</b>																																												
	<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																																							
Real en-route costs (EUR2009)	6 235 113 277	6 195 878 072	6 164 525 008	6 153 524 516	6 059 092 064																																							
Real terminal costs (EUR2009)	1 117 713 492	1 103 962 617	1 066 100 758	1 064 115 512	1 059 985 630																																							
Real gate-to-gate costs (EUR2009)	7 352 826 769	7 299 840 689	7 230 625 766	7 217 640 028	7 119 077 694																																							
En-route share (%)	84.8%	84.9%	85.3%	85.3%	85.1%																																							
<b>Actual data from Reporting Tables</b>																																												
	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																																							
Real en-route costs (EUR2009)	6 079 182 547	6 060 358 280	6 002 727 481	6 086 284 260																																								
Real terminal costs (EUR2009)	1 084 292 299	1 096 452 312	1 088 023 758	1 104 896 907																																								
Real gate-to-gate costs (EUR2009)	7 163 474 846	7 156 810 592	7 090 751 239	7 191 181 167																																								
En-route share (%)	84.9%	84.7%	84.7%	84.6%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-189 351 923	-143 030 096	-139 874 527	-26 458 861																																								
in %	-2.6%	-2.0%	-1.9%	-0.4%																																								
En-route share																																												
in p.p.	0.1 p.p.	-0.2 p.p.	-0.6 p.p.	-0.0 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>Actual gate-to-gate ANS costs at Union-wide level in 2018 were -0.4% lower than planned in the adopted PPs (7 191 M€2009 compared to 7 217 M€2009) due to a combination of lower en-route costs and higher terminal costs. (see note 3 in box 3 below)</p> <p>The actual proportion of en-route in total ANS costs (84.6%) is in line with the proportion planned in the PPs (85.3%). This indicates that, at system level, there is no noticeable reallocation of costs from en-route to terminal ANS.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>84.8%</td> <td>15.2%</td> </tr> <tr> <td>Actual</td> <td>84.9%</td> <td>15.1%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>84.9%</td> <td>15.1%</td> </tr> <tr> <td>Actual</td> <td>84.7%</td> <td>15.3%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>85.3%</td> <td>14.7%</td> </tr> <tr> <td>Actual</td> <td>84.7%</td> <td>15.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>85.3%</td> <td>14.7%</td> </tr> <tr> <td>Actual</td> <td>84.6%</td> <td>15.4%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>85.1%</td> <td>14.9%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	84.8%	15.2%	Actual	84.9%	15.1%	2016	Determined	84.9%	15.1%	Actual	84.7%	15.3%	2017	Determined	85.3%	14.7%	Actual	84.7%	15.3%	2018	Determined	85.3%	14.7%	Actual	84.6%	15.4%	2019	Determined	85.1%	14.9%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information</b>																																												
<p><b>Note 1:</b> It should be noted that the calculation of the "true costs" for users does not include the impact of the risk associated with exchange rates linked to the billing of the chargeable unit rate. The unit rate charged to airspace users is established in national currency but billed in Euros using the current exchange rate. In case of exchange rate fluctuations, the actual costs paid by airspace users will be higher or lower than planned.</p> <p>With respect terminal, Cyprus and at four Belgian regional TCZs, terminal ANS is 100% subsidised by the States/Regions. TANS activities are therefore fully financed through "income from other sources". Consequently, the calculation shown in box 7 for terminal excludes the adjustments generated for these TCZs and takes into account only the "other revenues".</p>																																												
<p><b>Note 2:</b> Although 30 main ATSPs reported information relating to terminal ANS in 2018, the analysis presented in box 9, 10, 11 for terminal focuses on 28 ATSPs in order to take into account the specificities of some TCZs:</p> <ul style="list-style-type: none"> <li>Actual data for the ATSPs operating in UK TCZ B (mainly NERL) are not publicly available (should be reported to the EC on a confidential basis as terminal ANS are provided on a contractual basis).</li> <li>In Cyprus and at four Belgian regional TCZs, terminal ANS is 100% subsidised by the States/Regions.</li> <li>In Sweden, no capital-related costs (depreciation and cost of capital) are reported for the main ATSP (LFV) in the terminal reporting tables since these costs are fully borne by the airport operator (Swedavia) that owns the CNS infrastructure used by LFV to provide terminal ANS services. For monitoring purposes, the overall estimated terminal surplus for ATSPs (LFV and Swedavia) is considered.</li> <li>From 2015 to 2019 the Federal Republic of Germany is strengthening the equity position of DFS with an overall contribution of 601.9 M€. In the RP2 Reporting Tables the above amounts are recorded as negative exceptional costs for charging purposes in the Route and Terminal Charging documents on an annual basis. Therefore, this reporting reduces the determined costs charged to the users and the corresponding DFS ANS revenues. However, the negative exceptional item is also included as part of actual costs reported in the Reporting Tables (R.T.). Therefore, this generates a difference between the DFS accounting profit and the Monitoring economic surplus results. An alternative surplus calculation taking into account this subject is shown in the German local view 2018 monitoring report.</li> <li>From 2017, France and Poland have two terminal CZ but one single ATSP each (DSNA and PANSA respectively) and Italy from 2015 (ENAV). Therefore, the ATSP surplus is calculated by taking into account both CZs for each state.</li> </ul> <p>In the cases mentioned above, the notion of economic surplus is either not appropriate, or to be interpreted with caution. NERL, DCAC and Eskyes (with the exception of its activity in Brussels TCZ) have therefore been excluded from the analysis presented below.</p>																																												
<p><b>Note 3:</b> UK TCZs were excluded from this analysis in order to ensure consistency with terminal monitoring report section.</p>																																												

## EU - all FABs

## Monitoring of CAPEX for 2018

Economic Assessment						
Currency: EUR						
Data from RP2 national performance plan	2015P	2016P	2017P	2018P	2019P	RP2P
<b>Total CAPEX (in M €2009)</b>	<b>1017.76</b>	<b>1064.03</b>	<b>1032.67</b>	<b>957.05</b>	<b>819.19</b>	<b>4890.70</b>
Main CAPEX (in M €2009)	725.84	789.06	760.89	664.75	541.07	3481.60
% Main into Total CAPEX	71.3%	74.2%	73.7%	69.5%	66.0%	71.2%
Real gate-to-gate ANSP costs (in M €2009)	<b>6498.11</b>	<b>6419.50</b>	<b>6413.42</b>	<b>6397.57</b>	<b>6297.97</b>	<b>32026.56</b>
% of CAPEX into Real gate-to-gate ANSP costs	15.7%	16.6%	16.1%	15.0%	13.0%	15.3%
Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A	RP2A
<b>Total CAPEX (in M €2009)</b>	<b>800.45</b>	<b>921.06</b>	<b>1025.07</b>	<b>1042.44</b>		
Main CAPEX (in M €2009)	<b>515.44</b>	<b>626.93</b>	<b>688.83</b>	<b>673.89</b>		
% Main into Total CAPEX	64.4%	68.1%	67.2%	64.6%		
Real gate-to-gate ANSP costs (in M €2009)	<b>6315.51</b>	<b>6283.07</b>	<b>6299.27</b>	<b>6403.80</b>		
% of CAPEX into Real gate-to-gate ANSP costs	12.7%	14.7%	16.3%	16.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in M €2009)	-217.31	-142.97	-7.60	85.39		
<b>Total CAPEX (in %, for M €2009)</b>	<b>-21.4%</b>	<b>-13.4%</b>	<b>-0.7%</b>	<b>8.9%</b>		

Year	Planned CAPEX (M €2009)	Actual CAPEX (M €2009)	Difference (M €2009)	Difference (%)
2015	1017.76	800.45	-217.31	-21.4%
2016	1064.03	921.06	-142.97	-13.4%
2017	1032.67	1025.07	-7.60	-0.7%
2018	957.05	1042.44	85.39	8.9%
2019	819.19			

The table above shows that in 2018 the actual total CAPEX was 1 042 M€2009, this is +8.9% higher than planned in the PP (957 M€2009) and it represents 16.3% the total real gate-to-gate costs. The difference of +8.9% higher actual CAPEX than planned, confirms last year change in the tendency, with almost no difference between actual and planned, while in the first two years of RP2, the actual CAPEX compared to planned were lower by -21.4% in 2015 and by -13.0% in 2016.

The postponement of capital expenditures (CAPEX) which was observed during the RP1 period could have been triggered to adjust to lower than expected traffic volumes (-4.9% TSUs over the whole RP1 period), but this was not the case in RP2.

Over the first 4 years of RP2, 7.0 % (i.e. 282.5 M€2009) of capital expenditure (CAPEX) planned in the RP2 Performance Plans have not materialised (i.e. have been cancelled and/or postponed). However, the related planned costs (depreciation and cost of capital) were included in the determined costs and therefore have been (or are being) charged to airspace users. It is important that these investment costs which were charged but not spent are taken into account by States when preparing their Performance Plans for RP3 (2020-2024) in order to avoid double counting.

**Note:** The Actual data for Total CAPEX have been updated for all years (2015-2018), with an average yearly increase of 78M€ with respect to what it was initially reported in the NSA Monitoring reports of previous years due to a new retroactive Capex reporting of France.

# **Annual Monitoring Report 2018**

Local level view  
BALTIC FAB





## BALTIC FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	B	A	B	
	ANSPs	For Safety Culture MO	A	A	C	C	
	ANSPs	For all other MOs	A	A	B	C	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		N/A	40%	0%	100%	
	Runway Incursions (RIs)		N/A	41%	0%	100%	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	9%	0%	27%	
	Runway Incursions (RIs)		100%	0%	25%	25%	
	ATM Specific occurrences (ATM-S)		100%	33%	14%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

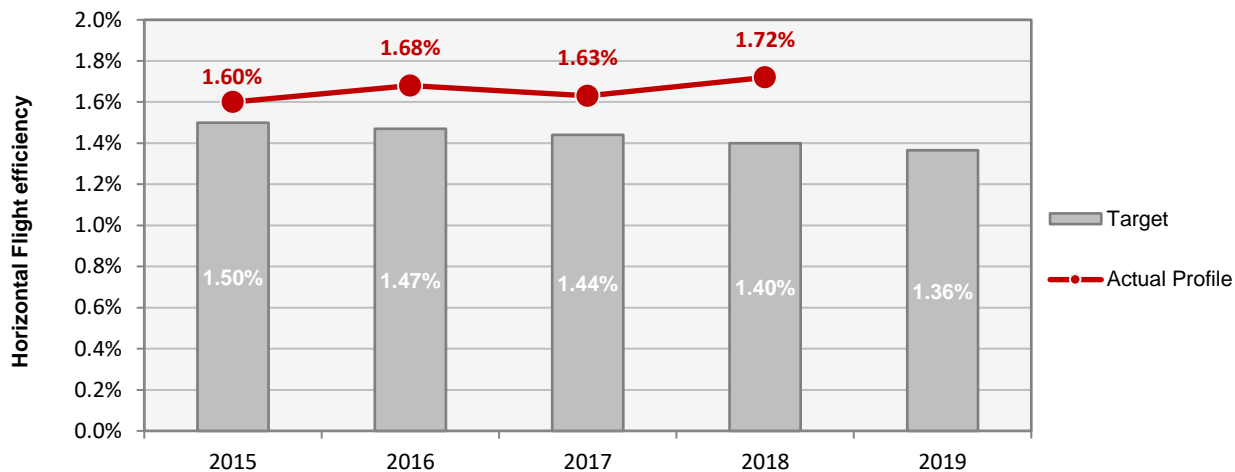
#### Observations

The lowest level in all EoS Component/area of the States is Level "B", achieved in Safety Culture, which is below the 2019 EoS target level. All other components are already at or above the 2019 EoS target level. Note that this component is not verified by EASA.

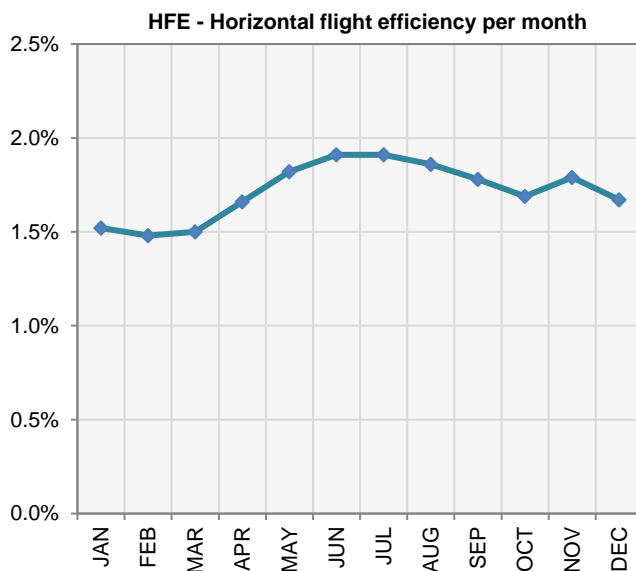
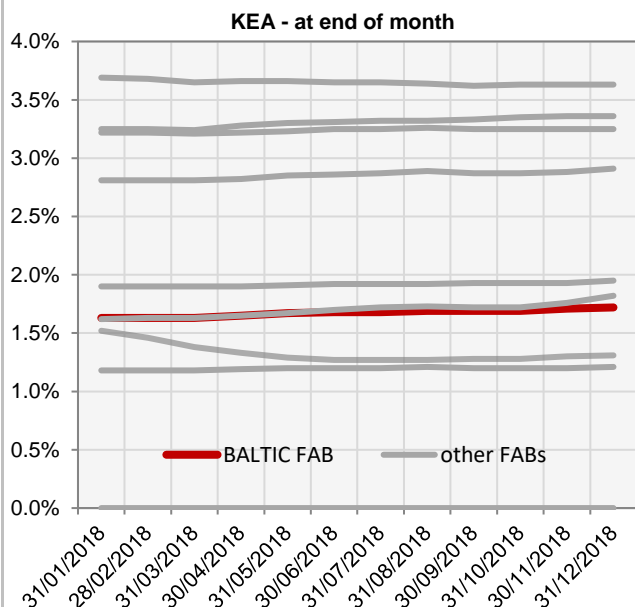
**BALTIC FAB**

**Monitoring of ENVIRONMENT for 2018**

KEA					
	2015	2016	2017	2018	2019
<b>FAB Target</b>	1.50%	1.47%	1.44%	1.40%	1.36%
<b>Actual performance</b>	1.60%	1.68%	1.63%	1.72%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>KEA (at end of month)</b>	1.63%	1.63%	1.63%	1.65%	1.67%	1.68%	1.68%	1.69%	1.69%	1.69%	1.71%	1.72%
<b>HFE</b>	1.52%	1.48%	1.50%	1.66%	1.82%	1.91%	1.91%	1.86%	1.78%	1.69%	1.79%	1.67%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**BALTIC FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

The elaboration of corrective action plan is limited.

The ANSPs of Baltic FAB have indicated the willingness to discuss the issue concerning the KEA algorithms, especially related to the factors remaining beyond their control and used in the calculation. In our opinion, effective corrective measures could be applied by the Network Manager to mitigate negative impact of above mentioned factors, especially by introduction rerouting in Europe to alleviate the capacity constraints that exist in some areas.

Implementation of cross-border FRA requires upgrades to PANSATM system and can be considered only after POLFRA is fully evaluated.

**Observations****NM evaluation:**

Cross border FRA with neighbouring FABs also required.

**NM proposed measures:**

Initiate cross-border projects with neighbouring FABs.

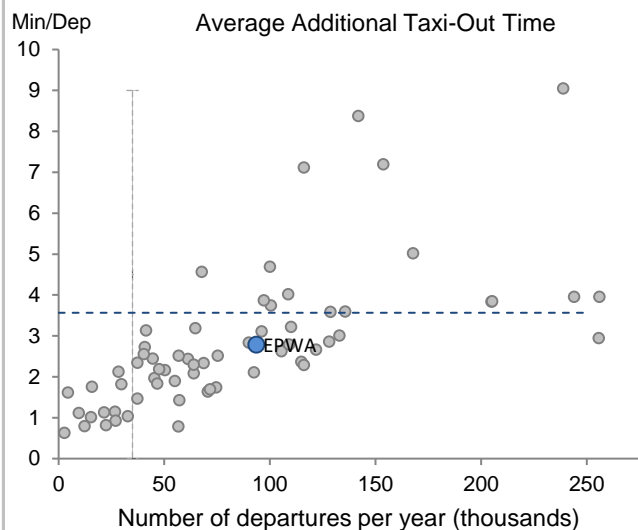
**BALTIC FAB**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

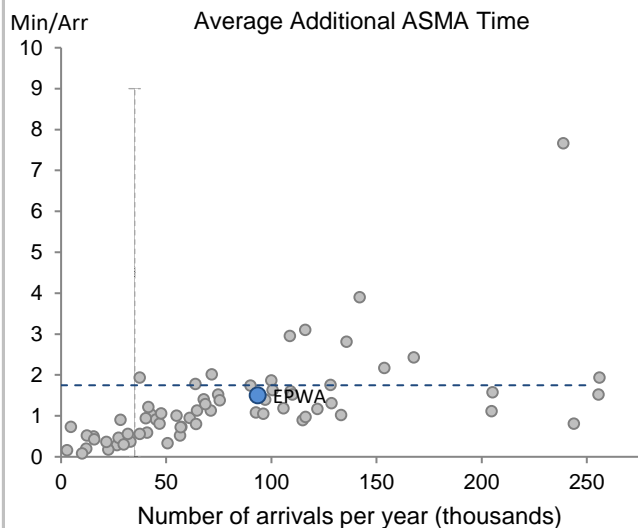
Only one airport in the Baltic FAB has established the Airport Operator Data Flow (APDF), required for the calculation of the environmental performance indicators. The FAB evaluation is therefore done on the basis of only this airport. Member States shall empower the respective airport reporting entity to establish the airport operator data flow and/or address the remaining data issues.

**2. Additional Taxi-Out Time**



The additional TXOT in the Baltic FAB (based only on Warsaw's performance due to the lack of data from the other airports) has improved in 2018 and it sits below the European average (RP2 available airports: 3.57 min/dep).

**3. Additional ASMA Time**



The additional ASMA time for the only airport in Baltic FAB with available data shows also better performance than the average of measured airports in RP2 (1.75 min/arr.). This performance follows the general trend according to the level of traffic, and just like the additional taxi-out time, it has improved in 2018.

**BALTIC FAB****Monitoring of CAPACITY for 2018**

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
<b>FAB Reference Value</b>	0.21	0.21	0.21	0.22	0.22	Despite a deterioration in capacity performance from 2017, the capacity target was achieved with significant traffic increase (+9.9%).
<b>FAB Target</b>	0.21	0.21	0.21	0.22	0.22	
<b>Actual performance</b>	0.16	0.35	0.10	0.22		

**BALTIC FAB assessment of capacity performance**

The IFR movements in 2018 increased in Baltic FAB by 9 % compared to 2017. In 2018 Poland experienced much higher than forecasted traffic growth expressed in IFR MVS – the increase was up to 10% as compared to 2017. This is much above the STATFOR forecast. It should be stressed that in 2018 traffic in Poland was impacted by a few special events: NATO Tiger Meet exercises, EPPO air show, UEFA Champions League Final (May) and FIFA World Cup in Russia (June-July), as well as by the 4ACCs initiative.

Following experiences from previous years, additional measures were implemented by PANSA during summer 2018 to improve capacity (continuation of measures implemented in 2017). They covered, among the others, new sectors configurations, improved rostering, shifting of employees vacations scheme and training to lower seasons' months. Despite the above mentioned additional measures, as a result of the significant traffic increase, PANSA achieved slightly higher delays level (0.25 minute per flight) than the ATFM capacity target (0.23 min per flight).

**Monitoring process for capacity performance**

The monitoring process was conducted continuously on the basis of data derived from Pan-European ANS Performance data repository (<http://ansperformance.eu/data/>) and information provided by Polish Air Navigation Services Agency (PANSA).

Monitoring was performed on the national and FAB levels (by the Baltic FAB Strategic, Economic and Performance Committee).

**Application of Corrective Measures for Capacity**

Bearing in mind that in 2018 large scale MIL / NATO exercises were planned in the Baltic FAB and foreseeing further significant traffic growth (FIFA World Championship, airlines plans for new routes opening), seeking safety and to cope with demand in good operational manner, SE Oro navigacija implemented the changes of Lithuanian airspace structure in Q2 2018. Since 22nd of June 2018 the Lithuanian airspace has been split into four sectors (one additional sector in upper airspace) allowing to increase the capacity.

**Capacity Planning**

Capacity planning process is based on the cycle agreed by Network Manager and local ANSPs (including annual meeting of NM representatives and local ANSPs when ACC capacity plan is updated).

The last three years showed significant changes in air traffic flow and density compared to assumptions made for RP2. The dynamic of air traffic growth has been driven by factors, which have not been typically considered during capacity planning process: significant increase of traffic - mainly from Russian Federation (outside of NM responsibility), bypassing Ukrainian airspace, changes of business plans of airlines. There were some events in 2018 which had a big impact on the Baltic FAB en-route capacity such as the FIFA World Championship, Military/NATO exercises, special events and 4ACCs initiative.

The geopolitical situation in the region and in the world, as well as the factors related to the activities of some airline companies and air navigation service providers, during the last three years showed significant changes in the structure and air traffic density with reference to assumptions for RP2, which had a significant influence on the SE Oro navigacija performance. In 2018 air traffic in Lithuanian airspace, expressed in IFR flights, has grown by 9.4 % while STATFOR baseline scenario forecast foreseen 3.8 % increase (EUROCONTROL Forecast of Annual Number of IFR Flights (2017 - 2023), September 2017). Traffic structure in Lithuanian airspace: 76% overflights (9.2 % increase in 2018 comparing to 2017), 24 % - terminal flights (10.2 % increase in 2018 comparing to 2017).

### Assessment of capacity performance

It is noted that BALTIC FAB has achieved the required level of en route capacity performance to be consistent with the union-wide target of 0,5 minutes average ATFM delay per flight. Although the average delay per flight increased from 2017 levels, it is recognised that BALTIC FAB experienced a significant increase in traffic from the previous year, almost 10%. The important positive contribution of BALTIC FAB to handle "higher than expected traffic increases" on the Northeast Axis (partially due to the 4ACC initiative to mitigate capacity shortfalls in FABEC) was recognised by IATA in its summary of Network Performance.

The multiple references to higher than expected/forecasted traffic growth by the NSAs and IATA are noted. However, even though the year-on-year increase from 2017 to 2018 was greater than predicted back in 2017, the evolution of the actual traffic compared to the STATFOR forecasts available in advance of the preparation of the FAB performance plans shows that BALTIC FAB traffic remains significantly below the high traffic scenario for 2018.

EUROCONTROL 7 year forecast February 2014 – BALTIC FAB											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	820		863		926		982		1044		1106
<b>Base</b>	807	<b>788</b>	837	<b>790</b>	873	<b>842</b>	904	<b>888</b>	938	<b>976</b>	974
<b>Low</b>	794		812		825		838		853		868

It is noted that, in the Network Operations Plan 2019-2024 (June 2019 edition) the Network Manager forecasts delays higher than the FAB target for 2019. The Network Manager reports that the higher delays will be predominantly due to implementation of the enhanced Network Manager / ANSP measures aimed at mitigating severe capacity shortfalls in FABEC, and that a delay attribution process will be available for the unloaded ACCs (including Warsaw ACC).

Baltic FAB delay forecast (with eNM/ANSP measures for 2019/2020)							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>		<b>0.13</b>	<b>0.14</b>	<b>0.18</b>	<b>0.24</b>	N/A	N/A
<b>NOP 2019 - 2024</b>		<b>0.36</b>	<b>0.33</b>	<b>0.21 – 0.26</b>			

### En route Capacity Incentive Scheme

BALTIC FAB do not apply a FAB-wide incentive scheme but apply local /national schemes instead. These schemes are presented in the relevant national performance report.

### Result of FAB Capacity Incentive Scheme

N/A

### Update on Military dimension of the plan

No changes in the Military Dimension of the plan were reported during 2018. In order to ensure the safety and efficiency of the performance of tasks by military aviation, OAT ACC Warsaw closely cooperates with AMC Poland at the tactical level (ASM 3). The procedures currently applied by PANSA and military control units for planning and protecting flights of military aircraft in operational air traffic are compliant with the EUROAT principles harmonised on a pan-European scale, which ensures that a high level of safety and interoperability is maintained when cooperating with allied aviation.

To improve the level of civil-military cooperation within the frames of FUA and to increase the capacity it was continued work to fulfil obligations as it was specified in the agreement signed between PANSA and Air Force Military Academy in Dęblin on 16 May 2017. In 2018 there were organised two training sessions for 7 ACC OAT controllers (March – 4, December – 3 persons) concerning intercept procedures.

Additionally, the new agreement between PANSA and Air Force Military Academy was signed on 7 June 2018 for initial theoretical training as a part of ACS/OAT controllers certification process. In 2018 there were organised 3 sessions for 15 persons. This type of training will be continued in 2019.

The following actions were also taken to improve the level of civil-military cooperation in 2018:

- Feeding PANSA radar system with radar data from military radars in accordance with national security regulations,
- Organisation of the meetings and briefings concerning possible locations of PANSA radio-navigation equipment on military locations.

On 3 August 2018 amended LoA was signed between SE "Oro navigacija" and Lithuanian Army on airspace management arrangement, operational cooperation with the purpose to ensure efficient airspace surveillance, control, defence and flight safety.

Further enhancement of FUA supporting legislation, airspace use planning, coordination and booking procedures, supporting technology were applied. Steps for the implementation of EUROOAT concept will be undertaken in 2019

**Observations on Military dimension of the plan**

The update on the Military dimension of the plan is welcomed.

**Application of FUA**

In order to increase the FUA concept implementation in the FIR EPWW, PANSA and Air Force Military Academy cooperate within the frame of the training of ACS OAT EPWW controllers, dedicated to the specifics of the military aircraft interceptions procedures. To improve the level of ATC information exchange between AMC and military services there are utilised 14 of AMS (CAT) terminals in the military airports and air command and control units.

Further enhancement of FUA supporting legislation, airspace use planning, coordination and booking procedures as well implementation of EUROOAT concept steps was conducted in 2018.

Annual national airspace utilisation planning started in Lithuania in 2018. It involves all kind of airspace users (military, sport aviation and GAT) into the coordination process. Revised LoA between SE Oro navigacija and Lithuanian Air Forces of the Armed Forces was signed on 3 August 2018. It enhanced the FUA procedures. ON also started to apply automated ASM tool LARA and real-time B2B connection with NM in 2018. It is planned to start usage of the automated ASM performance monitoring tool PRISMIL in 2019.

**Observations of the Application of FUA**

The update on the application of FUA within the BALTIC FAB is welcomed, in particular, the information about the implementation of an ASM support system which will hopefully enable BALTIC FAB to determine if the airspace management decisions taken provide the optimal benefit to both civil and military airspace users.

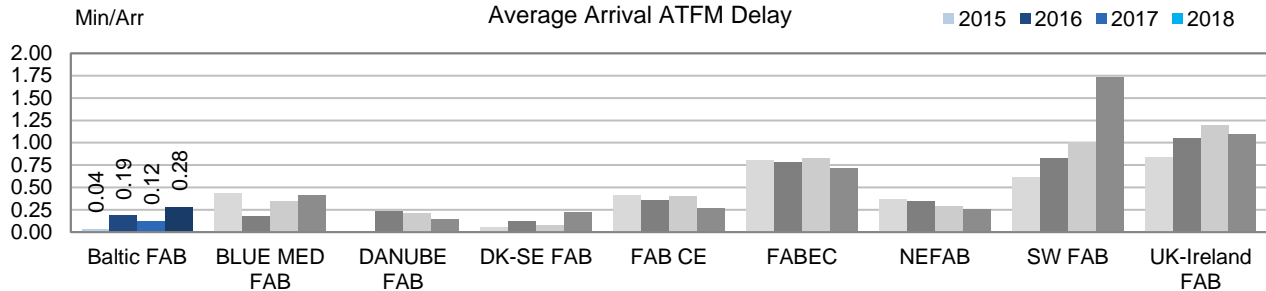
**BALTIC FAB**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

Baltic FAB contributes adequately to the airport-related ANS capacity performance in Europe with a low arrival ATFM delay of 0.28 min/arr. in 2018. However there is a significant deterioration with respect to 2017 (delays up by more than 50%) associated to a notable traffic increase at the airports under monitoring of almost 11 % in 2018.

**2. Arrival ATFM Delay**



The main contributor to the arrival delay in the Baltic FAB is still Warszawa/Chopina, where delays have significantly increased in 2018 reaching 0.68 min/arr. Weather related delays account for 43% of the total arrival ATFM delays, while ATC related delays (ATC Capacity, Staffing and Disruptions) represent 35% of these delays and Aerodrome Capacity 19%.

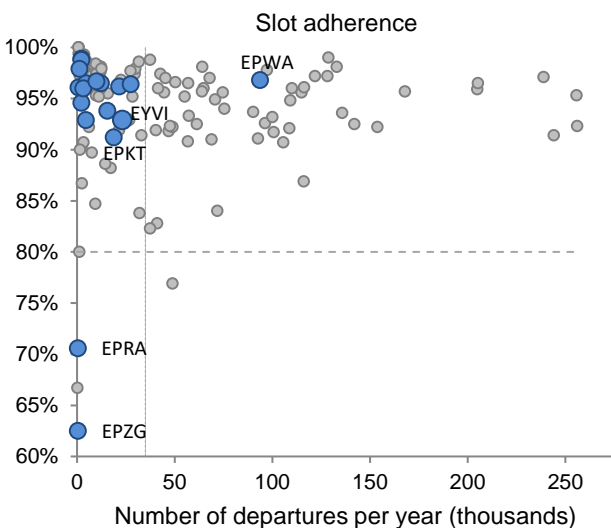
**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

Both Poland and Lithuania have established national targets adequate to historical performance but both have missed these targets in 2018.

The achieved arrival ATFM delay in Lithuania is negligible, and it falls within the deadband therefore no penalties apply. Poland specified local targets per airport or airport group in their Performance Plan with associated thresholds for bonuses and penalties.

Penalties will be applied for the air traffic services provided at EPWA and EPKK of -0.1% of revenue from terminal air navigation services. Concerning EPKT, EPPO, EPGD and EPWR airports, only the last two have reached their target, while the performance for the first two falls within the deadband. As national target is not reached, no bonus applies to any airport.

**4. ATFM Slot Adherence**



The ATFM Slot Adherence at most airports in Baltic FAB ranges well above 90% with only 2 exceptions corresponding to minor airports with less than 1000 departures per year (EPRA and EPZG). There is also a general improvement with respect to 2017, which has a positive effect on the network, especially taking into account that the share of regulated departures overall at Baltic FAB has drastically increased from 15.7% in 2017 to 26% in 2018.

**5. ATC Pre-departure Delay**

The monitoring of pre-departure delay requires the implementation of the Airport Operator Data Flow and a proper reporting of delays through this data flow. With the exception of Warszawa/Chopina (EPWA) the data flow is not established for airports in Baltic FAB. Accordingly, the indicator cannot be sufficiently monitored.

Lithuania and Poland are encouraged to strengthen the effort to establish the Airport Operator Data Flow across the national airports subject to monitoring.



# **Annual Monitoring Report 2018**

Local level view  
Lithuania



## LITHUANIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	61	C	C	C	C	B
ORO NAVIGACIJA	78	D	D	D	D	C
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			ORO NAVIGACIJA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			5	2		
Legal/Judiciary			6	1		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>13</b>	<b>3</b>		
ORO NAVIGACIJA			Number of questions answered			
			YES	NO		
Policy and its implementation			11	2		
Legal/Judiciary			3	0		
Occurrence reporting and Investigation			8	0		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
Only one question out of 36 in the EoS Component/area of the State does not meet the 2019 EoS target level (in Safety Culture)						

## LITHUANIA

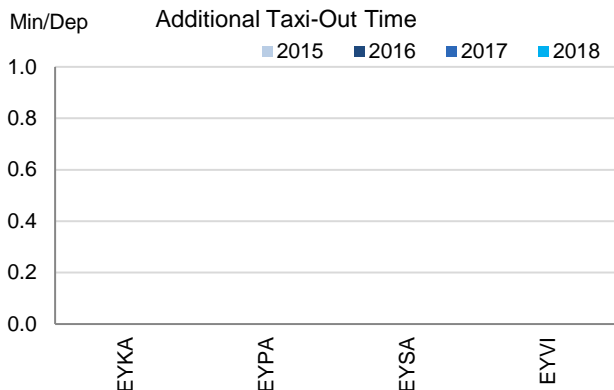
## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

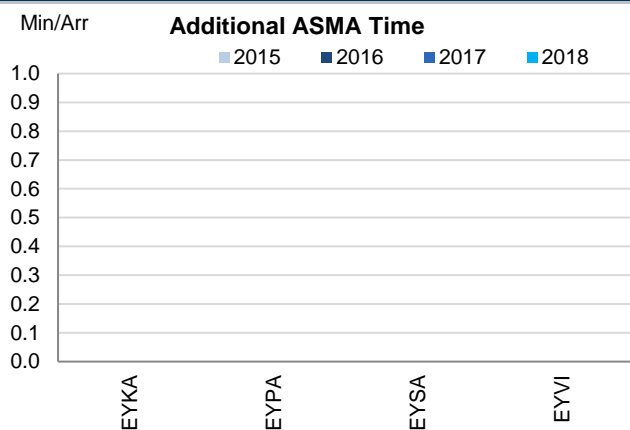
At the time being the monitoring of operational ANS performance at airports in Lithuania does not cover any of the environment indicators.

The Airport Operator Data Flow is not established for any of the four Lithuanian airports subject to RP2. Concerning Vilnius, and although it was anticipated that the data flow would be established during the course of 2016, the data is still not being provided. Progress in the establishment of the data flow was made in the last two years and it is expected to be implemented for this airport in the course of 2019. This will enable the monitoring of these performance indicators at the main Lithuanian airport EYVI.

## 2. Additional Taxi-Out Time



## 3. Additional ASMA Time



## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Kaunas	EYKA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Palanga	EYPA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Šiauliai	EYSA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Vilnius	EYVI	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

## LITHUANIA

## Monitoring of CAPACITY for 2018

## En route Capacity incentive scheme

	2015	2016	2017	2018	2019	Observations
National Capacity target	0.01	0.02	0.03	0.04	0.04	
Deadband +/-	0.0 < x ≤ 0.1		0.00			
Actual performance	0.00	0.00	0.00	0.00		

## National capacity incentive scheme

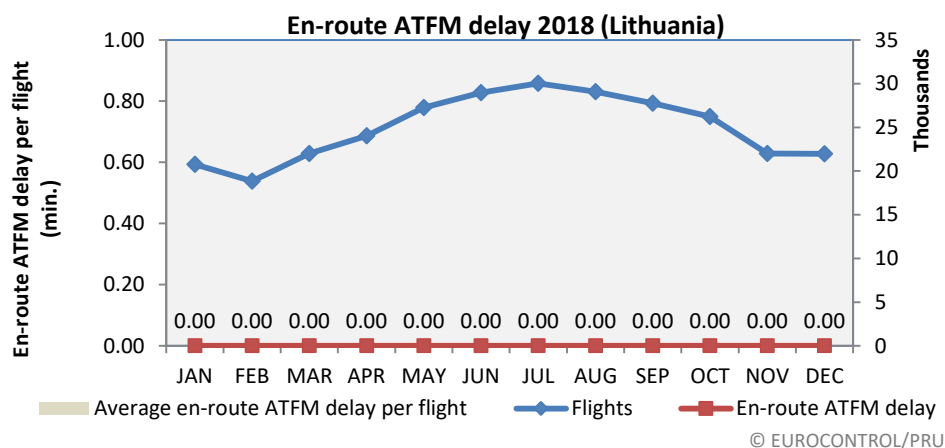
As in previous RP2 years, Oro Navigacija performed very well in Capacity KPA. En route ATFM delay per flight target established for Oro Navigacija for 2018 (average 0.04 min/flight) was reached and delivered even better result at the reference value of 0.00 min/flight. En route Capacity target has also been met at FAB level (achieved value 0.22 average min/flight delay - the same as set in the PP).

Oro Navigacija will receive bonus 0.1% of revenue from en route air navigation services.

Calculation:

Actual TSUs 2018 x ANSP component of the UR 2018 (39.42) x 0.1% bonus = 23,760 Eur.

## Observations regarding national capacity performance



En-route ATFM delay per flight (Lithuania)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EUROCONTROL 7 year forecast February 2014 – Lithuania											
	2014		2015		2016		2017		2018		2019
	actual		actual		actual		actual		actual		
High	263		280		298		313		330		348
Base	258	<b>257</b>	271	<b>260</b>	281	<b>261</b>	289	<b>276</b>	299	<b>299</b>	308
Low	254		262		265		269		273		277

The ANSP in Lithuania, Oro Navigacija, has once again provided zero en-route ATFM delay in 2017, making 11 consecutive years of zero delay.

Traffic levels in Lithuania have remained at or below those initially predicted for the baseline scenario in the STATFOR forecast available when FAB performance plans and associated capacity plans were being determined.

Capacity plans for Lithuania are contained in the Network Operations Plan 2019 – 2024. The implementation of a new ATM system, previously planned for 2019, has now been postponed until 2020.

The Network Manager predicts in the latest version of the NOP 2019-2024 that no capacity problems are expected in Lithuania for the remainder of RP2, or for the entirety of RP3.

### Planning and Effective Use of CDRs

Such data is not available at national level.

### Observations on Planning and Effective Use of CDRs

It is noted that Lithuania, like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
N/A	92%	100%	100%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	0%	0%	0%	

### Observations on Effective booking procedures

No performance-related benefits from monitoring this specific indicator have been noted, nor have any national efforts to change the value of the indicator.

**LITHUANIA**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

ANS at a total of 4 airports are subject to RP2 monitoring in Lithuania, a national target on arrival ATFM delay consistent with the level of traffic and the historic performance has been established. During RP2 so far, no capacity constraints or congestion are observed.

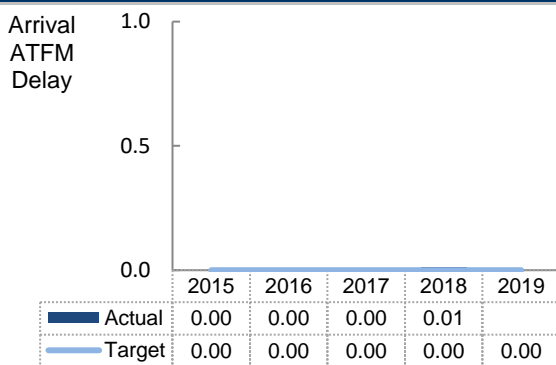
The monitoring of the ATC pre-departure delay indicator requires the establishment of the Airport Operator Data Flow, which is not the case for any of the Lithuanian airports. Lithuania is encouraged to consider the implementation of the data flow at all four airports subject to RP2 monitoring.

Traffic levels at these airports have drastically increased during RP2 (+21.8% with respect to 2015).

In terms of arrival ATFM delays, values have remained similar to those in the beginning of the reference period and the ATFM slot adherence has slightly improved with respect to 2015)

Lithuania contributes adequately to the Baltic FAB and European performance.

**2. Arrival ATFM Delay**



Lithuania has established a national target of 0 min/arr. on arrival ATFM delay for the entire RP2. While in previous years no ATFM arrival delays were recorded at the Lithuanian airports, during 2018 there are some very minimal arrival ATFM delays (2017: 0 min/arr; 2018: 0.01 min/arr)

Only 2 airports, EYPA (Palanga) and EYKA (Kaunas) recorded some arrival ATFM delay due to military exercises, as reported in the Baltic FAB monitoring report.

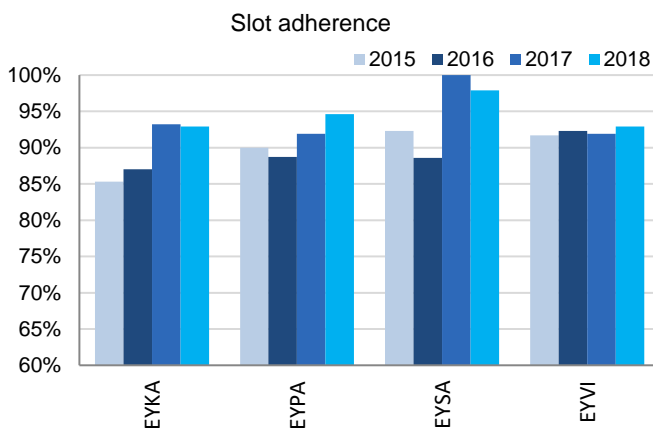
**3. Arrival ATFM Delay – National Target and Incentive Scheme**

The FAB performance plan refers to the fact that for all airports in Lithuania there is no risk of arrival ATFM delay identified or predicted for RP2.

After 3 consecutive years meeting the target of 0 min/arr, in 2018 there were some delays resulting in a national arrival ATFM delay of 0.01 min/arr., therefore missing the target.

The performance falls within the deadband of the incentive scheme so no penalties will be applied.

**4. ATFM Slot Adherence**



All four airports show a good compliance with the ATFM slot window of more than 90% of the regulated flights. The number of regulated departures at Palanga and Šiauliai is however negligible.

## 5. ATC Pre-departure Delay

The monitoring of pre-departure delay requires the implementation of the Airport Operator Data Flow. Concerning Vilnius, progress in the establishment of the data flow has been made in 2017 and 2018 and it is expected to be implemented for this airport in the course of 2019. This will enable the monitoring of this performance indicator.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Kaunas	EYKA	0.00	0.00	0.00	0.04		85.3%	87.0%	93.2%	92.9%		n/a	n/a	n/a	n/a	
Palanga	EYPA	0.00	0.00	0.00	0.04		90.0%	88.7%	91.9%	94.6%		n/a	n/a	n/a	n/a	
Šiauliai	EYSA	0.00	0.00	0.00	0.00		92.3%	88.6%	100.0%	97.9%		n/a	n/a	n/a	n/a	
Vilnius	EYVI	0.00	0.00	0.00	0.00		91.7%	92.3%	91.9%	92.9%		n/a	n/a	n/a	n/a	



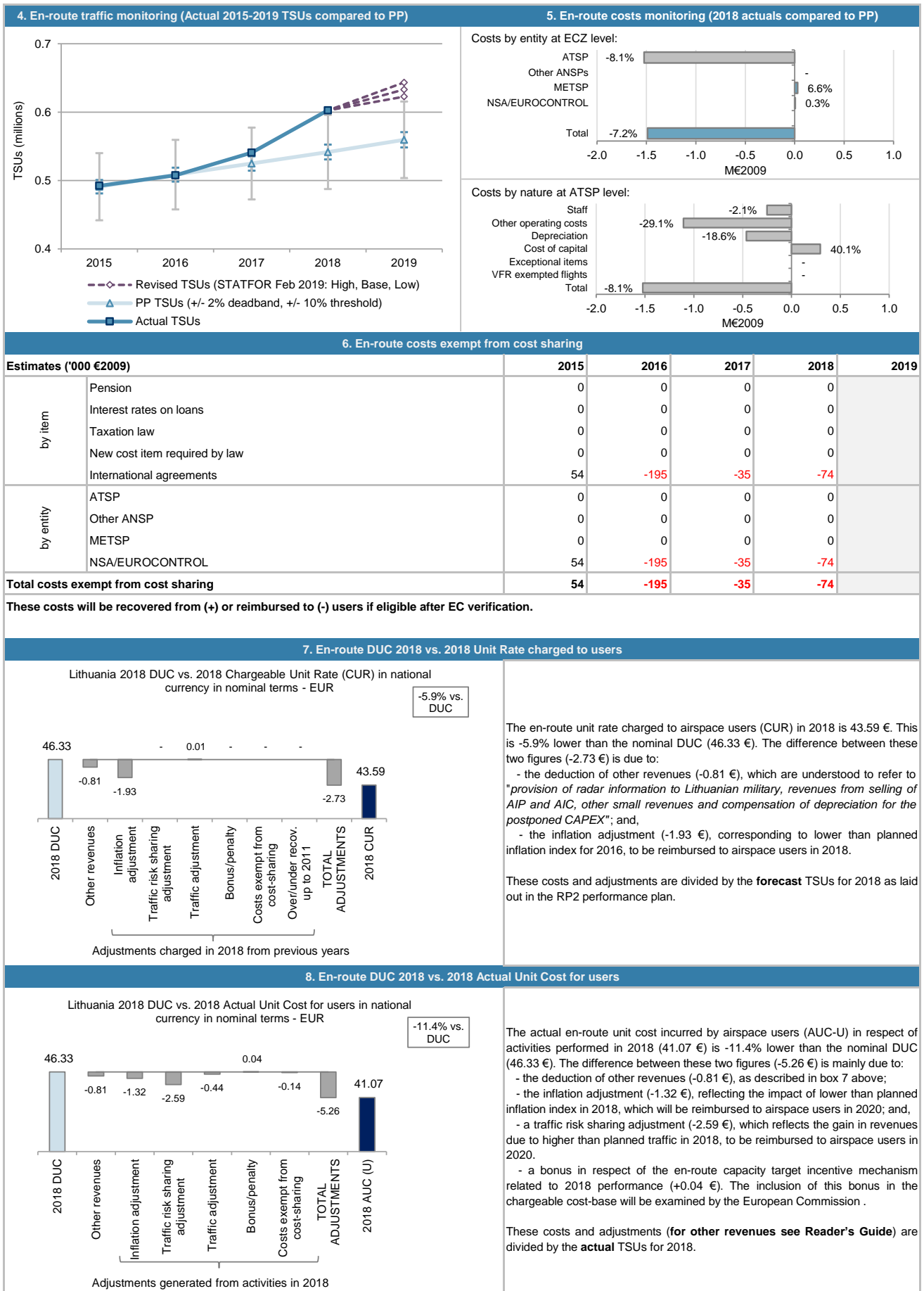
## LITHUANIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services																							
· Lithuania ECZ represents 0.3% of the SES en-route ANS determined costs in 2018																							
· ATSP: Oro Navigacija																							
· FAB: Baltic FAB																							
· National currency: EUR																							
2. En-route DUC monitoring at Charging Zone level																							
Lithuania: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D																		
En-route costs (nominal EUR)	23 316 993	23 342 321	24 186 978	25 093 574	25 748 766																		
Inflation %	1.7%	2.2%	2.5%	2.2%	2.2%																		
Inflation index (100 in 2009)	112.9	115.4	118.4	121.0	123.7																		
Real en-route costs (EUR2009)	20 652 919	20 223 855	20 434 886	20 737 566	20 814 037																		
Total en-route Service Units	490 928	508 601	524 877	541 672	559 548																		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>42.07</b>	<b>39.76</b>	<b>38.93</b>	<b>38.28</b>	<b>37.20</b>																		
Lithuania: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A																		
En-route costs (nominal EUR)	23 121 075	22 775 385	23 808 929	22 554 980																			
Inflation %	-0.7%	0.7%	3.7%	2.5%																			
Inflation index (100 in 2009)	109.5	110.2	114.3	117.2																			
Real en-route costs (EUR2009)	21 120 276	20 659 882	20 826 832	19 248 723																			
Total en-route Service Units	492 283	507 472	540 776	602 689																			
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>42.90</b>	<b>40.71</b>	<b>38.51</b>	<b>31.94</b>																			
Difference between Actuals and Planned	2015	2016	2017	2018	2019																		
En-route costs (nominal EUR)																							
in value	-195 918	-566 936	-378 049	-2 538 594																			
in %	-0.8%	-2.4%	-1.6%	-10.1%																			
Inflation %																							
in p.p.	-2.4 p.p.	-1.5 p.p.	1.2 p.p.	0.3 p.p.																			
Inflation index (100 in 2009)																							
in p.p.	-3.4 p.p.	-5.2 p.p.	-4.0 p.p.	-3.8 p.p.																			
Real en-route costs (EUR2009)																							
in value	467 357	436 027	391 946	-1 488 843																			
in %	2.3%	2.2%	1.9%	-7.2%																			
Total en-route Service Units																							
in value	1 355	-1 129	15 899	61 017																			
in %	0.3%	-0.2%	3.0%	11.3%																			
<b>Real en-route unit cost per Service Unit (EUR2009)</b>																							
in value	<b>0.83</b>	<b>0.95</b>	<b>-0.42</b>	<b>-6.35</b>																			
in %	<b>2.0%</b>	<b>2.4%</b>	<b>-1.1%</b>	<b>-16.6%</b>																			
3. Focus on en-route at State/Charging Zone level																							
<p><b>En-route unit cost</b></p> <p>In 2018, the actual en-route unit cost in real terms (31.94 €2009) is -16.6% lower than planned in the PP (38.28 €2009). This results from the combination of much higher than planned TSUs (+11.3%) and lower than planned en-route costs in real terms (-7.2%, or -1.5 M€2009).</p> <p><b>En-route service units</b></p> <p>The difference between actual and planned TSUs (+11.3%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional ATSP en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Oro Navigacija) retaining an amount of +0.9 M€2009.</p> <p>According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Lithuania are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.</p> <p><b>En-route costs</b></p> <p>In nominal terms, actual en-route costs are -10.1% (-2.5 M€) lower than planned. However, since the actual inflation index is also lower than planned (-3.8 p.p.), actual en-route costs are -7.2% (-1.5 M€2009) below plans when expressed in real terms.</p> <p>The lower than planned en-route costs in real terms are driven by Oro Navigacija (-8.1%, or -1.5 M€2009), while the costs for the MET service provider (+6.6%, or +0.03 M€2009) and the NSAEUROCONTROL (+0.3%, or +0.01 M€2009) are slightly higher than planned. A detailed analysis at ATSP level is provided in box 12.</p> <p>Costs exempt from cost-sharing are reported for a total amount of -0.1 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>																							
<table border="1"> <caption>Difference between actual and determined en-route costs (real terms)</caption> <thead> <tr> <th>Year</th> <th>Difference (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>2.3%</td> </tr> <tr> <td>2016</td> <td>2.2%</td> </tr> <tr> <td>2017</td> <td>1.9%</td> </tr> <tr> <td>2018</td> <td>-7.2%</td> </tr> <tr> <td>2019</td> <td>0%</td> </tr> </tbody> </table>						Year	Difference (%)	2015	2.3%	2016	2.2%	2017	1.9%	2018	-7.2%	2019	0%						
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<table border="1"> <caption>En-route DUC (PP, 2015-2019) and En-route unit costs (actual)</caption> <thead> <tr> <th>Year</th> <th>En-route DUC (PP) (€2009)</th> <th>En-route unit costs (actual) (€2009)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>42.07</td> <td>42.90</td> </tr> <tr> <td>2016</td> <td>39.76</td> <td>40.71</td> </tr> <tr> <td>2017</td> <td>38.93</td> <td>38.51</td> </tr> <tr> <td>2018</td> <td>38.28</td> <td>31.94</td> </tr> <tr> <td>2019</td> <td>37.20</td> <td>-</td> </tr> </tbody> </table>						Year	En-route DUC (PP) (€2009)	En-route unit costs (actual) (€2009)	2015	42.07	42.90	2016	39.76	40.71	2017	38.93	38.51	2018	38.28	31.94	2019	37.20	-
Year	En-route DUC (PP) (€2009)	En-route unit costs (actual) (€2009)																					
2015	42.07	42.90																					
2016	39.76	40.71																					
2017	38.93	38.51																					
2018	38.28	31.94																					
2019	37.20	-																					

LITHUANIA: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



## LITHUANIA: En-route ATSP (Oro Navigacija)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	18 786	18 322	18 493	18 794	
Actual costs for the ATSP	19 066	18 772	18 754	17 270	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-280	-450	-261	1 524	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-280</b>	<b>-450</b>	<b>-261</b>	<b>1 524</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	0.3%	-0.2%	3.0%	11.3%	
Determined costs for the ATSP (PP) - based on actual inflation	19 374	19 183	19 147	19 408	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>53</b>	<b>-43</b>	<b>442</b>	<b>854</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>19</b>	<b>20</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-227</b>	<b>-493</b>	<b>200</b>	<b>2 398</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	20 679	21 294	24 384	24 592	22 124
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	20 679	21 294	24 384	24 592	22 124
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	620	639	732	738	664
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	3.0%	3.0%	3.0%	3.0%	3.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	620	639	732	738	664
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>620</b>	<b>639</b>	<b>732</b>	<b>738</b>	<b>664</b>
<b>Revenue/costs for the en-route activity</b>	<b>18 786</b>	<b>18 322</b>	<b>18 493</b>	<b>18 794</b>	<b>18 877</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.3%</b>	<b>3.5%</b>	<b>4.0%</b>	<b>3.9%</b>	<b>3.5%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	20 901	22 610	28 083	34 453	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	20 901	22 610	28 083	34 453	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	627	678	843	1 034	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	3.0%	3.0%	3.0%	3.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	627	678	843	1 034	
Net ATSP gain(+)/loss(-) on en-route activity	-227	-493	200	2 398	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>401</b>	<b>185</b>	<b>1 043</b>	<b>3 432</b>	
<b>Revenue/costs for the en-route activity</b>	<b>18 839</b>	<b>18 280</b>	<b>18 954</b>	<b>19 668</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>2.1%</b>	<b>1.0%</b>	<b>5.5%</b>	<b>17.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>1.9%</b>	<b>0.8%</b>	<b>3.7%</b>	<b>10.0%</b>	

LITHUANIA: En-route ATSP (Oro Navigacija)

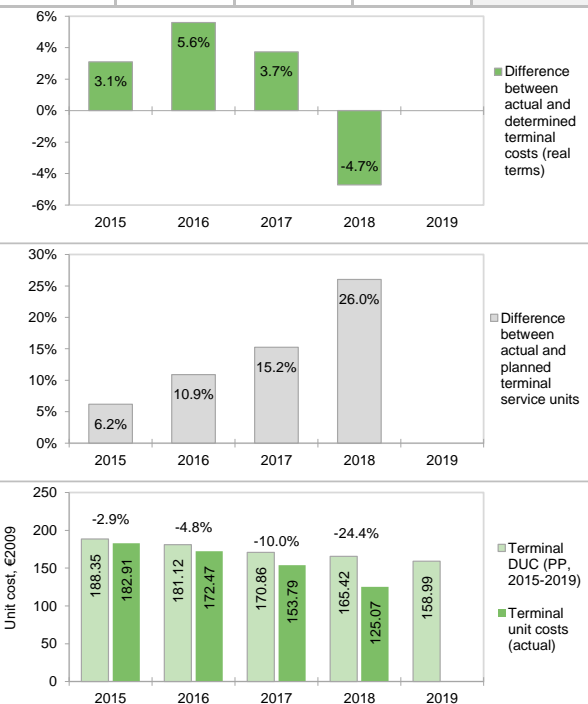
Monitoring of en-route COST-EFFICIENCY for 2018



## LITHUANIA: Terminal charging zone

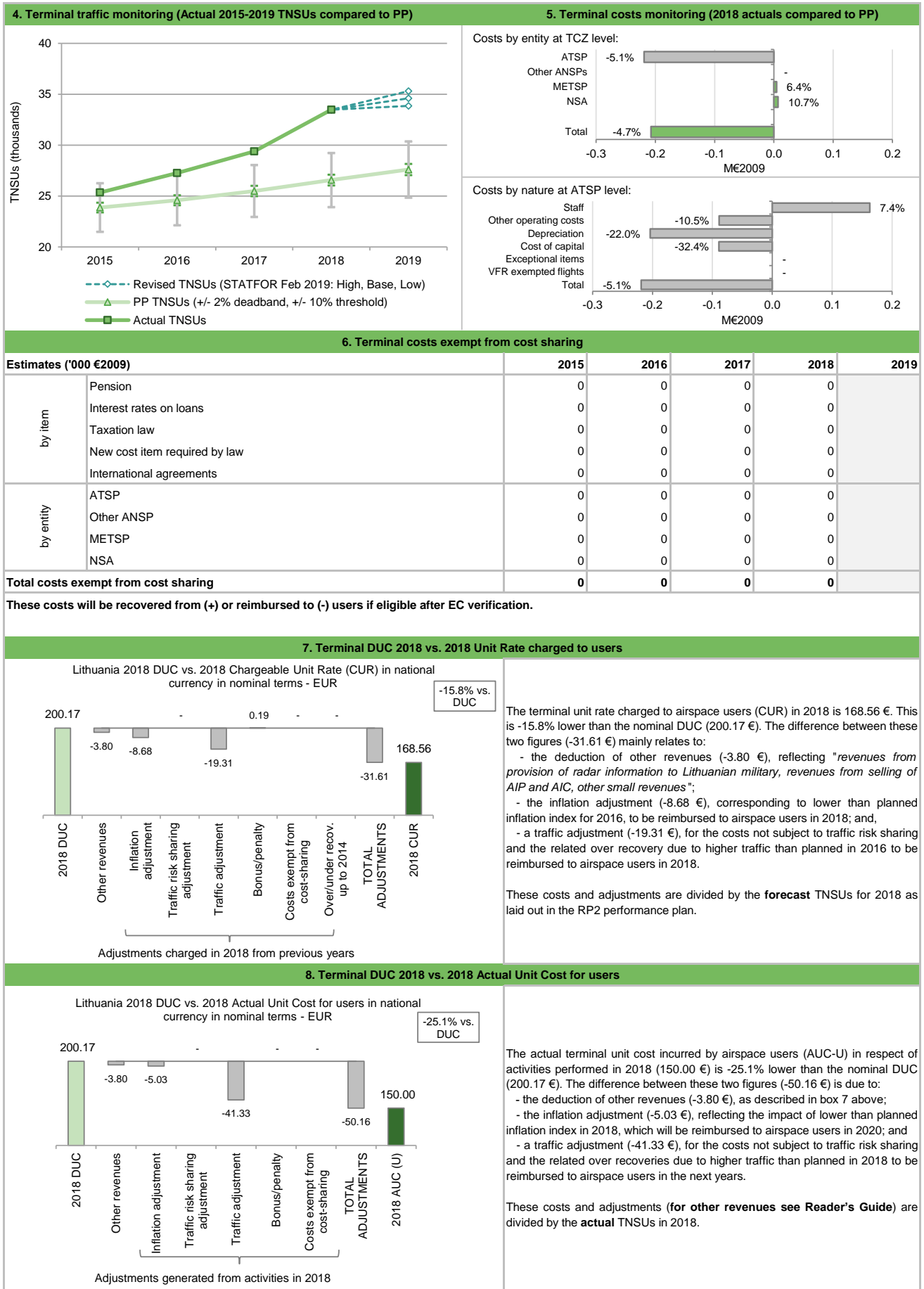
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Lithuania TCZ represents 0.4% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP:	Oro Navigacija	Airports with fewer than 70,000 IFRs ATMs:		4	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		0	
Number of airports in charging zone in 2018:	4,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Lithuania: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	5 076 489	5 140 161	5 156 643	5 318 264	5 429 702
Inflation %	1.7%	2.2%	2.5%	2.2%	2.2%
Inflation index (100 in 2009)	112.9	115.4	118.4	121.0	123.7
Real terminal costs (EUR2009)	4 496 476	4 453 450	4 356 700	4 395 064	4 389 104
Total terminal Service Units	23 873	24 589	25 498	26 569	27 606
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>188.35</b>	<b>181.12</b>	<b>170.86</b>	<b>165.42</b>	<b>158.99</b>
Lithuania: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	5 075 325	5 184 575	5 166 244	4 906 917	
Inflation %	-0.7%	0.7%	3.7%	2.5%	
Inflation index (100 in 2009)	109.5	110.2	114.3	117.2	
Real terminal costs (EUR2009)	4 636 128	4 703 003	4 519 165	4 187 629	
Total terminal Service Units	25 346	27 269	29 385	33 483	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>182.91</b>	<b>172.47</b>	<b>153.79</b>	<b>125.07</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-1 164	44 414	9 601	-411 347	
	in value				
	in %				
Inflation %	-2.4 p.p.	-1.5 p.p.	1.2 p.p.	0.3 p.p.	
	in p.p.				
Inflation index (100 in 2009)	-3.4 p.p.	-5.2 p.p.	-4.0 p.p.	-3.8 p.p.	
	in p.p.				
Real terminal costs (EUR2009)	139 651	249 553	162 466	-207 435	
	in value				
	in %				
Total terminal Service Units	1 474	2 680	3 887	6 914	
	in value				
	in %				
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-5.44</b>	<b>-8.65</b>	<b>-17.07</b>	<b>-40.35</b>	
	in value				
	in %				
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Lithuania Terminal Charging Zone (TCZ) comprising 4 airports: Vilnius (EYVI), Kaunas (EYKA), Palanga (EYPA) and Siauliai (EYSA).					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (125.07 €2009) is -24.4% lower than planned in the PP (165.42 €2009). This results from the combination of much higher than planned TNSUs (+26.0%) and lower than planned terminal costs in real terms (-4.7%, or -0.2 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Lithuania TCZ. The difference between actual and planned TNSUs (+26.0%) therefore generates additional revenues, which will be fully reimbursed to airspace users.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -7.7% (-0.4 M€) lower than planned. However, since the actual inflation index is also lower than planned (-3.8 p.p.), actual terminal costs are -4.7% (-0.2 M€2009) below plans when expressed in real terms.					
The lower than planned terminal costs in real terms are driven by Oro Navigacija (-5.1%, or -0.2 M€2009), while the costs for the MET service provider (+6.4%) and the NSA (+10.7%) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported for Lithuanian TCZ.					



LITHUANIA: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018



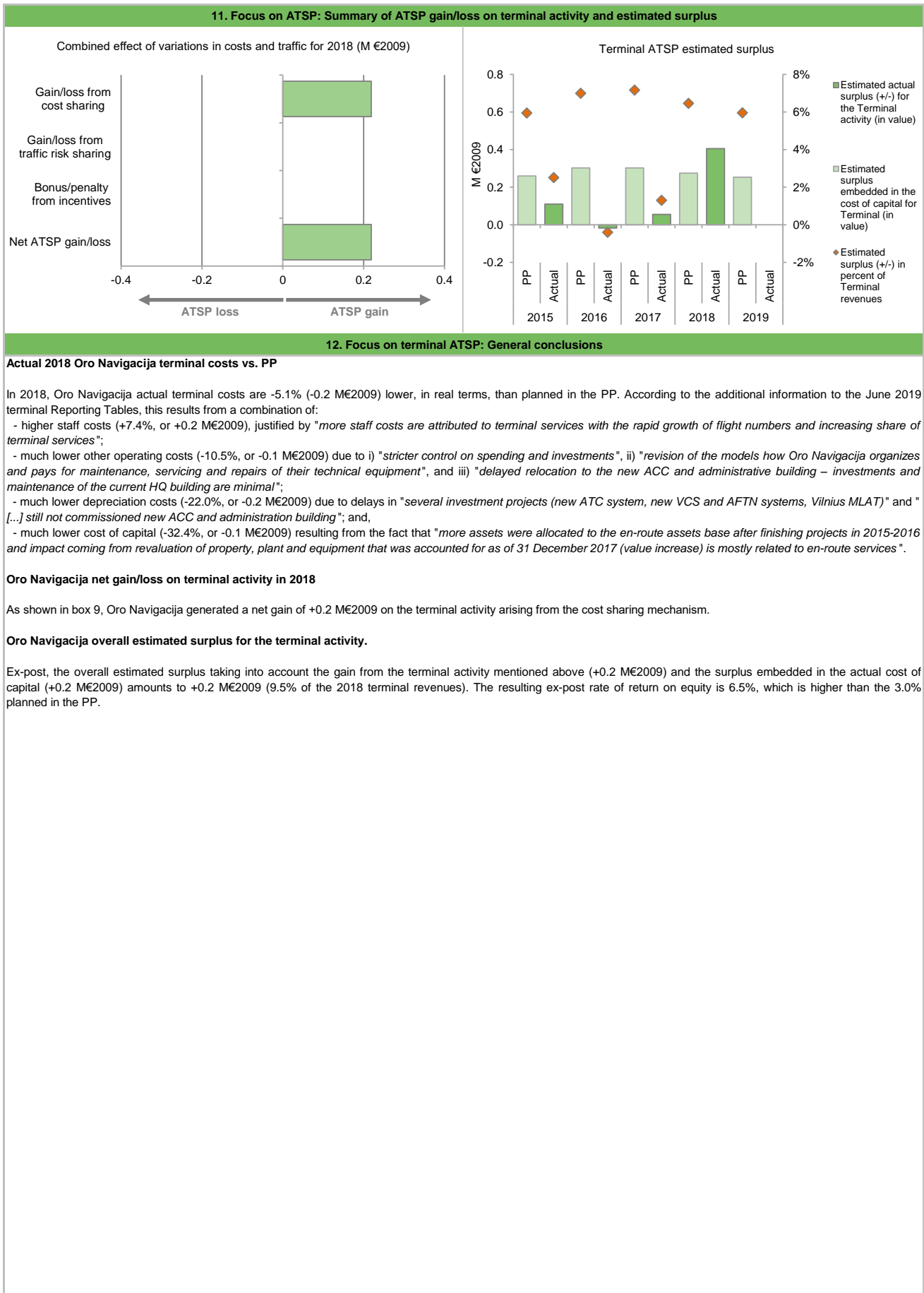
## LITHUANIA: Terminal ATSP (Oro Navigacija)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	4 364	4 317	4 218	4 258	
Actual costs for the ATSP	4 484	4 548	4 360	4 039	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-119	-231	-142	219	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-119</b>	<b>-231</b>	<b>-142</b>	<b>219</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-115</b>	<b>-226</b>	<b>-137</b>	<b>219</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	8 651	10 065	10 076	9 166	8 452
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	8 651	10 065	10 076	9 166	8 452
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	260	302	302	275	254
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	3.0%	3.0%	3.0%	3.0%	3.0%
Estimated surplus embedded in the cost of capital for terminal (in value)	260	302	302	275	254
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>260</b>	<b>302</b>	<b>302</b>	<b>275</b>	<b>254</b>
<b>Revenue/costs for the terminal activity</b>	<b>4 364</b>	<b>4 317</b>	<b>4 218</b>	<b>4 258</b>	<b>4 255</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.9%</b>	<b>7.0%</b>	<b>7.2%</b>	<b>6.5%</b>	<b>6.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	7 487	6 974	6 413	6 199	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	7 487	6 974	6 413	6 199	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	225	209	192	186	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	3.0%	3.0%	3.0%	3.0%	
Estimated surplus embedded in the cost of capital for terminal (in value)	225	209	192	186	
Net ATSP gain(+)/loss(-) on terminal activity	-115	-226	-137	219	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>110</b>	<b>-17</b>	<b>55</b>	<b>405</b>	
<b>Revenue/costs for the terminal activity</b>	<b>4 369</b>	<b>4 322</b>	<b>4 222</b>	<b>4 258</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.5%</b>	<b>-0.4%</b>	<b>1.3%</b>	<b>9.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>1.5%</b>	<b>-0.2%</b>	<b>0.9%</b>	<b>6.5%</b>	

LITHUANIA: Terminal ATSP (Oro Navigacija)

Monitoring of terminal COST-EFFICIENCY for 2018





## LITHUANIA: Gate-to-gate

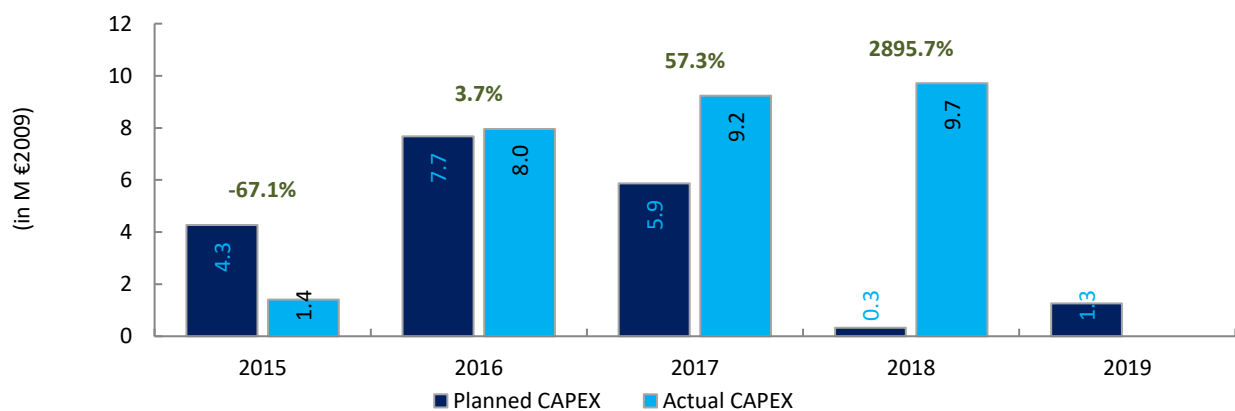
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Lithuania: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	20 652 919	20 223 855	20 434 886	20 737 566	20 814 037																																							
Real terminal costs (EUR2009)	4 496 476	4 453 450	4 356 700	4 395 064	4 389 104																																							
Real gate-to-gate costs (EUR2009)	25 149 396	24 677 305	24 791 586	25 132 629	25 203 141																																							
En-route share (%)	82.1%	82.0%	82.4%	82.5%	82.6%																																							
<b>Lithuania: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	21 120 276	20 659 882	20 826 832	19 248 723																																								
Real terminal costs (EUR2009)	4 636 128	4 703 003	4 519 165	4 187 629																																								
Real gate-to-gate costs (EUR2009)	25 756 404	25 362 885	25 345 998	23 436 352																																								
En-route share (%)	82.0%	81.5%	82.2%	82.1%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	607 008	685 580	554 412	-1 696 277																																								
Real gate-to-gate costs (EUR2009) in %	2.4%	2.8%	2.2%	-6.7%																																								
En-route share in p.p.	-0.1 p.p.	-0.5 p.p.	-0.3 p.p.	-0.4 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
In 2018, actual gate-to-gate ANS costs are -6.7% (-1.7 M€2009) lower than planned due to lower than planned en-route costs (-7.2%, or -1.5 M€2009) and terminal costs (-4.7%, or -0.2 M€2009).																																												
The actual share of en-route in gate-to-gate ANS costs (82.1%) is mostly in line with that planned in the PP for 2018 (82.5%).																																												
For Oro Navigacija, the estimated gate-to-gate economic surplus in 2018 amounts to 3.8 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 16.0% of gate-to-gate ANS revenues.																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>82.1%</td> <td>17.9%</td> </tr> <tr> <td>Actual</td> <td>82.0%</td> <td>18.0%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>82.0%</td> <td>18.0%</td> </tr> <tr> <td>Actual</td> <td>81.5%</td> <td>18.5%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>82.4%</td> <td>17.6%</td> </tr> <tr> <td>Actual</td> <td>82.2%</td> <td>17.8%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td>Actual</td> <td>82.1%</td> <td>17.9%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>82.6%</td> <td>17.4%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	82.1%	17.9%	Actual	82.0%	18.0%	2016	Determined	82.0%	18.0%	Actual	81.5%	18.5%	2017	Determined	82.4%	17.6%	Actual	82.2%	17.8%	2018	Determined	82.5%	17.5%	Actual	82.1%	17.9%	2019	Determined	82.6%	17.4%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Lithuania</b>																																												

## LITHUANIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Oro Navigacija						
FAB: Baltic FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	4.8	8.9	6.9	0.4	1.6	22.6
Main CAPEX (in nominal M)	4.2	8.7	6.4	0.1	1.2	20.7
Inflation %	1.7%	2.2%	2.5%	2.2%	2.2%	
Inflation index (100 in 2009)	112.9	115.4	118.4	121.0	123.7	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>4.3</b>	<b>7.7</b>	<b>5.9</b>	<b>0.3</b>	<b>1.3</b>	<b>19.4</b>
Main CAPEX (in M €2009)	3.8	7.5	5.4	0.1	1.0	17.8
% Main of Total CAPEX	87.9%	98.3%	92.4%	15.5%	80.3%	91.7%
Real gate-to-gate ANSP costs (in M €2009)	23.2	22.6	22.7	23.1	23.1	114.7
Total CAPEX as % of Real gate-to-gate ANSP costs	18.4%	33.9%	25.9%	1.4%	5.4%	16.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	1.5	8.8	10.6	11.4		
Main CAPEX (in nominal M)	0.8	8.4	10.2	10.0		
Inflation %	-0.7%	0.7%	3.7%	2.5%		
Inflation index (100 in 2009)	109.5	110.2	114.3	117.2		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>1.4</b>	<b>8.0</b>	<b>9.2</b>	<b>9.7</b>		
Main CAPEX (in M €2009)	0.7	7.6	8.9	8.6		
% Main of Total CAPEX	50.8%	95.4%	96.4%	88.2%		
Real gate-to-gate ANSP costs (in M €2009)	23.5	23.3	23.1	21.3		
Total CAPEX as % of Real gate-to-gate ANSP costs	6.0%	34.1%	40.0%	45.6%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-3.3	-0.1	3.6	11.0		
Total CAPEX (in M €2009)	-2.9	0.3	3.4	9.4		
<b>Total CAPEX (in %, M €2009)</b>	<b>-67.1%</b>	<b>3.7%</b>	<b>57.3%</b>	<b>2895.7%</b>		



# Annual Monitoring Report 2018

## Local level view

### Poland



## POLAND

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	59	C	C	C	C	C
PANSA	60	C	C	C	C	C
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	0%		
Runway Incursions (RIs)			100%	0%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			CAA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			7	2		
Legal/Judiciary			6	1		
Occurrence reporting and Investigation			0	2		
<b>TOTAL</b>			<b>13</b>	<b>5</b>		
PANSA			Number of questions answered			
			YES	NO		
Policy and its implementation			10	3		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			4	4		
<b>TOTAL</b>			<b>16</b>	<b>8</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						
With regard the RAT application, data recieved from the AST mechanism show performance far below targets.						

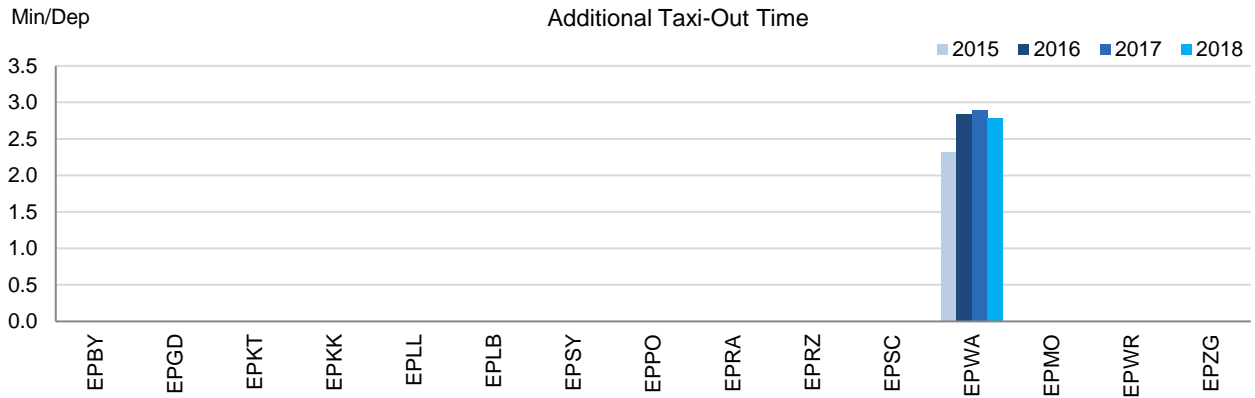
**POLAND**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

Poland, as a member of the Baltic FAB, identified fifteen airports as subject to RP2 monitoring, with the last addition of EPSY in 2016 (due to inclusion in the charging zone). However, Warsaw (EPWA) continues to be the only airport for which the Airport Operator Data Flow is established. It is strongly recommended to establish the APDF for Krakow (EPKK), Gdansk (EPGD), Katowice (EPKT), Wroclaw (EPWR), Poznan (EPPO), Warsaw Modlin (EPMO) and Rzeszow - Jasionka (EPRZ). Implementation of the APDF at EPLL, EPSC, EPBY, EPLB, EPZG, EPSY and EPRA should be considered.

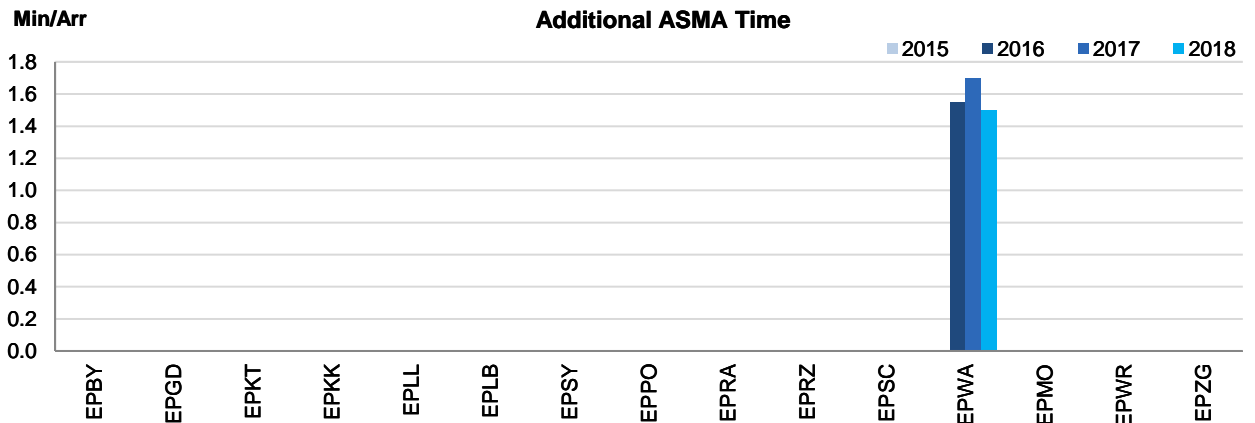
**2. Additional Taxi-Out Time**



Warsaw shows a slight decrease in its additional TXOT despite an 9% increase in traffic in 2018. The average additional taxi-out time in Warsaw for 2017 is 2.78 min/dep., below the European average (RP2 airports: 3.57 min/dep.). This figure is commensurate with the level of traffic at EPWA and in line with the trend showed by the rest of European airports. The additional taxi-times are higher in winter (probably due to de-icing operations) and June (due to construction works on the taxiways)

The additional TXOT at the rest of Polish airports cannot be monitored at the time being due to the lack of data.

**3. Additional ASMA Time**



The additional ASMA time at Warsaw in 2018 is 1.50 min/arr., once more below the average of the airports in RP2 (1.75 min/arr.) This figure is commensurate with the level of traffic at EPWA and in line with the trend showed by the rest of European airports.

The additional time in the terminal airspace at the rest of Polish airports cannot be monitored at the time being due to the lack of data.

#### 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bydgoszcz	EPBY	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Gdansk	EPGD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Katowice - Pyrzowice	EPKT	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Krakow - Balice	EPKK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lodz - Lublinek	EPLL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lublin	EPLB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Olsztyn-Mazury	EPSY		n/a	n/a	n/a			n/a	n/a	n/a	
Poznan - Lawica	EPPO	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Radom	EPRA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Rzeszow - Jasionka	EPRZ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Szczecin - Goleniów	EPSC	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Warszawa/ Chopina	EPWA	2.32	2.84	2.90	2.78		n/a	1.55	1.70	1.50	
Warszawa/ Modlin	EPMO	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Wroclaw/ Strachowice	EPWR	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Zielona Gora - Babimost	EPZG	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

## POLAND

## Monitoring of CAPACITY for 2018

## En route Capacity incentive scheme

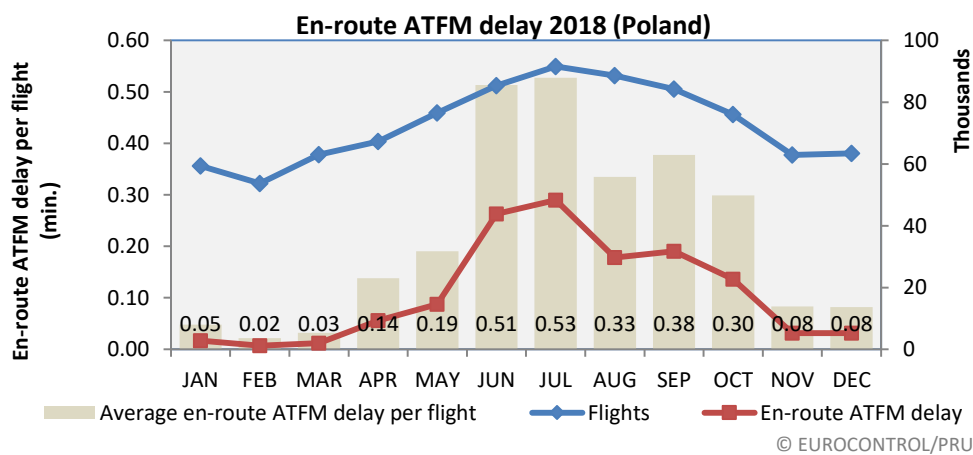
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.26	0.23	0.23	0.23	0.23	
Deadband +/-	0.15 - 0.4	0.15 - 0.3				
Actual performance	0.18	0.39	0.11	0.25		

## National capacity incentive scheme

The actual en-route ATFM delay in FIR Warszawa was 0,25 min/flight. The result is [above] the target set for 2018. The incentive scheme for en-route ATFM delay 2016-2019 years provides the dead band of ATFM delays with the thresholds from <0,15 min/flight to >0,3 min/flight. Within this area the incentive scheme is not applied. The difference between the target and actual result is equal 0,02 min/flight and in this case the incentive scheme penalties will not be enforced.

In 2018 the value of ATFM delay has been attributed to the dead band area. Consequently it will not affect the air navigation charges in 2020.

## Observations regarding national capacity performance



## En-route ATFM delay per flight (Poland)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2.00	1.63	1.13	0.66	0.52	0.51	0.79	0.18	0.39	0.11	0.25

## EUROCONTROL 7 year forecast February 2014 – Poland

	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	actual
High	722	764	821	871	926	981
Base	710	702	741	755	793	864
Low	699	719	731	743	756	769

Traffic levels in Poland increased by almost 10% on 2017 levels, which is just approximately halfway between the baseline and high traffic scenario for 2018, as forecasted by STATFOR back in 2014.

The significant year on year increase in traffic, was due in part to re-routing scenarios implemented through the 4ACC initiative to mitigate a significant capacity shortfall in neighbouring FABEC airspace.

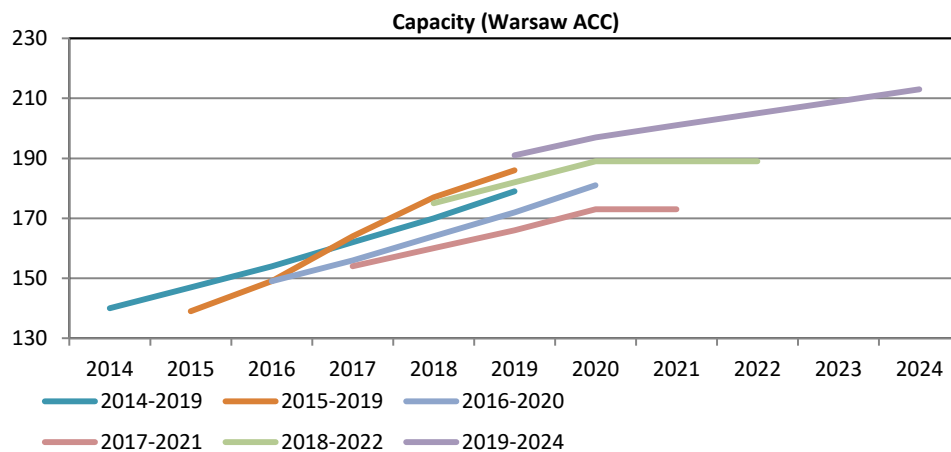
Average en route ATFM delay per flight in Poland increased from 0,11 minutes in 2017 to 0,25 minutes in 2018.

The airspace users, in particular IATA, recognised the "important positive contribution by Poland" in handling the traffic from the 4ACC initiative and Russian traffic rerouting around Ukrainian airspace.

In the latest version of the Network Operations Plan 2019-2024, although the Network Manager predicts that Poland will deliver capacity performance close to the reference values for the remainder of RP2 and for the entirety of RP3, it is also noted that continuation of the 4ACC initiative (eNM/ANSP measures) will increase traffic and create delays in Warsaw ACC during 2019 and 2020.



Poland delay forecast (with eNM/ANSP measures for 2019/2020)						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.14</b>	<b>0.15</b>	<b>0.20</b>	<b>0.26</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.38</b>	<b>0.36</b>	<b>0.23 – 0.28</b>			



Having initially postponed and downgraded capacity plans from 2014 to 2017, 2018 and 2019 see more ambitious capacity plans.

#### Planning and Effective Use of CDRs

Poland did not provide any information regarding the planning or use of conditional routes in 2018. Poland reports that Free Route Airspace has been implemented since the end of February 2019.

#### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

#### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
<1%	45%	51%	55%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
48%	N/A	N/A	4%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
0%	N/A	N/A	N/A	

#### Observations on Effective booking procedures

The Ministry of National Defence, Polish CAA and PANSAs were working together in 2018 to enhance FUA concept by strengthening the technology and processes used for reserving flexible airspace structures. Improvements in the management of FUA optimized the use of existing capacity and helped to increase capacity. FUA programme requires development of procedures and systems to enable real-time airspace status data exchange. At the end of 2018 it was implemented Common Airspace Tool (CAT), a next generation local ASM support system. It provides information on planned and current use of airspace structures and supports airspace management in the ATS route network. The tool is used by the Airspace Management Cell, air traffic services and the Polish Air Force.

## POLAND

## Monitoring of Airports Contribution to CAPACITY for 2018

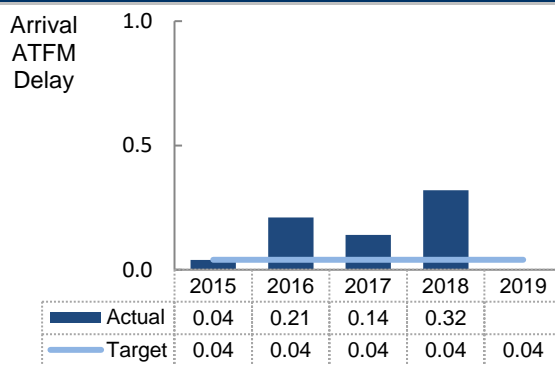
## 1. Overview

15 Polish airports are subject to RP2 monitoring (EPSY: Olsztyn-Mazury since 2016 only). Poland has established a constant national target on arrival ATFM delay of 0.04 min/arr. for RP2. Although no risk of occurrence of arrival ATFM delays during RP2 was identified, the situation deteriorated and the target was only met in 2015 (2015: 0.04 min/arr.; 2016: 0.21 min/arr.; 2017: 0.14 min/arr.; 2018: 0.32 min/arr.)

Traffic levels at these airports have drastically increased during RP2 (+30.4% with respect to 2015). In terms of arrival ATFM delays, values are much higher than those in the beginning of the reference period (delays in 2018 are 7 times the delays in 2015), while ATFM slot adherence has slightly improved.

The monitoring of the pre-departure delay indicator requires the establishment of the Airport Operator Data Flow. At the time being the data flow is only established for Warszawa/Chopin (EPWA). Poland is encouraged to consider the implementation of the data flow at other airports to improve the operational performance monitoring.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Poland have moderately increased with respect to the previous year (2017: 0.14 min/arr; 2018: 0.32 min/arr)

The target set for terminal ATFM arrival delay per flight in Polish airports was missed in 2018 for the third consecutive year.

A very high traffic growth of terminal traffic was observed (in total 11%) and respectively 9,5% in Warsaw Chopin Airport (EPWA) and 12,1% in the remaining airports in only one year.

Just like in previous years, the delays were generated mainly by Warsaw Chopin Airport (EPWA). Majority of delays are attributed to bad weather conditions (mainly in January, February, May, July, August, October and November), non-ATC capacity (highest rate of delays in April and September) and ATC capacity and Staffing issues (June and August to November). In general, the terminal delays attributable to ATC (i.e. ATC Capacity, ATC Staffing and ATC Disruptions) represented 35% of the terminal ATFM arrival delays in EPWA.

In 2018 growing number of airports reporting terminal and airports delays was observed. In particular Warszawa/ Modlin (EPMO) registered the highest delays after Warsaw Chopin, where the ATC related delays constituted more than 50% of the delays.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Poland has established a constant national target on arrival ATFM delay of 0.04 min/arr. for the whole reference period while the observed performance in 2018 ranges at 0.32 min/arr.

Poland has established a financial incentive scheme for terminal ATFM delay with reference to the arrival ATFM performance at airport level. This comprises an individual scheme for EPWA and a separate scheme for the five bigger regional airports (i.e. EPGD, EPKT, EPWR, EPPO and EPKK). The remaining airports were not considered within the incentive scheme due to their limited impact on the European network, although delays at Warszawa/ Modlin (EPMO) in 2018 are no longer negligible.

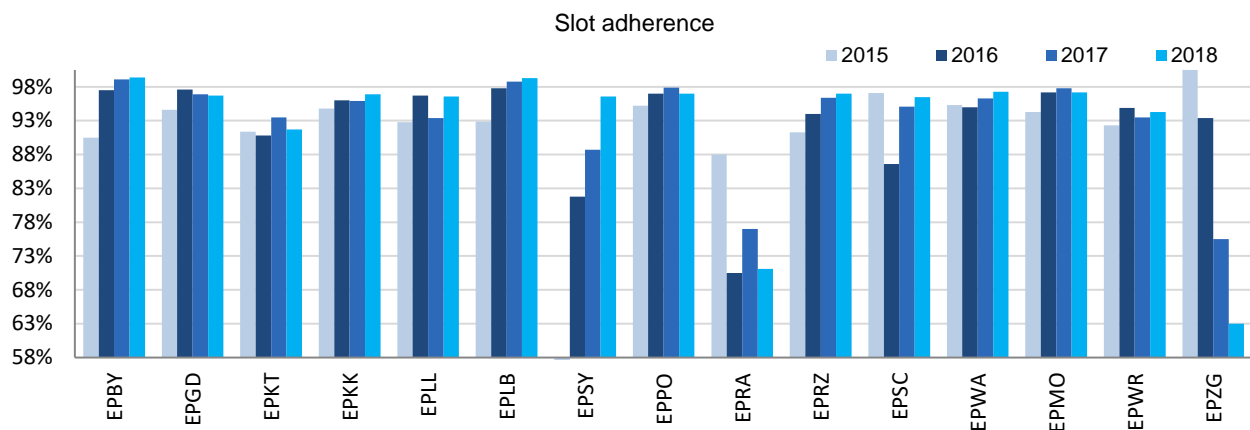
Warsaw has missed the target of 0.08 min/arr and has also exceeded the upper value of the deadband, therefore a penalty of 0.1% of the revenues from terminal services provided at EPWA will be applied.

At Krakow, the target of 0.0 min/arr. is also missed and the actual delay also exceeds the upper limit of the deadband so a penalty of 0.1% of the revenues from terminal services provided at EPKK will be applied.

The actual observed performance at Katowice and Poznan falls within the deadband, so no penalties nor bonuses shall apply.

Gdansk and Wroclaw met the zero delay target, but as the terminal capacity target is missed on national level, the bonuses could not be applied.

#### 4. ATFM Slot Adherence



The aggregated ATFM slot adherence at national level in Poland is very good with 95.8% of departures within their ATFM window. However, like the previous year, there are two airports: EPRA and EPZG where the ATFM slot adherence is below the minimum target of 80%. Although the number of regulated traffic at these airports is very low, the slot adherence should be monitored and air traffic services informed.

#### 5. ATC Pre-departure Delay

Warszawa/Chopina (EPWA) continues to be the only airport in Poland that has established the Airport Operator Data Flow required to monitor the pre-departure delay indicator. The indicator shows a slight improvement in the performance with respect to the last two years (2016: 0.45 min/dep.; 2017: 0.47 min/dep.; 2018: 0.35 min/dep.).

#### 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bydgoszcz	EPBY	0.00	0.00	0.00	0.00		90.0%	97.0%	98.6%	98.9%		n/a	n/a	n/a	n/a	
Gdansk	EPGD	0.00	0.00	0.00	0.00		94.1%	97.1%	96.4%	96.2%		n/a	n/a	n/a	n/a	
Katowice - Pyrzowice	EPKT	0.01	0.00	0.01	0.01		90.9%	90.3%	93.0%	91.2%		n/a	n/a	n/a	n/a	
Krakow - Balice	EPKK	0.21	0.05	0.01	0.04		94.3%	95.5%	95.4%	96.4%		n/a	n/a	n/a	n/a	
Lodz - Lublinek	EPLL	0.00	0.04	0.14	0.00		92.3%	96.2%	92.9%	96.1%		n/a	n/a	n/a	n/a	
Lublin	EPLB	0.00	0.00	0.00	0.00		92.4%	97.3%	98.3%	98.8%		n/a	n/a	n/a	n/a	
Olsztyn-Mazury	EPSY		0.00	0.00	0.00		n/a	81.3%	88.2%	96.1%			n/a	n/a	n/a	
Poznan - Lawica	EPPO	0.00	0.00	0.02	0.01		94.7%	96.5%	97.4%	96.5%		n/a	n/a	n/a	n/a	
Radom	EPRA	0.00	0.00	0.00	0.00		87.5%	70.0%	76.5%	70.6%		n/a	n/a	n/a	n/a	
Rzeszow - Jasionka	EPRZ	0.00	0.00	0.00	0.00		90.8%	93.5%	95.9%	96.5%		n/a	n/a	n/a	n/a	
Szczecin - Goleniów	EPSC	0.00	0.00	0.00	0.00		96.6%	86.1%	94.6%	96.0%		n/a	n/a	n/a	n/a	
Warszawa/ Chopina	EPWA	0.03	0.48	0.31	0.68		94.8%	94.5%	95.8%	96.8%		0.26	0.45	0.47	0.35	
Warszawa/ Modlin	EPMO	0.00	0.00	0.00	0.32		93.8%	96.7%	97.3%	96.7%		n/a	n/a	n/a	n/a	
Wroclaw/ Strachowice	EPWR	0.00	0.00	0.00	0.00		91.8%	94.4%	93.0%	93.8%		n/a	n/a	n/a	n/a	
Zielona Gora - Babimost	EPZG	0.00	0.00	0.00	0.00		100.0%	92.9%	75.0%	62.5%		n/a	n/a	n/a	n/a	

## POLAND: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Poland ECZ represents 2.6% of the SES en-route ANS determined costs in 2018					
· ATSP: PANSA					
· FAB: Baltic FAB					
· National currency: PLN Exchange rate 2009: 1 EUR = 4.32383 PLN					
2. En-route DUC monitoring at Charging Zone level					
Poland: Data from RP2 Performance Plan (EC Decision 2017/2376 of 15 December 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal PLN)	658 592 342	687 375 337	807 874 605	840 660 505	795 098 157
Inflation %	2.4%	2.5%	1.1%	1.9%	2.4%
Inflation index (100 in 2009)	115.9	118.7	111.3	113.4	116.1
Real en-route costs (PLN2009)	568 474 758	578 848 069	725 678 008	741 339 221	685 060 982
Total en-route Service Units	4 362 840	4 544 000	4 299 929	4 419 000	4 560 000
<b>Real en-route unit cost per Service Unit (PLN2009)</b>	<b>130.30</b>	<b>127.39</b>	<b>168.77</b>	<b>167.76</b>	<b>150.23</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>30.14</b>	<b>29.46</b>	<b>39.03</b>	<b>38.80</b>	<b>34.75</b>
Poland: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal PLN)	614 155 894	650 495 550	786 151 715	826 079 860	
Inflation %	-0.7%	-0.2%	1.6%	1.2%	
Inflation index (100 in 2009)	110.9	110.6	112.4	113.8	
Real en-route costs (PLN2009)	553 949 301	587 902 332	699 316 075	726 120 447	
Total en-route Service Units	3 880 013	4 174 735	4 290 520	4 666 097	
<b>Real en-route unit cost per Service Unit (PLN2009)</b>	<b>142.77</b>	<b>140.82</b>	<b>162.99</b>	<b>155.62</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>33.02</b>	<b>32.57</b>	<b>37.70</b>	<b>35.99</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal PLN)	-44 436 448	-36 879 787	-21 722 890	-14 580 645	
in value					
in %	-6.7%	-5.4%	-2.7%	-1.7%	
Inflation %	-3.1 p.p.	-2.7 p.p.	0.5 p.p.	-0.7 p.p.	
in p.p.					
Inflation index (100 in 2009)	-5.0 p.p.	-8.1 p.p.	1.1 p.p.	0.4 p.p.	
in p.p.					
Real en-route costs (PLN2009)	-14 525 457	9 054 263	-26 361 933	-15 218 774	
in value					
in %	-2.6%	1.6%	-3.6%	-2.1%	
Total en-route Service Units	-482 827	-369 265	-9 409	247 097	
in value					
in %	-11.1%	-8.1%	-0.2%	5.6%	
<b>Real en-route unit cost per Service Unit (PLN2009)</b>	<b>12.47</b>	<b>13.44</b>	<b>-5.77</b>	<b>-12.15</b>	
in value					
in %	<b>9.6%</b>	<b>10.5%</b>	<b>-3.4%</b>	<b>-7.2%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>2.88</b>	<b>3.11</b>	<b>-1.34</b>	<b>-2.81</b>	
in value					
in %	<b>9.6%</b>	<b>10.5%</b>	<b>-3.4%</b>	<b>-7.2%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (155.62 PLN2009 or 35.99 €2009) is -7.2% lower than planned in the PP (167.76 PLN2009 or 38.80 €2009). This results from the combination of higher than planned TSUs (+5.6%) and slightly lower than planned en-route costs in real terms (-2.1%, or -3.5 M€2009). See also <b>Note 1</b> at the end of this Report.					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+5.6%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (PANSA) retaining an amount of +4.8 M€2009. According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Poland are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -1.7% (-14.6 MPLN) lower than planned. However, since the actual inflation index is slightly higher than planned (+0.4 p.p.), actual en-route costs are -2.1% (-15.2 MPLN2009 or -3.5 M€2009) below plans when expressed in real terms. The slightly lower than planned en-route costs in real terms are driven by PANSA (-1.9%, or -2.9 M€2009), the MET service providers (-4.1%, or -0.2 M€2009) and the NSA/EUROCONTROL (-3.8%, or -0.4 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +0.2 M€2009 comprising +0.6 M€2009 for new cost item required by law and -0.4 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

Year	Difference (%)
2015	-2.6%
2016	1.6%
2017	-3.6%
2018	-2.1%

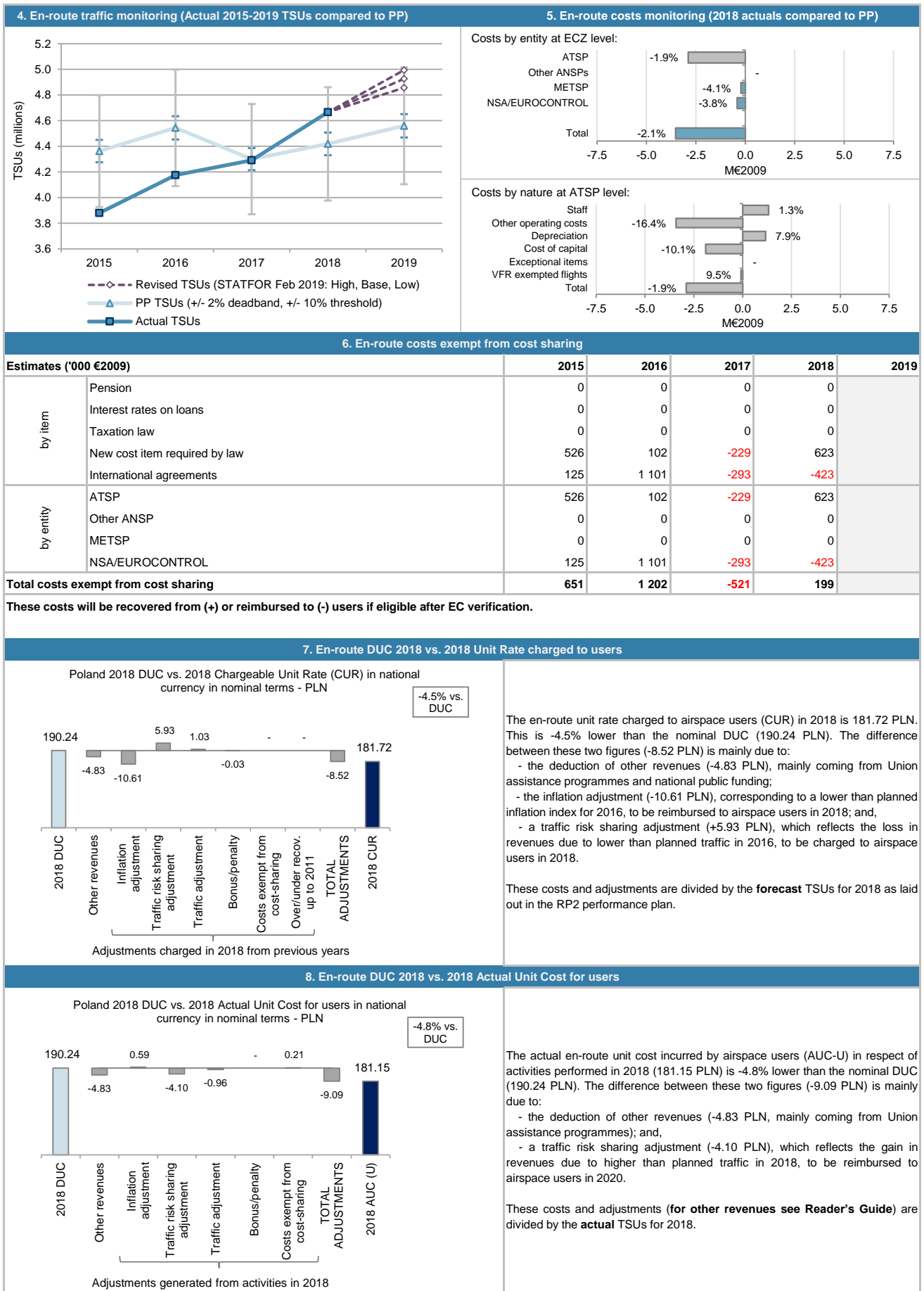
Year	Difference (%)
2015	-11.1%
2016	-8.1%
2017	-0.2%
2018	5.6%

Year	En-route DUC (PP, 2015-2019) (€2009)	En-route unit costs (actual) (€2009)
2015	30.14	33.02
2016	29.46	32.57
2017	39.03	37.70
2018	38.80	35.99
2019	34.75	

Year	Difference (%)
2015	-11.1%
2016	-8.1%
2017	-0.2%
2018	5.6%

**POLAND: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



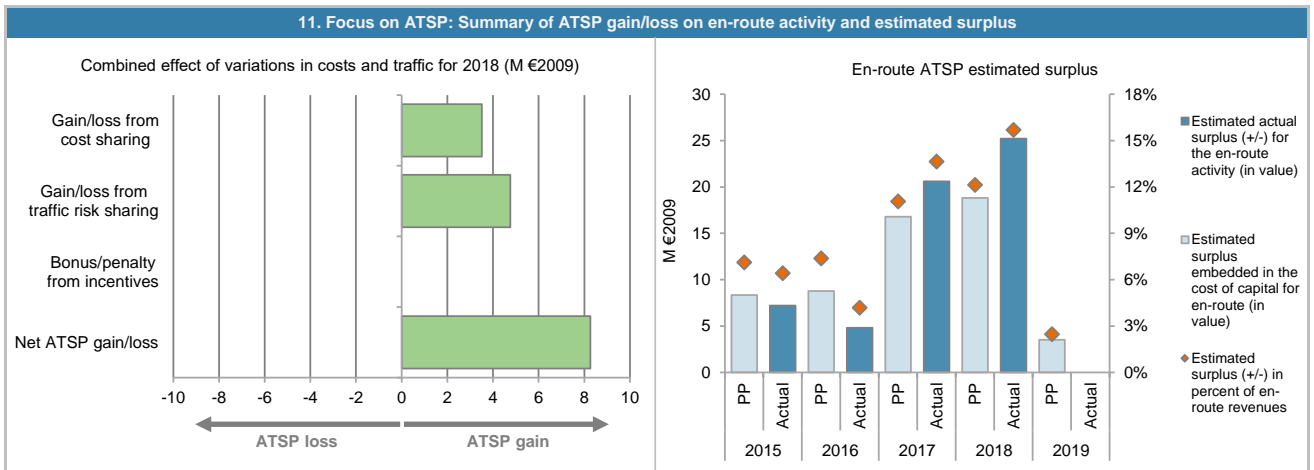
## POLAND: En-route ATSP (PANSA)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	116 939	118 981	151 522	155 060	
Actual costs for the ATSP	113 577	119 455	146 131	152 174	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	3 361	-474	5 391	2 886	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	526	102	-229	623	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>3 888</b>	<b>-373</b>	<b>5 162</b>	<b>3 509</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-11.1%	-8.1%	-0.2%	5.6%	
Determined costs for the ATSP (PP) - based on actual inflation	122 165	127 693	150 053	154 558	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-5 375</b>	<b>-4 901</b>	<b>-328</b>	<b>4 757</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>-32</b>	<b>41</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-1 488</b>	<b>-5 305</b>	<b>4 875</b>	<b>8 265</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	140 047	147 467	214 796	241 099	254 476
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	140 047	147 467	214 796	241 099	254 476
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	8 333	8 774	16 776	18 830	3 514
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.0%	6.0%	7.8%	7.8%	1.4%
Estimated surplus embedded in the cost of capital for en-route (in value)	8 333	8 774	16 776	18 830	3 514
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>8 333</b>	<b>8 774</b>	<b>16 776</b>	<b>18 830</b>	<b>3 514</b>
<b>Revenue/costs for the en-route activity</b>	<b>116 939</b>	<b>118 981</b>	<b>151 522</b>	<b>155 060</b>	<b>141 971</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>7.1%</b>	<b>7.4%</b>	<b>11.1%</b>	<b>12.1%</b>	<b>2.5%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.0%</b>	<b>6.0%</b>	<b>7.8%</b>	<b>7.8%</b>	<b>1.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	145 940	169 815	201 452	216 788	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	145 940	169 815	201 452	216 788	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	8 683	10 104	15 733	16 931	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.0%	6.0%	7.8%	7.8%	
Estimated surplus embedded in the cost of capital for en-route (in value)	8 683	10 104	15 733	16 931	
Net ATSP gain(+)/loss(-) on en-route activity	-1 488	-5 305	4 875	8 265	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>7 196</b>	<b>4 799</b>	<b>20 608</b>	<b>25 196</b>	
<b>Revenue/costs for the en-route activity</b>	<b>112 090</b>	<b>114 150</b>	<b>151 006</b>	<b>160 439</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.4%</b>	<b>4.2%</b>	<b>13.6%</b>	<b>15.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.9%</b>	<b>2.8%</b>	<b>10.2%</b>	<b>11.6%</b>	

**POLAND: En-route ATSP (PANSa)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 PANSa en-route costs vs. PP**

In 2018, PANSa actual en-route costs are -1.9% (-2.9 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- higher staff costs (+1.3%, or +1.3 M€2009) mainly due to "increased accruals for unused holidays and jubilee benefits";
- much lower other operating costs (-16.4%, or -3.4 M€2009) mainly due to the "implementation of optimisation measures, savings on repair and maintenance costs, lower costs for external services (i.e. insurance) and deduction of financial and other operating revenues from actual costs";
- higher depreciation costs (+7.9%, or +1.2 M€2009) mainly as a consequence of the "execution of investment plan in previous years and application of actual depreciation timeframes"; and,
- lower cost of capital (-10.1%, or -1.9 M€2009) due to a "lower assets base, which is a result of lower level of investment than expected and application of actual depreciation timeframes".

**PANSa net gain/loss on en-route activity in 2018**

As shown in box 9, PANSa generated a net gain of +8.3 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +3.5 M€2009 arising from the cost sharing mechanism; and,
- a gain of +4.8 M€2009 arising from the traffic risk sharing mechanism.

The gain from cost sharing mentioned above (+3.5 M€2009) includes amounts reported by PANSa for cost exempt from cost sharing (+0.6 M€2009). Should these costs not be deemed eligible by the European Commission, PANSa would record a net gain of +7.6 M€2009 for the en-route activity in 2018.

**PANSa overall estimated surplus for the en-route activity**

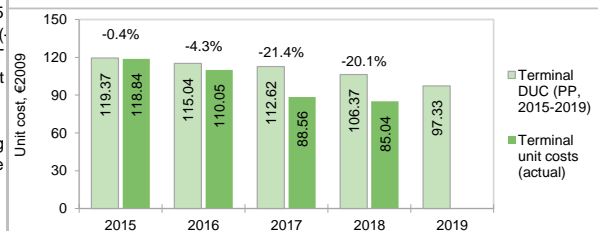
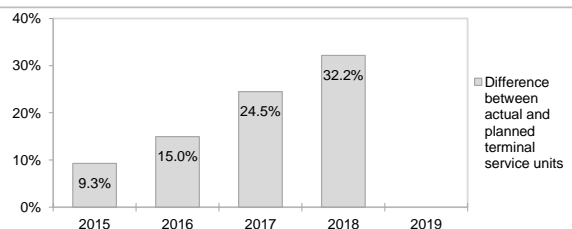
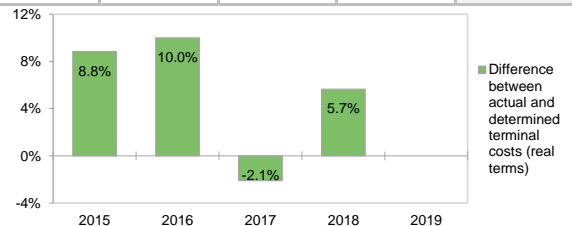
Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+8.3 M€2009) and the surplus embedded in the actual cost of capital (+16.9 M€2009) amounts to +25.2 M€2009 (15.7% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 11.6%, which is higher than the 7.8% planned in the PP.



## POLAND - ZONE 1: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

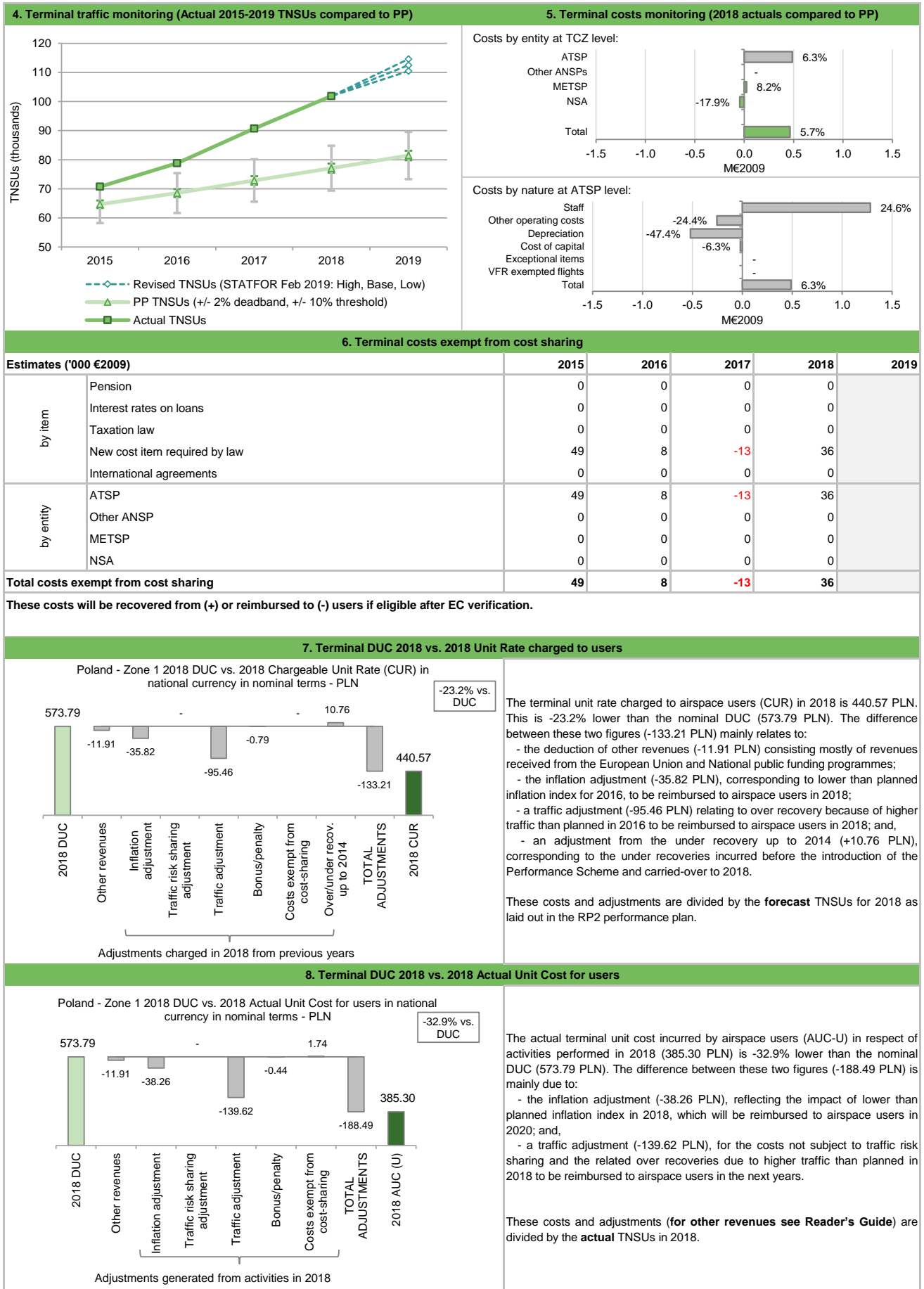
1. Contextual economic information: terminal air navigation services					
Poland - Zone 1 TCZ represents 0.8% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP:	PANSA	Airports with fewer than 70,000 IFRs ATMs:		0	
National currency:	PLN	Airports with between 70,000 and 225,000 IFRs ATMs:		1	
Number of airports in charging zone in 2018:	1,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Poland - Zone 1: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal PLN)	38 684 631	40 473 739	43 188 562	44 236 846	43 835 422
Inflation %	2.4%	2.5%	2.5%	2.5%	2.5%
Inflation index (100 in 2009)	115.9	118.7	121.7	124.8	127.9
Real terminal costs (PLN2009)	33 391 272	34 083 483	35 482 607	35 457 415	34 278 692
Total terminal Service Units	64 694	68 522	72 865	77 097	81 450
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>516.14</b>	<b>497.41</b>	<b>486.96</b>	<b>459.91</b>	<b>420.86</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>119.37</b>	<b>115.04</b>	<b>112.62</b>	<b>106.37</b>	<b>97.33</b>
Poland - Zone 1: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal PLN)	40 288 789	41 483 085	39 055 461	42 620 052	
Inflation %	-0.7%	-0.2%	1.6%	1.2%	
Inflation index (100 in 2009)	110.9	110.6	112.4	113.8	
Real terminal costs (PLN2009)	36 339 221	37 491 421	34 741 528	37 462 833	
Total terminal Service Units	70 718	78 789	90 729	101 889	
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>513.86</b>	<b>475.85</b>	<b>382.91</b>	<b>367.68</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>118.84</b>	<b>110.05</b>	<b>88.56</b>	<b>85.04</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal PLN)	in value 1 604 158	1 009 347	-4 133 101	-1 616 794	
	in % 4.1%	2.5%	-9.6%	-3.7%	
Inflation %	in p.p. -3.1 p.p.	-2.7 p.p.	-0.9 p.p.	-1.3 p.p.	
Inflation index (100 in 2009)	in p.p. -5.0 p.p.	-8.1 p.p.	-9.3 p.p.	-11.0 p.p.	
Real terminal costs (PLN2009)	in value 2 947 948	3 407 938	-741 079	2 005 418	
	in % 8.8%	10.0%	-2.1%	5.7%	
Total terminal Service Units	in value 6 024	10 267	17 864	24 793	
	in % 9.3%	15.0%	24.5%	32.2%	
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>in value -2.28</b>	<b>-21.56</b>	<b>-104.05</b>	<b>-92.23</b>	
	<b>in % -0.4%</b>	<b>-4.3%</b>	<b>-21.4%</b>	<b>-20.1%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -0.53</b>	<b>-4.99</b>	<b>-24.06</b>	<b>-21.33</b>	
	<b>in % -0.4%</b>	<b>-4.3%</b>	<b>-21.4%</b>	<b>-20.1%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Poland - Zone 1 Terminal Charging Zone (TCZ) comprising only Warsaw airport. See <a href="#">Note 2</a> at the end of this Report.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (367.68 PLN2009 or 85.04 €2009) is -20.1% lower than planned in the PP (459.91 PLN2009 or 106.37 €2009). This results from the combination of much higher than planned TNSUs (+32.2%) and higher than planned terminal costs in real terms (+5.7%, or +0.5 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Poland - Zone 1 TCZ. The difference between actual and planned TNSUs (+32.2%) therefore generates additional terminal revenues which will be fully reimbursed to airspace users.					
According to STATFOR February 2019 <a href="#">base</a> scenario, the TNSUs for Poland - Zone 1 are expected to remain well above the planned values for the remainder of RP2.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -3.7% (-1.6 MPLN) lower than planned. However, since the actual inflation index is also lower than planned (-11.0 p.p.), actual terminal costs are +5.7% (+2.0 MPLN2009 or +0.5 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by PANSA (+6.3%, or +0.5 M€2009) and the MET service provider (+8.2%, or +0.02 M€2009), while the costs for the NSA (-17.9%, or -0.05 M€2009) are lower than planned. It is noted, however, that actual costs for MET service provider are slightly lower than planned (-1.4%) in nominal terms. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +0.04 M€2009 corresponding to new cost items required by law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					





**POLAND - ZONE 1: Terminal charging zone**

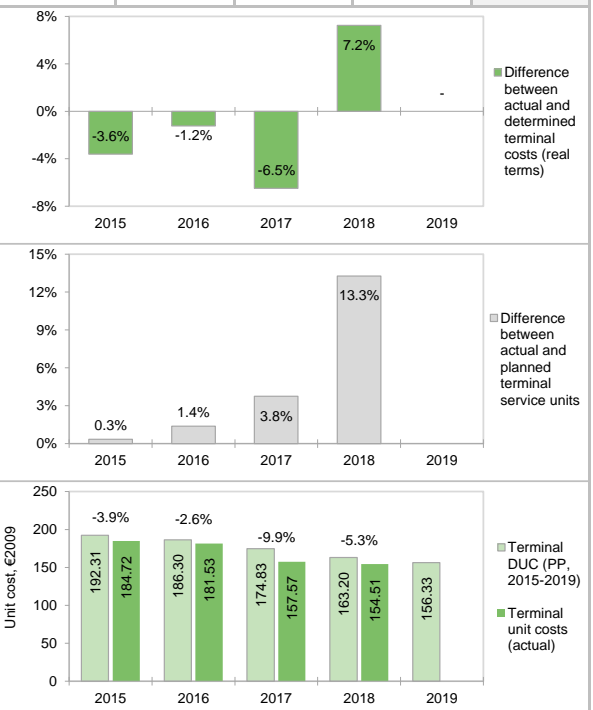
**Monitoring of terminal COST-EFFICIENCY for 2018**



## POLAND - ZONE 2: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Poland - Zone 2 TCZ represents 1.8% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP:	PANSA	Airports with fewer than 70,000 IFRs ATMs:		14	
National currency:	PLN	Airports with between 70,000 and 225,000 IFRs ATMs:		0	
Number of airports in charging zone in 2018:	14,	of which:	Airports with more than 225,000 IFRs ATMs:		0
2. Terminal DUC monitoring at Charging Zone level					
Poland - Zone 2: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal PLN)	91 615 857	97 620 964	100 827 140	103 009 775	107 437 855
Inflation %	2.38%	2.5%	2.5%	2.5%	2.5%
Inflation index (100 in 2009)	115.9	118.7	121.7	124.8	127.9
Real terminal costs (PLN2009)	79 079 726	82 207 934	82 836 974	82 566 020	84 014 912
Total terminal Service Units	95 106	102 052	109 584	117 005	124 294
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>831.49</b>	<b>805.55</b>	<b>755.92</b>	<b>705.66</b>	<b>675.94</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>192.31</b>	<b>186.30</b>	<b>174.83</b>	<b>163.20</b>	<b>156.33</b>
Poland - Zone 2: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal PLN)	84 508 955	89 844 281	87 082 979	100 735 338	
Inflation %	-0.70%	-0.2%	1.6%	1.2%	
Inflation index (100 in 2009)	110.9	110.6	112.4	113.8	
Real terminal costs (PLN2009)	76 224 420	81 199 114	77 464 090	88 545 905	
Total terminal Service Units	95 437	103 452	113 696	132 542	
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>798.69</b>	<b>784.90</b>	<b>681.33</b>	<b>668.06</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>184.72</b>	<b>181.53</b>	<b>157.57</b>	<b>154.51</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal PLN)	in value -7 106 902	in value -7 776 683	in value -13 744 161	in value -2 274 437	
	in % -7.8%	in % -8.0%	in % -13.6%	in % -2.2%	
Inflation %	in p.p. -3.1 p.p.	in p.p. -2.7 p.p.	in p.p. -0.9 p.p.	in p.p. -1.3 p.p.	
Inflation index (100 in 2009)	in p.p. -5.0 p.p.	in p.p. -8.1 p.p.	in p.p. -9.3 p.p.	in p.p. -11.0 p.p.	
Real terminal costs (PLN2009)	in value -2 855 306	in value -1 008 821	in value -5 372 884	in value 5 979 885	
	in % -3.6%	in % -1.2%	in % -6.5%	in % 7.2%	
Total terminal Service Units	in value 332	in value 1 400	in value 4 112	in value 15 538	
	in % 0.3%	in % 1.4%	in % 3.8%	in % 13.3%	
<b>Real terminal unit cost per Service Unit (PLN2009)</b>	<b>in value -32.81</b>	<b>in value -20.65</b>	<b>in value -74.60</b>	<b>in value -37.61</b>	
	<b>in % -3.9%</b>	<b>in % -2.6%</b>	<b>in % -9.9%</b>	<b>in % -5.3%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -7.59</b>	<b>in value -4.78</b>	<b>in value -17.25</b>	<b>in value -8.70</b>	
	<b>in % -3.9%</b>	<b>in % -2.6%</b>	<b>in % -9.9%</b>	<b>in % -5.3%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Poland - Zone 2 Terminal Charging Zone (TCZ) comprising 14 airports. See <a href="#">Note 2</a> at the end of this Report.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (668.06 PLN2009 or 154.51 €2009) is -5.3% lower than planned in the PP (705.66 PLN2009 or 163.20 €2009). This results from the combination of higher than planned TNSUs (+13.3%) and higher than planned terminal costs in real terms (+7.2%, or +1.4 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Poland - Zone 2 TCZ. The difference between actual and planned TNSUs (+13.3%) therefore generates additional terminal revenues which will be fully reimbursed to airspace users.					
According to STATFOR February 2019 <a href="#">base</a> scenario, the TNSUs for Poland - Zone 2 are expected to remain well above the planned values for the remainder of RP2.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -2.2% (-2.3 MPLN) lower than planned. However, since the actual inflation index is also lower than planned (-11.0 p.p.), actual terminal costs are +7.2% (+6.0 MPLN2009 or +1.4 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by PANSA (+7.1%, or +1.1 M€2009), the other ANSPs (+401.0%, or +0.04 M€2009) and the MET service provider (+8.5%, or +0.2 M€2009), while the costs for the NSA (-2.3%, or -0.01 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +0.1 M€2009 corresponding to new cost item required by law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**POLAND - ZONE 2: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

Legend:  
 - - - Revised TNSUs (STATFOR Feb 2019: High, Base, Low)  
 - - - PP TNSUs (+/- 2% deadband, +/- 10% threshold)  
 - - - Actual TNSUs

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	7.1%
Other ANSPs	401.0%
METSP	8.5%
NSA	-2.3%
<b>Total</b>	<b>7.2%</b>

Costs by nature at ATSP level:

Staff	8.8%
Other operating costs	-13.3%
Depreciation	19.7%
Cost of capital	26.8%
Exceptional items	-
VFR exempted flights	-
<b>Total</b>	<b>7.1%</b>

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	66	8	-16	59	
	International agreements	0	0	0	0	
by entity	ATSP	66	8	-16	59	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>66</b>	<b>8</b>	<b>-16</b>	<b>59</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

Poland - Zone 2 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - PLN

Adjustments charged in 2018 from previous years

The terminal unit rate charged to airspace users (CUR) in 2018 is 799.68 PLN. This is -9.2% lower than the nominal DUC (880.39 PLN). The difference between these two figures (-80.71 PLN) relates to:

- the deduction of other revenues (-18.10 PLN) consisting mostly of revenues received from the European Union and National public funding programmes;
- the inflation adjustment (-56.92 PLN), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic adjustment (-15.79 PLN), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018; and
- an adjustment from the under recovery up to 2014 (+10.27 PLN), corresponding to the under recoveries incurred before the introduction of the Performance Scheme for terminal ANS and carried-over to 2018.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

Poland - Zone 2 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - PLN

Adjustments generated from activities in 2018

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (692.61 PLN) is -21.3% lower than the nominal DUC (880.39 PLN). The difference between these two figures (-187.78 PLN) is mainly due to:

- the deduction of other revenues (-18.10 PLN) consisting mostly of revenues received from the European Union and National public funding programmes;
- the inflation adjustment (-68.49 PLN), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020; and,
- a traffic adjustment (-103.21 PLN), for the costs not subject to traffic risk sharing and the related over recoveries due to higher traffic than planned in 2018 to be reimbursed to airspace users in the next years.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

## POLAND: Terminal ATSP (PANS)

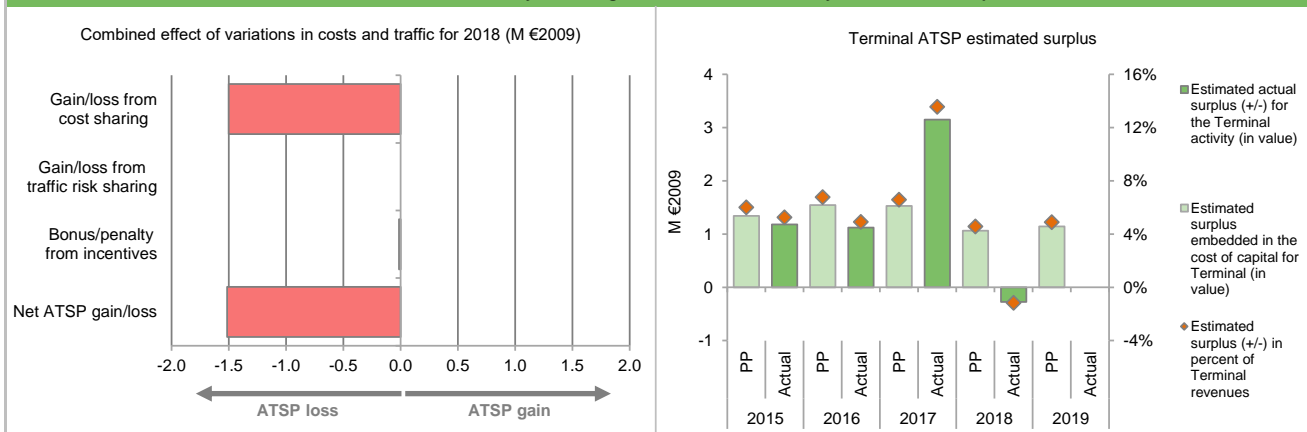
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	22 279	22 785	23 253	23 285	
Actual costs for the ATSP	22 725	23 459	21 614	24 881	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-445	-674	1 639	-1 596	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	115	16	-29	95	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-330</b>	<b>-658</b>	<b>1 610</b>	<b>-1 501</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>3</b>	<b>-17</b>	<b>-9</b>	<b>-14</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-327</b>	<b>-674</b>	<b>1 601</b>	<b>-1 515</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	22 504	25 990	28 178	30 583	32 419
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	22 504	25 990	28 178	30 583	32 419
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	1 339	1 546	1 529	1 063	1 143
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.0%	6.0%	5.4%	3.5%	3.5%
Estimated surplus embedded in the cost of capital for terminal (in value)	1 339	1 546	1 529	1 063	1 143
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 339</b>	<b>1 546</b>	<b>1 529</b>	<b>1 063</b>	<b>1 143</b>
<b>Revenue/costs for the terminal activity</b>	<b>22 279</b>	<b>22 785</b>	<b>23 253</b>	<b>23 285</b>	<b>23 372</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>6.0%</b>	<b>6.8%</b>	<b>6.6%</b>	<b>4.6%</b>	<b>4.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.0%</b>	<b>6.0%</b>	<b>5.4%</b>	<b>3.5%</b>	<b>3.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	25 319	30 172	28 524	35 742	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	25 319	30 172	28 524	35 742	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	1 506	1 795	1 548	1 242	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.0%	6.0%	5.4%	3.5%	
Estimated surplus embedded in the cost of capital for terminal (in value)	1 506	1 795	1 548	1 242	
Net ATSP gain(+)/loss(-) on terminal activity	-327	-674	1 601	-1 515	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 179</b>	<b>1 121</b>	<b>3 149</b>	<b>-273</b>	
<b>Revenue/costs for the terminal activity</b>	<b>22 397</b>	<b>22 785</b>	<b>23 216</b>	<b>23 366</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.3%</b>	<b>4.9%</b>	<b>13.6%</b>	<b>-1.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.7%</b>	<b>3.7%</b>	<b>11.0%</b>	<b>-0.8%</b>	

## POLAND: Terminal ATSP (PANSa)

## Monitoring of terminal COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



## 12. Focus on terminal ATSP: General conclusions

**Actual 2018 PANSa terminal costs vs. PP in TCZ 1**

In 2018, PANSa actual terminal costs in TCZ 1 are +6.3% (+0.5 M€2009) higher, in real terms, than planned in the PP. It is noted, however, that in nominal terms actual costs are lower than planned (-3.0%), due to much lower than planned inflation index (-11.0 p.p.). According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much higher staff costs (+24.6%, or +1.3 M€2009) mainly driven by "increase of ATCO salaries related to new RAD licences acquired by ATCOs in Warsaw TWR. Due to significant increase in traffic at EPWA compared to initial PP, allocation of some overhead costs was changed, which resulted in higher costs in TCZ 1 and lower in TCZ 2";
- lower other operating costs (-24.4%, or -0.3 M€2009) mainly due to the "implementation of optimisation measures, savings on repair and maintenance costs, lower costs for external services (i.e. insurance) and deduction of financial and other operating revenues from actual costs";
- much lower depreciation costs (-47.4%, or -0.5 M€2009) mainly due to "delayed realisation of ASMGCS project"; and,
- lower cost of capital (-6.3%, or -0.02 M€2009).

**Actual 2018 PANSa terminal costs vs. PP in TCZ 2**

In 2018, PANSa actual terminal costs in TCZ 2 are +7.1% (+1.1 M€2009) higher, in real terms, than planned in the PP. It is noted, however, that in nominal terms actual costs are lower than planned (-2.3%), due to much lower than planned inflation index (-11.0 p.p.). According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- higher staff costs (+8.8%, or +1.0 M€2009). It is noted, however, that in nominal terms staff costs are slightly lower than planned (-0.8%, or -0.4 MPLN), which is explained by "allocation of some overhead costs was changed, which resulted in higher costs in TCZ 1 and lower in TCZ 2";
- lower other operating costs (-13.3%, or -0.3 M€2009) mainly due to the "implementation of optimisation measures, savings on repair and maintenance costs, lower costs for external services (i.e. insurance) and deduction of financial and other operating revenues from actual costs";
- higher depreciation costs (+19.7%, or +0.3 M€2009) mainly due to "accelerated realisation of CAPEX related to towers at Kraków and Katowice airports"; and,
- higher cost of capital (+26.8%, or +0.2 M€2009) resulting from "CAPEX realisation related to towers Kraków and Katowice airports and higher net current assets".

**PANSa net gain/loss on terminal activity in 2018 in TCZ 1 and 2**

As shown in box 9, PANSa generated an overall net loss of -1.5 M€2009 on the terminal activity. This is a combination of two elements:

- an overall loss of -1.5 M€2009 arising from the cost sharing mechanism reflecting significant losses of -0.5 M€2009 in TCZ 1 and -1.1 M€2009 in TCZ 2.
- an overall loss of -0.01 M€2009, corresponding to a penalty as part of the terminal capacity target incentive mechanism (reflecting penalties of -45 '000 PLN for TCZ 1 and -25 '000 PLN for TCZ 2 in nominal terms). This overall amount corresponds to 0.1% of PANSa terminal revenues (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The loss from cost sharing mentioned above (-1.5 M€2009) includes amounts reported by PANSa for cost exempt from cost sharing (+0.04 M€2009 for TCZ 1 and +0.06 M€2009 for TCZ 2). Should these costs not be deemed eligible by the European Commission, PANSa would record a net loss of -1.6 M€2009 for the terminal activity in 2018.

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity		
	TCZ 1	TCZ 2
<b>Cost sharing ('000 €2009)</b>		
<b>2018</b>		
Determined costs for the ATSP (PP) - based on planned inflation	7 667	15 617
Actual costs for the ATSP	8 154	16 727
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-487	-1 109
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	36	59
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-451</b>	<b>-1 050</b>
<b>Traffic risk sharing ('000 €2009)</b>		
<b>2018</b>		
Not Applicable		
Not Applicable		
<b>Incentives ('000 €2009)</b>		
<b>2018</b>		
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>-9</b>	<b>-5</b>
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-460</b>	<b>-1 055</b>

**PANSa overall estimated surplus for the terminal activity in TCZ 1 and TCZ 2**

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity in TCZ 1 and TCZ 2 mentioned above (-1.5 M€2009) and the surplus embedded in the actual cost of capital (+1.2 M€2009) amounts to -0.3 M€2009 (1.2% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is negative (-0.8%). This indicated that the part of surplus embedded in the cost of capital through RoE included in the PP (+3.5%) was not sufficient to compensate for the losses arising from the cost sharing mechanism due to higher than planned terminal costs in real terms for PANSa.

## POLAND: Gate-to-gate

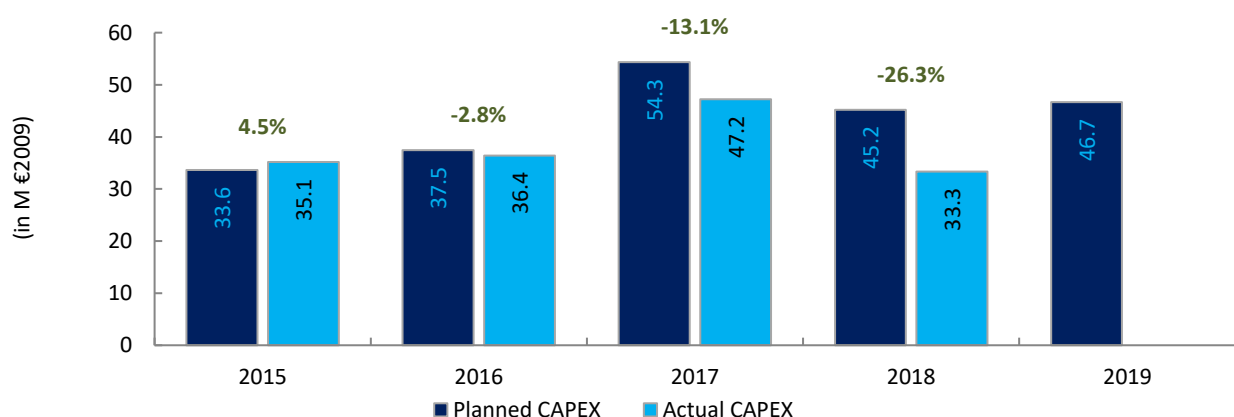
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Poland: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	131 474 817	133 873 919	167 832 225	171 454 294	158 438 464																																							
Real terminal costs (EUR2009)	26 011 892	26 895 465	27 364 531	27 296 040	27 358 523																																							
Real gate-to-gate costs (EUR2009)	157 486 709	160 769 384	195 196 756	198 750 334	185 796 987																																							
En-route share (%)	83.5%	83.3%	86.0%	86.3%	85.3%																																							
<b>Poland: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	128 115 421	135 967 957	161 735 331	167 934 550																																								
Real terminal costs (EUR2009)	26 033 318	27 450 324	25 950 516	29 142 852																																								
Real gate-to-gate costs (EUR2009)	154 148 739	163 418 281	187 685 846	197 077 402																																								
En-route share (%)	83.1%	83.2%	86.2%	85.2%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-3 337 970	2 648 897	-7 510 910	-1 672 931																																								
in %	-2.1%	1.6%	-3.8%	-0.8%																																								
En-route share																																												
in p.p.	-0.4 p.p.	-0.1 p.p.	0.2 p.p.	-1.1 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -0.8% (-1.7 M€2009) lower than planned due to lower than planned en-route costs (-2.1%, or -3.5 M€2009) while terminal costs are higher than planned (+6.8%, or +1.8 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (85.2%) is slightly lower than planned in the PP for 2018 (86.3%).</p> <p>For PANSAs, the estimated gate-to-gate economic surplus in 2018 amounts to 24.9 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 13.6% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>83.5%</td> <td>16.5%</td> </tr> <tr> <td>Actual</td> <td>83.1%</td> <td>16.9%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>83.3%</td> <td>16.7%</td> </tr> <tr> <td>Actual</td> <td>83.2%</td> <td>16.8%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>86.0%</td> <td>14.0%</td> </tr> <tr> <td>Actual</td> <td>86.2%</td> <td>13.8%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>86.3%</td> <td>13.7%</td> </tr> <tr> <td>Actual</td> <td>85.2%</td> <td>14.8%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>85.3%</td> <td>14.7%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	83.5%	16.5%	Actual	83.1%	16.9%	2016	Determined	83.3%	16.7%	Actual	83.2%	16.8%	2017	Determined	86.0%	14.0%	Actual	86.2%	13.8%	2018	Determined	86.3%	13.7%	Actual	85.2%	14.8%	2019	Determined	85.3%	14.7%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	83.5%	16.5%																																									
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	Actual	85.2%	14.8%																																									
2019	Determined	85.3%	14.7%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Poland</b>																																												
<p><b>Note 1:</b> As of 01.01.2017 until the end of RP2, Poland has decided to modify the configuration of the terminal charging zones as follows:</p> <ul style="list-style-type: none"> <li>- Poland Terminal Charging Zone 1 dedicated to Warsaw Chopin airport; and,</li> <li>- Poland Terminal Charging Zone 2 comprising 14 other airports.</li> </ul>																																												
<p><b>Note 1:</b> Poland has revised their RP2 en-route cost-efficiency targets for the years 2017 to 2019. The figures shown in this report reflect: i) the initial adopted Performance Plan (EC Decision 2015/348 of 2 March 2015) for the years 2015 and 2016; and ii) the revised Performance Plan (EC Decision 2017/2376 of 15 December 2017) for the years 2017 to 2019.</p>																																												
<p>It should be noted that the revision only refers to en-route DUC for the years 2017-2019 and <u>does not</u> affect the terminal DUC for the Polish terminal charging zones.</p>																																												

## POLAND

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: PANSA						
FAB: Baltic FAB						
Currency: PLN						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	168.5	192.4	261.6	221.6	234.1	1 078.2
Main CAPEX (in nominal M)	149.3	154.3	234.4	194.2	227.8	960.0
Inflation %	2.4%	2.5%	1.1%	1.9%	2.4%	
Inflation index (100 in 2009)	115.9	118.7	111.3	113.4	116.1	
Exchange rate 2009	4.32383	4.32383	4.32383	4.32383	4.32383	
<b>Total CAPEX (in M €2009)</b>	<b>33.6</b>	<b>37.5</b>	<b>54.3</b>	<b>45.2</b>	<b>46.7</b>	<b>217.3</b>
Main CAPEX (in M €2009)	29.8	30.1	48.7	39.6	45.4	193.6
% Main of Total CAPEX	88.6%	80.2%	89.6%	87.6%	97.3%	89.1%
Real gate-to-gate ANSP costs (in M €2009)	139.2	141.8	174.8	178.3	165.3	799.4
Total CAPEX as % of Real gate-to-gate ANSP costs	24.2%	26.4%	31.1%	25.3%	28.2%	27.2%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	168.5	174.3	229.5	163.9		
Main CAPEX (in nominal M)	122.5	149.3	192.6	129.9		
Inflation %	-0.7%	-0.2%	1.6%	1.2%		
Inflation index (100 in 2009)	110.9	110.6	112.4	113.8		
Exchange rate 2009	4.32383	4.32383	4.32383	4.32383		
<b>Total CAPEX (in M €2009)</b>	<b>35.1</b>	<b>36.4</b>	<b>47.2</b>	<b>33.3</b>		
Main CAPEX (in M €2009)	25.6	31.2	39.6	26.4		
% Main of Total CAPEX	72.7%	85.7%	83.9%	79.2%		
Real gate-to-gate ANSP costs (in M €2009)	136.3	142.9	167.7	177.1		
Total CAPEX as % of Real gate-to-gate ANSP costs	25.8%	25.5%	28.1%	18.8%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	0.0	-18.1	-32.1	-57.6		
Total CAPEX (in M €2009)	1.5	-1.0	-7.1	-11.9		
<b>Total CAPEX (in %, M €2009)</b>	<b>4.5%</b>	<b>-2.8%</b>	<b>-13.1%</b>	<b>-26.3%</b>		



Note: Planned and actual inflation indices used to calculate CAPEX in real terms above, are based on the en-route Reporting Tables. Following the revision of RP2 Performance Plan these data differ from terminal Reporting Tables for the years 2017-2019. For this reason, two separate inflation indices are used to calculate the gate-to-gate ANSP costs in real terms.





# **Annual Monitoring Report 2018**

Local level view  
BLUE MED FAB



## BLUE MED FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management							
			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	A	B	B	B	
	ANSPs	For Safety Culture MO	C	C	C	C	
	ANSPs	For all other MOs	C	B	B	C	
Application of the severity classification of the Risk Analysis Tool (RAT)							
Ground Score			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		88%	99%	100%	99%	
	Runway Incursions (RIs)		95%	91%	100%	100%	
Overall Score			2015 Value	2016 Value	2017 Target	2018 Target	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		12%	98%	100%	81%	
	Runway Incursions (RIs)		26%	85%	100%	51%	
	ATM Specific occurrences (ATM-S)		51%	65%	97%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

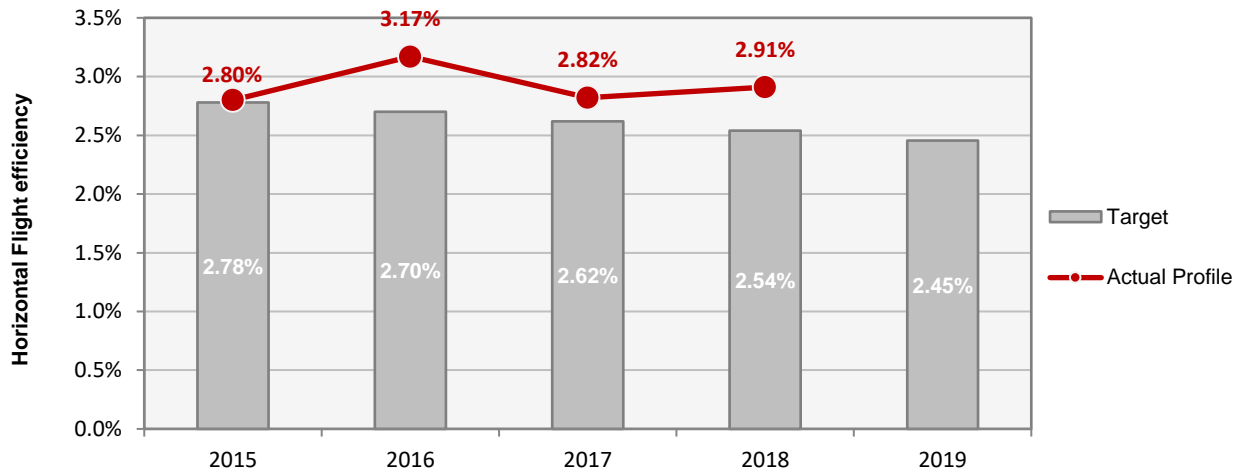
#### Observations

The lowest level in the EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. Safety Policy and Objectives, Safety Risk Management and Safety Assurance are already at the 2019 EoSM target level.

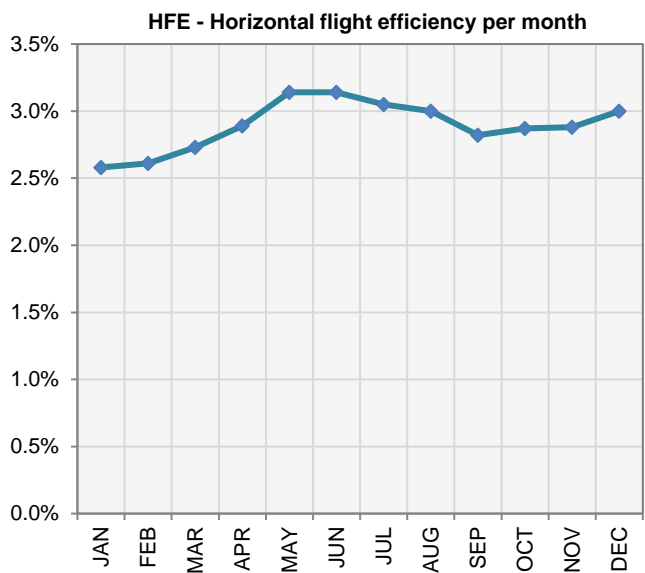
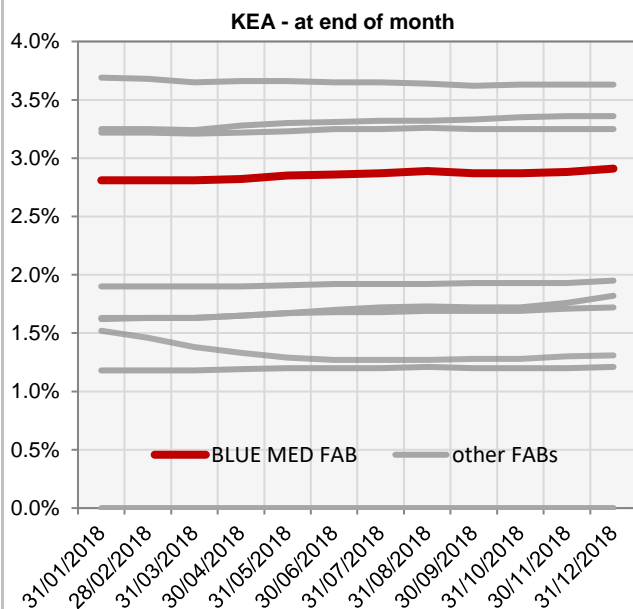
**BLUE MED FAB**

**Monitoring of ENVIRONMENT for 2018**

KEA					
	2015	2016	2017	2018	2019
<b>FAB Target</b>	2.78%	2.70%	2.62%	2.54%	2.45%
<b>Actual performance</b>	2.80%	3.17%	2.82%	2.91%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>KEA (at end of month)</b>	2.81%	2.81%	2.81%	2.82%	2.85%	2.86%	2.87%	2.89%	2.87%	2.87%	2.88%	2.91%
<b>HFE</b>	2.58%	2.61%	2.73%	2.89%	3.14%	3.14%	3.05%	3.00%	2.82%	2.87%	2.88%	3.00%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**BLUE MED FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

Greece expect further improvement due to FRA implementation during the coming years.

**Observations****NM evaluation:**

There are no major projects that will lead to the achievement of the network RP2 target.

**NM proposed measures:**

Cross-border FRA projects implementation must be considered for the entire Blue Med FAB starting with FRA project for Greece together with lowering down of the FL.

The interface between Blue Med FAB and FABEC needs to be addressed with priority.

Timely implementation of projects in line with the ERNIP Part 2.

**BLUE MED FAB**

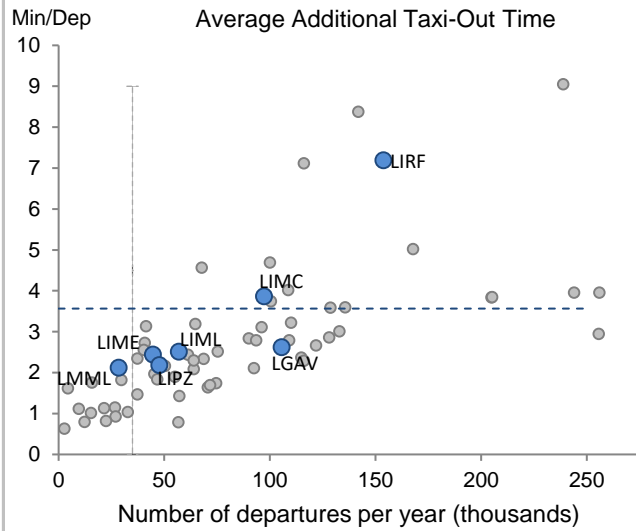
**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

The Airport Operator Data Flow (APDF) is established for 7 out of the 9 airports subject to RP2 monitoring in the Blue Med FAB, with only Cypriot airports pending the implementation. The monitoring is done on the basis of the airports submitting data.

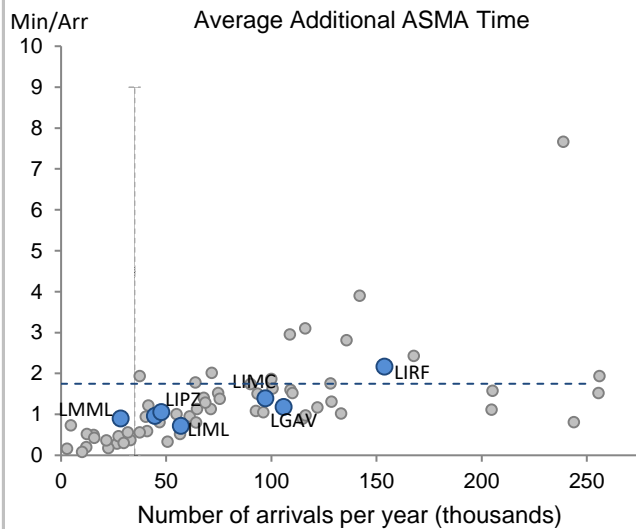
Cyprus shall empower the respective airport reporting entity to establish the airport operator data flow and/or address the remaining data issues.

**2. Additional Taxi-Out Time**



Additional taxi-out times for the airports in Blue Med FAB have increased in 2018, and two of these airports (Rome Fiumicino and Milan Malpensa) show important deterioration reaching additional times amongst the highest in the SES area.

**3. Additional ASMA Time**



The observed additional ASMA times at available airports within the Blue Med FAB area are commensurate with their level of traffic, although performance has worsened with respect to 2017 for all these airports.

## BLUE MED FAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.17	0.18	0.18	0.18	0.18	The revised Blue Med FAB en route capacity targets were presented to the Single Sky Committee in March 2019
Previous FAB targets	0.35	0.36	0.37	0.37	0.37	
FAB Target	0.17	0.18	0.18	0.24	0.24	
Actual performance	0.64	0.13	0.23	0.35		

## BLUE MED FAB assessment of capacity performance

Blue Med FAB did not provide any assessment of FAB capacity performance in 2018.

## Monitoring process for capacity performance

No specific statements are made about monitoring FAB performance. The FAB monitoring report confirms that EUROCONTROL data is the source for performance data (in line with the performance regulation) although Italy makes statements about ENAV having different data.

## Application of Corrective Measures for Capacity

The Cyprus NSA reports that "the ANSP took corrective measures so as to improve the capacity situation in regards to previous years (even though it was faced with an abnormally high air traffic increase for a second year in a row)."

## Capacity Planning

No information is provided at FAB level, although Greece reports that further capacity improvement is expected following the expected recruitment of air traffic controllers and overhaul in the CNS system.

## PRB Assessment of capacity performance

Blue Med FAB failed to meet the adopted revised target of 0,24 minutes average en route ATFM delay per flight in 2018. A 7% rise in traffic from 2017 levels was accompanied with a 68% increase in ATFM delays, giving a total FAB delay of 0,35 minute per flight. Traffic levels for 2018 were between the high and baseline traffic forecast provided by STATFOR in February 2014, prior to the adoption of FAB performance plans.

EUROCONTROL 7 year forecast February 2014 – BLUE MED FAB										
	2014		2015		2016		2017		2018	2019
		actual		actual		actual		actual		actual
High	2277		2367		2488		2596		2706	2968
Base	2246	2282	2310	2327	2387	2371	2456	2485	2524	2662
Low	2213		2247		2274		2304		2337	2413

In the Annual Network Operations Report 2018, the airspace users (IATA) reported that on the South East Axis, higher than expected traffic increases were generally handled well.

The Network Operation Plan (NOP) 2019-2024 predicts that the Blue Med FAB will not meet the required level of capacity performance until 2024.

BlueMed FAB delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.24	0.24	0.24	0.20	N/A	N/A
NOP 2019 - 2024	0.41	0.39	0.13 – 0.41			

## En route Capacity Incentive Scheme

No FAB wide incentive scheme is in place. Several of the Member States have adopted national incentive schemes which are covered in the national sections.

### Result of FAB Capacity Incentive Scheme

N/A

### Update on Military dimension of the plan

The State Level Agreement referred to establishment of Blue\_Med FAB includes various elements related to civil military cooperation in general and Flexible Use of Airspace in particular. A specific Committee, the Civil Military Cooperation Committee (CMCC), which includes Civil and Military components from each State, is tasked to assist the Blue\_Med Governing Board in Civil- Military Matters, and developing the various items of cooperation.

To understand the Blue\_Med FAB Civil-Military environment it is important to understand that the four member States have no territorial border in common, and the respective FIRs touch each other on high seas.

Activity of CMCC permitted to achieve a first purpose related to the Air to Air Refuelling route project with the publication of a new junction corridor between Italian e Maltese route network.

In the same way, the document "Harmonization of procedures for military operations over high seas of Blue\_Med Airspace" it's believed to have reached a sufficient level of maturity for CMCC approval after a final discussion, for the subsequent endorsement in the BM FAB.

### Observations on Military dimension of the plan

The update of information is welcomed, however, it is noted that no information is provided on how civil military coordination will provide additional capacity for general air traffic.

### Application of FUA

CYPRUS: repeated the information provided in the previous year's report.

GREECE : The ASM-FUA system has been implemented and its operation is ensured in combination with the AMC-FUA. The latter is in close cooperation with the HANSP/D17 division, which has the overall responsibility of ASM/ATFM functions. Furthermore, in the section HANSP/D17/C the so called CIAM tool of Eurocontrol is in operation supporting every day activities, like the issuance of AUP/UUP at level 2 and 3, meaning the level of pre-tactical and tactical planning. For the CIAM system (AMC-FUA) reference is also made in the mutual agreement between N.M. and HANSP (Annex 1, page 4, code number CC000001710) as well as in para 3.2 of Annex 3 to the same agreement, where the maintenance process of the system in question is mentioned. For the FUA function the State, within the frame of agreement between HCAA and Hellenic Air Force (HAF), has established appropriate FUA mechanisms:

1. At Strategic Level 1:

- High Level Airspace Policy Body which is a High Level Council consisting of the HCAA Governor and the Hellenic Air Force Deputy Chief of Staff. The High Level Council meets once a year and whenever it is deemed necessary and amongst others is responsible for updating and/or monitoring the implementation of the civil-military Agreement. It also deals with matters concerning airspace structure and the flexible use of airspace by civil and military traffic.

2. At Pre-tactical Airspace Management Level 2:

- Coordinating Body for ATM, consisting of the HCAA Regulator (D4), the Hellenic Air Force ATS Director (HAF/A4), the ASM-ATFCM Director (D17) and experts as deemed necessary.
- The Airspace management Work Group, staffed by teams from the Hellenic Air Force Section (A3) , the HCAA(D4/B) Section, the (D17/C) Section, the (D17/D) Section, is responsible for processing requests and management of the existing CDRs as well as establishment of TSAs. As a result the TSA named LG-TSA 01 has been already established and is in operation.

3. At Tactical Airspace Management Level 3:

- The Airspace Management Cell -AMC, with established coordination procedures and communication facilities which allow the real-time activation, deactivation or reallocation of airspace allocated at pre-tactical level.

### Observations of the Application of FUA

The information from Cyprus and Greece regarding the institutional arrangements for FUA is welcomed. Information on how the BLUE MED FAB authorities determine whether or not the optimum benefit has been provided to both civil and military airspace users would be appreciated.



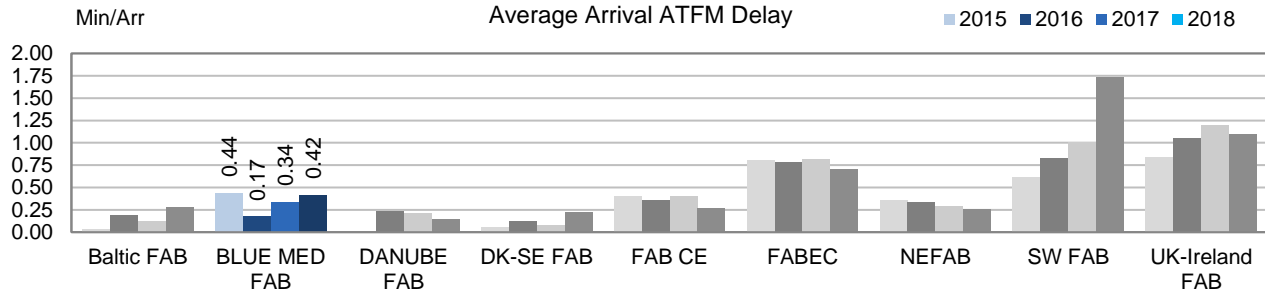
**BLUE MED FAB**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

BLUE MED FAB contributes adequately to the airport-related ANS Capacity performance in Europe. In 2018, the aggregated average arrival ATFM delay per flight further increased but it still sits under the 0.5 min/arr.

**2. Arrival ATFM Delay**



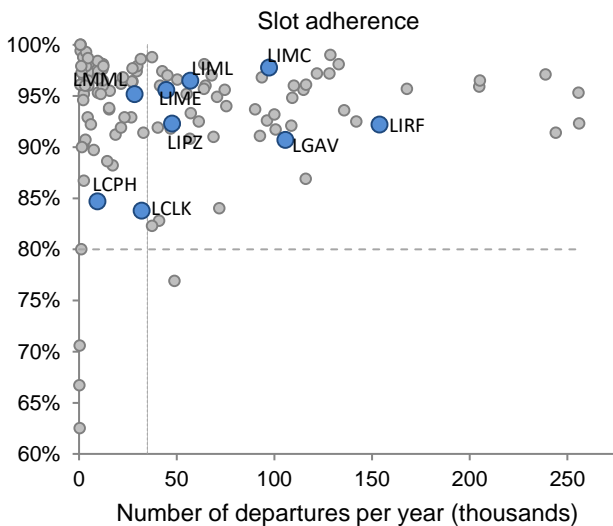
The drastic increase of arrival ATFM delay in Athens drives the aggregated trend of the BLUE MED FAB reaching 0.42 min/arr. in 2018. It is nevertheless well below the European average in 2018 (0.78 min/arr.)

**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

Greece, Italy and Malta have established a national target on arrival ATFM delay, while Cyprus only establishes local reference values.

Malta and Greece have not established an incentive scheme. Italy applies its incentive scheme based on CRSTMP reasons and results in a bonus. Cyprus does not apply any penalty although the local targets are not met.

**4. ATFM Slot Adherence**



The overall performance in terms of adherence to ATFM slots remains at the same levels as in 2017 for BLUE MED FAB. Slot compliance in Cyprus (i.e. LCLK: 83.8% and LCPH: 84.7%) remains well below 90% and some of the lowest in the monitored SES airports. Milan airports (LIML and LIMC, both A-CDM) and Bergamo (LIME) show best-in-class performance, above 95% of ATFM slot compliance.

**5. ATC Pre-departure Delay**

Like last year, Italy is the main contributor to the average pre-departure delay performance within BLUE MED FAB and more specifically Rome Fiumicino and Venice with very high ATC pre-departure delay.

The monitoring of pre-departure delay requires the implementation of the Airport Operator Data Flow which is not yet established for Cyprus. Data quality issues prevent the calculation of the indicator in Athens and Milan Linate.



# Annual Monitoring Report 2018

## Local level view

### Cyprus



## CYPRUS

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	60	C	C	C	C	C
<b>CYATS</b>	59	C	C	C	C	C
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
<b>Source of RAT data:</b>			DCA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			8	1		
Legal/Judiciary			6	1		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>16</b>	<b>2</b>		
<b>CYATS</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			11	2		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			5	3		
<b>TOTAL</b>			<b>18</b>	<b>6</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

**CYPRUS**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

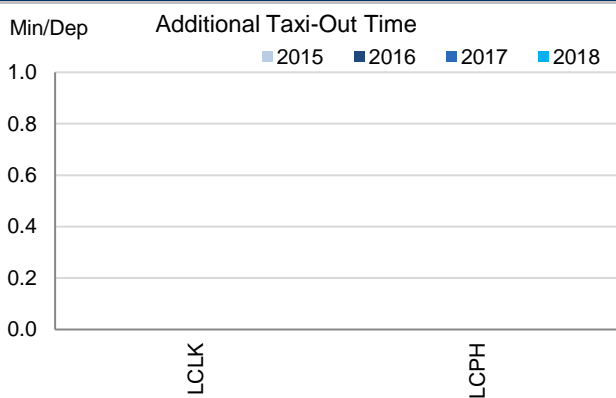
**1. Overview**

Cyprus identified two airports, Larnaca and Paphos, as subject to RP2 monitoring. However the airport operator data flow is not established for any of them and therefore the monitoring of operational ANS performance at airports in Cyprus does not cover any of the environment indicators.

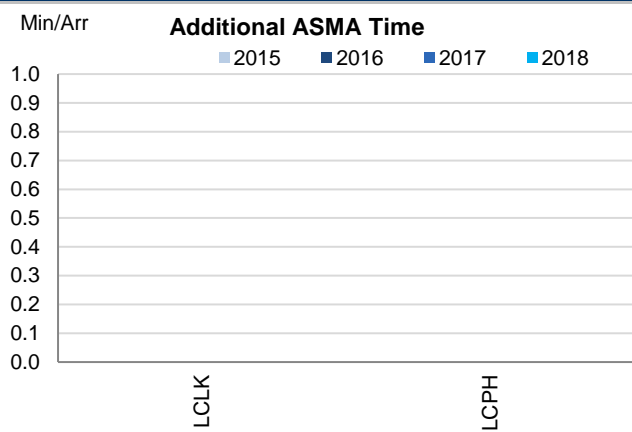
Cyprus' NSA considers Paphos should be excluded from the PP monitoring process as it has less than 70000 movements and is not the airport with the highest number of IFR air transport movements. However, being part of the Charging Zone, and as the list of monitored airports must be aligned with it, it must be included in the monitoring.

It was expected that Cyprus would establish the reporting for Larnaca in the course of 2018, however, despite many attempts from the PRU to contact the airport operator and the NSA, there has been no progress. Establishing this data flow is an absolute requirement to enable the monitoring of the environmental performance indicators. Member States shall empower the respective airport reporting entity to establish the airport operator data flow and/or address the remaining data issues.

**2. Additional Taxi-Out Time**



**3. Additional ASMA Time**



**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Larnaca	LCLK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Paphos	LCPH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

**CYPRUS**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	1.50	1.50	1.50	1.50	1.50	
Deadband +/-	?	?	?	?	?	
Actual performance	2.47	0.63	1.11	1.10		

**National capacity incentive scheme**

The Blue Med FAB monitoring report contains information regarding a national en route capacity incentive scheme applied in Cyprus. The incentive scheme applied in 2018 appears to be significantly different to the scheme applied in previous years, mainly due to the introduction of an additional criterion: a performance target and indicator that excludes the months of July to September.

The FAB report states that this is in accordance with an agreement between Cyprus and the EC, from December 2018.

No information about the revision of the performance scheme has been provided to the Performance Review Body.

The required target for Cyprus is defined as 0.42 minutes per flight (excluding the months July to September 2018, in accordance with an agreement between Cyprus and the EC of December 2018)

The verified actual value according to the FAB report is 1.1 minutes for the entire year, 0.4 minutes excluding the months of July to September 2018.

Cyprus considers the target to having been achieved. Nevertheless, taking into consideration the discussions held between Cyprus and the EC in December 2018, the state will not apply any bonus.

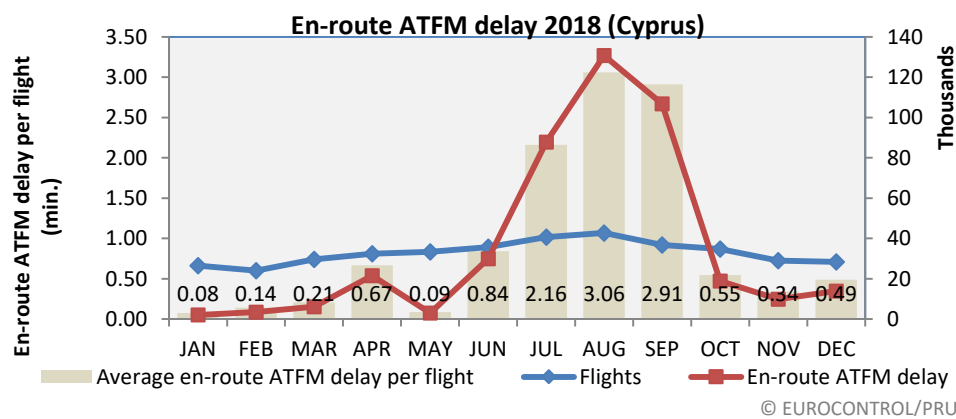
**Compliance issues relating to national capacity incentive scheme**

In previous monitoring reports for RP2, the PRB flagged compliance issues regarding the national incentive scheme for Cyprus.

"In the assessment report of the BLUEMED FAB RP2 performance plan, the PRB noted that the incentive scheme for Cyprus is non-transparent; it is not proportional or effective, and it does not foster a high-level of capacity performance at either FAB or national level. None of these issues were addressed in the FAB monitoring report."

Despite the introduction of an alternative incentive scheme, no information has been provided to the PRB on how the new scheme is constructed. Therefore, it cannot be assessed against the existing compliance issues.

**PRB observations regarding national capacity performance**



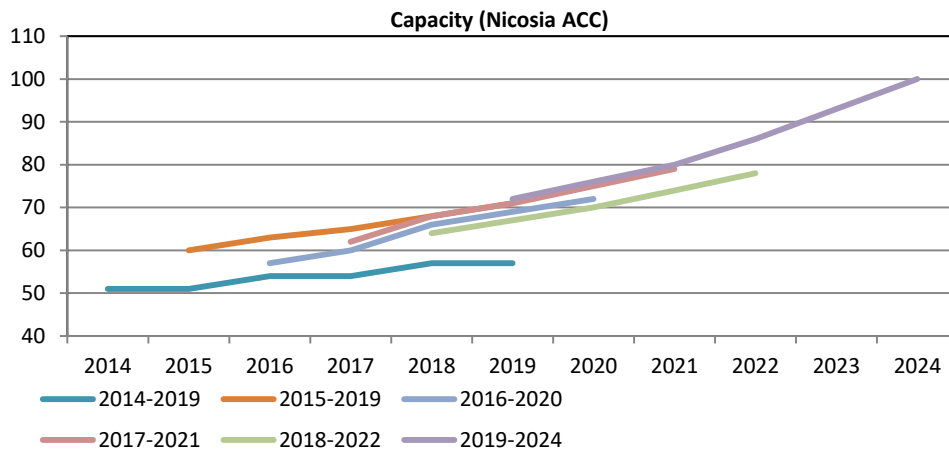
En-route ATFM delay per flight (Cyprus)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
2.65	2.32	3.54	1.62	1.59	2.16	1.91	2.47	0.63	1.11	1.10

EUROCONTROL 7 year forecast February 2014 – Cyprus											
	2014	2015	2016	2017	2018	2019					
	actual	actual	actual	actual	actual	actual					
High	304	334	358	382	405	434					
Base	298	304	323	319	340	322	356	360	371	394	391
Low	291	311	320	329	339	351					

The deterioration in en route capacity performance in Cyprus since 2016 is noted. Traffic levels in Cyprus during RP2 to date have remained within the forecast ranges made by STATFOR when the FAB performance plans and associated capacity plans were being determined. Cyprus remains a capacity bottleneck and, based on the current capacity plans, the Network Manager expects Cyprus to continue to create significant delays for airspace users for the remainder of RP2 and for RP3.

Cyprus delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>1.17</b>	<b>1.30</b>	<b>1.16</b>	<b>0.95</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>1.06</b>	<b>1.13</b>	<b>0.17 – 1.18</b>			

Although the capacity plans have improved from the previous year, they continue to promise delays that are above the requirements to be consistent with the union-wide targets for RP2 and for RP3.



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### Planning and Effective Use of CDRs

Cyprus has previously reported that there are no CDRs within the national airspace.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
N/A	98%	98%	100%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	0%	0%	0%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	5%	8%	7%	

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.



## CYPRUS

## Monitoring of Airports Contribution to CAPACITY for 2018

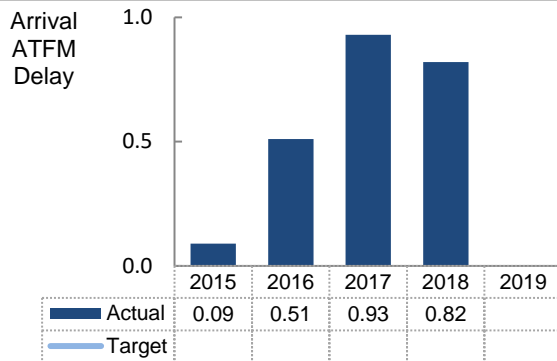
## 1. Overview

In Cyprus, Larnaca (LCLK) and Paphos (LCPH) are the two airports subject to RP2 monitoring. Traffic levels at these airports have drastically increased during RP2 (+41.9% with respect to 2015) which had an associated dramatic increase of the arrival ATFM delays (delays in 2018 are 9 times the delays in 2015) showing a clear deterioration of performance at Cyprus airports.

Slot adherence at both airports remains above the minimum target of 80% in the past four years.

The monitoring of pre-departure delay is not yet feasible, as for neither of the airports the Airport Operator Data Flow is established.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Cyprus have moderately decreased with respect to the previous year (2017: 0.93 min/arr, 2018: 0.82 min/arr).

Delays caused by regulations (mainly due to lack of aerodrome capacity) at Paphos are the 4th highest in the SES area, including the busiest airports (annual average 2.44 min/arr. reaching values above 3.5 min/arr. during the Summer months)

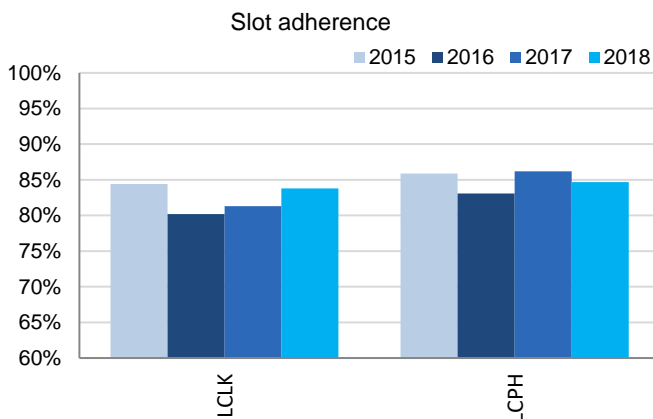
Aerodrome capacity is also the main reason for regulations at Larnaca.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Cyprus has not established a national target on arrival ATFM delay but local reference values for the two airports, Larnaca (LCLK) and Paphos (LCPH) are provided, aiming at zero ATFM delays for arriving aircraft. These local values are not met in 2018 for either of the two airports.

In BLUE MED FAB's performance plan, Cyprus presents an incentive scheme for capacity targets, but it does not clarify to which indicator it applies. In their monitoring report, BLUE MED FAB does not apply any penalties for Cyprus concerning arrival ATFM delay.

## 4. ATFM Slot Adherence



Both airports show an adherence to ATFM slots ranging just below 85%. Although the performance is above the required minimum of 80%, both airports show values within the ten lowest performances in the SES area. The compliance with the ATFM departure slot window should be reinforced.

## 5. ATC Pre-departure Delay

The monitoring of pre-departure delay is not yet feasible, as the Airport Operator Data Flow is not established for either of the airports.

After an initial contact with the airport already in 2015 regarding the provision of data by Larnaca, and a more intense exchange in 2017 and 2018, unfortunately there has been no progress and it is not possible to monitor this performance indicator. Cyprus is encouraged to consider the implementation of the data flow at Paphos also, as long as this airport is part of the RP2 performance monitoring due to the alignment with the Charging Scheme.

## 6. Appendix

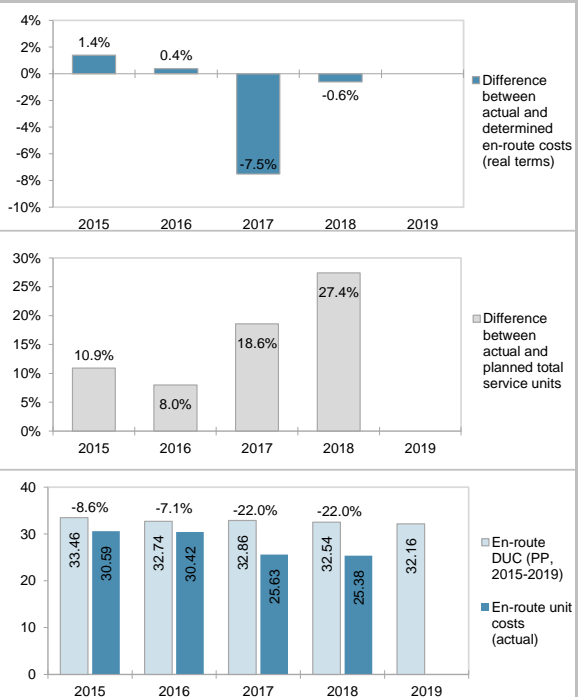
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Larnaca	LCLK	0.03	0.30	0.63	0.35		84.4%	80.2%	81.3%	83.8%		n/a	n/a	n/a	n/a	
Paphos	LCPH	0.26	1.22	2.05	2.44		85.9%	83.1%	86.2%	84.7%		n/a	n/a	n/a	n/a	

## CYPRUS: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Cyprus ECZ represents 0.8% of the SES en-route ANS determined costs in 2018					
· ATSP: DCAC Cyprus					
· FAB: BLUE MED FAB					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
Cyprus: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	52 708 045	53 598 493	55 916 691	57 610 277	59 360 816
Inflation %	1.6%	1.7%	1.7%	1.8%	2.0%
Inflation index (100 in 2009)	112.9	114.8	116.8	118.9	121.3
Real en-route costs (EUR2009)	46 681 639	46 676 772	47 881 610	48 459 560	48 952 987
Total en-route Service Units	1 395 081	1 425 773	1 457 140	1 489 197	1 521 959
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>33.46</b>	<b>32.74</b>	<b>32.86</b>	<b>32.54</b>	<b>32.16</b>
Cyprus: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	51 048 657	49 919 678	47 510 052	52 087 068	
Inflation %	-1.5%	-1.2%	0.7%	0.8%	
Inflation index (100 in 2009)	107.8	106.5	107.3	108.2	
Real en-route costs (EUR2009)	47 336 521	46 851 861	44 280 357	48 160 943	
Total en-route Service Units	1 547 646	1 540 071	1 727 958	1 897 492	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>30.59</b>	<b>30.42</b>	<b>25.63</b>	<b>25.38</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)	-1 659 388	-3 678 816	-8 406 639	-5 523 209	
in %	-3.1%	-6.9%	-15.0%	-9.6%	
Inflation %	-3.1 p.p.	-2.9 p.p.	-1.0 p.p.	-1.0 p.p.	
Inflation index (100 in 2009)	-5.1 p.p.	-8.3 p.p.	-9.5 p.p.	-10.7 p.p.	
Real en-route costs (EUR2009)	654 882	175 089	-3 601 253	-298 617	
in %	1.4%	0.4%	-7.5%	-0.6%	
Total en-route Service Units	152 565	114 298	270 818	408 295	
in %	10.9%	8.0%	18.6%	27.4%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-2.88</b>	<b>-2.32</b>	<b>-7.23</b>	<b>-7.16</b>
<b>in %</b>	<b>-8.6%</b>	<b>-7.1%</b>	<b>-22.0%</b>	<b>-22.0%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (25.38 €2009) is -22.0% lower than planned in the PP (32.54 €2009). This results from the combination of much higher than planned TSUs (+27.4%) and slightly lower than planned en-route costs in real terms (-0.6%, or -0.3 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+27.4%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (DCAC Cyprus) retaining an amount of +1.7 M€2009.					
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Cyprus are expected to largely remain above ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It is noted that the determined TSUs underpinning the adopted RP2 cost-efficiency targets were below STATFOR February 2014 <u>low</u> TSU growth scenario for all years of RP2 at the time of PP adoption.					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -9.6% (-5.5 M€) lower than planned. However, since the actual inflation index is also lower than planned (-10.7 p.p.), actual en-route costs are -0.6% (-0.3 M€2009) below plans when expressed in real terms.					
The slightly lower than planned en-route costs in real terms are driven by DCAC Cyprus (-9.0%, or -3.1 M€2009) and the MET service provider (-15.6%, or -0.6 M€2009), while the costs for the NSA/EUROCONTROL (+34.2%, or +3.4 M€2009) are higher than planned. It is noted, that this is primarily driven by the NSA costs, which, according to the additional information to June 2019 en-route Reporting Tables, were due to "recruitment of additional staff in SAR domain" and "upgrading of SAR infrastructure and additional outsourcing costs". A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.2 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



CYPRUS: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



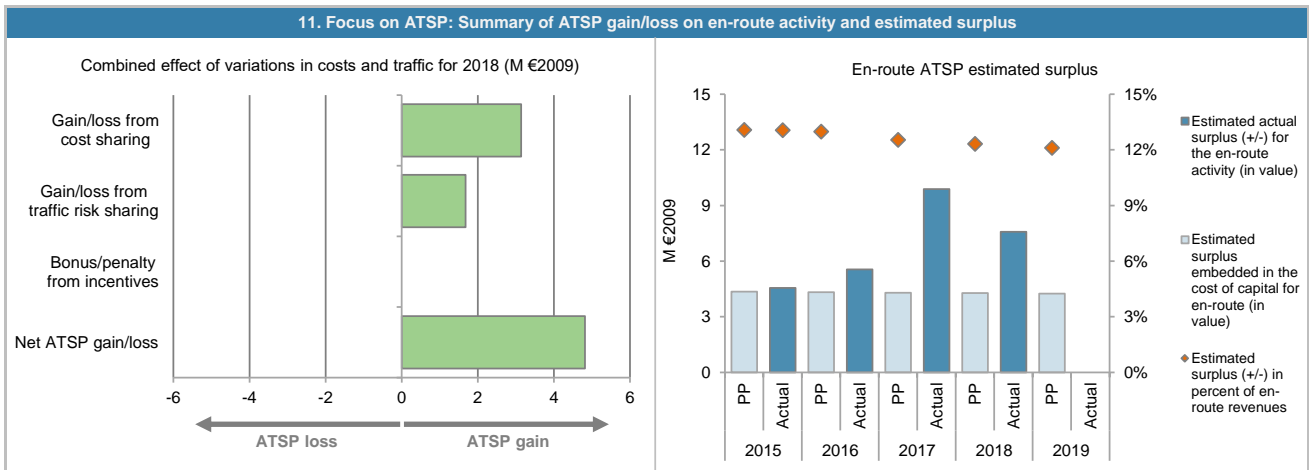
## CYPRUS: En-route ATSP (DCAC Cyprus)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	33 286	33 298	34 299	34 683	
Actual costs for the ATSP	33 990	32 741	29 154	31 545	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-704	556	5 145	3 138	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-704</b>	<b>556</b>	<b>5 145</b>	<b>3 138</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	10.9%	8.0%	18.6%	27.4%	
Determined costs for the ATSP (PP) - based on actual inflation	34 850	35 886	37 332	38 124	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 533</b>	<b>1 365</b>	<b>1 643</b>	<b>1 677</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>351</b>	<b>401</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>830</b>	<b>2 273</b>	<b>7 189</b>	<b>4 816</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	32 241	32 252	33 222	33 594	33 907
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	32 241	32 252	33 222	33 594	33 907
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	4 353	4 323	4 301	4 276	4 242
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	13.5%	13.4%	12.9%	12.7%	12.5%
Estimated surplus embedded in the cost of capital for en-route (in value)	4 353	4 323	4 301	4 276	4 242
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 353</b>	<b>4 323</b>	<b>4 301</b>	<b>4 276</b>	<b>4 242</b>
<b>Revenue/costs for the en-route activity</b>	<b>33 286</b>	<b>33 298</b>	<b>34 299</b>	<b>34 683</b>	<b>35 006</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>13.1%</b>	<b>13.0%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>12.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>13.5%</b>	<b>13.4%</b>	<b>12.9%</b>	<b>12.7%</b>	<b>12.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	27 553	24 508	20 770	21 712	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	27 553	24 508	20 770	21 712	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	3 720	3 285	2 689	2 764	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	13.5%	13.4%	12.9%	12.7%	
Estimated surplus embedded in the cost of capital for en-route (in value)	3 720	3 285	2 689	2 764	
Net ATSP gain(+)/loss(-) on en-route activity	830	2 273	7 189	4 816	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 549</b>	<b>5 558</b>	<b>9 878</b>	<b>7 579</b>	
<b>Revenue/costs for the en-route activity</b>	<b>34 820</b>	<b>35 014</b>	<b>36 343</b>	<b>36 361</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>13.1%</b>	<b>15.9%</b>	<b>27.2%</b>	<b>20.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>16.5%</b>	<b>22.7%</b>	<b>47.6%</b>	<b>34.9%</b>	

**CYPRUS: En-route ATSP (DCAC Cyprus)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 DCAC Cyprus en-route costs vs. PP**

In 2018, DCAC Cyprus actual en-route costs are -9.0% (-3.1 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- higher staff costs in real terms (+6.2%, or +0.8 M€2009). However, due to much lower than planned inflation index (-10.7 p.p.), the staff costs are lower than planned in nominal terms (-3.4%, or -0.5 M€), which is explained by the "continuing austerity measures implemented in the entire Public Sector domain".
- lower other operating costs (-4.9%, or -0.6 M€2009);
- much lower depreciation costs (-41.5%, or -1.8 M€2009), mainly due to postponements of some planned investments.
- much lower cost of capital (-35.4%, or -1.5 M€2009), mainly due to the lower than planned asset base as a result of the factors outlined above.

**DCAC Cyprus net gain/loss on en-route activity in 2018**

As shown in box 9, DCAC Cyprus generated a net gain of +4.8 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +3.1 M€2009 arising from the cost sharing mechanism; and
- a gain of +1.7 M€2009 arising from the traffic risk sharing mechanism.

**DCAC Cyprus overall estimated surplus for the en-route activity**

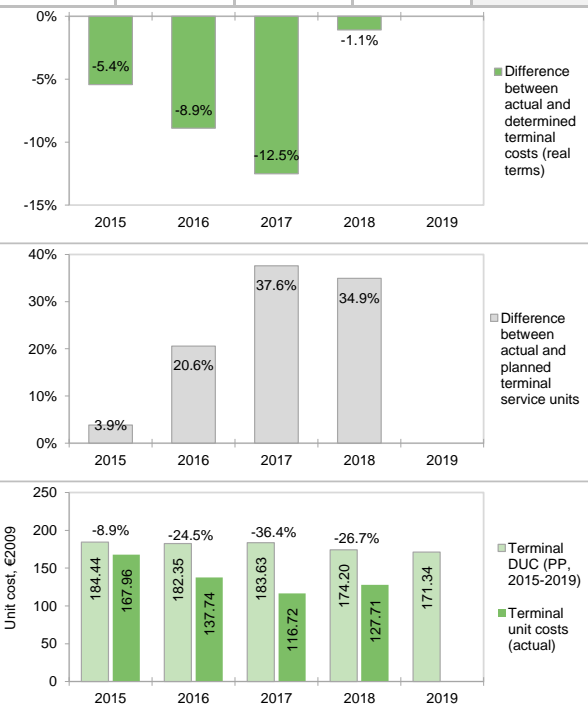
Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+4.8 M€2009) and the surplus embedded in the actual cost of capital (+2.8 M€2009) amounts to +7.6 M€2009 (20.8% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 34.9%, which is much higher than the 12.7% planned in the PP. The much higher than planned ex-post RoE realised by DCAC Cyprus in 2018 is mostly explained by the significant gains realised from en-route activity as a result of the costs and traffic risk sharing mechanisms.

It is also noted that in 2018, the actual asset base in real terms (21.7 M€2009) is -35.4% lower than planned (33.6 M€2009).

## CYPRUS: Terminal charging zone

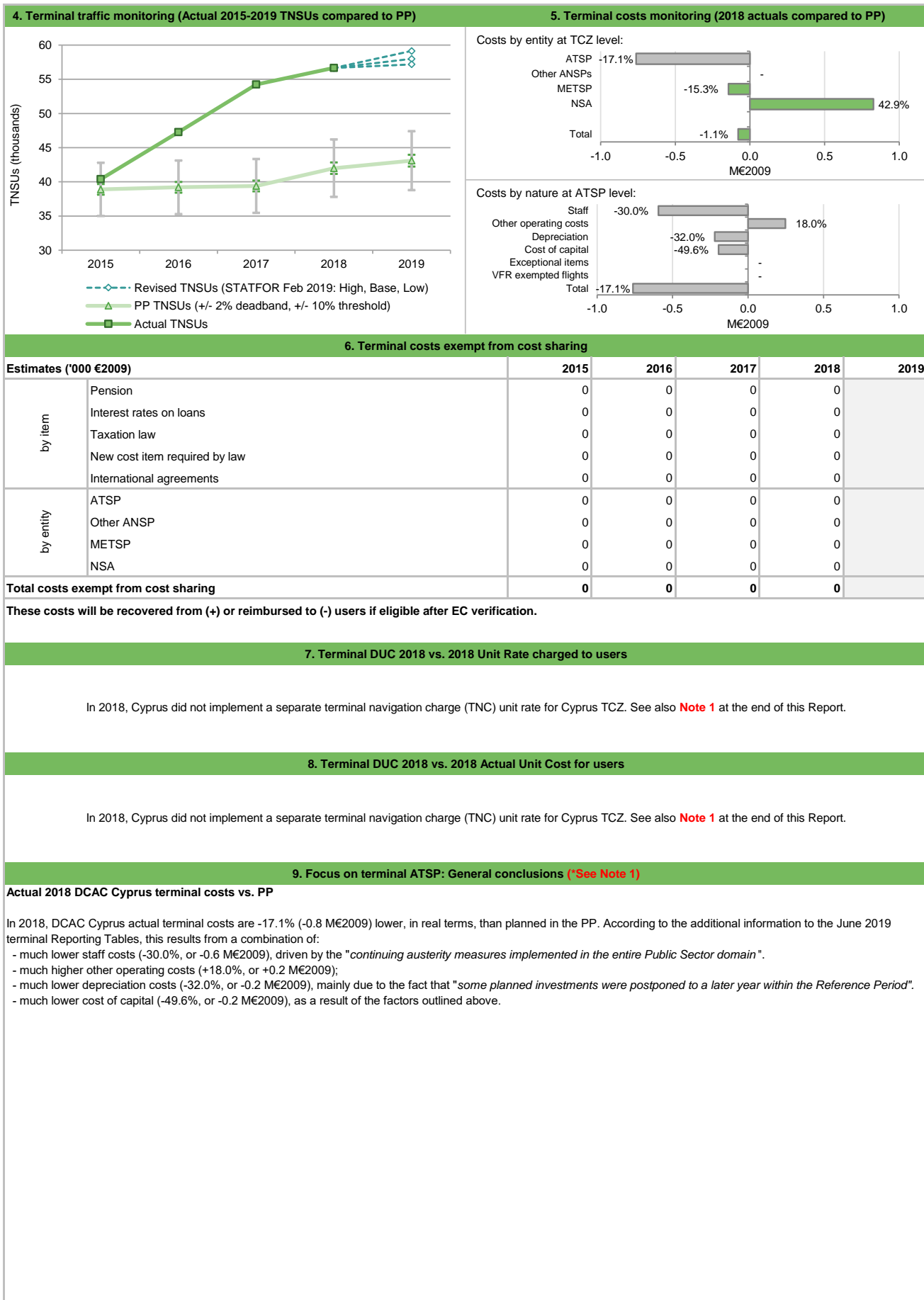
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Cyprus TCZ represents 0.7% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP:	DCAC Cyprus	Airports with fewer than 70,000 IFRs ATMs:		2	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		0	
Number of airports in charging zone in 2018:	2,	of which:	Airports with more than 225,000 IFRs ATMs:		0
2. Terminal DUC monitoring at Charging Zone level					
Cyprus: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	8 100 923	8 207 992	8 448 984	8 697 839	8 954 830
Inflation %	1.6%	1.7%	1.7%	1.8%	2.0%
Inflation index (100 in 2009)	112.9	114.8	116.8	118.9	121.3
Real terminal costs (EUR2009)	7 174 699	7 148 010	7 234 887	7 316 289	7 384 765
Total terminal Service Units	38 900	39 200	39 400	42 000	43 100
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>184.44</b>	<b>182.35</b>	<b>183.63</b>	<b>174.20</b>	<b>171.34</b>
Cyprus: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	7 317 736	6 937 913	6 790 939	7 827 184	
Inflation %	-1.5%	-1.2%	0.7%	0.8%	
Inflation index (100 in 2009)	107.8	106.5	107.3	108.2	
Real terminal costs (EUR2009)	6 785 608	6 511 543	6 329 297	7 237 201	
Total terminal Service Units	40 399	47 274	54 225	56 668	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>167.96</b>	<b>137.74</b>	<b>116.72</b>	<b>127.71</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-783 187	-1 270 080	-1 658 045	-870 655	
	in %				
	-9.7%	-15.5%	-19.6%	-10.0%	
Inflation %	-3.1 p.p.	-2.9 p.p.	-1.0 p.p.	-1.0 p.p.	
Inflation index (100 in 2009)	-5.1 p.p.	-8.3 p.p.	-9.5 p.p.	-10.7 p.p.	
Real terminal costs (EUR2009)	-389 091	-636 467	-905 591	-79 089	
	in %				
	-5.4%	-8.9%	-12.5%	-1.1%	
Total terminal Service Units	1 499	8 074	14 825	14 668	
	in %				
	3.9%	20.6%	37.6%	34.9%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-16.48</b>	<b>-44.61</b>	<b>-66.90</b>	<b>-46.48</b>	
	in %				
	<b>-8.9%</b>	<b>-24.5%</b>	<b>-36.4%</b>	<b>-26.7%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Cyprus Terminal Charging Zone (TCZ) comprising Larnaka (LCLK) and Pafos (LCPH) international airports. See also <b>Note 1</b> at the end of this Report.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (127.71 €2009) is -26.7% lower than planned in the PP (174.20 €2009). This results from the combination of much higher than planned TNSUs (+34.9%) and slightly lower than planned terminal costs in real terms (-1.1%, or -0.1 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Cyprus TCZ. In 2018, the actual TNSUs in Cyprus TCZ are +34.9% higher than planned in the PP. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Cyprus are expected to remain largely above the planned values for the remainder of RP2. It is noted that the determined TNSUs selected in the RP2 PP were in line with STATFOR February 2014 <u>low</u> TNSU growth scenario.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -10.0% (-0.9 M€) lower than planned. However, since the actual inflation index is also lower than planned (-10.7 p.p.), actual terminal costs are -1.1% (-0.1 M€2009) below plans when expressed in real terms. The slightly lower than planned terminal costs in real terms are driven by DCAC Cyprus (-17.1%, or -0.8 M€2009) and the MET service provider (-15.3%, or -0.1 M€2009), while the costs for the NSA (+42.9%, or +0.8 M€2009) are higher than planned. It is noted that, according to the additional information to June 2019 terminal Reporting Tables, this was due to "recruitment of additional staff in SAR domain" and "upgrading of SAR infrastructure and additional outsourcing costs". A detailed analysis at ATSP level is provided in box 9.					
There are no costs exempt from cost-sharing reported.					



**CYPRUS: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## CYPRUS: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

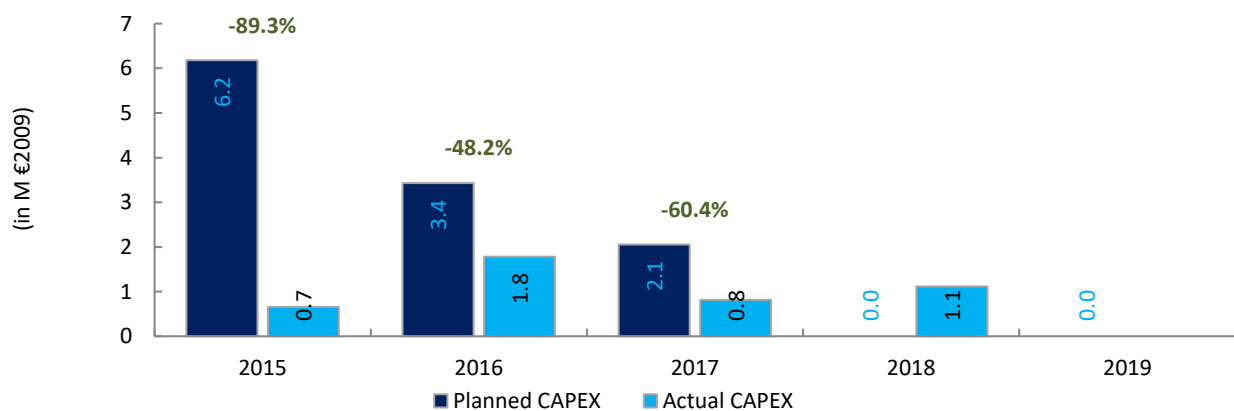
1. Monitoring of gate-to-gate ANS costs																																												
<b>Cyprus: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	46 681 639	46 676 772	47 881 610	48 459 560	48 952 987																																							
Real terminal costs (EUR2009)	7 174 699	7 148 010	7 234 887	7 316 289	7 384 765																																							
Real gate-to-gate costs (EUR2009)	53 856 338	53 824 782	55 116 498	55 775 849	56 337 752																																							
En-route share (%)	86.7%	86.7%	86.9%	86.9%	86.9%																																							
<b>Cyprus: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	47 336 521	46 851 861	44 280 357	48 160 943																																								
Real terminal costs (EUR2009)	6 785 608	6 511 543	6 329 297	7 237 201																																								
Real gate-to-gate costs (EUR2009)	54 122 129	53 363 404	50 609 653	55 398 144																																								
En-route share (%)	87.5%	87.8%	87.5%	86.9%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	265 791	-461 379	-4 506 844	-377 706																																								
in %	0.5%	-0.9%	-8.2%	-0.7%																																								
En-route share																																												
in p.p.	0.8 p.p.	1.1 p.p.	0.6 p.p.	0.1 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
In 2018, actual gate-to-gate ANS costs are -0.7% (-0.4 M€2009) lower than planned due to lower than planned en-route costs (-0.6%, or -0.3 M€2009) and terminal costs (-1.1%, or -0.1 M€2009).																																												
The actual share of en-route in gate-to-gate ANS costs (86.9%) is in line with that planned in the PP for 2018 (86.9%).																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>86.7%</td> <td>13.3%</td> </tr> <tr> <td>Actual</td> <td>87.5%</td> <td>12.5%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>86.7%</td> <td>13.3%</td> </tr> <tr> <td>Actual</td> <td>87.8%</td> <td>12.2%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>86.9%</td> <td>13.1%</td> </tr> <tr> <td>Actual</td> <td>87.5%</td> <td>12.5%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>86.9%</td> <td>13.1%</td> </tr> <tr> <td>Actual</td> <td>86.9%</td> <td>13.1%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>86.9%</td> <td>13.1%</td> </tr> <tr> <td>Actual</td> <td>86.9%</td> <td>13.1%</td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	86.7%	13.3%	Actual	87.5%	12.5%	2016	Determined	86.7%	13.3%	Actual	87.8%	12.2%	2017	Determined	86.9%	13.1%	Actual	87.5%	12.5%	2018	Determined	86.9%	13.1%	Actual	86.9%	13.1%	2019	Determined	86.9%	13.1%	Actual	86.9%	13.1%
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	86.7%	13.3%																																									
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	Actual	86.9%	13.1%																																									
<b>3. Technical notes on en-route and terminal information reported by Cyprus</b>																																												
<p><b>Note 1:</b> According to the information provided in the additional information to the June 2019 terminal Reporting Tables - "As far as the terminal charging zone is concerned, for the time being no terminal charge is imposed to users. The Government currently fully subsidises terminal costs". As the TANS activities are therefore fully financed through "income from other sources", the analysis of the terminal economic surplus is void. Nevertheless, the analysis at Cyprus TCZ level still looks at the deviation between the terminal actual unit cost and the terminal DUC reported for 2018 in the RP2 PP.</p>																																												



## CYPRUS

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: DCAC Cyprus						
FAB: BLUE MED FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	7.0	3.9	2.4	0.0	0.0	13.3
Main CAPEX (in nominal M)	7.0	3.9	2.4	0.0	0.0	13.3
Inflation %	1.6%	1.7%	1.7%	1.8%	2.0%	
Inflation index (100 in 2009)	112.9	114.8	116.8	118.9	121.3	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>6.2</b>	<b>3.4</b>	<b>2.1</b>	<b>0.0</b>	<b>0.0</b>	<b>11.7</b>
Main CAPEX (in M €2009)	6.2	3.4	2.1	0.0	0.0	11.7
% Main of Total CAPEX	100.0%	100.0%	100.0%	N/A	N/A	100.0%
Real gate-to-gate ANSP costs (in M €2009)	37.6	37.6	38.7	39.1	39.5	192.6
Total CAPEX as % of Real gate-to-gate ANSP costs	16.4%	9.1%	5.3%	0.0%	0.0%	6.1%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	0.7	1.9	0.9	1.2		
Main CAPEX (in nominal M)	0.04	1.3	0.9	1.0		
Inflation %	-1.5%	-1.2%	0.7%	0.8%		
Inflation index (100 in 2009)	107.8	106.5	107.3	108.2		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>0.7</b>	<b>1.8</b>	<b>0.8</b>	<b>1.1</b>		
Main CAPEX (in M €2009)	0.04	1.2	0.8	0.9		
% Main of Total CAPEX	5.7%	68.9%	98.4%	84.3%		
Real gate-to-gate ANSP costs (in M €2009)	38.0	36.3	32.3	35.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	1.7%	4.9%	2.5%	3.2%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-6.3	-2.0	-1.5	1.2		
Total CAPEX (in M €2009)	-5.5	-1.7	-1.2	1.1		
<b>Total CAPEX (in %, M €2009)</b>	<b>-89.3%</b>	<b>-48.2%</b>	<b>-60.4%</b>			





# Annual Monitoring Report 2018

## Local level view

### Greece



## GREECE

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	74	C	C	C	C	D
HANSP	75	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			HCAA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			8	1		
Legal/Judiciary			4	3		
Occurrence reporting and Investigation			0	2		
<b>TOTAL</b>			<b>12</b>	<b>6</b>		
HANSP			Number of questions answered			
			YES	NO		
Policy and its implementation			11	3		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			8	0		
<b>TOTAL</b>			<b>21</b>	<b>4</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

**GREECE**

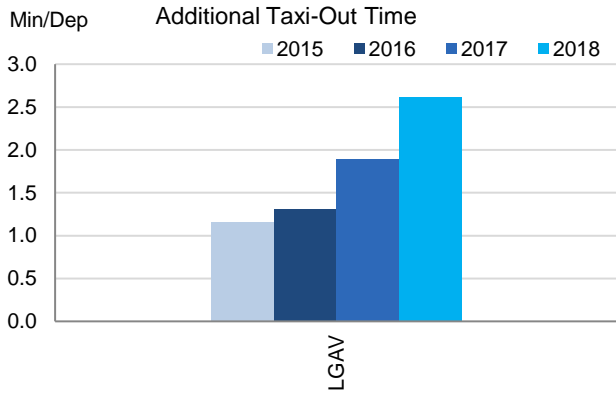
**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

Operational ANS performance at airports is monitored for one airport in Greece (i.e. Athens (LGAV)), the only airport subject to RP2 monitoring. Traffic has increased drastically at this airport in the last year (+12%) and also since the beginning of RP2 (2018 vs 2015: +25%)

Both additional taxi-out and ASMA times have increased significantly in 2018, however Athens still shows lower additional times than the RP2 averages or than other airports with the same levels of traffic.

**2. Additional Taxi-Out Time**

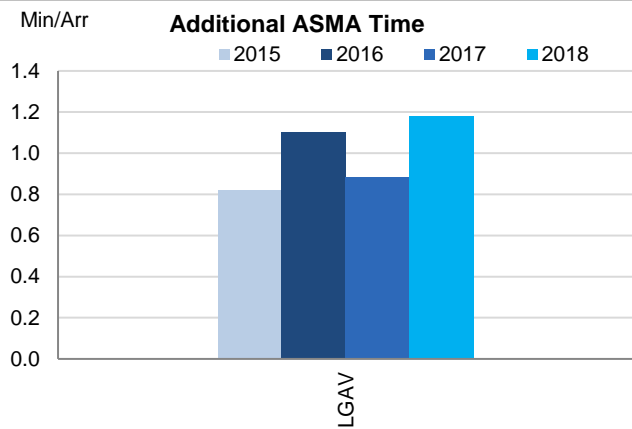


In line with the increase in traffic, more congestion in the departure taxi phase is observed, with additional taxi times increasing significantly in the last two years.

Additional taxi-out times are more than double than at the beginning of RP2 (LGAV: 2015: 1.16 min/dep.; 2018: 2.62 min/dep.)

The heavy maintenance works that took place on the ground (RWY 03R/21L and TWY D) forced single runway operations and increased the additional taxi out times in November.

**3. Additional ASMA Time**



Additional ASMA times in the approach to Athens have increased in 2018 and now reached 1.18 min/arr.

The works that took place on the ground in November also had an impact on the approach times, as the arrival capacity was reduced.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Athens	LGAV	1.16	1.31	1.89	2.62		0.82	1.10	0.88	1.18	

**GREECE**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.70	1.40	1.00	0.60	0.50	
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.95	0.14	0.21	0.53		

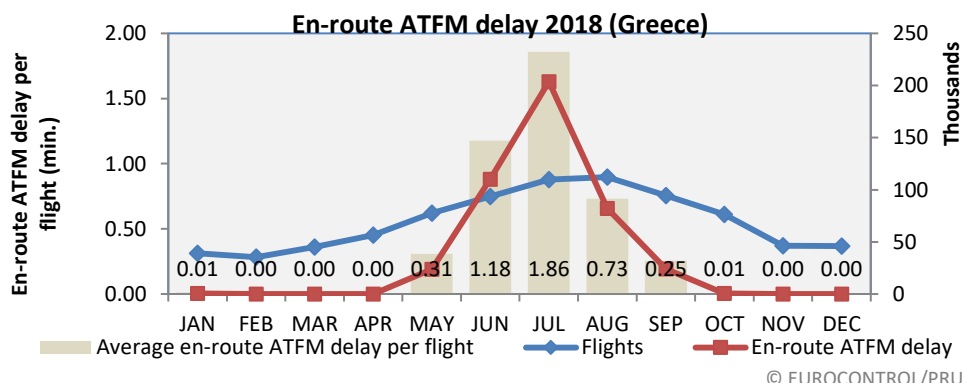
**National capacity incentive scheme**

No national incentive scheme

**Compliance issues relating to national capacity incentive scheme**

Greece did not apply an incentive scheme for en route capacity. This was raised in the PRB assessment of the BLUE MED performance plan but was not addressed in the BLUE MED annual monitoring report.

**PRB observations regarding national capacity performance**



En-route ATFM delay per flight (Greece)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1.47	1.12	1.00	2.95	0.15	0.06	0.41	0.95	0.14	0.21	0.53

EUROCONTROL 7 year forecast February 2014 – Greece										
	2014	2015	2016	2017	2018	2019				
	actual	actual	actual	actual	actual	actual				
High	653	681	714	746	777	814				
Base	644	678	689	710	730	756				
Low	635	649	659	670	681	695				

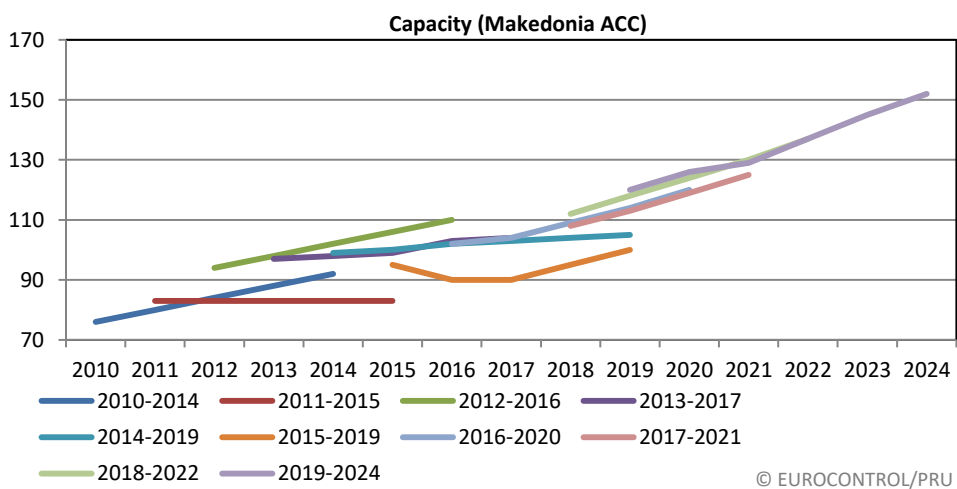
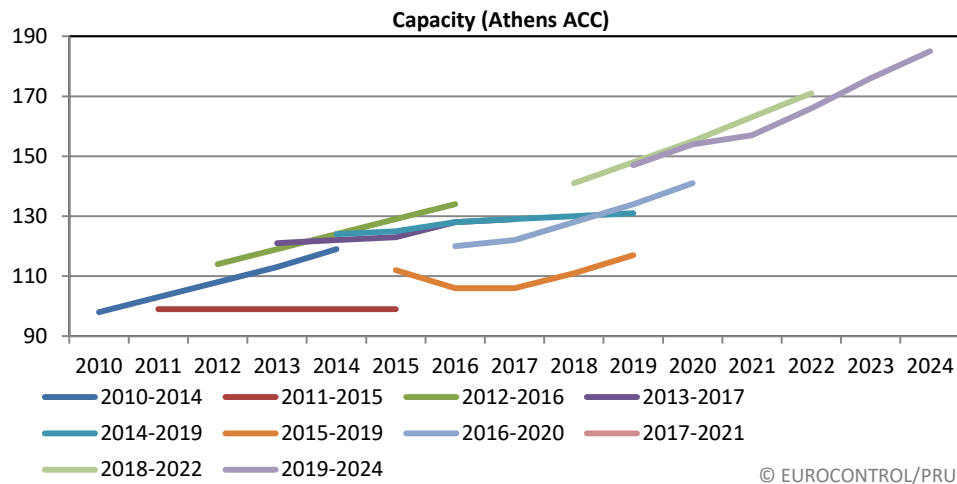
En route capacity performance in Greece further deteriorated in 2018 reaching 0,53 minutes of delay per flight compared to 0,14 minutes in 2016 and 0,21 minutes in 2017. Traffic levels rose significantly in Greece, almost 12% on top of 2017 levels. The level of traffic surpassed the high traffic scenario forecasted by STATFOR in 2014, as shown below.

The FAB report explains that the capacity performance resulted from a lack of air traffic controllers combined with an unexpected increase in traffic.

The airspace users highlighted the good delay performance from Greece, in both Athens and Makedonia ACCs, taking into account the difficult circumstances.

The Network Manager predicts, in the latest Network operations Plan 2019-2024, capacity problems to continue in Greece for the remainder of RP2 and for most of RP3.

Greece delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.19	0.16	0.16	0.13	N/A	N/A
NOP 2019 - 2024	0.70	0.56	0.24 – 0.60			



With the exception of 2015 - 2019 plan, the ACCs in Greece plan to increase capacity year on year.

**Planning and Effective Use of CDRs**

Greece did not provide any data on these indicators.

**Observations on Planning and Effective Use of CDRs**

It is noted that Greece like many other States, is having difficulties in monitoring the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
N/A	94%	94%	94%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	6%	6%	6%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	100%	100%	N/A	

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.



## GREECE

## Monitoring of Airports Contribution to CAPACITY for 2018

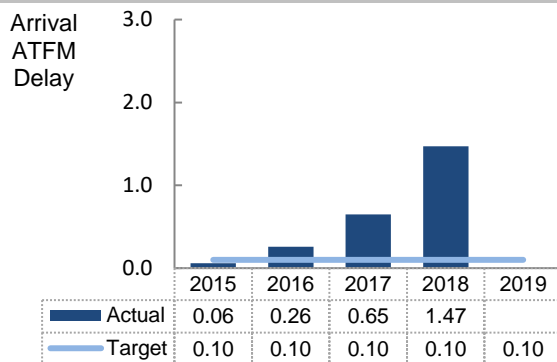
## 1. Overview

In Greece, Athens (LGAV) is the only airport subject to RP2 monitoring. The national target on arrival ATFM delay coincides with the local reference value of Athens airport. A significant increase of arrival ATFM delay has been observed in 2016 and even more in 2017 (2015: 0.06 min/arr.; 2016: 0.26 min/arr.; 2017: 0.65 min/arr.)

Traffic levels at Athens has drastically increased during RP2 (delays in 2018 are almost 1.5 minutes/arr higher than in 2015), which has had a tremendous impact on the arrival ATFM delays, that are dramatically higher than those in the beginning of the reference period (+141.2% in 2018 with respect to 2015).

Along with the worsening of the arrival ATFM delays, the ATFM slot adherence has slightly deteriorated but still sits above 90%.

## 2. Arrival ATFM Delay



During 2018, and for the third year in a row, arrival ATFM delays in Athens have significantly increased with respect to the previous year (2017: 0.65 min/arr, 2018: 1.47 min/arr)

83% of these delays are attributed to ATC capacity, while the month of November heavy maintenance works on the runways had an important impact on aerodrome capacity related delays.

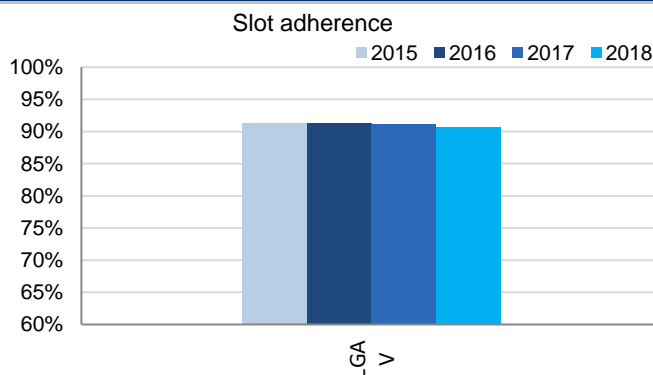
In their monitoring report, BLUE MED FAB mentions the same reasons as last year for missing the target: a) *The increase of traffic with respect to the beginning of RP2*, b) *Increase of total movements at neighbour airports that have inevitably affected the LGAV terminal area*, c) *Lack of additional ATCOs to accommodate the increased and unforeseen traffic in the summer period*, d) *Difficulties in formation of flexible operational environment and in accordance with the respective circumstances, due to nature of CNS systems*; e) *Lack of appropriate tools like those already used in most of the European States, aiming at more fruitful cooperation with EUROCONTROL and more effective ATFM process*.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Greece established an ambitious local value for Athens (LGAV) of 0.10 min/arr. that was met in 2015. However, in 2016, 2017 and 2018 the target is not met, and in the case of 2018, has almost reached 1.5 min/arr.

Greece does not present an incentive scheme for terminal air navigation services.

## 4. ATFM Slot Adherence



Athens (LGAV) shows a stable performance in terms of compliance with ATFM slots ranging slightly above 90% during RP2 but it still below the best in class airports with similar number of movements.

## 5. ATC Pre-departure Delay

Pre-departure delay at Athens is not available in 2018, due to insufficient data quality for the calculation of the indicator. Athens is encouraged to increase the data quality concerning delay reporting within the Airport Operator Data Flow.

## 6. Appendix

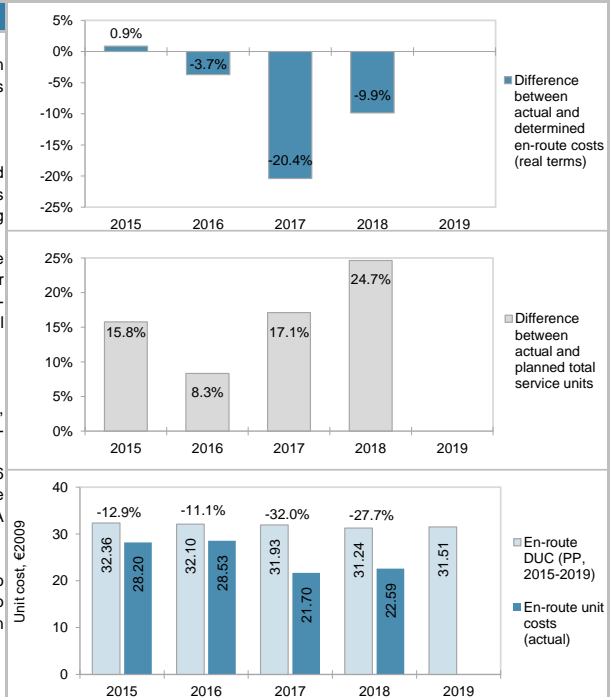
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Athens	LGAV	0.06	0.26	0.65	1.47		91.3%	91.3%	91.2%	90.7%		0.54	0.75	0.67	n/a	

## GREECE: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· Greece ECZ represents 2.3% of the SES en-route ANS determined costs in 2018						
· ATSP: HCAA						
· FAB: BLUE MED FAB						
· National currency: EUR						
2. En-route DUC monitoring at Charging Zone level						
Greece: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)		2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)		147 841 464	151 226 557	155 317 991	156 939 780	164 629 376
Inflation %		0.3%	1.1%	1.2%	1.3%	1.6%
Inflation index (100 in 2009)		107.9	109.1	110.4	111.8	113.6
Real en-route costs (EUR2009)		136 958 572	138 630 543	140 635 901	140 350 008	144 936 752
Total en-route Service Units		4 231 888	4 318 281	4 404 929	4 492 622	4 599 834
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>32.36</b>	<b>32.10</b>	<b>31.93</b>	<b>31.24</b>	<b>31.51</b>
Greece: Actual data from Reporting Tables		2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)		145 550 899	140 632 309	119 231 966	135 813 107	
Inflation %		-1.1%	0.0%	1.1%	0.8%	
Inflation index (100 in 2009)		105.4	105.4	106.5	107.4	
Real en-route costs (EUR2009)		138 146 953	133 478 564	111 935 532	126 490 065	
Total en-route Service Units		4 898 818	4 678 399	5 158 194	5 600 105	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>28.20</b>	<b>28.53</b>	<b>21.70</b>	<b>22.59</b>	
Difference between Actuals and Planned		2015	2016	2017	2018	2019
En-route costs (nominal EUR)	in value	-2 290 565	-10 594 248	-36 086 026	-21 126 673	
	in %	-1.5%	-7.0%	-23.2%	-13.5%	
Inflation %	in p.p.	-1.4 p.p.	-1.1 p.p.	-0.1 p.p.	-0.5 p.p.	
Inflation index (100 in 2009)	in p.p.	-2.6 p.p.	-3.7 p.p.	-3.9 p.p.	-4.4 p.p.	
Real en-route costs (EUR2009)	in value	1 188 381	-5 151 979	-28 700 369	-13 859 943	
	in %	0.9%	-3.7%	-20.4%	-9.9%	
Total en-route Service Units	in value	666 930	360 118	753 265	1 107 483	
	in %	15.8%	8.3%	17.1%	24.7%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	in value	<b>-4.16</b>	<b>-3.57</b>	<b>-10.23</b>	<b>-8.65</b>	
	in %	<b>-12.9%</b>	<b>-11.1%</b>	<b>-32.0%</b>	<b>-27.7%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (22.59 €2009) is -27.7% lower than planned in the PP (31.24 €2009). This results from the combination of much higher than planned TSUs (+24.7%) and lower than planned en-route costs in real terms (-9.9%, or -13.9 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+24.7%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (HCAA) retaining an amount of +5.7 M€2009.						
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Greece are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It is noted that the determined TSUs underpinning the adopted RP2 cost-efficiency targets were in line with STATFOR February 2014 <u>low</u> TSU growth scenario for all years of RP2 (2015-2019).						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -13.5% (-21.1 M€) lower than planned. However, since the actual inflation index is also lower than planned (-4.4 p.p.), actual en-route costs are -9.9% (-13.9 M€2009) below plans when expressed in real terms.						
The lower than planned en-route costs in real terms are driven by HCAA (-10.2%, or -12.6 M€2009) and, to a lesser extent, by the NSA/EUROCONTROL (-22.6%, or -2.3 M€2009), while the costs for the MET service provider (+17.1%, or +1.1 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -2.5 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



GREECE: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



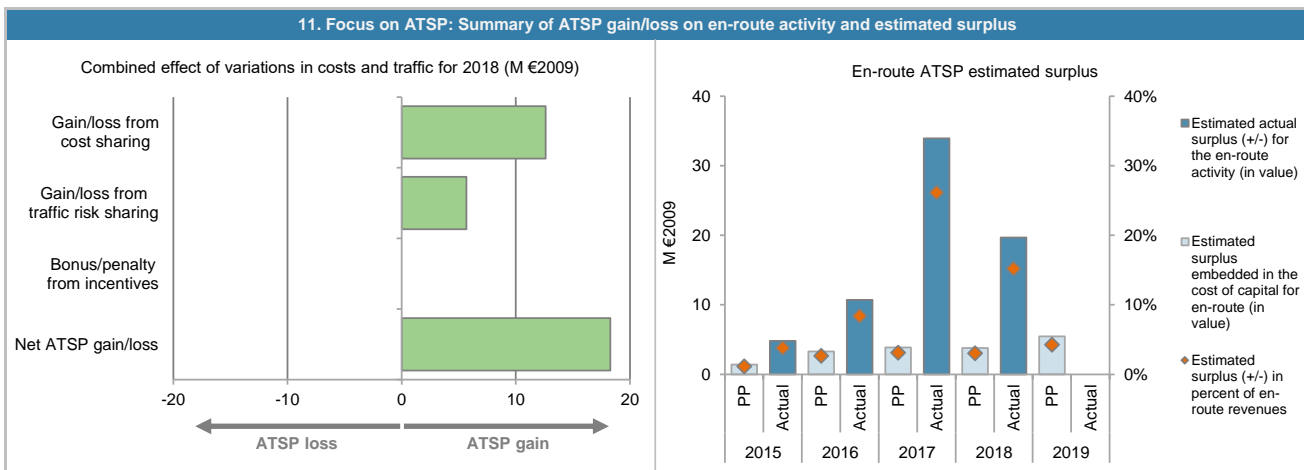
## GREECE: En-route ATSP (HCAA)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	120 824	122 261	124 133	123 747	
Actual costs for the ATSP	121 884	117 535	96 393	111 133	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-1 060	4 727	27 741	12 615	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-1 060</b>	<b>4 727</b>	<b>27 741</b>	<b>12 615</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	15.8%	8.3%	17.1%	24.7%	
Determined costs for the ATSP (PP) - based on actual inflation	123 791	126 586	128 703	128 876	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>5 447</b>	<b>4 939</b>	<b>5 663</b>	<b>5 671</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 387</b>	<b>9 666</b>	<b>33 404</b>	<b>18 285</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	15 891	36 938	43 733	42 692	61 610
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	15 891	36 938	43 733	42 692	61 610
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	1 413	3 284	3 888	3 795	5 477
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	8.9%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 413	3 284	3 888	3 795	5 477
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 413</b>	<b>3 284</b>	<b>3 888</b>	<b>3 795</b>	<b>5 477</b>
<b>Revenue/costs for the en-route activity</b>	<b>120 824</b>	<b>122 261</b>	<b>124 133</b>	<b>123 747</b>	<b>128 286</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>1.2%</b>	<b>2.7%</b>	<b>3.1%</b>	<b>3.1%</b>	<b>4.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	4 983	11 770	5 929	15 621	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	4 983	11 770	5 929	15 621	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	443	1 046	527	1 389	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	
Estimated surplus embedded in the cost of capital for en-route (in value)	443	1 046	527	1 389	
Net ATSP gain(+)/loss(-) on en-route activity	4 387	9 666	33 404	18 285	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 830</b>	<b>10 712</b>	<b>33 931</b>	<b>19 674</b>	
<b>Revenue/costs for the en-route activity</b>	<b>126 271</b>	<b>127 201</b>	<b>129 796</b>	<b>129 418</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.8%</b>	<b>8.4%</b>	<b>26.1%</b>	<b>15.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>96.9%</b>	<b>91.0%</b>	<b>572.3%</b>	<b>125.9%</b>	

**GREECE: En-route ATSP (HCAA)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 HCAA en-route costs vs. PP**

In 2018, HCAA actual en-route costs are -10.2% (-12.6 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-4.9%, or -4.7 M€2009);
- much lower other operating costs (-23.3%, or -4.4 M€2009), due to lower "travel expenses, repair, maintenance and utilities costs".
- much lower depreciation costs (-22.9%, or -1.1 M€2009); and
- much lower cost of capital (-63.4%, or -2.4 M€2009), reflecting "the implementation of the investment plan" and a significantly lower than planned total asset base (-63.4%, or -27.1M€2009). Based on the information provided in the BLUE MED FAB Monitoring Report 2018, the actual capex for HCAA in 2018 was -81.2% lower than planned in PP, in nominal terms.

**HCAA net gain/loss on en-route activity in 2018**

As shown in box 9, HCAA generated a net gain of +18.3 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +12.6 M€2009 arising from the cost sharing mechanism; and
- a gain of +5.7 M€2009 arising from the traffic risk sharing mechanism.

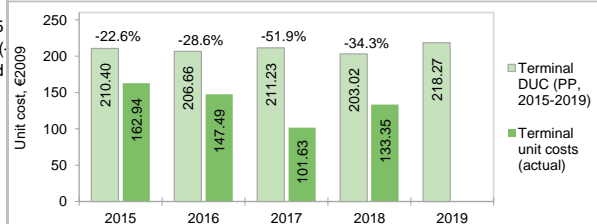
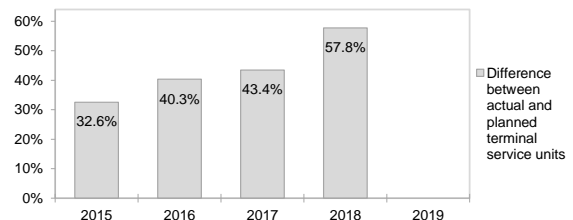
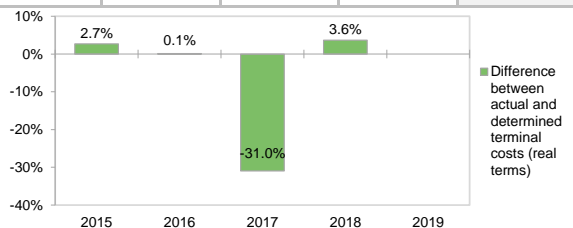
**HCAA overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+18.3 M€2009) and the surplus embedded in the actual cost of capital (+1.4 M€2009) amounts to +19.7 M€2009 (15.2% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 125.9%, which is much higher than the 8.9% planned in the PP. It should be noted that the ex-post RoE is significantly affected by much lower than planned asset base in real terms (-63.4%).

## GREECE: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Greece TCZ represents 1.5% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No	
· ATSP:	HCAA	· Airports with fewer than 70,000 IFRs ATMs:		0	
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		1	
· Number of airports in charging zone in 2018:	1,	of which:	· Airports with more than 225,000 IFRs ATMs:	0	
2. Terminal DUC monitoring at Charging Zone level					
Greece: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	17 173 869	17 398 050	18 378 066	18 168 294	20 342 644
Inflation %	0.3%	1.1%	1.2%	1.3%	1.6%
Inflation index (100 in 2009)	107.9	109.1	110.4	111.8	113.6
Real terminal costs (EUR2009)	15 909 668	15 948 926	16 640 801	16 247 762	17 909 299
Total terminal Service Units	75 618	77 174	78 781	80 031	82 050
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>210.40</b>	<b>206.66</b>	<b>211.23</b>	<b>203.02</b>	<b>218.27</b>
Greece: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	17 209 550	16 828 787	12 233 143	18 080 344	
Inflation %	-1.1%	0.0%	1.1%	0.8%	
Inflation index (100 in 2009)	105.4	105.4	106.5	107.4	
Real terminal costs (EUR2009)	16 334 127	15 972 733	11 484 533	16 839 198	
Total terminal Service Units	100 249	108 300	113 003	126 275	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>162.94</b>	<b>147.49</b>	<b>101.63</b>	<b>133.35</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value 35 681	in value -569 263	in value -6 144 923	in value -87 950	
	in % 0.2%	in % -3.3%	in % -33.4%	in % -0.5%	
Inflation %	in p.p. -1.4 p.p.	in p.p. -1.1 p.p.	in p.p. -0.1 p.p.	in p.p. -0.5 p.p.	
Inflation index (100 in 2009)	in p.p. -2.6 p.p.	in p.p. -3.7 p.p.	in p.p. -3.9 p.p.	in p.p. -4.4 p.p.	
Real terminal costs (EUR2009)	in value 424 460	in value 23 808	in value -5 156 269	in value 591 437	
	in % 2.7%	in % 0.1%	in % -31.0%	in % 3.6%	
Total terminal Service Units	in value 24 631	in value 31 126	in value 34 222	in value 46 244	
	in % 32.6%	in % 40.3%	in % 43.4%	in % 57.8%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -47.46</b>	<b>in value -59.18</b>	<b>in value -109.60</b>	<b>in value -69.66</b>	
	<b>in % -22.6%</b>	<b>in % -28.6%</b>	<b>in % -51.9%</b>	<b>in % -34.3%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Greece Terminal Charging Zone (TCZ) comprising only Athinaï / Eleftherios Venizelos (LGAV) airport.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (133.35 €2009) is -34.3% lower than planned in the PP (203.02 €2009). This results from the combination of much higher than planned TNSUs (+57.8%) and higher than planned terminal costs in real terms (+3.6%, or +0.6 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Greece TCZ. In 2018, the actual TNSUs in Greece TCZ are +57.8% higher than planned in the PP. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Greece are expected to remain largely above the planned values for the remainder of RP2. It should be noted that the forecast TNSUs selected in the RP2 PP were mostly in line with the STATFOR February 2014 <u>base</u> case TNSU growth scenario at the time of PP adoption.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -0.5% (-0.1 M€) lower than planned. However, since the actual inflation index is also lower than planned (-4.4 p.p.), actual terminal costs are +3.6% (+0.6 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by HCAA (+3.4%, or +0.5 M€2009) and the MET service provider (+35.5%, or +0.1 M€2009), while the costs for the NSA (-11.9%, or -0.01 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported for Greece TCZ.					



GREECE: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	3.4%
Other ANSPs	-
METSP	35.5%
NSA	-11.9%
Total	3.6%

Costs by nature at ATSP level:

Staff	-0.4%
Other operating costs	38.7%
Depreciation	-86.2%
Cost of capital	-92.0%
Exceptional items	-
VFR exempted flights	4.1%
Total	3.4%

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)	2015	2016	2017	2018	2019
<b>by item</b>					
Pension	0	0	0	0	
Interest rates on loans	0	0	0	0	
Taxation law	0	0	0	0	
New cost item required by law	0	0	0	0	
International agreements	0	0	0	0	
<b>by entity</b>					
ATSP	0	0	0	0	
Other ANSP	0	0	0	0	
METSP	0	0	0	0	
NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

Greece 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR

It is noted that Greece applied two different chargeable terminal unit rates in 2018:

- 141.96 € for the period from 1st of January until 31st of March;
- 116.00 € for the period of the 1st of April until the 31st of December.

The figure for the terminal unit rate charged to airspace users (CUR) in 2018 shown in the chart (120.72 €) reflects the average chargeable unit rate throughout 2018. This is -46.8% lower than the nominal DUC (227.02 €). The difference between these two figures (-106.29 €) mainly reflects:

- the deduction of other revenues (-21.24 €), reflecting a subsidy provided by the Greek Government (see **Note 1**);
- the inflation adjustment (-7.43 €), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018; and
- a traffic adjustment (-77.63 €), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

Greece 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (116.91 €) is -48.5% lower than the nominal DUC (227.02 €). As explained in the box 7 above, the values provided in this chart also reflect the average terminal unit cost incurred by airspace users throughout 2018. The difference between these two figures (-110.10 €) is mainly due to:

- the deduction of other revenues (-21.24 €), reflecting a subsidy from the Greek Government (see **Note 1**);
- the inflation adjustment (-5.73 €), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020; and
- a traffic adjustment (-83.14 €), for the costs not subject to traffic risk sharing and the related over recoveries due to higher traffic than planned in 2018 to be reimbursed to airspace users in 2020.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.



## GREECE: Terminal ATSP (HCAA)

## Monitoring of terminal COST-EFFICIENCY for 2018

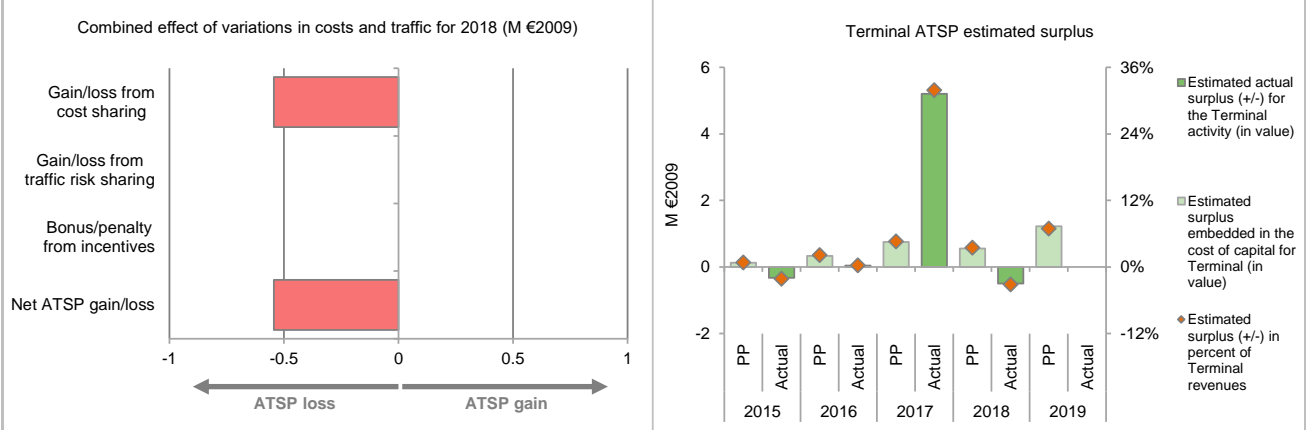
9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	15 602	15 645	16 340	15 951	
Actual costs for the ATSP	15 928	15 599	11 133	16 495	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-326	46	5 208	-544	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-326</b>	<b>46</b>	<b>5 208</b>	<b>-544</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-326</b>	<b>46</b>	<b>5 208</b>	<b>-544</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 448	3 745	8 513	6 297	13 724
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	1 448	3 745	8 513	6 297	13 724
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	129	333	757	560	1 220
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	8.9%
Estimated surplus embedded in the cost of capital for terminal (in value)	129	333	757	560	1 220
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>129</b>	<b>333</b>	<b>757</b>	<b>560</b>	<b>1 220</b>
<b>Revenue/costs for the terminal activity</b>	<b>15 602</b>	<b>15 645</b>	<b>16 340</b>	<b>15 951</b>	<b>17 617</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>0.8%</b>	<b>2.1%</b>	<b>4.6%</b>	<b>3.5%</b>	<b>6.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	0	0	0	504	
Estimated proportion of financing through equity (in %)	-	-	-	100.0%	
Estimated proportion of financing through equity (in value)	0	0	0	504	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	0	0	0	45	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	-	-	-	8.9%	
Estimated surplus embedded in the cost of capital for terminal (in value)	0	0	0	45	
Net ATSP gain(+)/loss(-) on terminal activity	-326	46	5 208	-544	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-326</b>	<b>46</b>	<b>5 208</b>	<b>-499</b>	
<b>Revenue/costs for the terminal activity</b>	<b>15 602</b>	<b>15 645</b>	<b>16 340</b>	<b>15 951</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-2.1%</b>	<b>0.3%</b>	<b>31.9%</b>	<b>-3.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>				<b>-99.1%</b>	



**GREECE: Terminal ATSP (HCAA)**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 HCAA terminal costs vs. PP**

In 2018, HCAA actual terminal costs are +3.4% (+0.5 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- slightly lower staff costs (-0.4%, or -0.04 M€2009);
- much higher other operating costs (+38.7%, or +1.6 M€2009), reflecting payments of obligations from previous years resulting from the implementation of a newly established State accounting procedure for HCAA in 2017;
- much lower depreciation costs (-86.2%, or -0.5 M€2009), reflecting "the depreciation of the currently existing assets";
- much lower cost of capital (-92.0%, or -0.5 M€2009) reflecting "the implementation of the investment plan" and an equally lower than planned total asset base (-92.0%, or -5.8M€2009);

**HCAA net gain/loss on terminal activity in 2018**

As shown in box 9, HCAA generated a net loss of -0.5 M€2009 on the terminal activity arising from the cost sharing mechanism.

**HCAA overall estimated surplus for the terminal activity**

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity mentioned above (-0.5 M€2009) and the surplus embedded in the actual cost of capital (+0.04 M€2009) amounts to -0.5 M€2009 (3.1% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is negative (-99.1%). This indicates that the part of surplus embedded in the cost of capital through the RoE included in the PP (+8.9%) was not sufficient to compensate for the losses arising from the cost sharing mechanism due to higher than planned terminal cost for HCAA.

## GREECE: Gate-to-gate

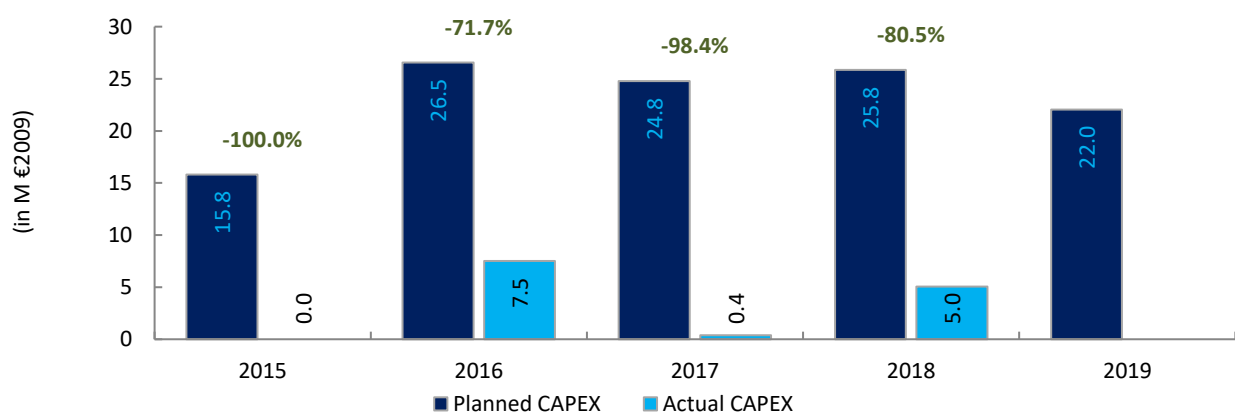
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs					
<b>Greece: Data from RP2 Performance Plan</b>					
	2015D	2016D	2017D	2018D	2019D
Real en-route costs (EUR2009)	136 958 572	138 630 543	140 635 901	140 350 008	144 936 752
Real terminal costs (EUR2009)	15 909 668	15 948 926	16 640 801	16 247 762	17 909 299
Real gate-to-gate costs (EUR2009)	152 868 239	154 579 468	157 276 702	156 597 770	162 846 051
En-route share (%)	89.6%	89.7%	89.4%	89.6%	89.0%
<b>Greece: Actual data from Reporting Tables</b>					
	2015A	2016A	2017A	2018A	2019A
Real en-route costs (EUR2009)	138 146 953	133 478 564	111 935 532	126 490 065	
Real terminal costs (EUR2009)	16 334 127	15 972 733	11 484 533	16 839 198	
Real gate-to-gate costs (EUR2009)	154 481 080	149 451 297	123 420 064	143 329 264	
En-route share (%)	89.4%	89.3%	90.7%	88.3%	
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>					
	2015	2016	2017	2018	2019
Real gate-to-gate costs (EUR2009) in value	1 612 840	-5 128 172	-33 856 638	-13 268 506	
in %	1.1%	-3.3%	-21.5%	-8.5%	
En-route share in p.p.	-0.2 p.p.	-0.4 p.p.	1.3 p.p.	-1.4 p.p.	
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>					
<p>In 2018, actual gate-to-gate ANS costs are -8.5% (-13.3 M€2009) lower than planned due to lower than planned en-route costs (-9.9%, or -13.9 M€2009) while terminal costs are higher than planned in real terms (+3.6%, or +0.6 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (88.3%) is slightly lower than planned in the PP for 2018 (89.6%).</p> <p>For HCAA, the estimated gate-to-gate economic surplus in 2018 amounts to 19.2 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 13.2% of gate-to-gate ANS revenues.</p>					
<b>3. Technical notes on en-route and terminal information reported by Greece</b>					
<p><b>Note 1:</b> the additional information to the June 2018 terminal Reporting Tables indicates that two separate unit rates were applied in the Greek TCZ during 2018: "the unit rate applicable for the period of the 1st of January until the 30th of March 2018 was €141.96 and the final, subsidised, unit rate applicable to Athens / Eleftherios Venizelos Airport for the period of the 1st of April until the 31st of December 2018 is €116.00."</p> <p>This subsidy granted by the Greek Government resulted in a reduced terminal unit rate charged to the airspace users at Athens International Airport.</p>					

## GREECE

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: HCAA						
FAB: BLUE MED FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	17.1	29.0	27.4	28.9	25.0	127.3
Main CAPEX (in nominal M)	17.1	29.0	27.4	28.9	25.0	127.3
Inflation %	0.3%	1.1%	1.2%	1.3%	1.6%	
Inflation index (100 in 2009)	107.9	109.1	110.4	111.8	113.6	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>15.8</b>	<b>26.5</b>	<b>24.8</b>	<b>25.8</b>	<b>22.0</b>	<b>115.0</b>
Main CAPEX (in M €2009)	15.8	26.5	24.8	25.8	22.0	115.0
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	136.4	137.9	140.5	139.7	145.9	700.4
Total CAPEX as % of Real gate-to-gate ANSP costs	11.6%	19.3%	17.6%	18.5%	15.1%	16.4%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	0.0	7.9	0.4	5.4		
Main CAPEX (in nominal M)	0.0	6.6	0.4	5.4		
Inflation %	-1.1%	0.0%	1.1%	0.8%		
Inflation index (100 in 2009)	105.4	105.4	106.5	107.4		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>0.0</b>	<b>7.5</b>	<b>0.4</b>	<b>5.0</b>		
Main CAPEX (in M €2009)	0.0	6.2	0.4	5.0		
% Main of Total CAPEX		82.7%	100.0%	100.0%		
Real gate-to-gate ANSP costs (in M €2009)	137.8	133.1	107.5	127.6		
Total CAPEX as % of Real gate-to-gate ANSP costs	0.0%	5.6%	0.4%	4.0%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-17.1	-21.0	-26.9	-23.5		
Total CAPEX (in M €2009)	-15.8	-19.0	-24.4	-20.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-100.0%</b>	<b>-71.7%</b>	<b>-98.4%</b>	<b>-80.5%</b>		





# Annual Monitoring Report 2018

## Local level view

### Italy



## ITALY

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	67	C	D	C	C	B
<b>ENAV</b>	72	C	C	D	D	C
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
	RAT application (%)					
	ATM Ground	ATM Overall				
Separation Minima Infringements (SMIs)	99%	78%				
Runway Incursions (RIs)	100%	49%				
ATM Specific Occurrences (ATM-S)		100%				
<b>Source of RAT data:</b>	ENAV					
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level	Number of questions answered					
	YES	NO				
Policy and its implementation	6	3				
Legal/Judiciary	5	2				
Occurrence reporting and Investigation	2	0				
<b>TOTAL</b>	<b>13</b>	<b>5</b>				
ENAV	Number of questions answered					
	YES	NO				
Policy and its implementation	12	1				
Legal/Judiciary	2	1				
Occurrence reporting and Investigation	7	1				
<b>TOTAL</b>	<b>21</b>	<b>3</b>				
Observations						
Only one question out of 36 in the EoSM Component/area of the State in Safety Culture does not meet the 2019 EoSM target level.						

## ITALY

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

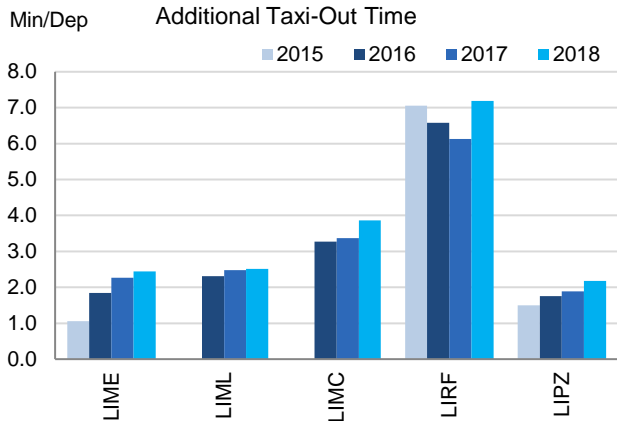
## 1. Overview

Italy identified five airports as subject to RP2 monitoring. In 2016 the APDF was finally correctly established and the environmental indicators can be analysed since then for all five airports.

Traffic increase at the Italian airports under monitoring has moderately increased since the beginning of RP2 (+7% with respect to 2015)

Additional times at all Italian airports have increase in 2018, in some cases quite significant. Rome Fiumicino (LIRF) shows additional times above the European SES average, while the rest of Italian airports perform slightly better.

## 2. Additional Taxi-Out Time

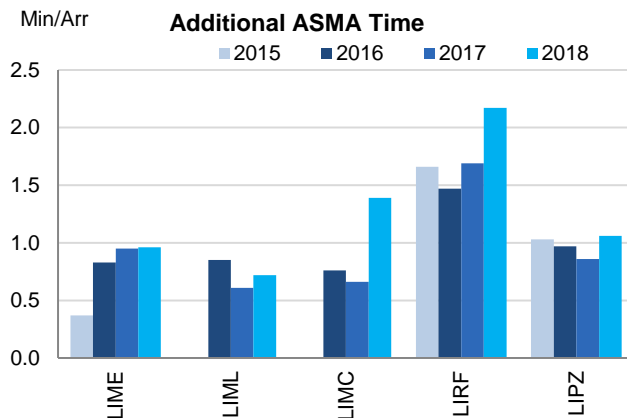


Rome Fiumicino, the main driver for Italian performance, has significantly increased its additional TXOT (i.e. LIRF: 2017: 6.13 min/dep. vs 2018: 7.19 min/dep.) and it remains as the airport with the third highest additional taxi-out times in the SES area. These additional times are especially long in summer, when they range above 8 min/dep.

Milan Malpensa (LIMC), where traffic increased by 9% with respect to 2017, also reaches values above the SES average, with almost 4 min/dep that reach above 5 min/dep in December.

The rest of Italian airports have slightly increased their additional taxi-out times with respect to 2016, but still show a performance commensurate with their level of traffic.

## 3. Additional ASMA Time



Additional ASMA times at Rome Fiumicino in 2018 have significantly deteriorated once more and now are amongst the 10 longest times in the SES area, exceeding the 2 minutes.

In 2018 additional ASMA times at Milan Malpensa doubled those from last year (LIMC: 2017: 0.66 min/arr; 2018: 1.39 min/arr.)

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bergamo	LIME	1.06	1.84	2.27	2.44		0.37	0.83	0.95	0.96	
Milan/ Linate	LIML	n/a	2.31	2.48	2.51		n/a	0.85	0.61	0.72	
Milan/ Malpensa	LIMC	n/a	3.27	3.37	3.86		n/a	0.76	0.66	1.39	
Rome/Fiumicino	LIRF	7.06	6.58	6.13	7.19		1.66	1.47	1.69	2.17	
Venice	LIPZ	1.50	1.75	1.89	2.18		1.03	0.97	0.86	1.06	



ITALY

Monitoring of CAPACITY for 2018

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.09	0.10	0.11	0.11	0.11	Although the revised FAB targets are 35% lower than previously, the national target for Italy (on which the incentive is based) has not been amended accordingly.
Deadband +/-	Nil	Nil	Nil	Nil	Nil	
Actual performance	0.01	0.00	0.01	0.03		

National capacity incentive scheme

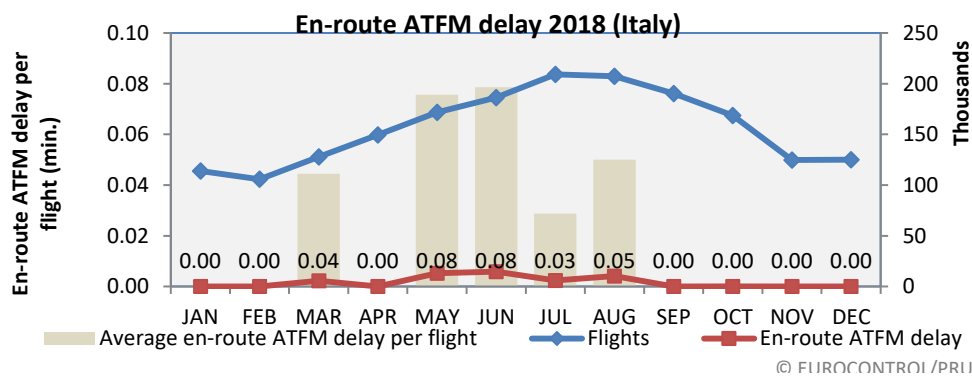
For 2018, ENAV SpA has achieved a level of delay of 0,024 average minutes of en route ATFM delay per flight [PRB records delay of 0,03 minutes per flight]. According to the applied scheme the level of bonus for ENAV is 1% of revenues from en route ANS: €6,9 million.

Compliance issues relating to national capacity incentive scheme

Previously, the PRB noted several compliance issues relating to the en route capacity incentive schemes proposed in the BLUEMED revised performance plan, some relating directly to Italy, in the assessment of the RP2 FAB Performance Plans - BLUEMED. One compliance issue concerned the fact that FAB performance was not a specific criterion and another referred to the fact that the incentive scheme proposed by Italy uses capacity targets without supporting evidence to show how they are consistent with the required FAB performance, and therefore they could not be considered as fostering a high level of FAB performance.

The BLUEMED monitoring report contained no information as to how the previous raised compliance issues had been addressed.

Observations regarding national capacity performance



En-route ATFM delay per flight (Italy)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.05	0.01	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.01	0.03

EUROCONTROL 7 year forecast February 2014 – Italy									
	2014	2015	2016	2017	2018	2019			
	actual	actual	actual	actual	actual	actual			
High	1683	1746	1831	1903	1978	2058			
Base	1661	1706	1757	1801	1845	1897	1680	1696	1786
Low	1638	1661	1674	1690	1708	1728			

Although en route capacity performance in Italy during 2018 deteriorated from previous levels experienced in RP2, it remained a very good capacity performance. Traffic levels increased by 5% but remained within the ranges forecast by STATFOR when the FAB performance plans, and associated capacity plans were being determined. The Network Manager, in the latest NOP 2019 - 2024, states that no capacity problems are expected in Italy, either for the remainder of RP2 or for RP3.

Italy delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.05</b>	<b>0.08</b>	<b>0.03 – 0.06</b>			

### Planning and Effective Use of CDRs

Italy did not provide any data on this indicator

### Observations on Planning and Effective Use of CDRs

It is noted that Italy, like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
51%	55%	56%	48%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

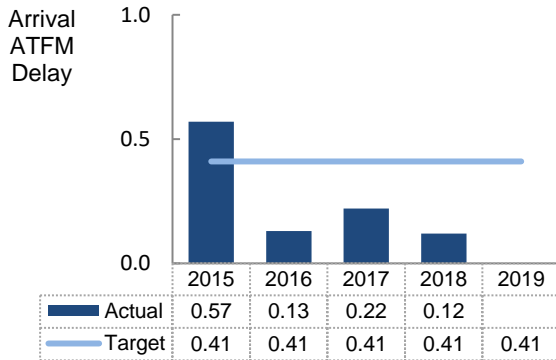
**ITALY**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

A total of 5 Italian airports are subject to RP2 monitoring. A national target is set for all causes with a local breakdown for all the airports.  
 Traffic levels at these airports have moderately increased during RP2 (+6.7% with respect to 2015). In 2018, the most notable increase is observed at Malpensa, with 9% more movements than in 2017.  
 In terms of arrival ATFM delays, values are significantly lower than those in the beginning of the reference period and at the same time ATFM slot adherence has slightly improved.  
 In terms of ATC pre-departure delay, Italian airports show low performance compared to the rest of Europe.

**2. Arrival ATFM Delay**

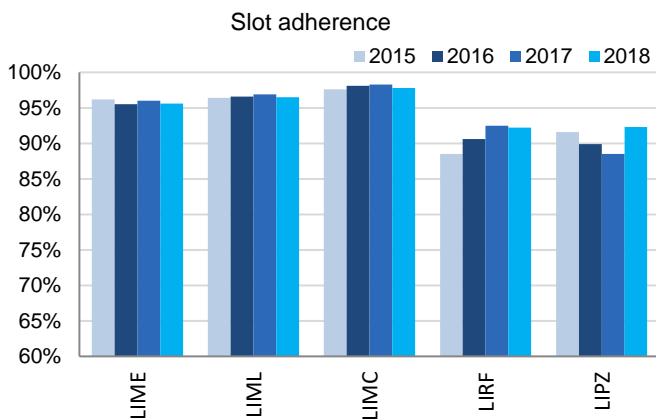


During 2018, arrival ATFM delays in Italy have moderately decreased with respect to the previous year (2017: 0.22 min/arr, 2018: 0.12 min/arr). National performance is highly driven by Rome Fiumicino (LIRF) where delays were very high at the beginning of the reference period but have drastically decreased in the last 3 years.  
 In 2018 Venice (LIPZ) shows the worst delays for arrivals at Italian airports reaching 0.44 min/arr., mainly due to weather reasons, especially in the month of December, and also influencing the national average.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

The actual national performance on arrival ATFM delay (0.12 min/arr.) ranges well below the established national target of 0.41 min/arr. in 2017.  
 At local level LIPZ is the only airport that does not meet its target (0.40 min/arr.) with a performance of 0.44 min/arr.)  
 Italy presents an incentive scheme based on the arrival ATFM delay per flight including only CRSTMP causes. The target for reasons attributable to ENAV is 0.02 min/flight, which was met with a result of 0.01 min/flight as reported in the reasons for regulations. Accordingly, ENAV will receive a bonus of 0.2% of terminal ANS revenues.

**4. ATFM Slot Adherence**



Adherence to ATFM slots in all Italian airports subject to RP2 monitoring is good and above 90%.  
 The main evolution is observed at Venice with a moderate improvement (LIPZ; 2017: 88.5%; 2018: 92.3%)  
 Milan airports and Bergamo show best-in-class performance, above 95% of ATFM slot compliance.

**5. ATC Pre-departure Delay**

The monitoring of pre-departure delay is enabled at all Italian airports and is based exclusively on data reported by the airports through the Airport Operator Data Flow. The share of unexplained delay at LIML (almost 40% each month) needs to be monitored, as the indicator is only calculated provided the share of unexplained delay does not exceed a certain threshold.  
 Pre-departure delay at Rome/Fiumicino has improved again from 1.79 min/dep. in 2017 to 1.57 min/dep. in 2018. Despite this improvement Fiumicino remains, together with Venice, third and fifth airport in the SES performance scheme with the highest pre-departure delay.  
 Pre-departure delay at Linate (LIML) is not available in 2018 due to insufficient data quality for the calculation of the indicator. Milan Linate is encouraged to increase the data quality concerning delay reporting within the Airport Operator Data Flow.

## 6. Appendix

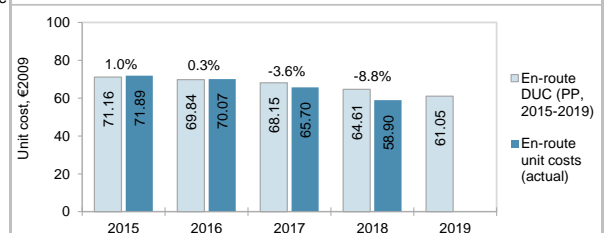
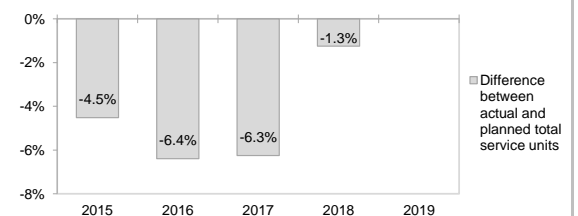
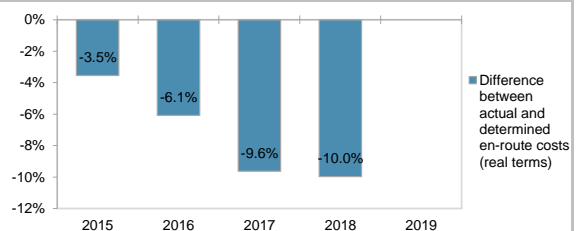
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bergamo	LIME	0.03	0.01	0.05	0.07		96.2%	95.5%	96.0%	95.6%		0.73	0.74	0.98	0.89	
Milan/ Linate	LIML	0.06	0.02	0.10	0.04		96.4%	96.6%	96.9%	96.5%		n/a	0.39	0.27	n/a	
Milan/ Malpensa	LIMC	0.02	0.02	0.03	0.09		97.6%	98.1%	98.3%	97.8%		n/a	0.48	0.58	0.65	
Rome/Fiumicino	LIRF	1.22	0.23	0.36	0.10		88.5%	90.6%	92.5%	92.2%		3.03	2.35	1.79	1.57	
Venice	LIPZ	0.39	0.27	0.45	0.44		91.6%	89.9%	88.5%	92.3%		1.57	1.54	1.77	1.32	

## ITALY: En-route charging zone

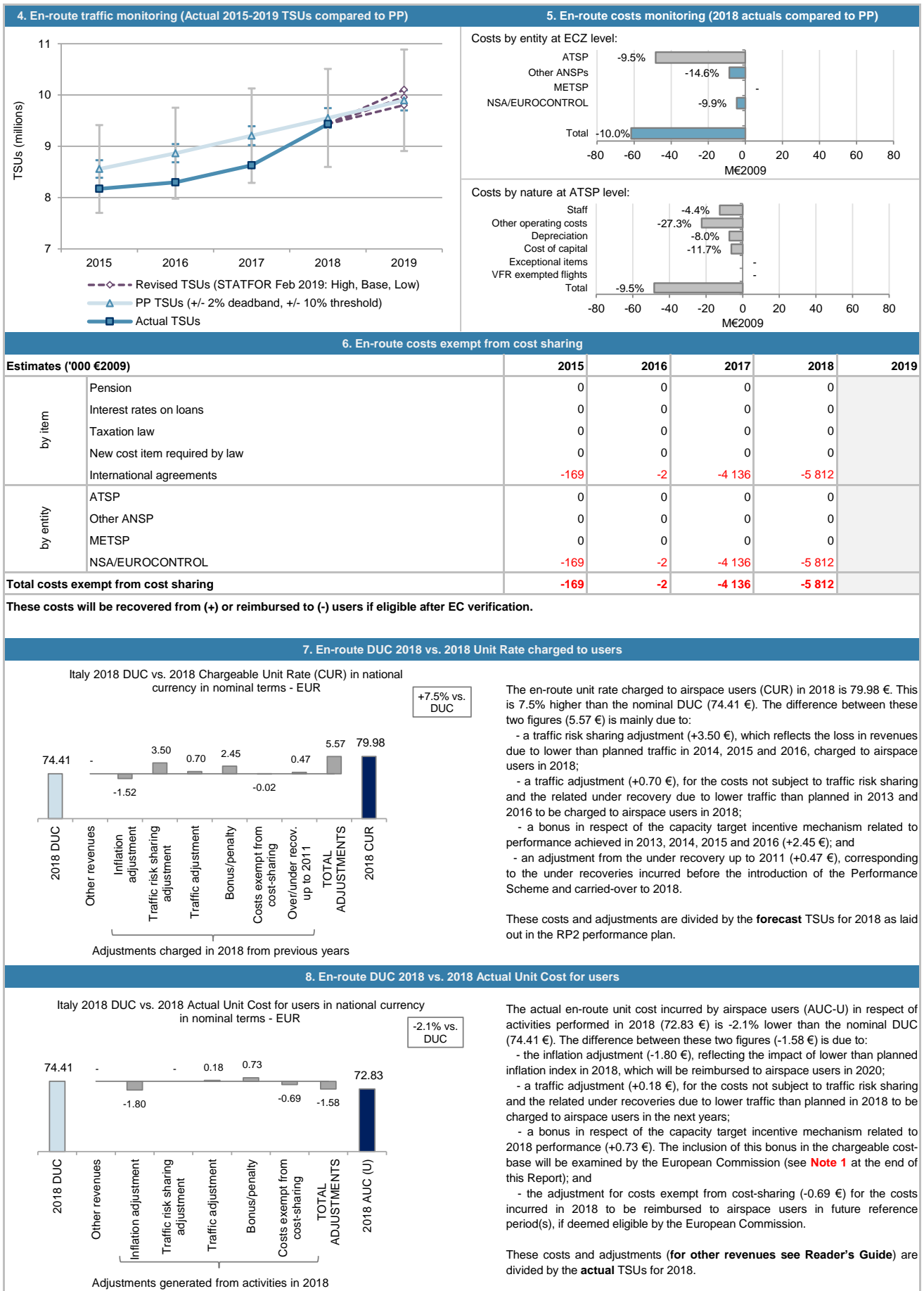
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
<ul style="list-style-type: none"> <li>Italy ECZ represents 10.1% of the SES en-route ANS determined costs in 2018</li> <li>ATSP: ENAV</li> <li>FAB: BLUE MED FAB</li> <li>National currency: EUR</li> </ul>						
2. En-route DUC monitoring at Charging Zone level						
Italy: Data from RP2 Performance Plan (EC Decision 2016/599 of 15 April 2016)		2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)		674 742 285	693 557 255	711 992 044	710 883 664	707 016 612
Inflation %		1.0%	1.1%	1.3%	1.5%	1.6%
Inflation index (100 in 2009)		110.8	112.0	113.5	115.2	117.0
Real en-route costs (EUR2009)		609 005 804	619 176 790	627 477 336	617 241 895	604 216 765
Total en-route Service Units		8 557 964	8 866 051	9 207 393	9 553 591	9 897 521
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>71.16</b>	<b>69.84</b>	<b>68.15</b>	<b>64.61</b>	<b>61.05</b>
Italy: Actual data from Reporting Tables		2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)		644 872 816	637 727 794	629 970 988	624 645 681	
Inflation %		0.1%	-0.1%	1.3%	1.2%	
Inflation index (100 in 2009)		109.8	109.7	111.1	112.4	
Real en-route costs (EUR2009)		587 471 424	581 543 938	567 098 230	555 636 761	
Total en-route Service Units		8 171 509	8 299 670	8 631 816	9 433 866	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>71.89</b>	<b>70.07</b>	<b>65.70</b>	<b>58.90</b>	
Difference between Actuals and Planned		2015	2016	2017	2018	2019
En-route costs (nominal EUR) in value		-29 869 469	-55 829 462	-82 021 055	-86 237 983	
in %		-4.4%	-8.0%	-11.5%	-12.1%	
Inflation % in p.p.		-0.9 p.p.	-1.2 p.p.	0.0 p.p.	-0.3 p.p.	
Inflation index (100 in 2009) in p.p.		-1.0 p.p.	-2.4 p.p.	-2.4 p.p.	-2.8 p.p.	
Real en-route costs (EUR2009) in value		-21 534 381	-37 632 852	-60 379 106	-61 605 134	
in %		-3.5%	-6.1%	-9.6%	-10.0%	
Total en-route Service Units in value		-386 455	-566 380	-575 577	-119 725	
in %		-4.5%	-6.4%	-6.3%	-1.3%	
<b>Real en-route unit cost per Service Unit (EUR2009) in value</b>		<b>0.73</b>	<b>0.23</b>	<b>-2.45</b>	<b>-5.71</b>	
<b>in %</b>		<b>1.0%</b>	<b>0.3%</b>	<b>-3.6%</b>	<b>-8.8%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (58.90 €2009) is -8.8% lower than planned in the PP (64.61 €2009). This results from the combination of slightly lower than planned TSUs (-1.3%) and lower than planned en-route costs in real terms (-10.0%, or -61.6 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (-1.3%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting loss of en-route revenues (-6.4 M€2009) is therefore fully borne by the main ATSP (ENAV).						
According to STATFOR February 2019 <a href="#">base</a> scenario, the en-route TSUs for Italy are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2.						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -12.1% (-86.2 M€) lower than planned. However, since the actual inflation index is also lower than planned (-2.8 p.p.), actual en-route costs are -10.0% (-61.6 M€2009) below plans when expressed in real terms.						
The lower than planned en-route costs in real terms are driven by ENAV (-9.5%, or -48.3 M€2009), ITAF (-14.6%, or -8.6 M€2009) and the NSA/EUROCONTROL (-9.9%, or -4.7 M€2009). A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -5.8 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



ITALY: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



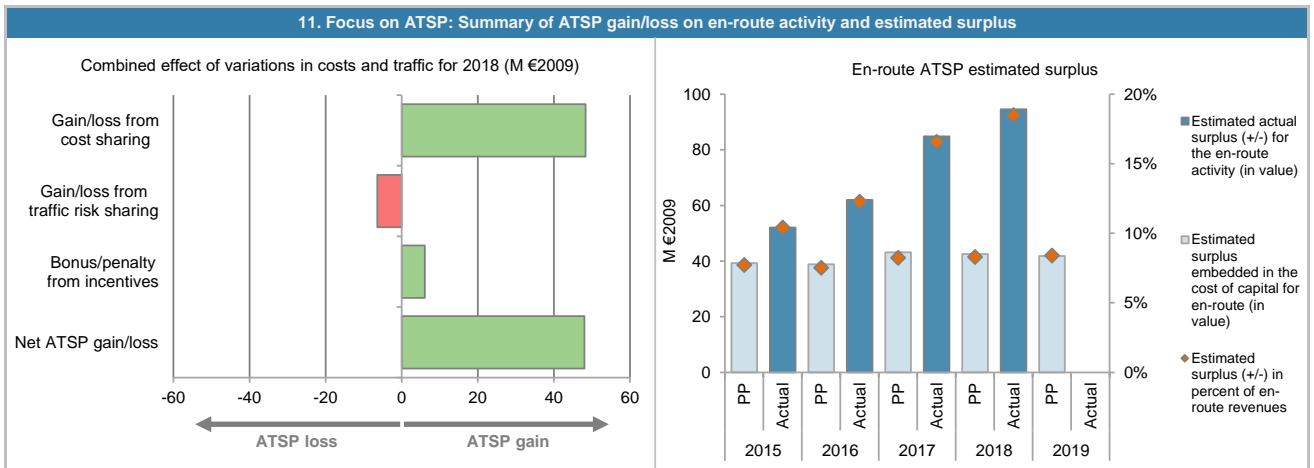
## ITALY: En-route ATSP (ENAV)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	508 717	516 644	523 252	511 500	
Actual costs for the ATSP	487 764	482 739	473 875	463 157	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	20 953	33 905	49 377	48 343	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>20 953</b>	<b>33 905</b>	<b>49 377</b>	<b>48 343</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-4.5%	-6.4%	-6.3%	-1.3%	
Determined costs for the ATSP (PP) - based on actual inflation	500 771	514 683	521 266	511 069	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-13 795</b>	<b>-17 069</b>	<b>-17 073</b>	<b>-6 405</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>5 260</b>	<b>5 418</b>	<b>5 640</b>	<b>6 101</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>12 418</b>	<b>22 253</b>	<b>37 944</b>	<b>48 039</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	973 075	962 488	950 136	936 095	921 353
Estimated proportion of financing through equity (in %)	70.0%	70.0%	70.0%	70.0%	70.0%
Estimated proportion of financing through equity (in value)	681 153	673 742	665 095	655 266	644 947
Estimated proportion of financing through debt (in %)	30.0%	30.0%	30.0%	30.0%	30.0%
Estimated proportion of financing through debt (in value)	291 923	288 746	285 041	280 828	276 406
Cost of capital pre-tax (in value)	49 984	49 440	53 558	52 766	51 935
Average interest on debt (in %)	3.7%	3.7%	3.7%	3.7%	3.7%
Interest on debt (in value)	10 655	10 539	10 404	10 250	10 089
Determined RoE pre-tax rate (in %)	5.8%	5.8%	6.5%	6.5%	6.5%
Estimated surplus embedded in the cost of capital for en-route (in value)	39 329	38 901	43 154	42 516	41 846
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>39 329</b>	<b>38 901</b>	<b>43 154</b>	<b>42 516</b>	<b>41 846</b>
<b>Revenue/costs for the en-route activity</b>	<b>508 717</b>	<b>516 644</b>	<b>523 252</b>	<b>511 500</b>	<b>497 949</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>7.7%</b>	<b>7.5%</b>	<b>8.2%</b>	<b>8.3%</b>	<b>8.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>5.8%</b>	<b>5.8%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	982 145	983 128	802 883	717 817	
Estimated proportion of financing through equity (in %)	70.0%	70.0%	90.0%	100.0%	
Estimated proportion of financing through equity (in value)	687 502	688 190	722 595	717 817	
Estimated proportion of financing through debt (in %)	30.0%	30.0%	10.0%	0.0%	
Estimated proportion of financing through debt (in value)	294 644	294 939	80 288	0	
Cost of capital pre-tax (in value)	50 450	50 501	48 900	46 574	
Average interest on debt (in %)	3.7%	3.7%	2.5%	0.0%	
Interest on debt (in value)	10 754	10 765	2 015	0	
Determined RoE pre-tax rate (in %)	5.8%	5.8%	6.5%	6.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	39 696	39 735	46 884	46 574	
Net ATSP gain(+)/loss(-) on en-route activity	12 418	22 253	37 944	48 039	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>52 114</b>	<b>61 989</b>	<b>84 828</b>	<b>94 614</b>	
<b>Revenue/costs for the en-route activity</b>	<b>500 182</b>	<b>504 993</b>	<b>511 819</b>	<b>511 196</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>10.4%</b>	<b>12.3%</b>	<b>16.6%</b>	<b>18.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>7.6%</b>	<b>9.0%</b>	<b>11.7%</b>	<b>13.2%</b>	

ITALY: En-route ATSP (ENAV)

Monitoring of en-route COST-EFFICIENCY for 2018



12. Focus on en-route ATSP: General conclusions

Actual 2018 ENAV en-route costs vs. PP

In 2018, ENAV actual en-route costs are -9.5% (-48.3 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-4.4%, or -12.5 M€2009) as a result of "management actions put in place already from the beginning of RP2, actions of which the positive effects also continue in 2018. Up to 2018 the total FTEs of the Company are -353 compared to the FTEs planned in the Performance Plan. About 10% of such reduction is related to the downsizing of the number of executive profiles. A significant part of such reduction is also related to the increase of the early retirement rate and to the rationalisation of the administrative staff allocated to the different sites of the Company";
- much lower other operating costs (-27.3%, or -22.4 M€2009), according to the additional information this is "mainly attributable to a reduction of costs for utilities and operational telecommunications (as combined effect of the improved economic conditions obtained in the renegotiation phase of the contract for E-Net services and the replacement of analogic devices with digital ones), of costs for rent (with the termination of rental contracts for additional premises and the simultaneous shift of staff to the new offices owned by the Company at the Rome Ciampino ACC), as well as a general reduction in support activities";
- lower depreciation costs (-8.0%, or -7.3 M€2009) due to the "cost containment actions put in place in the first three years of the Reference Period (2015-2017). In fact, [...] the Company has obtained a reduction on costs for the implementation activities of plants and equipment for air traffic control from the supplier companies";
- much lower cost of capital (-11.7%, or -6.2 M€2009) resulting from the combined effect of lower than planned actual asset base and higher than planned average rate of cost of capital. Concerning the latter, it is noted that the higher than planned weighted average cost of capital results from a different gearing between equity and debt compared to the plan (actual capital entirely financed through equity, whereas the share of financing through debt was planned in the PP).

ENAV net gain/loss on en-route activity in 2018

As shown in box 9, ENAV generated a net gain of +48.0 M€2009 on the en-route activity. This is a combination of three elements:

- a gain of +48.3 M€2009 arising from the cost sharing mechanism;
- a loss of -6.4 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +6.1 M€2009 (+6.9 M€ in nominal terms), corresponding to a bonus for ENAV as part of the en-route capacity target incentive mechanism. This amount corresponds to 1.08% of ENAV en-route revenues (based on ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission. See also **Note 1** at the end of this Report.

ENAV overall estimated surplus for the en-route activity

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+48.0 M€2009) and the surplus embedded in the actual cost of capital (+46.6 M€2009) amounts to +94.6 M€2009 (18.5% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 13.2%, which is much higher than the 6.5% planned in the PP.

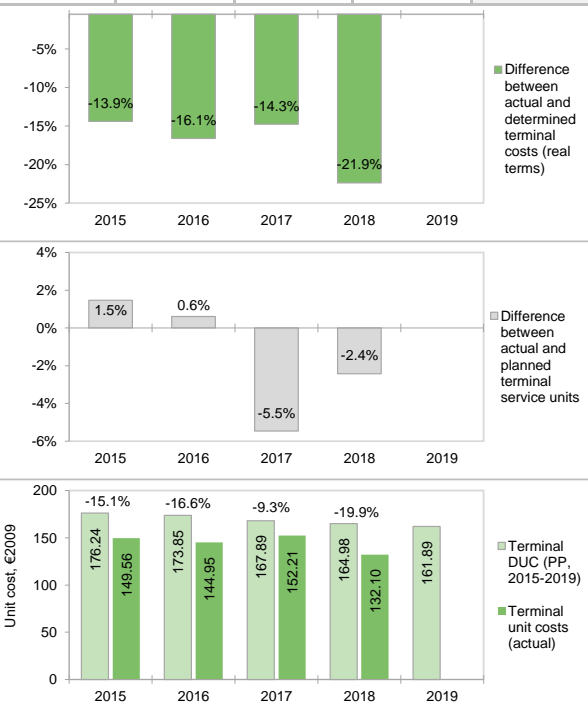
It is also noted that the actual gearing between equity and debt financing reported by ENAV in 2018 differs from the ratio planned in the PP for the year 2018. As already indicated in the analysis on cost of capital above, due to this change, the actual weighted average cost of capital (6.5%) is higher than foreseen in the PP (5.6%).



## ITALY - ZONE 1: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Italy - Zone 1 TCZ represents 3.6% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	ENAV	· Airports with fewer than 70,000 IFRs ATMs:		0		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	1,	of which:	· Airports with more than 225,000 IFRs ATMs:	1		
2. Terminal DUC monitoring at Charging Zone level						
Italy - Zone 1: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	42 696 901	43 687 670	43 890 827	44 785 896	45 542 237	
Inflation %	1.0%	1.1%	1.3%	1.5%	1.6%	
Inflation index (100 in 2009)	110.8	112.0	113.5	115.2	117.0	
Real terminal costs (EUR2009)	38 537 174	39 002 391	38 680 909	38 886 435	38 920 419	
Total terminal Service Units	218 658	224 343	230 401	235 700	240 414	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>176.24</b>	<b>173.85</b>	<b>167.89</b>	<b>164.98</b>	<b>161.89</b>	
Italy - Zone 1: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	36 422 803	35 874 570	36 830 898	34 156 485		
Inflation %	0.1%	-0.1%	1.3%	1.2%		
Inflation index (100 in 2009)	109.8	109.7	111.1	112.4		
Real terminal costs (EUR2009)	33 180 738	32 714 019	33 155 078	30 382 982		
Total terminal Service Units	221 862	225 695	217 830	229 992		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>149.56</b>	<b>144.95</b>	<b>152.21</b>	<b>132.10</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-6 274 098	-7 813 100	-7 059 929	-10 629 411	
	in %	-14.7%	-17.9%	-16.1%	-23.7%	
Inflation %	in p.p.	-0.9 p.p.	-1.2 p.p.	0.0 p.p.	-0.3 p.p.	
Inflation index (100 in 2009)	in p.p.	-1.0 p.p.	-2.4 p.p.	-2.4 p.p.	-2.8 p.p.	
Real terminal costs (EUR2009)	in value	-5 356 436	-6 288 373	-5 525 831	-8 503 453	
	in %	-13.9%	-16.1%	-14.3%	-21.9%	
Total terminal Service Units	in value	3 203	1 352	-12 570	-5 708	
	in %	1.5%	0.6%	-5.5%	-2.4%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>-26.69</b>	<b>-28.90</b>	<b>-15.68</b>	<b>-32.88</b>	
	in %	<b>-15.1%</b>	<b>-16.6%</b>	<b>-9.3%</b>	<b>-19.9%</b>	
3. Focus on terminal at State/Charging Zone level						
<p>This analysis focuses on Italy - Zone 1 Terminal Charging Zone (TCZ) comprising only Roma Fiumicino (LIRF) airport. An analysis of TCZ 2 comprising Milano/Malpensa (LIMC), Bergamo/Orio al Serio (LIME), Milano/Linate (LIML) and Venezia/Tessera (LIPZ) airports is provided separately.</p>						
<p><b>Terminal unit cost</b></p> <p>In 2018, the actual terminal unit cost in real terms (132.10 €2009) is -19.9% lower than planned in the PP (164.98 €2009). This results from the combination of slightly lower than planned TNSUs (-2.4%) and much lower than planned terminal costs in real terms (-21.9%, or -8.5 M€2009).</p>						
<p><b>Terminal service units</b></p> <p>The traffic risk sharing mechanism applies in Italy TCZ 1. The difference between actual and planned TNSUs (-2.4%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ENAV) bearing a loss of -0.8 M€2009. Based on the additional information to the June 2019 terminal reporting tables "this airport has been especially impacted by the situation of Alitalia, which accounted for about 40,8% of the service units generated at Rome Fiumicino airport". According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Italy TCZ 1 are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2.</p>						
<p><b>Terminal costs</b></p> <p>In nominal terms, actual terminal costs are -23.7% (-10.6 M€) lower than planned. However, since the actual inflation index is also lower than planned (-2.8 p.p.), actual terminal costs are -21.9% (-8.5 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by ENAV (-22.0%, or -8.5 M€2009) and, to a lesser extent, by the NSA costs (-0.6%). A detailed analysis at ATSP level is provided in box 12.</p>						
<p>There are no costs exempt from cost-sharing reported.</p>						



ITALY - ZONE 1: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	-22.0%
Other ANSPs	-
METSP	-
NSA	-0.6%
Total	-21.9%

Costs by nature at ATSP level:

Staff	-23.1%
Other operating costs	-46.9%
Depreciation	-19.0%
Cost of capital	9.8%
Exceptional items	-
VFR exempted flights	-
Total	-22.0%

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	0	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

Italy - Zone 1 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR

The terminal unit rate charged to airspace users (CUR) in 2018 is 187.30 €. This is -1.4% lower than the nominal DUC (190.01 €). The difference between these two figures (-2.71 €) relates to:

- the inflation adjustment (-3.89 €), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic adjustment (-0.12 €), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018; and
- a bonus in respect of the capacity target incentive mechanism related to performance in 2015 and 2016 (+1.30 €).

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

Italy - Zone 1 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (186.63 €) is -1.8% lower than the nominal DUC (190.01 €). The difference between these two figures (-3.38 €) is mainly due to:

- the inflation adjustment (-4.65 €), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020;
- a traffic risk sharing adjustment (+0.53 €), which reflects the loss in revenues due to lower than planned traffic in 2018, to be charged to airspace users in the next years;
- a traffic adjustment (+0.37 €), for the costs not subject to traffic risk sharing and the related under recoveries due to lower traffic than planned in 2018 to be charged to airspace users in the next years; and
- a bonus in respect of the capacity target incentive mechanism related to 2018 performance (+0.37 €). The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission (see **Note 2** at the end of this Report).

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

## ITALY: Terminal ATSP (ENAV) Italy - Zone 1

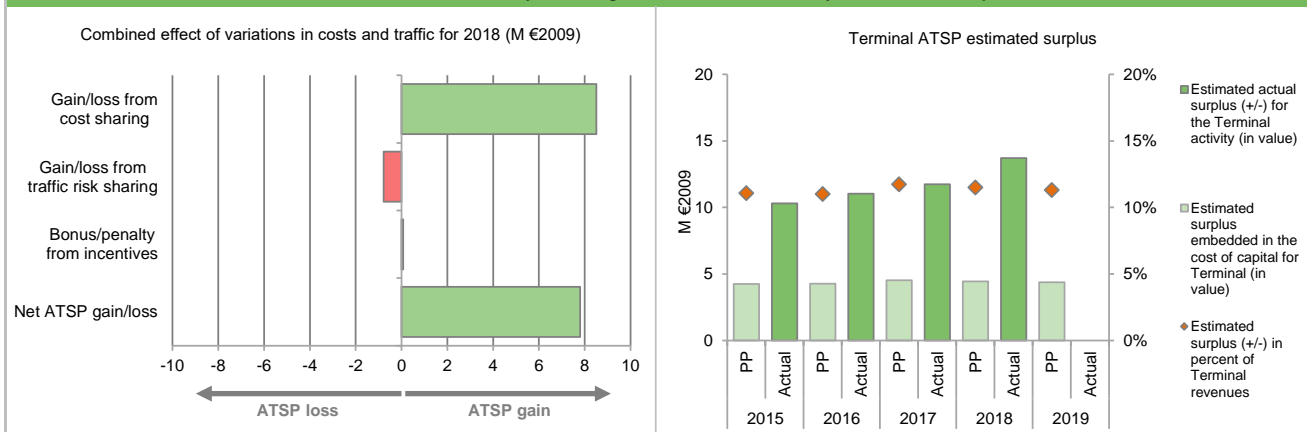
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	38 350	38 813	38 489	38 694	
Actual costs for the ATSP	32 992	32 523	32 964	30 192	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	5 357	6 290	5 526	8 502	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>5 357</b>	<b>6 290</b>	<b>5 526</b>	<b>8 502</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.5%	0.6%	-5.5%	-2.4%	
Determined costs for the ATSP (PP) - based on actual inflation	35 838	36 707	36 401	36 703	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>525</b>	<b>221</b>	<b>-1 105</b>	<b>-781</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>126</b>	<b>154</b>	<b>74</b>	<b>76</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>6 008</b>	<b>6 666</b>	<b>4 494</b>	<b>7 798</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	79 306	78 443	80 342	79 154	77 908
Estimated proportion of financing through equity (in %)	70.0%	70.0%	70.0%	70.0%	70.0%
Estimated proportion of financing through equity (in value)	55 514	54 910	56 239	55 408	54 536
Estimated proportion of financing through debt (in %)	30.0%	30.0%	30.0%	30.0%	30.0%
Estimated proportion of financing through debt (in value)	23 792	23 533	24 103	23 746	23 372
Cost of capital pre-tax (in value)	4 964	5 219	5 457	5 376	5 291
Average interest on debt (in %)	3.0%	4.0%	3.9%	3.9%	3.9%
Interest on debt (in value)	714	941	940	926	912
Determined RoE pre-tax rate (in %)	7.7%	7.8%	8.0%	8.0%	8.0%
Estimated surplus embedded in the cost of capital for terminal (in value)	4 250	4 278	4 517	4 450	4 380
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>4 250</b>	<b>4 278</b>	<b>4 517</b>	<b>4 450</b>	<b>4 380</b>
<b>Revenue/costs for the terminal activity</b>	<b>38 350</b>	<b>38 813</b>	<b>38 489</b>	<b>38 694</b>	<b>38 729</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>11.1%</b>	<b>11.0%</b>	<b>11.7%</b>	<b>11.5%</b>	<b>11.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.7%</b>	<b>7.8%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	80 045	80 125	100 360	73 512	
Estimated proportion of financing through equity (in %)	70.0%	70.0%	90.0%	100.0%	
Estimated proportion of financing through equity (in value)	56 031	56 087	90 324	73 512	
Estimated proportion of financing through debt (in %)	30.0%	30.0%	10.0%	0.0%	
Estimated proportion of financing through debt (in value)	24 013	24 037	10 036	0	
Cost of capital pre-tax (in value)	5 010	5 331	7 506	5 904	
Average interest on debt (in %)	3.0%	4.0%	2.5%	0.0%	
Interest on debt (in value)	720	961	252	0	
Determined RoE pre-tax rate (in %)	7.7%	7.8%	8.0%	8.0%	
Estimated surplus embedded in the cost of capital for terminal (in value)	4 290	4 370	7 254	5 904	
Net ATSP gain(+)/loss(-) on terminal activity	6 008	6 666	4 494	7 798	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>10 298</b>	<b>11 035</b>	<b>11 748</b>	<b>13 702</b>	
<b>Revenue/costs for the terminal activity</b>	<b>39 000</b>	<b>39 189</b>	<b>37 458</b>	<b>37 990</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>26.4%</b>	<b>28.2%</b>	<b>31.4%</b>	<b>36.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>18.4%</b>	<b>19.7%</b>	<b>13.0%</b>	<b>18.6%</b>	

## ITALY: Terminal ATSP (ENAV) Italy - Zone 1

## Monitoring of terminal COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



## 12. Focus on terminal ATSP: General conclusions

## Actual 2018 ENAV terminal costs in TCZ1 vs. PP

In 2018, ENAV actual terminal costs are -22.0% (-8.5 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much lower staff costs (-23.1%, or -4.3 M€2009). As already noted in the analysis of the performance in the en-route charging zone, this is mainly the result of management actions put in place already in 2015 and 2016, which had a positive affect also in 2018, including the reduction of total FTEs (about 10% of this reduction is related to the executive profiles) and an increase in the early retirement rate and rationalisation of administrative staff across the different sites;
- much lower other operating costs (-46.9%, or -3.3 M€2009) due to "reduction of costs for lower utilities and operational telecommunications, cost of rent as well as a general reduction in support activities";
- much lower depreciation costs (-19.0%, or -1.4 M€2009), mainly explained by the "cost containment actions put in place at the beginning of RP2 and a lower implementation cost obtained from the supplier for plans and equipment for air traffic control"; and
- higher cost of capital (+9.8%, or +0.5 M€2009) due to the combination of lower than planned actual asset base and higher than planned weighted average rate of cost of capital. It is noted that the weighted average rate of cost of capital is higher than planned due to a different gearing between equity and debt in 2018 as compared to the plan (increased proportion of financing through equity).

No description of the main drivers for the deviation between actual and determined costs is provided individually for each TCZ in the additional information to June 2019 terminal Reporting Tables. Only a consolidated description for the variation in costs for ENAV, aggregating both TCZs, is reported in the additional information to June 2019 terminal Reporting Tables. The drivers noted above are therefore not necessarily directly related to the activity of ENAV in this particular TCZ.

## ENAV net gain/loss on terminal activity in 2018

As shown in box 9, ENAV generated a net gain of +7.8 M€2009 on the terminal activity. This is a combination of three elements:

- a gain of +8.5 M€2009 arising from the cost sharing mechanism;
- a loss of -0.8 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.1 M€2009 (or 86 '000€ in nominal terms), corresponding to a bonus for ENAV as part of the terminal capacity target incentive mechanism for 2018. The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission. See also **Note 2** at the end of this Report.

## ENAV overall estimated surplus for the terminal activity.

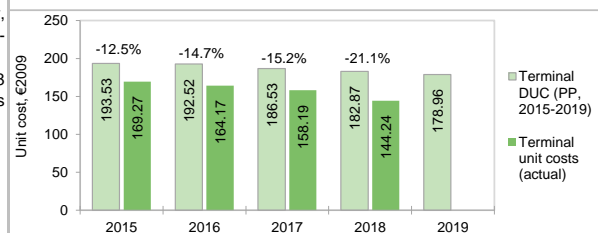
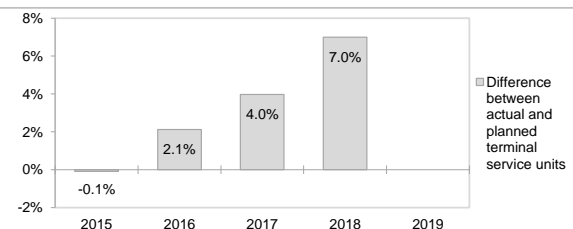
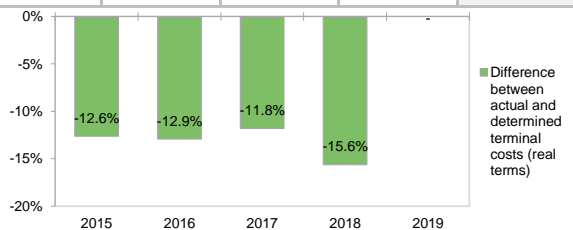
Ex-post, the overall estimated surplus taking into account the gain from the terminal activity mentioned above (+7.8 M€2009) and the surplus embedded in the actual cost of capital (+5.9 M€2009) amounts to +13.7 M€2009 (36.1% of the 2018 terminal revenues in TCZ 1). The resulting ex-post rate of return on equity is 18.6%, which is much higher than the 8.0% planned in the PP.

It is also noted that the actual gearing between equity and debt financing reported by ENAV in 2018 differs from the ratio planned in the PP for the year 2018. As already indicated in the analysis on cost of capital above, due to this change, the actual weighted average cost of capital (8.0%) is higher than foreseen in the PP (6.8%).

## ITALY - ZONE 2: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Italy - Zone 2 TCZ represents 5.3% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No	
· ATSP:	ENAV	· Airports with fewer than 70,000 IFRs ATMs:		0	
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		4	
· Number of airports in charging zone in 2018:	4,	of which:		· Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Italy - Zone 2: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	61 479 947	63 501 025	63 881 934	65 032 915	65 952 563
Inflation %	1.03%	1.1%	1.3%	1.5%	1.6%
Inflation index (100 in 2009)	110.8	112.0	113.5	115.2	117.0
Real terminal costs (EUR2009)	55 490 290	56 690 865	56 299 036	56 466 398	56 363 094
Total terminal Service Units	286 726	294 467	301 829	308 771	314 947
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>193.53</b>	<b>192.52</b>	<b>186.53</b>	<b>182.87</b>	<b>178.96</b>
Italy - Zone 2: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	53 228 033	54 136 477	55 151 947	53 570 380	
Inflation %	0.10%	-0.1%	1.3%	1.2%	
Inflation index (100 in 2009)	109.8	109.7	111.1	112.4	
Real terminal costs (EUR2009)	48 490 101	49 367 051	49 647 638	47 652 091	
Total terminal Service Units	286 465	300 714	313 846	330 374	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>169.27</b>	<b>164.17</b>	<b>158.19</b>	<b>144.24</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value -8 251 914	in value -9 364 547	in value -8 729 987	in value -11 462 535	
	in % -13.4%	in % -14.7%	in % -13.7%	in % -17.6%	
Inflation %	in p.p. -0.9 p.p.	in p.p. -1.2 p.p.	in p.p. 0.0 p.p.	in p.p. -0.3 p.p.	
Inflation index (100 in 2009)	in p.p. -1.0 p.p.	in p.p. -2.4 p.p.	in p.p. -2.4 p.p.	in p.p. -2.8 p.p.	
Real terminal costs (EUR2009)	in value -7 000 188	in value -7 323 814	in value -6 651 398	in value -8 814 307	
	in % -12.6%	in % -12.9%	in % -11.8%	in % -15.6%	
Total terminal Service Units	in value -261	in value 6 247	in value 12 016	in value 21 603	
	in % -0.1%	in % 2.1%	in % 4.0%	in % 7.0%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -24.26</b>	<b>in value -28.35</b>	<b>in value -28.33</b>	<b>in value -38.64</b>	
	<b>in % -12.5%</b>	<b>in % -14.7%</b>	<b>in % -15.2%</b>	<b>in % -21.1%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Italy - Zone 2 Terminal Charging Zone (TCZ) comprising Milano/Malpensa (LIMC), Bergamo/Orio al Serio (LIME), Milano/Linate (LIML) and Venezia/Tessera (LIPZ) airports.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (144.24 €2009) is -21.1% lower than planned in the PP (182.87 €2009). This results from the combination of higher than planned TNSUs (+7.0%) and much lower than planned terminal costs in real terms (-15.6%, or -8.8 ME2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Italy TCZ 2. In 2018, the actual TNSUs in Italy TCZ 2 are +7.0% higher than planned in the PP mainly "thanks to the performance of Malpensa, Venezia and Bergamo airports. The reduction of Linate activities was affected by the end of operations of Air Berlin and the reduction of Air Italy. The impact associated with the situation of Alitalia is lower in this zone, since it represents 12,7% of the SUs (nonetheless Alitalia increases of 4,7%)".					
According to STATFOR February 2019 base scenario, the TNSUs for Italy TCZ 2 are expected to remain largely above the planned values for the remainder of RP2.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -17.6% (-11.46 ME) lower than planned. However, since the actual inflation index is also lower than planned (-2.8 p.p.), actual terminal costs are -15.6% (-8.8 ME2009) below plans when expressed in real terms.					
The lower than planned terminal costs in real terms are driven by ENAV (-15.7%, or -8.8 ME2009) and, to a lesser extent, by the NSA costs (-0.6%). A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported.					



ITALY - ZONE 2: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	-15.7%
Other ANSPs	-
METSP	-
NSA	-0.6%
Total	-15.6%

Costs by nature at ATSP level:

Staff	-12.6%
Other operating costs	-35.0%
Depreciation	-12.8%
Cost of capital	-0.4%
Exceptional items	-
VFR exempted flights	-
Total	-15.7%

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	0	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

Italy - Zone 2 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR

The terminal unit rate charged to airspace users (CUR) in 2018 is 203.06 €. This is -3.6% lower than the nominal DUC (210.62 €). The difference between these two figures (-7.56 €) relates to:

- the inflation adjustment (-4.32 €), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic adjustment (-4.72 €), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018; and
- a bonus in respect of the capacity target incentive mechanism related to performance in 2015 and 2016 (+1.48 €).

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

Italy - Zone 2 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (192.55 €) is -8.6% lower than the nominal DUC (210.62 €). The difference between these two figures (-18.07 €) is mainly due to:

- the inflation adjustment (-4.70 €), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020;
- a traffic adjustment (-13.77 €), for the costs not subject to traffic risk sharing and the related over recoveries due to higher traffic than planned in 2018 to be reimbursed to airspace users in 2020; and
- a bonus in respect of the capacity target incentive mechanism related to 2018 performance (+0.40 €). The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission (see **Note 2** at the end of this Report).

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

## ITALY: Terminal ATSP (ENAV) Italy - Zone 2

## Monitoring of terminal COST-EFFICIENCY for 2018

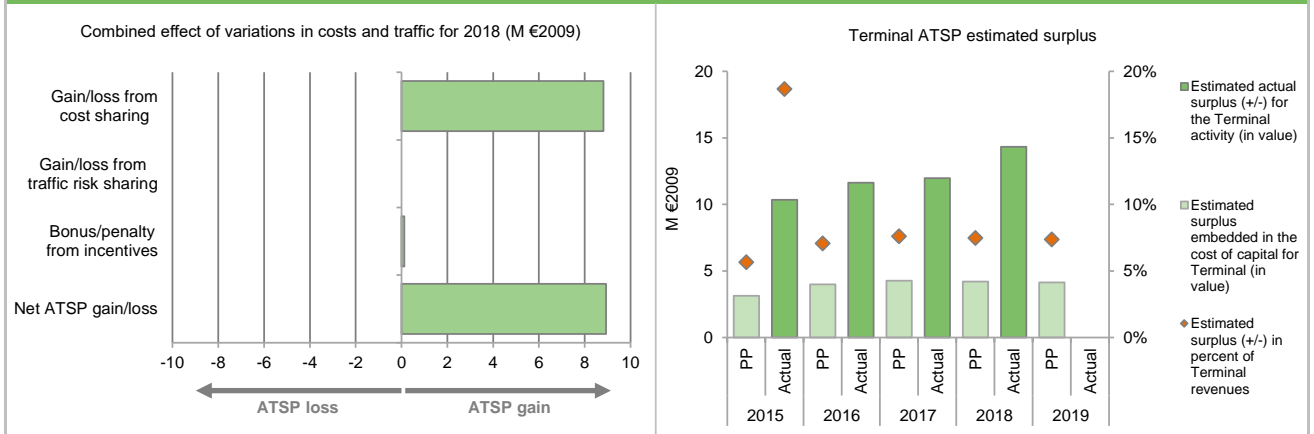
9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	55 198	56 396	56 001	56 167	
Actual costs for the ATSP	48 197	49 070	49 350	47 354	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	7 002	7 327	6 651	8 813	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>7 002</b>	<b>7 327</b>	<b>6 651</b>	<b>8 813</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
	Not Applicable				
	Not Applicable				
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>178</b>	<b>239</b>	<b>118</b>	<b>119</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>7 180</b>	<b>7 566</b>	<b>6 769</b>	<b>8 931</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	104 216	103 082	105 578	104 018	102 380
Estimated proportion of financing through equity (in %)	70.0%	70.0%	70.0%	70.0%	70.0%
Estimated proportion of financing through equity (in value)	72 951	72 158	73 905	72 812	71 666
Estimated proportion of financing through debt (in %)	30.0%	30.0%	30.0%	30.0%	30.0%
Estimated proportion of financing through debt (in value)	31 265	30 925	31 673	31 205	30 714
Cost of capital pre-tax (in value)	4 068	5 226	5 498	5 416	5 331
Average interest on debt (in %)	3.0%	4.0%	3.9%	3.9%	3.9%
Interest on debt (in value)	938	1 237	1 235	1 217	1 198
Determined RoE pre-tax rate (in %)	4.3%	5.5%	5.8%	5.8%	5.8%
Estimated surplus embedded in the cost of capital for terminal (in value)	3 130	3 989	4 262	4 199	4 133
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>3 130</b>	<b>3 989</b>	<b>4 262</b>	<b>4 199</b>	<b>4 133</b>
<b>Revenue/costs for the terminal activity</b>	<b>55 198</b>	<b>56 396</b>	<b>56 001</b>	<b>56 167</b>	<b>56 065</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.7%</b>	<b>7.1%</b>	<b>7.6%</b>	<b>7.5%</b>	<b>7.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>4.3%</b>	<b>5.5%</b>	<b>5.8%</b>	<b>5.8%</b>	<b>5.8%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	105 188	105 293	100 360	93 560	
Estimated proportion of financing through equity (in %)	70.0%	70.0%	90.0%	100.0%	
Estimated proportion of financing through equity (in value)	73 631	73 705	90 324	93 560	
Estimated proportion of financing through debt (in %)	30.0%	30.0%	10.0%	0.0%	
Estimated proportion of financing through debt (in value)	31 556	31 588	10 036	0	
Cost of capital pre-tax (in value)	4 105	5 338	5 461	5 396	
Average interest on debt (in %)	3.0%	4.0%	2.5%	0.0%	
Interest on debt (in value)	947	1 264	252	0	
Determined RoE pre-tax rate (in %)	4.3%	5.5%	5.8%	5.8%	
Estimated surplus embedded in the cost of capital for terminal (in value)	3 159	4 074	5 209	5 396	
Net ATSP gain(+)/loss(-) on terminal activity	7 180	7 566	6 769	8 931	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>10 339</b>	<b>11 640</b>	<b>11 979</b>	<b>14 327</b>	
<b>Revenue/costs for the terminal activity</b>	<b>55 376</b>	<b>56 635</b>	<b>56 119</b>	<b>56 286</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>18.7%</b>	<b>20.6%</b>	<b>21.3%</b>	<b>25.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>14.0%</b>	<b>15.8%</b>	<b>13.3%</b>	<b>15.3%</b>	



ITALY: Terminal ATSP (ENAV) Italy - Zone 2

Monitoring of terminal COST-EFFICIENCY for 2018

11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



12. Focus on terminal ATSP: General conclusions

Actual 2018 ENAV terminal costs in TCZ 2 vs. PP

ENAV actual terminal costs in TCZ 2 are -15.7% (-8.8 M€2009) lower, in real terms, than planned in the PP. According to the additional information provided in the June 2019 terminal Reporting Tables, this results from a combination of:

- lower staff costs (-12.6%, or -3.6 M€2009). As already noted in the analysis of the performance in the en-route charging zone and TCZ1, this is mainly the result of management actions put in place already in 2015 and 2016, which had a positive affect also in 2018, including the reduction of total FTEs (about 10% of this reduction is related to the executive profiles) and an increase in the early retirement rate and rationalisation of administrative staff across the different sites;
- significantly lower other operating costs (-35.0%, or -3.7 M€2009), primarily due to "reduction of costs for lower utilities and operational telecommunications, cost of rent as well as a general reduction in support activities";
- lower depreciation costs (-12.8%, or -1.5 M€2009), mainly explained by the "cost containment actions put in place at the beginning of RP2 and a lower implementation cost obtained from the supplier for plans and equipment for air traffic control"; and
- slightly lower cost of capital (-0.4%, or -0.02 M€2009) due to the combination of lower than planned actual asset base and higher than planned weighted average rate of cost of capital. It is noted that the weighted average rate of cost of capital is higher than planned due to a different gearing between equity and debt in 2018 as compared to the plan (increased proportion of financing through equity).

No description of the main drivers for the deviation between actual and determined costs is provided individually for each TCZ in the additional information to June 2019 terminal Reporting Tables. Only a consolidated description for the variation in costs for ENAV, aggregating both TCZs, is reported in the additional information to June 2019 terminal Reporting Tables. The drivers noted above are therefore not necessarily directly related to the activity of ENAV in this particular TCZ.

ENAV 2018 net gain/loss on terminal activity in TCZ 2

As shown in box 9, the terminal activity in TCZ 2 generated a net gain of some +8.9 M€2009 in 2018. This is a combination of two elements:

- a gain of +8.8 M€2009 as a result of the cost sharing mechanism; and,
- a gain of +0.1 M€2009 (or 133 '000€ in nominal terms), corresponding to a bonus for ENAV as part of the terminal capacity target incentive mechanism. The inclusion of this bonus in the chargeable cost base will be examined by the European Commission. See also **Note 2** at the end of this Report.

ENAV overall estimated surplus for the terminal activity in TCZ 2

Ex-post, the overall estimated surplus taking into account the net gain from the terminal activity in TCZ 2 mentioned above (+8.9 M€2009) and the surplus embedded in the cost of capital (+5.4 M€2009) amounts to +14.3 M€2009 (approximately 25.5% of the 2018 terminal revenues in TCZ 2). The resulting ex-post rate of return on equity is 15.3%, which is much higher than the 5.8% planned in the PP for the TCZ 2.

It is also noted that the actual gearing between equity and debt financing reported by ENAV in 2018 differs from the ratio planned in the PP for the year 2018. As already indicated in the analysis on cost of capital above, due to this change, the actual weighted average cost of capital (5.8%) is higher than foreseen in the PP (5.2%).



## ITALY: Gate-to-gate

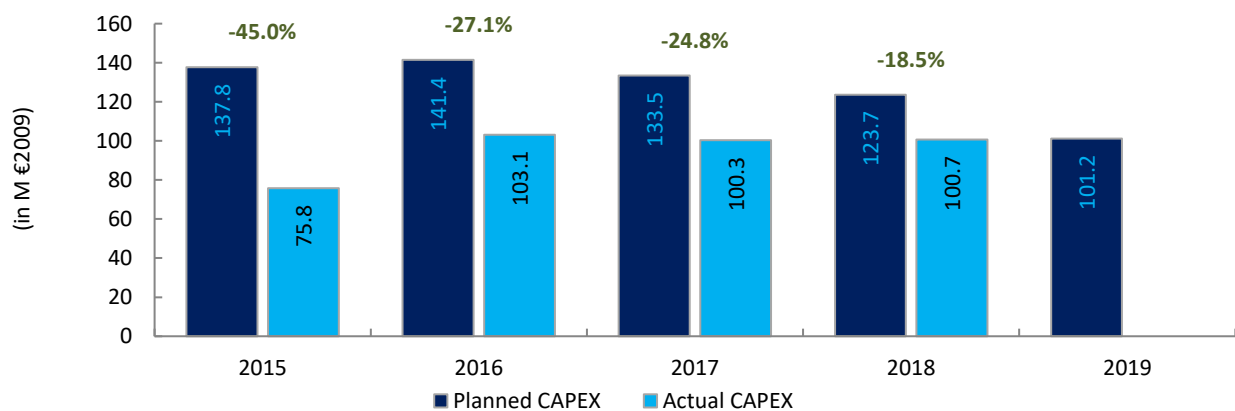
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Italy: Data from RP2 Performance Plan</b>																																												
	<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																																							
Real en-route costs (EUR2009)	609 005 804	619 176 790	627 477 336	617 241 895	604 216 765																																							
Real terminal costs (EUR2009)	94 027 463	95 693 256	94 979 945	95 352 833	95 283 514																																							
Real gate-to-gate costs (EUR2009)	703 033 268	714 870 046	722 457 281	712 594 727	699 500 279																																							
En-route share (%)	86.6%	86.6%	86.9%	86.6%	86.4%																																							
<b>Italy: Actual data from Reporting Tables</b>																																												
	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																																							
Real en-route costs (EUR2009)	587 471 424	581 543 938	567 098 230	555 636 761																																								
Real terminal costs (EUR2009)	81 670 839	82 081 069	82 802 716	78 035 073																																								
Real gate-to-gate costs (EUR2009)	669 142 263	663 625 007	649 900 946	633 671 834																																								
En-route share (%)	87.8%	87.6%	87.3%	87.7%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																																							
Real gate-to-gate costs (EUR2009)	in value	-33 891 005	-51 245 039	-72 556 335	-78 922 894																																							
	in %	-4.8%	-7.2%	-10.0%	-11.1%																																							
En-route share	in p.p.	1.2 p.p.	1.0 p.p.	0.4 p.p.	0.0 p.p.																																							
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -11.1% (-78.9 M€2009) lower than planned due to lower than planned en-route costs (-10.0%, or -61.6 M€2009) and terminal costs (-18.2%, or -17.3 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (87.7%) is slightly higher than planned in the PP for 2018 (86.6%).</p> <p>For ENAV, the estimated gate-to-gate economic surplus in 2018 amounts to 122.6 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 20.2% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>86.6%</td> <td>13.4%</td> </tr> <tr> <td>Actual</td> <td>87.8%</td> <td>12.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>86.6%</td> <td>13.4%</td> </tr> <tr> <td>Actual</td> <td>87.6%</td> <td>12.4%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>86.9%</td> <td>13.1%</td> </tr> <tr> <td>Actual</td> <td>87.3%</td> <td>12.7%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>86.6%</td> <td>13.4%</td> </tr> <tr> <td>Actual</td> <td>87.7%</td> <td>12.3%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>86.4%</td> <td>13.6%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	86.6%	13.4%	Actual	87.8%	12.2%	2016	Determined	86.6%	13.4%	Actual	87.6%	12.4%	2017	Determined	86.9%	13.1%	Actual	87.3%	12.7%	2018	Determined	86.6%	13.4%	Actual	87.7%	12.3%	2019	Determined	86.4%	13.6%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Italy</b>																																												
<p><b>Note 1:</b> A bonus of 6 859 '000€ for achieving the local en-route capacity target is reported for ENAV in the BLUEMED FAB 2018 Monitoring Report and in the submission of June 2019 en-route Reporting Tables. This amount corresponds to 1.08% of ENAV en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission.</p>																																												
<p><b>Note 2:</b> Bonuses of 86 '000€ for TCZ1 and 133 '000€ for TCZ2 for achieving the respective local terminal ANS capacity targets are reported for ENAV (see capacity section for complete information). These amounts correspond to 0.2% of ENAV terminal revenues for both TCZ1 and TCZ2 (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of these bonuses in the chargeable cost-bases will be examined by the European Commission.</p>																																												

## ITALY

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ENAV						
FAB: BLUE MED FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	152.6	158.4	151.4	142.4	118.4	723.3
Main CAPEX (in nominal M)	41.6	75.4	75.7	60.2	40.3	293.2
Inflation %	1.0%	1.1%	1.3%	1.5%	1.6%	
Inflation index (100 in 2009)	110.8	112.0	113.5	115.2	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>137.8</b>	<b>141.4</b>	<b>133.5</b>	<b>123.7</b>	<b>101.2</b>	<b>637.5</b>
Main CAPEX (in M €2009)	37.6	67.3	66.7	52.2	34.5	258.3
% Main of Total CAPEX	27.3%	47.6%	50.0%	42.2%	34.1%	40.5%
Real gate-to-gate ANSP costs (in M €2009)	602.3	611.9	617.7	606.4	592.7	3 031.0
Total CAPEX as % of Real gate-to-gate ANSP costs	22.9%	23.1%	21.6%	20.4%	17.1%	21.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	83.2	113.1	111.4	113.2		
Main CAPEX (in nominal M)	24.1	53.7	50.0	50.1		
Inflation %	0.1%	-0.1%	1.3%	1.2%		
Inflation index (100 in 2009)	109.8	109.7	111.1	112.4		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>75.8</b>	<b>103.1</b>	<b>100.3</b>	<b>100.7</b>		
Main CAPEX (in M €2009)	22.0	48.9	45.0	44.6		
% Main of Total CAPEX	29.0%	47.5%	44.8%	44.3%		
Real gate-to-gate ANSP costs (in M €2009)	569.0	564.3	556.2	540.7		
Total CAPEX as % of Real gate-to-gate ANSP costs	13.3%	18.3%	18.0%	18.6%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-69.5	-45.3	-40.0	-29.2		
Total CAPEX (in M €2009)	-62.0	-38.3	-33.2	-22.9		
<b>Total CAPEX (in %, M €2009)</b>	<b>-45.0%</b>	<b>-27.1%</b>	<b>-24.8%</b>	<b>-18.5%</b>		



# Annual Monitoring Report 2018

## Local level view

### Malta



## MALTA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	72	C	C	C	B	C
<b>MATS</b>	84	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
<b>Source of RAT data:</b>			Transport Malta			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			9	0		
Legal/Judiciary			7	0		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>18</b>	<b>0</b>		
<b>MATS</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			12	1		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			6	2		
<b>TOTAL</b>			<b>20</b>	<b>4</b>		
Observations						
Only one question out of 36 in the EoSM Component/area of the State in Safety Promotion does not meet the 2019 EoSM target level.						

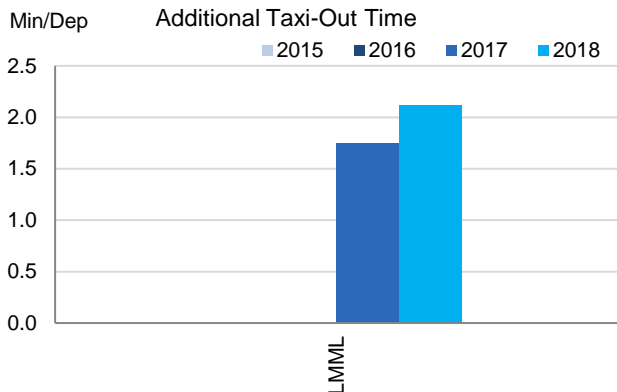
**MALTA**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

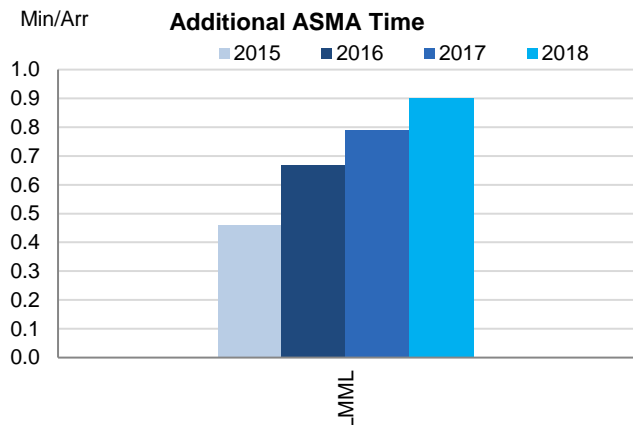
In Malta (LMML), where traffic has drastically increased since the beginning of RP2 (+35% with respect to 2015) both environmental indicators show a steady deterioration in the reference period 2. The performance does not seem affected by the seasonality of the airport.

**2. Additional Taxi-Out Time**



The average additional taxi-out time in Malta has significantly increased in 2018 (+21% for 2017) although it is commensurate with the level of traffic. Taxi out times were longer in February and March, when additional TXOT exceeded the 2.5 min/dep.

**3. Additional ASMA Time**



After 3 years of steady increase, additional times in the sequence and metering area (ASMA) at Malta have now doubled those in the beginning of the reference period (LMML: 2015: 0.46 min/arr.; 2018: 0.90 min/arr.)

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Malta	LMML	n/a	n/a	1.75	2.12		0.46	0.67	0.79	0.90	

## MALTA

## Monitoring of CAPACITY for 2018

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.01	0.02	0.02	0.02	0.02	
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.00	0.00	0.00	0.00		

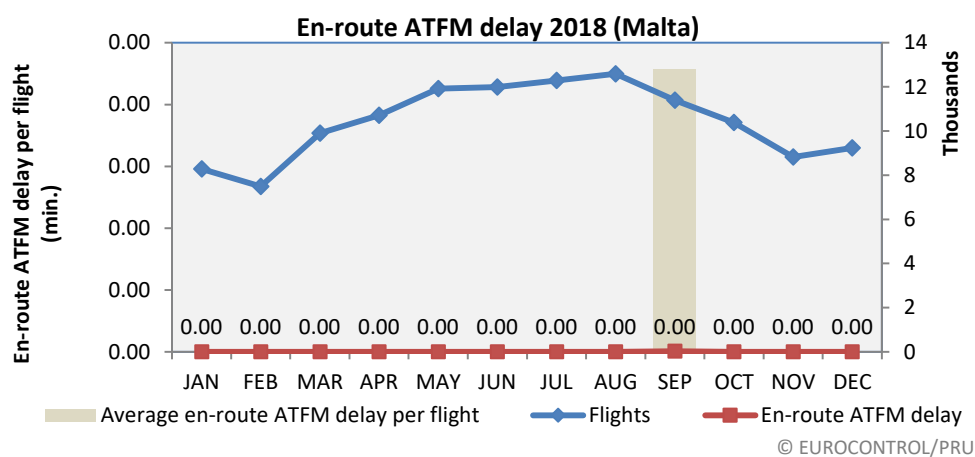
### National capacity incentive scheme

Malta did not present an en route capacity incentive scheme in the BLUEMED performance plan.

### Compliance issues relating to national capacity incentive scheme

Nil

### Observations regarding national capacity performance



En-route ATFM delay per flight (Malta)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EUROCONTROL 7 year forecast February 2014 – Malta										
	2014		2015		2016		2017		2018	2019
	actual		actual		actual		actual		actual	
High	120		130		140		149		159	171
Base	118	102	126	102	133	110	139	116	145	125
Low	116		122		125		129		132	136

En route capacity performance in Malta in 2018 resulted in negligible ATFM delay for airspace users, continuing the excellent performance for previous years. It is noted that the traffic evolution for Malta has been lower than initially forecast by STATFOR when the FAB performance plans and associated capacity plans were being determined. In light of the evolution of traffic and the existing capacity plans, it is expected that Malta will be able to deliver similar capacity performance for the remainder of RP2, and for RP3.

Malta delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.01	0.01	0.01	0.01	N/A	N/A
NOP 2019 - 2024	0.01	0.01	0.01			

**Planning and Effective Use of CDRs**

Malta has previously stated that there are no CDR's in Maltese airspace.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Malta does not have defence aircraft. Furthermore the territory of Malta is small and no airspace dedicated to the military exists. FUA principles apply over the high seas with foreign military forces either through direct coordination or through established agreements. The Commission confirmed on 27.09.2013 that Article 4 (1) of Regulation EC No 2150/2005 is not applicable to states that do not have defence aircraft.

**Observations on Effective booking procedures**

Historically, Malta has stated that military operations and training does not impact either ATC capacity or available route options for GAT traffic.



## MALTA

## Monitoring of Airports Contribution to CAPACITY for 2018

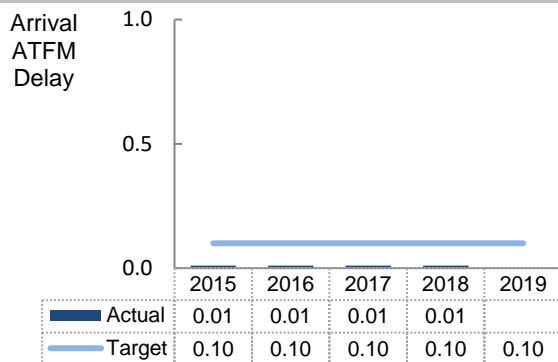
## 1. Overview

Malta (LMML) is the only airport subject to RP2 monitoring. Traffic levels at Malta airport have drastically increased during RP2 (+34.9% with respect to 2015). Despite this fact, arrival ATFM delays have remained similar to those in the beginning of the reference period, fully meeting the national target with a negligible local share of arrival ATFM delay (i.e. 0.01 min/arr. in every year of RP2).

At the same time, LMML ranges in the group of best-in-class with a level of ATFM slot adherence of above 95%. Pre-departure delay has slightly increased in 2018 reaching 0.28 min/dep.

Malta contributes adequately to the BLUE MED FAB and European performance.

## 2. Arrival ATFM Delay



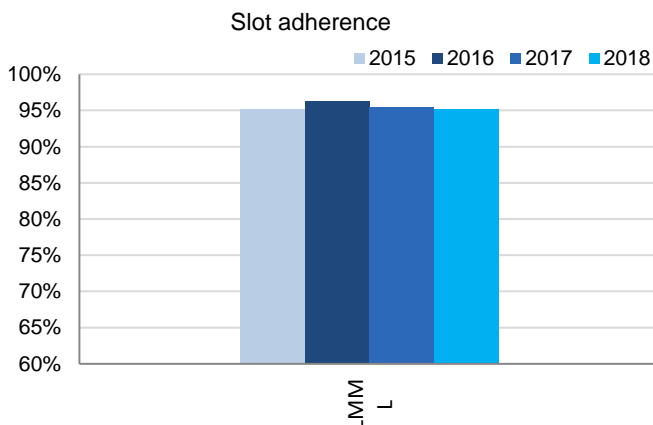
Once again, Malta shows a constant performance in terms of arrival ATFM delay during RP2. The observed average arrival ATFM accounts for a negligible value of 0.01 min/arr. The actual performance ranges well below the established national target (i.e. 0.10 min/arr., constant across RP2).

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Within BLUE MED FAB, Malta has established a constant national target on arrival ATFM delay that has been fully met each year in RP2.

This target is in line with the historical performance observed before the start of RP2 and allows for operational variability. Malta has not established an incentive scheme for the national target on arrival ATFM delay.

## 4. ATFM Slot Adherence



Although there is a slight decrease of ATFM slot adherence, Malta remains within best-in-class, above 95% compliance.

## 5. ATC Pre-departure Delay

ATC pre-departure delay at Malta airport in 2018 has increased to 0.28 min/dep, which is higher than most airports with similar number of movements.

The quality of the data provided through the Airport Operator Data Flow, necessary for the calculation of the pre-departure delay indicator has improved in 2018.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Malta	LMML	0.01	0.01	0.01	0.01		95.1%	96.3%	95.5%	95.2%		0.08	0.16	0.17	0.28	

## MALTA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services																							
<ul style="list-style-type: none"> <li>Malta ECZ represents 0.3% of the SES en-route ANS determined costs in 2018</li> <li>ATSP: MATS</li> <li>FAB: BLUE MED FAB</li> <li>National currency: EUR</li> </ul>																							
2. En-route DUC monitoring at Charging Zone level																							
Malta: Data from RP2 Performance Plan (EC Decision 2017/2376 of 15 December 2017)	2015D	2016D	2017D	2018D	2019D																		
En-route costs (nominal EUR)	17 736 060	19 082 057	20 694 940	21 720 523	22 752 314																		
Inflation %	1.7%	1.8%	1.7%	1.7%	1.7%																		
Inflation index (100 in 2009)	111.9	114.0	115.9	117.9	119.9																		
Real en-route costs (EUR2009)	15 844 908	16 745 957	17 857 802	18 429 483	18 982 242																		
Total en-route Service Units	609 000	621 000	880 000	933 000	990 000																		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>26.02</b>	<b>26.97</b>	<b>20.29</b>	<b>19.75</b>	<b>19.17</b>																		
Malta: Actual data from Reporting Tables (see Note 1)	2015A	2016A	2017A	2018A	2019A																		
En-route costs (nominal EUR)	16 845 837	18 130 096	20 442 642	22 321 466																			
Inflation %	1.2%	0.9%	1.3%	1.7%																			
Inflation index (100 in 2009)	111.2	112.2	113.6	115.6																			
Real en-route costs (EUR2009)	15 153 971	16 163 775	17 991 619	19 316 792																			
Total en-route Service Units	823 344	905 497	915 945	934 710																			
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>18.41</b>	<b>17.85</b>	<b>19.64</b>	<b>20.67</b>																			
Difference between Actuals and Planned	2015	2016	2017	2018	2019																		
En-route costs (nominal EUR)																							
in value	-890 223	-951 961	-252 298	600 943																			
in %	-5.0%	-5.0%	-1.2%	2.8%																			
Inflation %																							
in p.p.	-0.5 p.p.	-0.9 p.p.	-0.4 p.p.	0.0 p.p.																			
Inflation index (100 in 2009)																							
in p.p.	-0.8 p.p.	-1.8 p.p.	-2.3 p.p.	-2.3 p.p.																			
Real en-route costs (EUR2009)																							
in value	-690 937	-582 183	133 817	887 308																			
in %	-4.4%	-3.5%	0.7%	4.8%																			
Total en-route Service Units																							
in value	214 344	284 497	35 945	1 710																			
in %	35.2%	45.8%	4.1%	0.2%																			
<b>Real en-route unit cost per Service Unit (EUR2009)</b>																							
in value	<b>-7.61</b>	<b>-9.12</b>	<b>-0.65</b>	<b>0.91</b>																			
in %	<b>-29.3%</b>	<b>-33.8%</b>	<b>-3.2%</b>	<b>4.6%</b>																			
3. Focus on en-route at State/Charging Zone level (see Note 1)																							
<p><b>En-route unit cost</b> In 2018, the actual en-route unit cost in real terms (20.67 €2009) is +4.6% higher than planned in the PP (19.75 €2009). This is mainly driven by higher than planned en-route costs in real terms (+4.8%, or +0.9 M€2009), while the TSUs remained mostly in line with the plan (+0.2%). See also <a href="#">Notes 1 and 2</a> at the end of this Report.</p> <p><b>En-route service units</b> The difference between actual and planned TSUs (+0.2%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues (+0.03 M€2009) is therefore fully retained by the main ATSP (MATS). According to STATFOR February 2019 <a href="#">base</a> scenario, the en-route TSUs for Malta are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It is noted that the determined TSUs underpinning the adopted RP2 cost-efficiency targets for 2015-2016 were significantly below STATFOR February 2014 <a href="#">low</a> TSU growth scenario, while the TSUs selected for the revised PP (2017-2019) were in line with STATFOR February 2016 <a href="#">base</a> TSU growth scenario.</p> <p><b>En-route costs</b> In nominal terms, actual en-route costs are +2.8% (+0.6 M€) higher than planned. However, since the actual inflation index is lower than planned (-2.3 p.p.), actual en-route costs are +4.8% (+0.9 M€2009) above plans when expressed in real terms. The higher than planned en-route costs in real terms are driven by all reporting entities: MATS (+4.3%, or +0.7 M€2009), the MET service provider (+3.8%, or +0.02 M€2009) and the NSA/EUROCONTROL (+10.4%, or +0.2 M€2009). A detailed analysis at ATSP level is provided in box 12.</p> <p>Costs exempt from cost-sharing are reported for a total amount of +0.02 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>																							
<table border="1"> <caption>Difference between actual and determined en-route costs (real terms)</caption> <thead> <tr> <th>Year</th> <th>Difference (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>-4.4%</td> </tr> <tr> <td>2016</td> <td>-3.5%</td> </tr> <tr> <td>2017</td> <td>0.7%</td> </tr> <tr> <td>2018</td> <td>4.8%</td> </tr> <tr> <td>2019</td> <td>0.0%</td> </tr> </tbody> </table>						Year	Difference (%)	2015	-4.4%	2016	-3.5%	2017	0.7%	2018	4.8%	2019	0.0%						
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Year	En-route DUC (PP, 2015-2019)	En-route unit costs (actual)																					
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2016	26.97	17.85																					
2017	20.29	19.64																					
2018	19.75	20.67																					
2019	19.17	20.67																					

**MALTA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



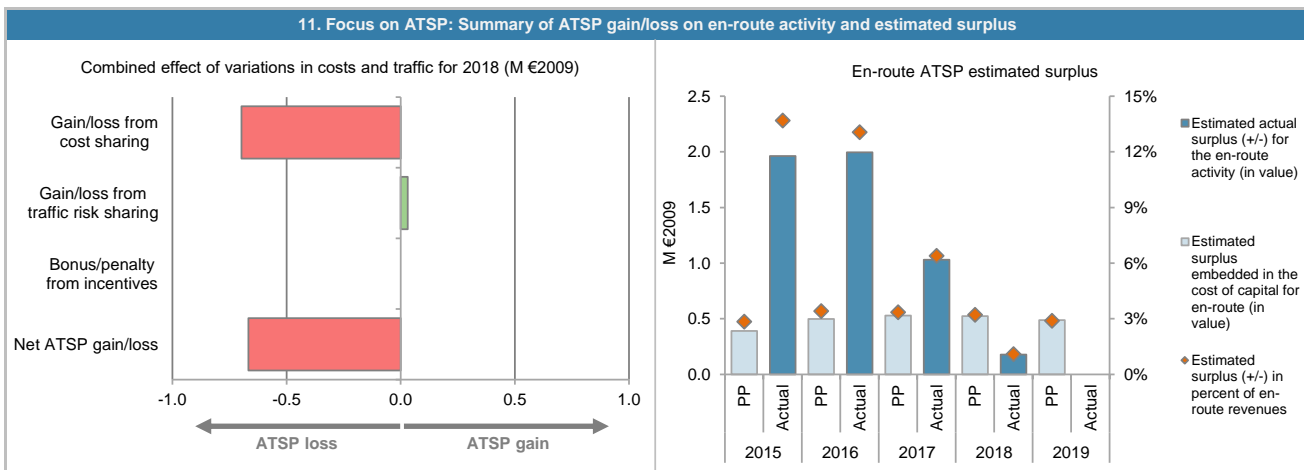
## MALTA: En-route ATSP (MATS)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	13 734	14 616	15 712	16 272	
Actual costs for the ATSP	13 120	14 061	15 887	16 969	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	614	555	-174	-698	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>614</b>	<b>555</b>	<b>-174</b>	<b>-698</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	35.2%	45.8%	4.1%	0.2%	
Determined costs for the ATSP (PP) - based on actual inflation	13 830	14 849	16 026	16 596	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>609</b>	<b>653</b>	<b>421</b>	<b>30</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>1 223</b>	<b>1 209</b>	<b>246</b>	<b>-667</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	9 037	10 721	11 457	11 410	10 563
Estimated proportion of financing through equity (in %)	62.6%	62.3%	57.8%	55.1%	56.2%
Estimated proportion of financing through equity (in value)	5 656	6 677	6 618	6 290	5 931
Estimated proportion of financing through debt (in %)	37.4%	37.7%	42.2%	44.9%	43.8%
Estimated proportion of financing through debt (in value)	3 380	4 044	4 838	5 121	4 632
Cost of capital pre-tax (in value)	526	661	722	728	673
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	4.0%
Interest on debt (in value)	135	162	194	205	185
Determined RoE pre-tax rate (in %)	6.9%	7.5%	8.0%	8.3%	8.2%
Estimated surplus embedded in the cost of capital for en-route (in value)	391	499	529	523	488
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>391</b>	<b>499</b>	<b>529</b>	<b>523</b>	<b>488</b>
<b>Revenue/costs for the en-route activity</b>	<b>13 734</b>	<b>14 616</b>	<b>15 712</b>	<b>16 272</b>	<b>16 809</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>2.8%</b>	<b>3.4%</b>	<b>3.4%</b>	<b>3.2%</b>	<b>2.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.9%</b>	<b>7.5%</b>	<b>8.0%</b>	<b>8.3%</b>	<b>8.2%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	10 716	10 526	9 830	10 164	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	10 716	10 526	9 830	10 164	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	740	786	785	846	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.9%	7.5%	8.0%	8.3%	
Estimated surplus embedded in the cost of capital for en-route (in value)	740	786	785	846	
Net ATSP gain(+)/loss(-) on en-route activity	1 223	1 209	246	-667	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 963</b>	<b>1 995</b>	<b>1 032</b>	<b>178</b>	
<b>Revenue/costs for the en-route activity</b>	<b>14 343</b>	<b>15 270</b>	<b>16 133</b>	<b>16 302</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>13.7%</b>	<b>13.1%</b>	<b>6.4%</b>	<b>1.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>18.3%</b>	<b>19.0%</b>	<b>10.5%</b>	<b>1.8%</b>	

**MALTA: En-route ATSP (MATS)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 MATS en-route costs vs. PP**

In 2018, MATS actual en-route costs are +4.3% (+0.7 M€2009) higher, in real terms, than planned in the PP. This results from a combination of:

- much higher staff costs (+20.1%, or +1.4 M€2009);
- slightly lower other operating costs (-1.5%, or -0.09 M€2009);
- much lower depreciation costs (-29.0%, or -0.7 M€2009);
- higher cost of capital (+16.1%, or +0.1 M€2009) resulting from the fact that, differently from what was planned in the PP, MATS's actual capital structure relies entirely on equity financing and thus is calculated using a higher weighted average cost of capital compared to the plan, which included some financing through debt at a lower rate (interest rate on debt of 4.0%) compared to the rate of return on equity (i.e. 8.3%).

See also **Note 1** at the end of this report.

**MATS net gain/loss on en-route activity in 2018**

As shown in box 9, MATS generated a net loss of -0.7 M€2009 on the en-route activity. This is a combination of two elements:

- a loss of -0.7 M€2009 arising from the cost sharing mechanism; and
- a gain of +0.03 M€2009 arising from the traffic risk sharing mechanism.

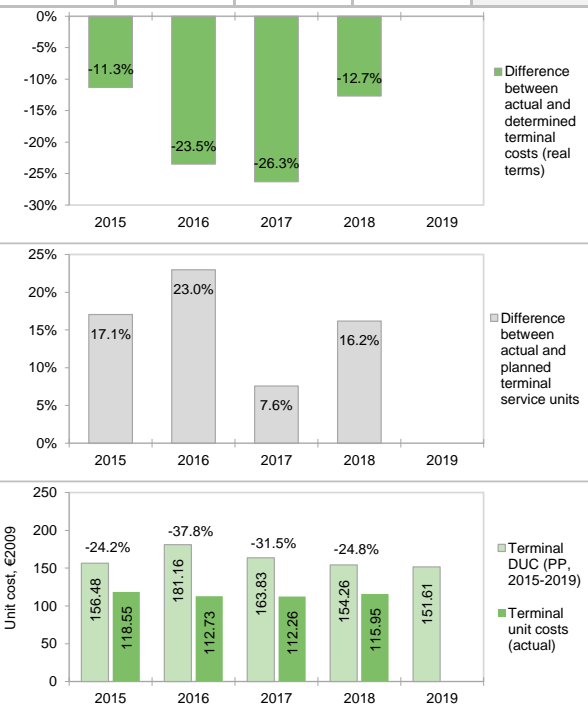
**MATS overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net loss from the en-route activity mentioned above (-0.7 M€2009) and the surplus embedded in the actual cost of capital (+0.8 M€2009) amounts to +0.2 M€2009 (1.1% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 1.8%, which is much lower than the 8.3% planned in the PP.

## MALTA: Terminal charging zone

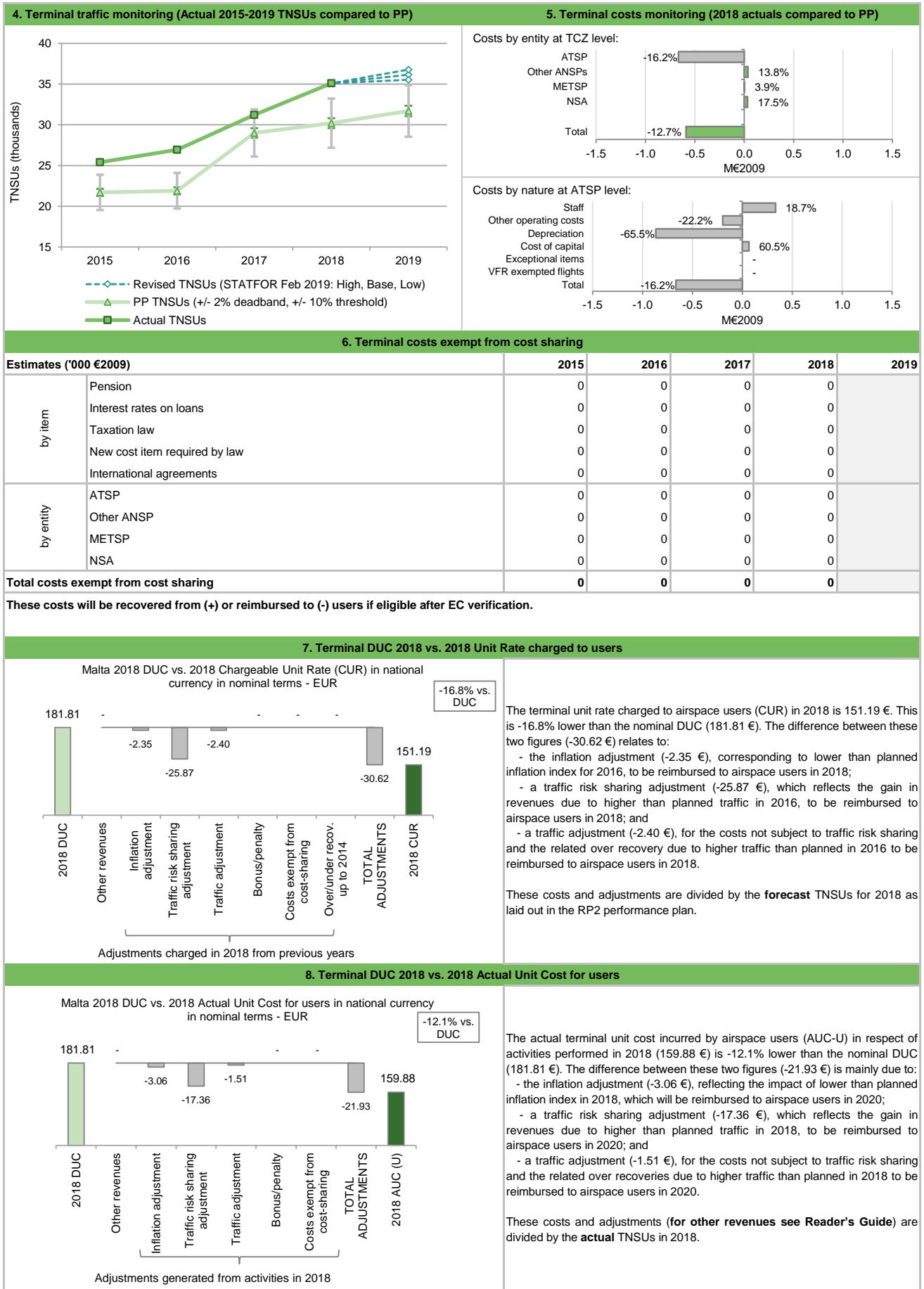
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Malta TCZ represents 0.4% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes	
· ATSP: MATS		· Airports with fewer than 70,000 IFRs ATMs:		1	
· National currency: EUR		· Airports with between 70,000 and 225,000 IFRs ATMs:		0	
· Number of airports in charging zone in 2018: 1, of which:		· Airports with more than 225,000 IFRs ATMs:		0	
2. Terminal DUC monitoring at Charging Zone level					
Malta: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	3 800 840	4 520 832	5 505 759	5 490 582	5 760 674
Inflation %	1.7%	1.8%	1.7%	1.7%	1.7%
Inflation index (100 in 2009)	111.9	114.0	115.9	117.9	119.9
Real terminal costs (EUR2009)	3 395 566	3 967 374	4 750 956	4 658 663	4 806 127
Total terminal Service Units	21 700	21 900	29 000	30 200	31 700
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>156.48</b>	<b>181.16</b>	<b>163.83</b>	<b>154.26</b>	<b>151.61</b>
Malta: Actual data from Reporting Tables (see Note 1)					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	3 347 230	3 405 338	3 979 668	4 701 684	
Inflation %	1.2%	0.9%	1.3%	1.7%	
Inflation index (100 in 2009)	111.2	112.2	113.6	115.6	
Real terminal costs (EUR2009)	3 011 060	3 036 008	3 502 516	4 068 794	
Total terminal Service Units	25 400	26 933	31 200	35 092	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>118.55</b>	<b>112.73</b>	<b>112.26</b>	<b>115.95</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-453 610	-1 115 494	-1 526 091	-788 898	
	in value				
	in %				
Inflation %	-11.9%	-24.7%	-27.7%	-14.4%	
	in p.p.				
Inflation index (100 in 2009)	-0.5 p.p.	-0.9 p.p.	-0.4 p.p.	0.0 p.p.	
	in p.p.				
Real terminal costs (EUR2009)	-384 506	-931 366	-1 248 440	-589 868	
	in value				
	in %				
Total terminal Service Units	3 700	5 033	2 200	4 892	
	in value				
	in %				
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-37.93</b>	<b>-68.43</b>	<b>-51.57</b>	<b>-38.31</b>	
	in value				
	in %				
	-24.2%	-37.8%	-31.5%	-24.8%	
3. Focus on terminal at State/Charging Zone level (see Note 1)					
This analysis focuses on Malta Terminal Charging Zone (TCZ) comprising only Malta international airport (LMML). See also <b>Notes 1 and 2</b> at the end of this Report.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (115.95 €2009) is -24.8% lower than planned in the PP (154.26 €2009). This results from the combination of much higher than planned TNSUs (+16.2%) and much lower than planned terminal costs in real terms (-12.7%, or -0.6 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Malta TCZ. The difference between actual and planned TNSUs (+16.2%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (MATS) retaining an amount of +0.2 M€2009. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Malta are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It is noted that the determined TNSUs chosen in the adopted PP for 2015-2016 were below the STATFOR February 2014 <u>low</u> TNSU growth scenario, while the TNSUs selected for the revised PP (2017-2019) were in line with STATFOR February 2016 <u>base</u> TNSU growth scenario.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -14.4% (-0.8 M€) lower than planned. However, since the actual inflation index is also lower than planned (-2.3 p.p.), actual terminal costs are -12.7% (-0.6 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by MATS (-16.2%, or -0.7 M€2009), while the costs for the other service provider Malta international airport - MIA (+13.8%, or +0.04 M€2009), the MET service provider (+3.9%) and the NSA (+17.5%, or +0.03 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported for Malta TCZ.					



**MALTA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## MALTA: Terminal ATSP (MATS)

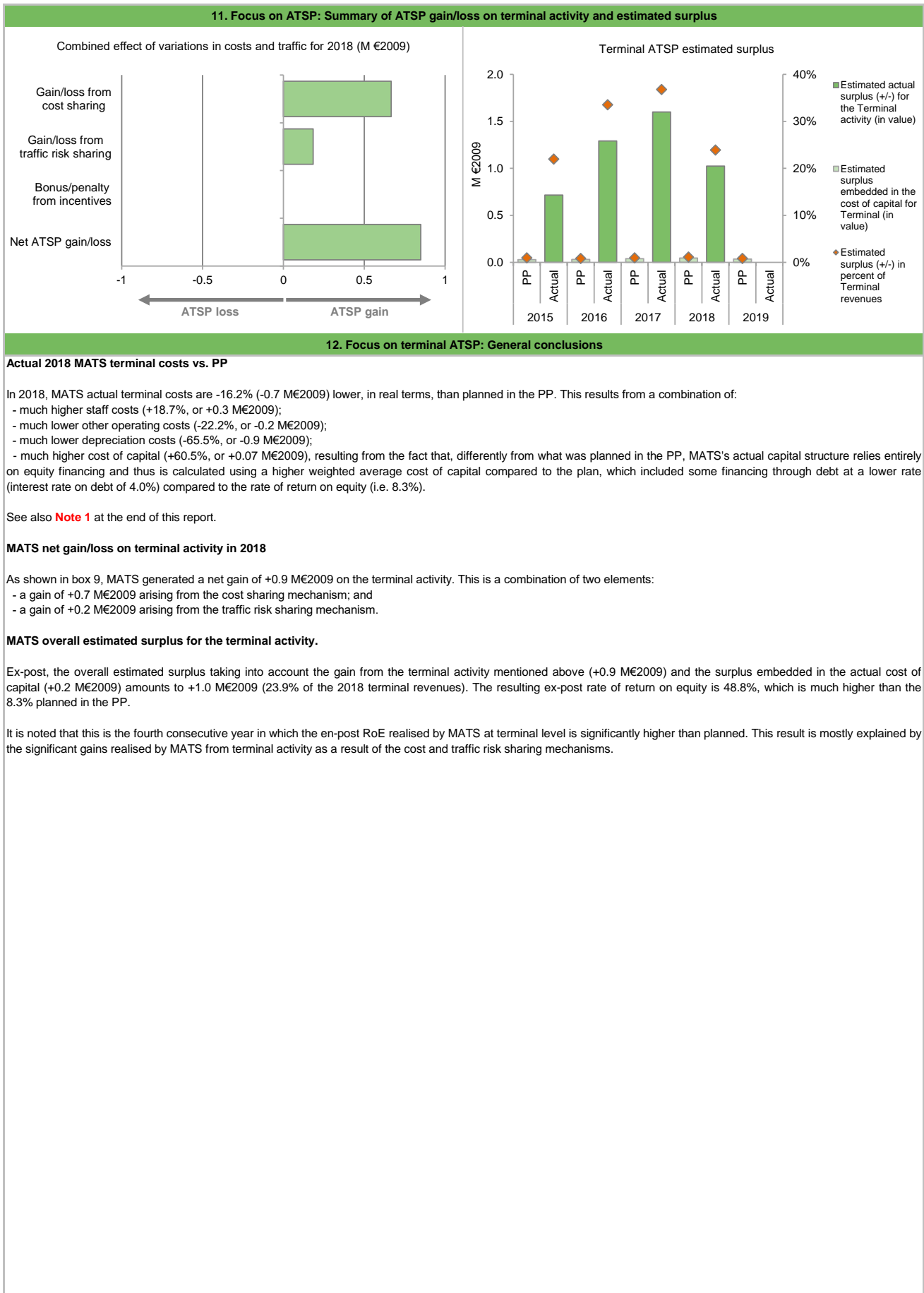
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	3 118	3 690	4 193	4 102	
Actual costs for the ATSP	2 750	2 739	2 946	3 436	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	368	951	1 247	666	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>368</b>	<b>951</b>	<b>1 247</b>	<b>666</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	17.1%	23.0%	7.6%	16.2%	
Determined costs for the ATSP (PP) - based on actual inflation	3 139	3 749	4 277	4 184	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>138</b>	<b>165</b>	<b>157</b>	<b>184</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>506</b>	<b>1 116</b>	<b>1 404</b>	<b>850</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 655	2 111	2 196	2 115	2 061
Estimated proportion of financing through equity (in %)	25.7%	19.5%	22.9%	26.5%	20.8%
Estimated proportion of financing through equity (in value)	426	411	504	560	428
Estimated proportion of financing through debt (in %)	74.3%	80.5%	77.1%	73.5%	79.2%
Estimated proportion of financing through debt (in value)	1 230	1 701	1 692	1 555	1 633
Cost of capital pre-tax (in value)	79	99	108	109	101
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	4.0%
Interest on debt (in value)	49	68	68	62	65
Determined RoE pre-tax rate (in %)	6.9%	7.5%	8.0%	8.3%	8.2%
Estimated surplus embedded in the cost of capital for terminal (in value)	29	31	40	47	35
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>29</b>	<b>31</b>	<b>40</b>	<b>47</b>	<b>35</b>
<b>Revenue/costs for the terminal activity</b>	<b>3 118</b>	<b>3 690</b>	<b>4 193</b>	<b>4 102</b>	<b>4 261</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>0.9%</b>	<b>0.8%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>0.8%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.9%</b>	<b>7.5%</b>	<b>8.0%</b>	<b>8.3%</b>	<b>8.2%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	3 023	2 360	2 457	2 099	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	3 023	2 360	2 457	2 099	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	209	176	196	175	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.9%	7.5%	8.0%	8.3%	
Estimated surplus embedded in the cost of capital for terminal (in value)	209	176	196	175	
Net ATSP gain(+)/loss(-) on terminal activity	506	1 116	1 404	850	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>715</b>	<b>1 292</b>	<b>1 601</b>	<b>1 025</b>	
<b>Revenue/costs for the terminal activity</b>	<b>3 256</b>	<b>3 855</b>	<b>4 350</b>	<b>4 286</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>22.0%</b>	<b>33.5%</b>	<b>36.8%</b>	<b>23.9%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>23.7%</b>	<b>54.8%</b>	<b>65.1%</b>	<b>48.8%</b>	



**MALTA: Terminal ATSP (MATS)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## MALTA: Gate-to-gate

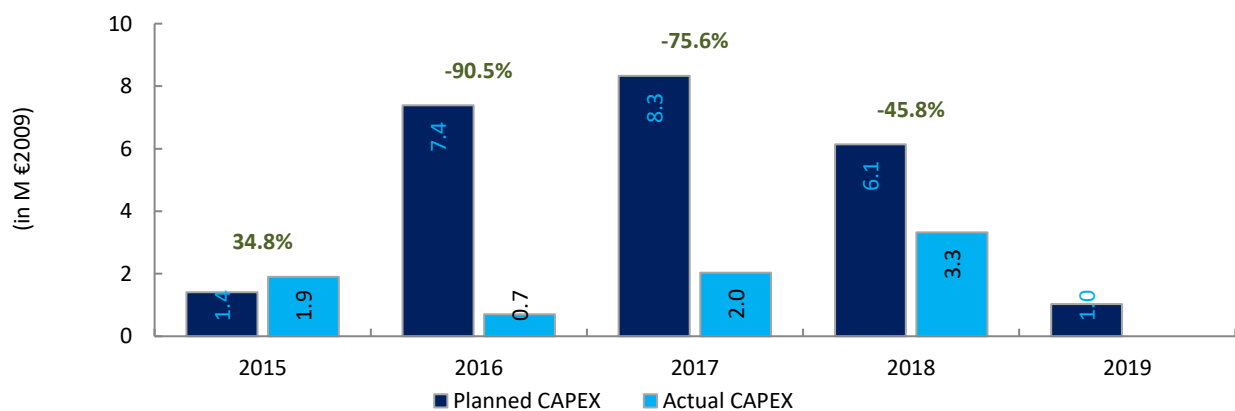
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Malta: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	15 844 908	16 745 957	17 857 802	18 429 483	18 982 242																																							
Real terminal costs (EUR2009)	3 395 566	3 967 374	4 750 956	4 658 663	4 806 127																																							
Real gate-to-gate costs (EUR2009)	19 240 474	20 713 331	22 608 758	23 088 146	23 788 369																																							
En-route share (%)	82.4%	80.8%	79.0%	79.8%	79.8%																																							
<b>Malta: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	15 153 971	16 163 775	17 991 619	19 316 792																																								
Real terminal costs (EUR2009)	3 011 060	3 036 008	3 502 516	4 068 794																																								
Real gate-to-gate costs (EUR2009)	18 165 031	19 199 783	21 494 135	23 385 586																																								
En-route share (%)	83.4%	84.2%	83.7%	82.6%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-1 075 443	-1 513 549	-1 114 623	297 440																																								
in %	-5.6%	-7.3%	-4.9%	1.3%																																								
En-route share																																												
in p.p.	1.1 p.p.	3.3 p.p.	4.7 p.p.	2.8 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +1.3% (+0.3 M€2009) higher than planned due to higher than planned en-route costs (+4.8%, or +0.9 M€2009) while terminal costs are lower than planned (-12.7%, or -0.6 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (82.6%) is higher than planned in the PP for 2018 (79.8%).</p> <p>For MATS, the estimated gate-to-gate economic surplus in 2018 amounts to 1.2 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 5.8% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>82.4%</td> <td>17.6%</td> </tr> <tr> <td>Actual</td> <td>83.4%</td> <td>16.6%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>80.8%</td> <td>19.2%</td> </tr> <tr> <td>Actual</td> <td>84.2%</td> <td>15.8%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>79.0%</td> <td>21.0%</td> </tr> <tr> <td>Actual</td> <td>83.7%</td> <td>16.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>79.8%</td> <td>20.2%</td> </tr> <tr> <td>Actual</td> <td>82.6%</td> <td>17.4%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>79.8%</td> <td>20.2%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	82.4%	17.6%	Actual	83.4%	16.6%	2016	Determined	80.8%	19.2%	Actual	84.2%	15.8%	2017	Determined	79.0%	21.0%	Actual	83.7%	16.3%	2018	Determined	79.8%	20.2%	Actual	82.6%	17.4%	2019	Determined	79.8%	20.2%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	82.4%	17.6%																																									
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2019	Determined	79.8%	20.2%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Malta</b>																																												
<p><b>Note 1:</b> Malta has submitted an updated set of en-route and terminal reporting tables following the fact-validation process for this Monitoring Report in September 2019. According to the information provided by Malta:</p> <p>"Audited accounts for MATS were approved on 05/08/2019. Reporting Tables submitted in June 2019 were based on provisional data. Revised Reporting tables with actual 2018 values as per audited accounts are being enclosed."</p> <p>For this reason, the actual 2018 data for en-route and terminal data presented in this Monitoring Report for Malta reflects the latest submission.</p> <p>Based on the updated cost data, actual unit costs in Malta en-route charging zone were some +4.6% higher than DUC in 2018, meaning that Malta has failed to meet the en-route cost-efficiency target for 2018. However, since an updated version of BLUEMED FAB 2018 Monitoring Report was <u>not</u> provided, no information is available on the drivers behind this performance or corrective measures implemented.</p> <p>It is also noted that Malta did <u>not</u> provide updated version additional information to these reporting tables. As such, the drivers behind the variation in costs observed for the reporting entities, and in particular the main ATSP (MATS), are not available.</p> <p><b>Note 2:</b> Malta has revised their RP2 en-route cost-efficiency targets for the years 2017 to 2019. The figures shown in this report reflect: i) the initial adopted Performance Plan (EC Decision 2015/348 of 2 March 2015) for the years 2015 and 2016; and ii) the revised Performance Plan (EC Decision 2017/2376 of 15 December 2017) for the years 2017 to 2019.</p> <p>A similar revision was also done for the terminal determined unit costs in Malta terminal charging zone for the period 2017 to 2019.</p>																																												

## MALTA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: MATS						
FAB: BLUE MED FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	1.6	8.4	9.7	7.2	1.2	28.1
Main CAPEX (in nominal M)	1.6	8.4	9.7	7.2	1.2	28.1
Inflation %	1.7%	1.8%	1.7%	1.7%	1.7%	
Inflation index (100 in 2009)	111.9	114.0	115.9	117.9	119.9	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>1.4</b>	<b>7.4</b>	<b>8.3</b>	<b>6.1</b>	<b>1.0</b>	<b>24.3</b>
Main CAPEX (in M €2009)	1.4	7.4	8.3	6.1	1.0	24.3
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	16.9	18.3	19.9	20.4	21.1	96.5
Total CAPEX as % of Real gate-to-gate ANSP costs	8.4%	40.3%	41.8%	30.2%	4.9%	25.2%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	2.1	0.8	2.3	3.8		
Main CAPEX (in nominal M)	1.9	0.8	2.3	1.1		
Inflation %	1.2%	0.9%	1.3%	1.7%		
Inflation index (100 in 2009)	111.2	112.2	113.6	115.6		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>1.9</b>	<b>0.7</b>	<b>2.0</b>	<b>3.3</b>		
Main CAPEX (in M €2009)	1.7	0.7	2.0	1.0		
% Main of Total CAPEX	90.8%	100.0%	100.0%	29.8%		
Real gate-to-gate ANSP costs (in M €2009)	15.9	16.8	18.8	19.0		
Total CAPEX as % of Real gate-to-gate ANSP costs	12.0%	4.2%	10.8%	17.5%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	0.5	-7.6	-7.3	-3.4		
Total CAPEX (in M €2009)	0.5	-6.7	-6.3	-2.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>34.8%</b>	<b>-90.5%</b>	<b>-75.6%</b>	<b>-45.8%</b>		





# Annual Monitoring Report 2018

Local level view  
DANUBE FAB



## DANUBE FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	B	B	B	
	ANSPs	For Safety Culture MO	C	D	D	D	
	ANSPs	For all other MOs	C	C	D	D	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	100%	100%	
	Runway Incursions (RIs)		100%	N/A	N/A	n/a	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	100%	100%	
	Runway Incursions (RIs)		100%	N/A	N/A	100%	
	ATM Specific occurrences (ATM-S)		100%	100%	100%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

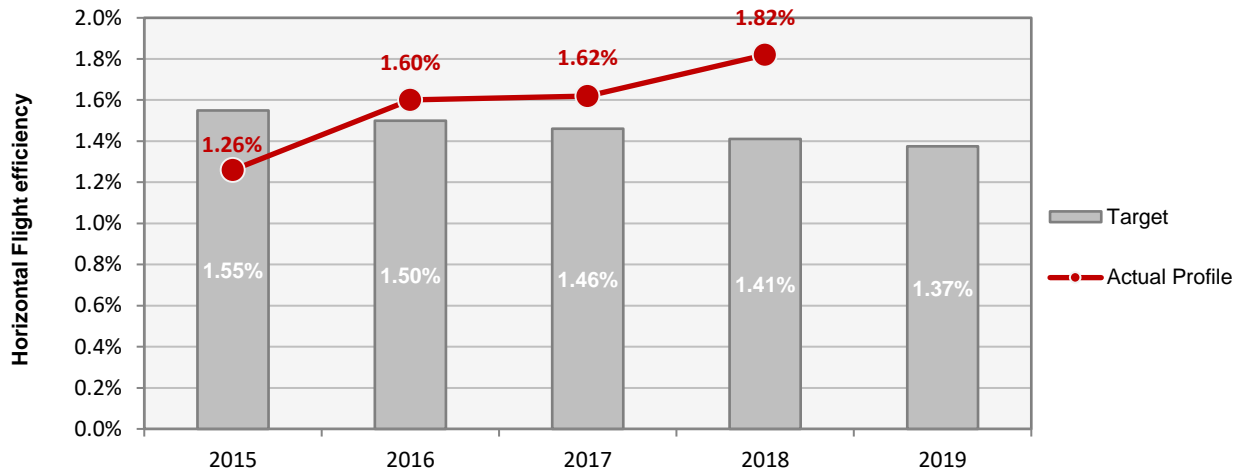
#### Observations

The lowest level in each EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. All components are at this level.

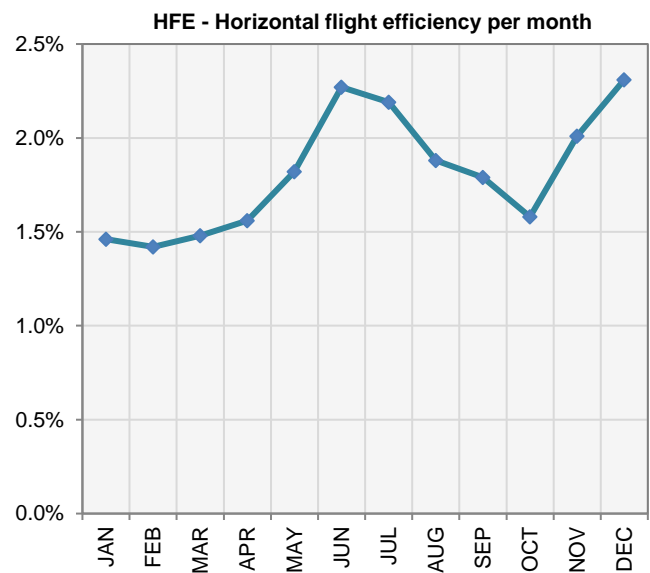
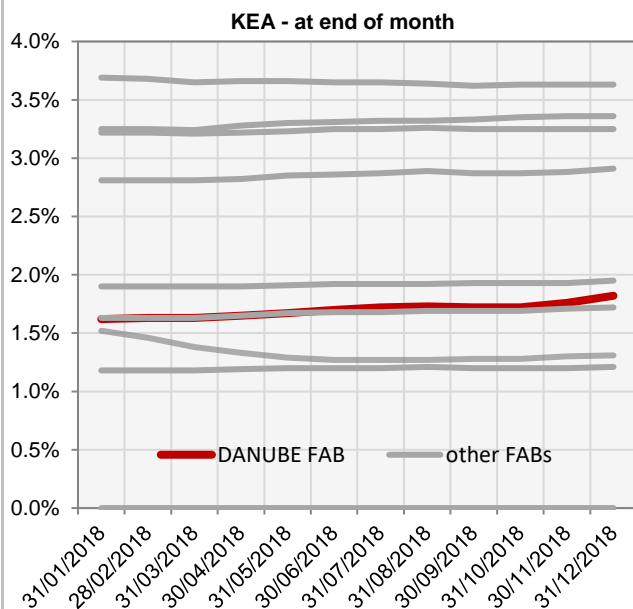
**DANUBE FAB**

**Monitoring of ENVIRONMENT for 2018**

KEA					
	2015	2016	2017	2018	2019
<b>FAB Target</b>	1.55%	1.50%	1.46%	1.41%	1.37%
<b>Actual performance</b>	1.26%	1.60%	1.62%	1.82%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>KEA (at end of month)</b>	1.62%	1.63%	1.63%	1.65%	1.67%	1.70%	1.72%	1.73%	1.72%	1.72%	1.76%	1.82%
<b>HFE</b>	1.46%	1.42%	1.48%	1.56%	1.82%	2.27%	2.19%	1.88%	1.79%	1.58%	2.01%	2.31%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.



**DANUBE FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

In order to reduce the environmental impact DANUBE FAB partners, ROMATSA and BULATSA, have continued to extend free routes airspace implementation with Slovakia joining the SEEN FRA initiative starting December 6th 2018 and plans to have H24 SEE FRA between Bulgaria, Hungary and Romania from November 7th 2019.

**Observations****NM evaluation:**

The current H24 FRA plans might not be sufficient to achieve the network reference value.

**NM proposed measures:**

Implementation of cross-border FRA H24, with adjacent FABs/ACCs and review of RAD restrictions.

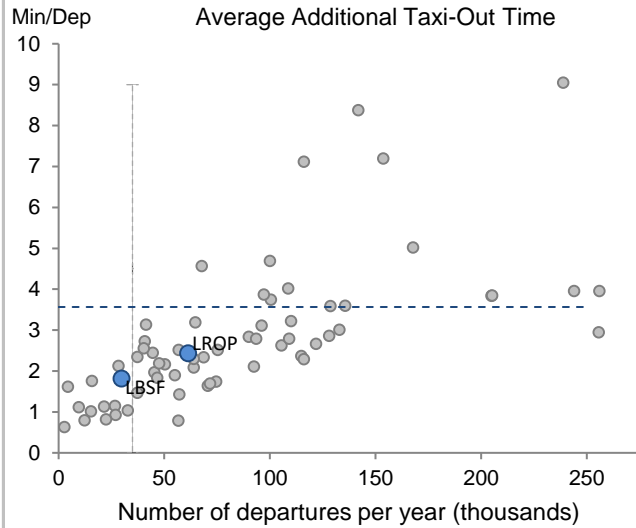
**DANUBE FAB**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

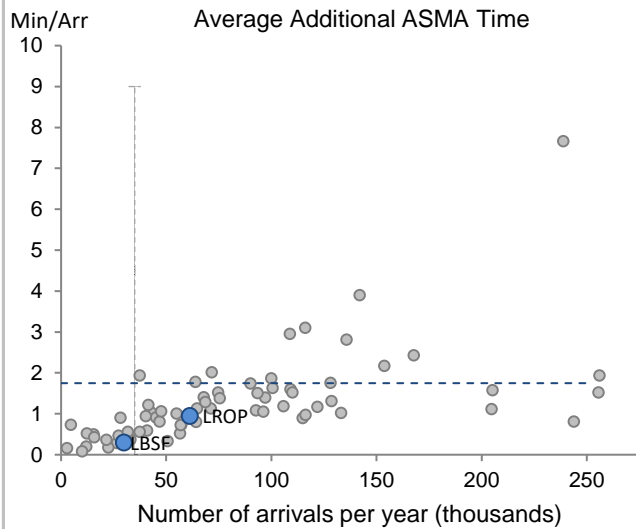
Traffic at the three airports in DANUBE FAB subject to monitoring has significantly increased since the beginning of the reference period. In 2018 the performance of the environmental indicators can be monitored for two of these airports. According to the available data, airports in the Danube FAB contribute adequately to the European performance with low levels of additional times in line with the general performance for airports with those levels of traffic. In order to monitor the performance at Bucharest/Băneasa (LRBS), it is necessary to properly establish the Airport Operator Data Flow.

**2. Additional Taxi-Out Time**



In 2018 the additional taxi-out times at Bucharest/Otopeni can be monitored for the first time. The additional taxi-out times at both Bucharest/Otopeni (LROP) and Sofia (LBSF) are well below the average for airports in RP2.

**3. Additional ASMA Time**



The monitored airports in the Danube FAB show additional times in the terminal area well below the RP2 average. This performance is commensurate with their levels of traffic.

## DANUBE FAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.04	0.04	0.04	0.05	0.06	
FAB Target	0.03	0.03	0.03	0.03	0.04	
Actual performance	0.03	0.00	0.01	0.08		

## DANUBE FAB assessment of capacity performance

Republic of Bulgaria:

The targets for KPA Capacity are set on FAB level, but there are at least two important reasons to also analyse the variances towards planned figures on national level:

1. The drivers behind the reported delay may be different;
2. The implementation of the incentive scheme is on national level.

With this regards the reported delay figure for Bulgaria in 2018 is 0.00.

Romania:

Average enroute ATFM delay per flight in Summer 2018 was 0.20 minutes per flight, 69% of the delays being encountered due to weather and 31% due to ATC capacity. During all year 2018 Bucharest ACC registered for the first time an actual en-route delay of 0.12 min/flight per year (mainly due to weather).

The increase in ATFM delays, above the targets from the Performance Plan, is due to the combined action of two factors: a geopolitical situation that concentrates traffic and increases operational complexity in the Southern and Western regions of Romania and a significant traffic growth throughout the year, but intensified during the summer months, forcing the KONEL and BUDMO sectors that take over most of these flights, to reach maximum capacity. Though during the Summer 2018 KONEL and BUDMO sectors have been further split at the maximum 8 sectors possible, they have reached their maximum capacity. On the other hand, the Northern-eastern part of Bucharest ACC is significantly under-utilised with traffic below the maximum capacity due to traffic flows distribution in the context of the Black Sea situation.

## Monitoring process for capacity performance

Republic of Bulgaria

Use of occupancy counts for family (group) sectors Sofia and Varna.

Monitor the route network and sectorisation change's needs, as outgrowth of the continuous increase of numbers of aircraft and followed up by:

- Evaluation of sector capacities;
- Evaluation of sector configurations and opening schemes;
- Evaluation of human resources.

Romania

Monitoring is done through continuous checks of the PRU data portal (<http://ansperformance.eu/data/performancearea/>) to verify that the values are within limits and the discrepancies between the values pertaining to the past year and those of the current year are not following an ascending trend.

## Application of Corrective Measures for Capacity

Republic of Bulgaria

There is a sharp increase of traffic and ANS demand was met with relocation of all available ATCOs holding a valid licence, after proper necessary transitional measures, at working positions in the ACC OPS room. Such measures comprise:

- Re-positioning of administrative and project staff holding ATCO licenses, as well as En-route Approach and Terminal services ATCOs;
- Additional training of ATCOs related to acquisition of competence to work at working positions at all sector families (Sofia and Varna);
- Increased flexibility of application of sector configuration aiming at the application of the optimal sector configurations, so as to provide for capacity;
- Increased number of shifts;
- Overall improvements of operational efficiency and rostering;

Romania:

ROMATSA participated in the coordinated process initiated by the Network Manager with all ATM stakeholders that agreed on the European RAD restrictions that are active between 25th of April - 6th of November 2019 and for the summer seasons beyond 2020. These will generate, according to EUROCONTROL analysis, approximately 1% increase in traffic in FIR Bucharest, above STATFOR forecast and a redistribution of traffic flows to Central and Northern regions in Romania. At a local level, ROMATSA has continued its programme for training and authorising new ATCOs that will replace the ageing personnel and ensure the needed staffing for the forecasted traffic growth. Starting with April 8th 2019 a new ATM system is in operations, with enhanced functionalities that provide increased capacity. ROMATSA will open ACC sectors for the summer season 2019, according to the Capacity Plan 2019-2024.

On a medium term, throughout RP3, we estimate that the combined positive effects of implementing the new ATM System, FRA H24, sectors optimisation and continuing to select, train and authorize new ATCOs will provide the additional capacity needed to accommodate the estimated traffic growth.

### Capacity Planning

The capacity planning need has been duly reflected by carrying out the en-route planning process together with NM, required by NMF IR.

### PRB Assessment of capacity performance

EUROCONTROL 7 year forecast February 2014 – DANUBE FAB											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	804		846		893		941		982		1038
<b>Base</b>	793	<b>829</b>	825	<b>895</b>	858	<b>905</b>	892	<b>951</b>	917	<b>1045</b>	960
<b>Low</b>	782		802		820		839		858		882

Danube FAB failed to meet its adopted target for the first time in RP2 during 2018. Having provided excellent capacity performance since 2016, despite traffic levels well above the high traffic scenario forecasted by STATFOR back in 2014 when the performance plans and associated capacity plans were being determined, the 10% annual growth of traffic resulted in delays in Romania that led to an overall FAB performance of 0,08 average minutes of en route ATFM delay per flight.

The airspace users (IATA) commented positively on the good delay performance in 2018 provided by Danube FAB.

In the latest Network Operation Plan 2019 -2024, the Network Manager predicts Danube FAB to be close to the required performance for the remainder of RP2 but does not expect any capacity problems for Danube FAB during RP3.

Danube FAB delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018</b>	-	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	N/A	N/A
<b>NOP 2019</b>	-	<b>0.09</b>	<b>0.10</b>	<b>0.04 – 0.07</b>			
<b>2024</b>							

### En route Capacity Incentive Scheme

DANUBE FAB does not apply a FAB wide en route capacity incentive scheme. Instead both Member States apply local incentive schemes which are contained in the relevant national section that follow.

### Result of FAB Capacity Incentive Scheme

Not applicable

### Update on Military dimension of the plan

At FAB level, a civil-military Air Space Policy Body is defined for coordination between Romania and Bulgaria.

### Observations on Military dimension of the plan

Nil

### Application of FUA

No new information was provided by either Bulgaria or Romania.

### Observations of the Application of FUA

No information is provided on how the Member States assess whether or not the airspace has actually been managed to provide the optimum benefits for all airspace users.

**DANUBE FAB**

**Monitoring of Airports Contribution to CAPACITY for 2018**

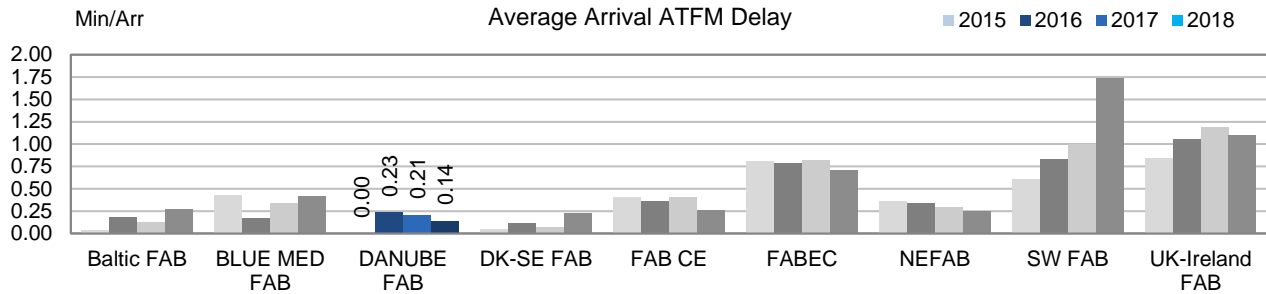
**1. Overview**

The scope of the DANUBE FAB performance plan comprises the terminal air navigation services at one airport in Bulgaria and two airports in Romania.

The ANS Capacity performance in terms of arrival ATFM delay is driven by the issues at Bucharest/Otopeni (LROP) airport, while there are no registered delays at Sofia (LBSF) or Bucharest/Baneasa (LRBS).

Across Europe, DANUBE FAB still remains in the best-in-class group and adequately contributes to the European ANS Capacity performance.

**2. Arrival ATFM Delay**



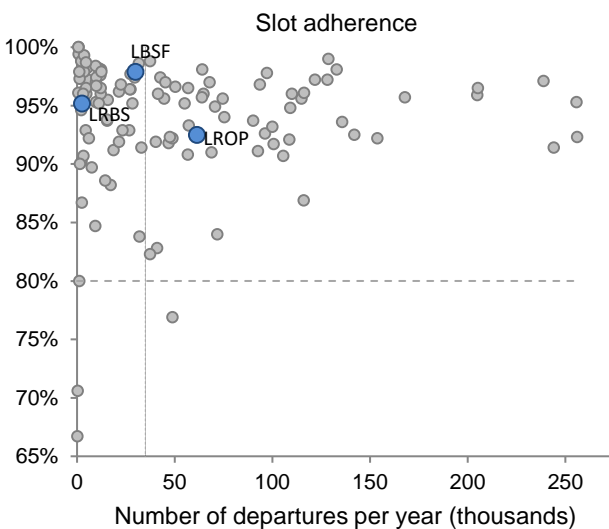
The only contributor to arrival ATFM delay in DANUBE FAB in 2018 is Bucharest/Otopeni (LROP), resulting in the lowest aggregate arrival ATFM delay of all FABs (0.14 min/arr.)

**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

The DANUBE FAB performance plan establishes a national target on arrival ATFM delay with a breakdown per airport for both States, Bulgaria and Romania. The targets are consistent with the observed historical performance and the plan suggests no capacity constraints for arriving traffic under the projected traffic conditions for RP2.

The FAB DANUBE performance plan presents an incentive scheme for the national targets on arrival ATFM delay for Bulgaria and Romania. The performance in Bulgaria meets the target but no bonus is established (it is comprised within the deadband). In Romania, the actual performance in 2018 is significantly lower than the target but the incentive scheme is based on CRSTMP reasons only and according to it the value falls within the deadband, so no penalty is applied.

**4. ATFM Slot Adherence**



Across DANUBE FAB, the slot adherence ranges well above 90%. Slot adherence at Sofia (LBSF) ranges in the best-in-class group.

There is no significant change in the slot adherence with respect to 2017.

**5. ATC Pre-departure Delay**

ATC pre-departure delay monitoring is now possible in Bucharest/Otopeni (thanks to an improvement of the data quality) and Sofia (LBSF). Both airports show performances commensurate with the level of traffic. There is no available data from Bucharest/Baneasa (LRBS).



# Annual Monitoring Report 2018

Local level view  
Bulgaria





## BULGARIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	40	B	B	B	B	C
BULATSA	91	D	E	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
	RAT application (%)					
	ATM Ground	ATM Overall				
Separation Minima Infringements (SMIs)	100%	100%				
Runway Incursions (RIs)	n/a	n/a				
ATM Specific Occurrences (ATM-S)		100%				
Source of RAT data:	BULATSA					
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level	Number of questions answered					
	YES	NO				
Policy and its implementation	9	0				
Legal/Judiciary	5	2				
Occurrence reporting and Investigation	2	0				
<b>TOTAL</b>	<b>16</b>	<b>2</b>				
BULATSA	Number of questions answered					
	YES	NO				
Policy and its implementation	13	0				
Legal/Judiciary	2	1				
Occurrence reporting and Investigation	6	2				
<b>TOTAL</b>	<b>21</b>	<b>3</b>				
Observations						
<p>Three out of the four reviewed EoSM Components/areas of the State does not meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), eighteen are below Level C.</p>						

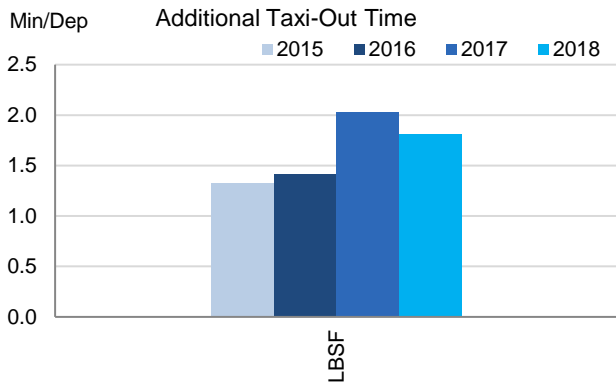
**BULGARIA**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

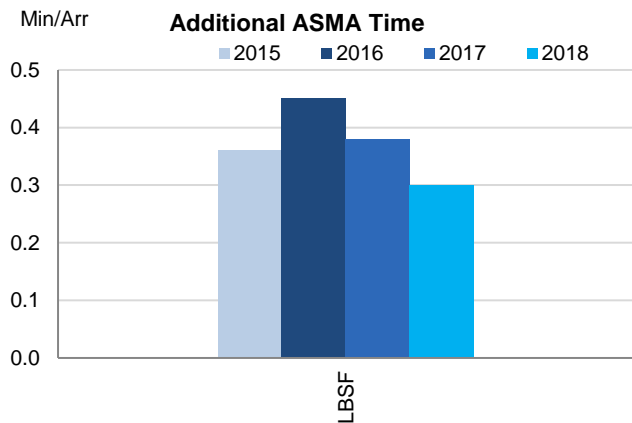
Bulgaria has identified one airport, Sofia (LBSF) as subject to RP2 monitoring, for which the APDF is well established. Traffic at Sofia has only slightly increased last year (+5% with respect to 2017) but there is a drastic increase with respect to the beginning of the reference period (+37% with respect to 2015). While the additional time in the taxi-out phase have significantly increased during RP2, the additional ASMA times have progressively improved in the last 2 years.

**2. Additional Taxi-Out Time**



Additional taxi-out times at Sofia (LBSF) have slightly improved in 2018. The taxi-out times are heavily influenced by winter operations, reaching up to 4 min/dep in February, compared with an average from April to October of 1 min/dep.

**3. Additional ASMA Time**



Additional times in the terminal area have significantly improved one more year and the performance is better than in 2015 (LBSF; 2015: 0.36 min/arr.; 2018:0.30 min/arr.), despite the drastic increase in traffic since the beginning of the reference period.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Sofia	LBSF	1.32	1.41	2.03	1.81		0.36	0.45	0.38	0.30	

**BULGARIA**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.05	0.05	0.05	0.06	0.07	
Deadband +/-	0.02 - 0.05		0.02 - 0.06			
Actual performance	0.01	0.01	0.00	0.00		

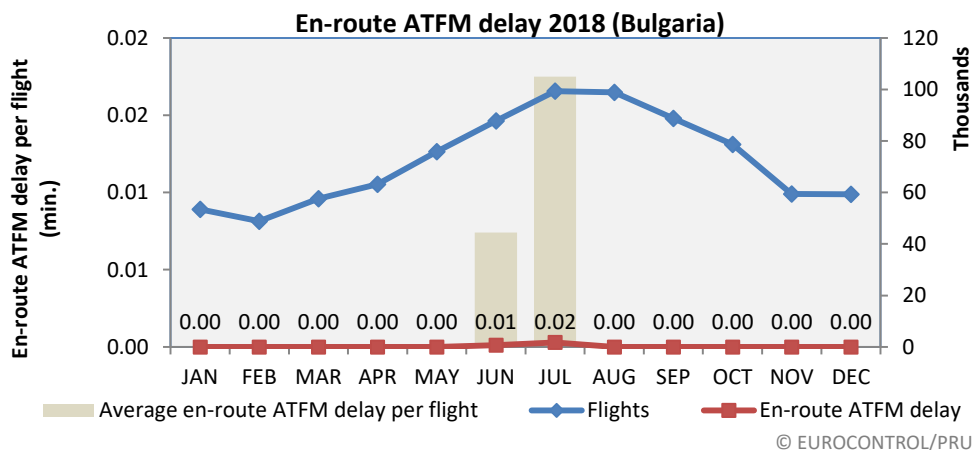
**National capacity incentive scheme**

As per the incentive scheme envisaged in the approved PP for RP2 the amount of the bonus is 0.02% of the annual en-route revenue, which is reported to be 194,545 k BGN for 2018: giving an actual bonus of 38,909 BGN for 2018.

**Compliance issues relating to national capacity incentive scheme**

The PRB had previously highlighted that the incentive scheme was not linked to FAB performance. In the 2018 monitoring report, Bulgaria state that they have not yet increased the unit rates because of good performance in each of the years 2015-2018. Bulgaria report that they have proposed to link the incentive scheme with FAB performance, but that this has not been approved by the FAB authorities. The Bulgarian NSA has forwarded a query to the European commission asking its view on a possible way forward for dealing with the amount of bonus already accumulated as per the incentive scheme of Bulgaria.

**Observations regarding national capacity performance**

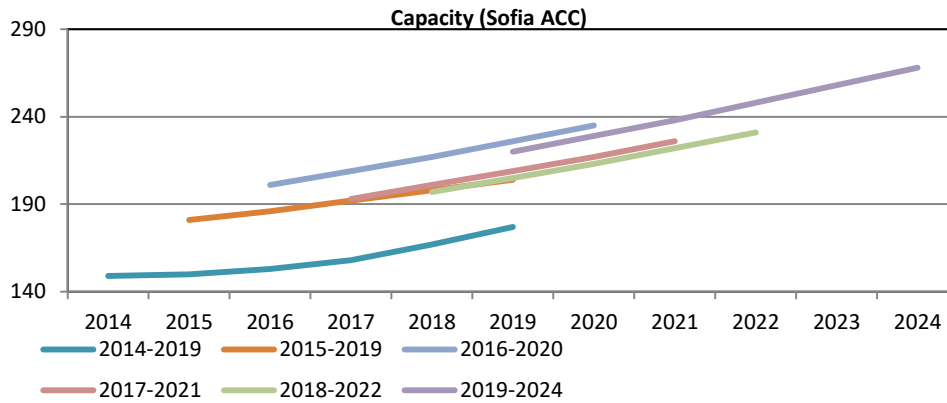


En-route ATFM delay per flight (Bulgaria)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.01	0.01	0.00	0.00

EUROCONTROL 7 year forecast February 2014 – Bulgaria										
	2014	2015	2016	2017	2018	2019				
	actual	actual	actual	actual	actual	actual				
High	580	617	650	686	713	754				
Base	572	683	601	767	626	758	652	783	669	871
Low	564	585	599	614	628	648				

En route capacity performance in Bulgaria has been excellent in 2018 with zero average delay per flight. Traffic levels rose by over 11% (to a level that is 16% higher than forecasted for the end of RP3 even in the high traffic scenario from back in 2014) and the new Istanbul airport opened in neighbouring Turkey which required significant changes to traffic in Bulgaria.. Bulgaria has been handling traffic levels above the high forecast predicted by STATFOR for the entirety of RP2 with negligible delays for airspace users. The Network Manager expects no capacity problems in Bulgaria for the remainder of RP2 and for the entirety of RP3.

Bulgaria delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	0.01	0.01	0.01	0.01	N/A	N/A
<b>NOP 2019 - 2024</b>	0.01	0.01	0.01			



Sofia ACC has been, and is, planning significant capacity improvements.

### Planning and Effective Use of CDRs

Bulgaria did not provide any data on this indicator

### Observations on Planning and Effective Use of CDRs

It is noted that Bulgaria, like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
29%	37%	29%	23%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

Procedure 3 is not applicable within the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## BULGARIA

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

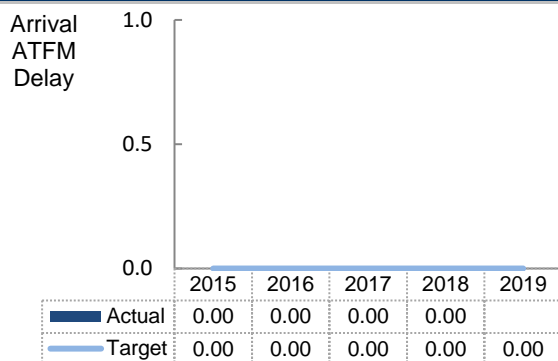
In Bulgaria, only ANS performance at Sofia (LBSF) airport is subject to RP2 Monitoring. Despite the drastic increase in traffic during RP2 (+37.2% with respect to 2015), the national target on arrival ATFM delay of 0 min/arr. is fully met once more in 2018. The actual performance in terms of arrival ATFM delay ranges within the incentive deadband and results in no financial incentive.

Next to the excellent performance in terms of arrival ATFM delay, Bulgaria shows a high level of compliance with ATFM slots. On the other hand, ATC pre-departure delay, although still low, shows a worsening since the beginning of RP2.

The local performance is commensurate with the traffic and shows no congestion of capacity constraints.

Bulgaria adequately contributes to the DANUBE FAB and European ANS Capacity-related performance.

## 2. Arrival ATFM Delay

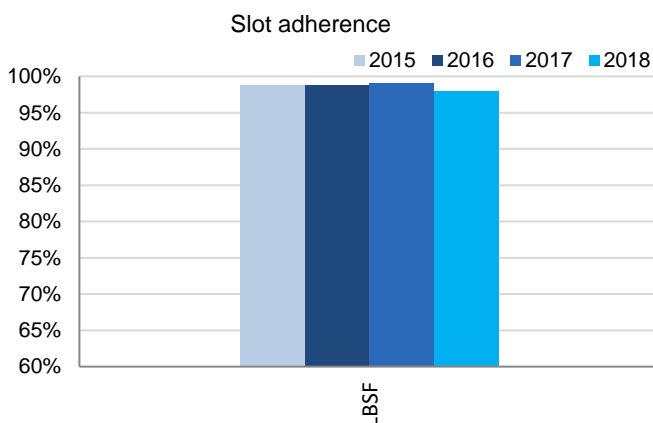


Since the beginning of RP2, including 2018, the recorded arrival ATFM delay for Sofia (LBSF) is zero. This achieved performance is commensurate with the level of traffic.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Bulgaria has established a national target on arrival ATFM delay for every year of RP2 (0.0 min/arr.) which is met in 2018. The DANUBE FAB PP presents an incentive scheme for Bulatsa that does not contemplate any incentives for meeting the zero delay target. Therefore no bonuses are applied.

## 4. ATFM Slot Adherence



ATFM slot adherence has slightly deteriorated in 2018 but remains well above 95%

## 5. ATC Pre-departure Delay

ATC pre-departure delay has increased at Sofia (LBSF) reaching 0.15 min/dep., almost double than the previous year.

## 6. Appendix

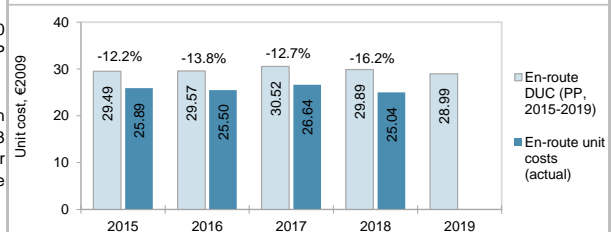
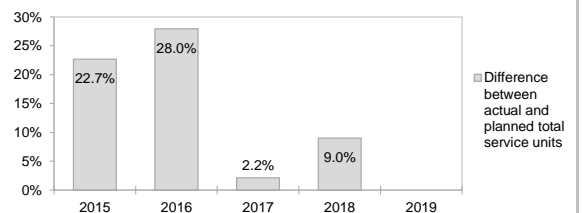
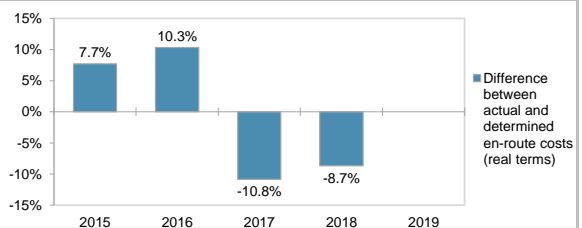
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
		Sofia	LBSF	0.00	0.00	0.00	0.00		98.8%	98.8%	99.0%	97.9%		0.04	0.03	0.08

## BULGARIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· Bulgaria ECZ represents 1.7% of the SES en-route ANS determined costs in 2018						
· ATSP: BULATSA						
· FAB: DANUBE FAB						
· National currency: BGN Exchange rate 2009: 1 EUR = 1.9553 BGN						
2. En-route DUC monitoring at Charging Zone level						
Bulgaria: Data from RP2 Performance Plan (EC Decision 2017/2376 of 15 December 2017)						
	2015D	2016D	2017D	2018D	2019D	
En-route costs (nominal BGN)	166 771 377	172 805 739	219 350 068	228 283 095	232 773 544	
Inflation %	0.9%	1.8%	1.1%	1.2%	1.4%	
Inflation index (100 in 2009)	110.1	112.1	106.9	108.1	109.7	
Real en-route costs (BGN2009)	151 495 007	154 219 178	205 254 233	211 080 244	212 260 655	
Total en-route Service Units	2 627 000	2 667 000	3 439 000	3 611 824	3 745 039	
<b>Real en-route unit cost per Service Unit (BGN2009)</b>	<b>57.67</b>	<b>57.82</b>	<b>59.68</b>	<b>58.44</b>	<b>56.68</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>29.49</b>	<b>29.57</b>	<b>30.52</b>	<b>29.89</b>	<b>28.99</b>	
Bulgaria: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
En-route costs (nominal BGN)	173 870 778	178 955 967	194 762 951	210 486 527		
Inflation %	-1.1%	-1.3%	1.2%	2.6%		
Inflation index (100 in 2009)	106.6	105.2	106.4	109.2		
Real en-route costs (BGN2009)	163 171 301	170 155 585	182 989 369	192 750 918		
Total en-route Service Units	3 222 750	3 412 754	3 513 254	3 937 596		
<b>Real en-route unit cost per Service Unit (BGN2009)</b>	<b>50.63</b>	<b>49.86</b>	<b>52.09</b>	<b>48.95</b>		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>25.89</b>	<b>25.50</b>	<b>26.64</b>	<b>25.04</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
En-route costs (nominal BGN)	in value	7 099 402	6 150 228	-24 587 117	-17 796 567	
	in %	4.3%	3.6%	-11.2%	-7.8%	
Inflation %	in p.p.	-2.0 p.p.	-3.1 p.p.	0.1 p.p.	1.4 p.p.	
Inflation index (100 in 2009)	in p.p.	-3.5 p.p.	-6.9 p.p.	-0.4 p.p.	1.1 p.p.	
Real en-route costs (BGN2009)	in value	11 676 294	15 936 406	-22 264 865	-18 329 327	
	in %	7.7%	10.3%	-10.8%	-8.7%	
Total en-route Service Units	in value	595 750	745 754	74 254	325 772	
	in %	22.7%	28.0%	2.2%	9.0%	
<b>Real en-route unit cost per Service Unit (BGN2009)</b>	<b>in value</b>	<b>-7.04</b>	<b>-7.97</b>	<b>-7.60</b>	<b>-9.49</b>	
	<b>in %</b>	<b>-12.2%</b>	<b>-13.8%</b>	<b>-12.7%</b>	<b>-16.2%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-3.60</b>	<b>-4.07</b>	<b>-3.89</b>	<b>-4.85</b>	
	<b>in %</b>	<b>-12.2%</b>	<b>-13.8%</b>	<b>-12.7%</b>	<b>-16.2%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (48.95 BGN2009 or 25.04 €2009) is -16.2% lower than planned in the PP (58.44 BGN2009 or 29.89 €2009). This results from the combination of higher than planned TSUs (+9.0%) and lower than planned en-route costs in real terms (-8.7%, or -9.4 M€2009). See also <b>Note 1</b> at the end of this Report.						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+9.0%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (BULATSA) retaining an amount of +3.9 M€2009.						
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Bulgaria are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It is noted that the determined TSUs underpinning the en-route cost-efficiency targets in the revised PP (2017-2019) were mostly in line with STATFOR February 2016 <u>base</u> TSU growth scenario.						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -7.8% (-17.8 MBGN) lower than planned. However, since the actual inflation index is higher than planned (+1.1 p.p.), actual en-route costs are -8.7% (-18.3 MBGN2009 or -9.4 M€2009) below plans when expressed in real terms.						
The lower than planned en-route costs in real terms are driven by BULATSA (-8.9%, or -9.0 M€2009) and the NSA/EUROCONTROL (-5.7%, or -0.3 M€2009). A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -0.4 M€2009 (or -0.9 MBGN in nominal terms) comprising -0.7 M€2009 for unforeseen changes in national taxation law and +0.3 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



**BULGARIA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**

#### 4. En-route traffic monitoring (Actual 2015-2019 TSUs compared to PP)

#### 5. En-route costs monitoring (2018 actuals compared to PP)

Costs by entity at ECZ level:

ATSP	-8.9%
Other ANSPs	-
METSP	-
NSA/EUROCONTROL	-5.7%
<b>Total</b>	<b>-8.7%</b>

Costs by nature at ATSP level:

Staff	-8.6%
Other operating costs	-9.7%
Depreciation	-23.0%
Cost of capital	8.4%
Exceptional items	-
VFR exempted flights	-
<b>Total</b>	<b>-8.9%</b>

#### 6. En-route costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	-113	-349	-557	-741	
	New cost item required by law	0	0	0	0	
	International agreements	-16	232	303	330	
by entity	ATSP	-113	-349	-557	-741	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA/EUROCONTROL	-16	232	303	330	
<b>Total costs exempt from cost sharing</b>		<b>-129</b>	<b>-117</b>	<b>-254</b>	<b>-412</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. En-route DUC 2018 vs. 2018 Unit Rate charged to users

Bulgaria 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - BGN

The en-route unit rate charged to airspace users (CUR) in 2018 is 51.99 BGN. This is -17.7% lower than the nominal DUC (63.20 BGN). The difference between these two figures (-11.21 BGN) is due to:

- the deduction of other revenues (-0.95 BGN), which are understood to refer to i) "expected revenues related to the long-term contract for radar data provision to Hungarocontrol for controlling of Kosovo airspace (KFOR sector)", and ii) "the settlement of depreciation costs of delayed projects in RP1";
- the inflation adjustment (-2.94 BGN), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic risk sharing adjustment (-9.68 BGN), which reflects the gain in revenues due to higher than planned traffic in 2016, to be reimbursed to airspace users in 2018; and
- a traffic adjustment (+2.36 BGN), for the costs not subject to traffic risk sharing and the related under recovery.

These costs and adjustments are divided by the **forecast** TSUs for 2018 as laid out in the RP2 performance plan.

#### 8. En-route DUC 2018 vs. 2018 Actual Unit Cost for users

Bulgaria 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - BGN

The actual en-route unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (59.49 BGN) is -5.9% lower than the nominal DUC (63.20 BGN). The difference between these two figures (-3.72 BGN) mainly relates to to:

- the deduction of other revenues (-0.95 BGN). According to the additional information to the June 2019 en-route Reporting Tables, these revenues refer to i) "expected revenues related to the long-term contract for radar data provision to Hungarocontrol for controlling of Kosovo airspace (KFOR sector)", and ii) "the settlement of depreciation costs of delayed projects in RP1".
- a traffic risk sharing adjustment (-2.53 BGN), which reflects the gain in revenues due to higher than planned traffic in 2018, to be reimbursed to airspace users in 2020.

It is also noted that Bulgaria has reported a performance bonus for achieving a local en-route capacity target under the capacity incentive scheme for en-route activity in 2018 amounting to 38 909 BGN, which, although not reported in the June 2019 submission of en-route Reporting Tables, is reflected in this calculation (+0.01 BGN). See also **Note 2** at the end of this Report.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TSUs for 2018.

## BULGARIA: En-route ATSP (BULATSA)

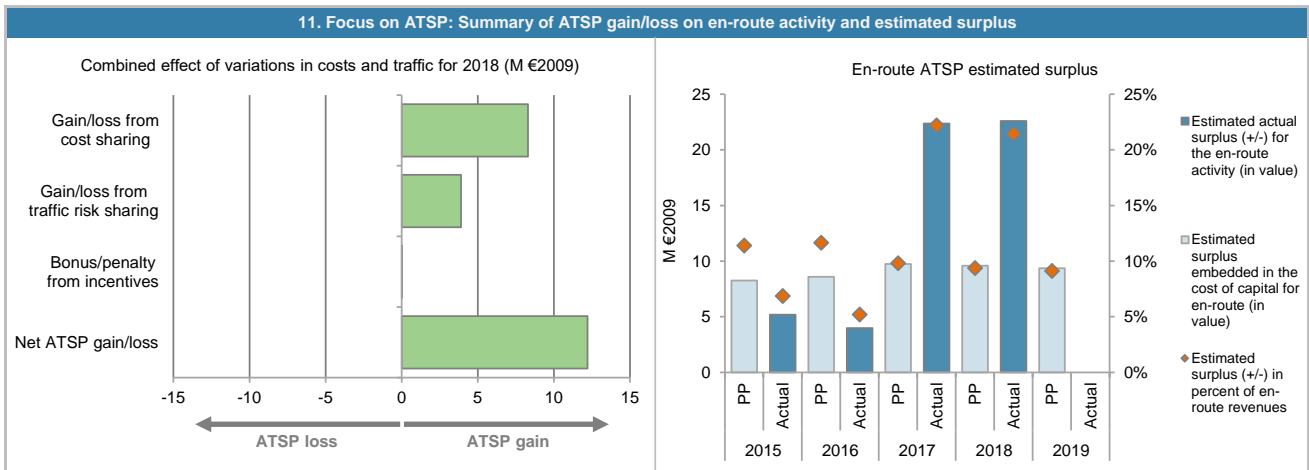
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	72 403	73 634	99 263	102 109	
Actual costs for the ATSP	79 219	81 994	88 248	93 070	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-6 816	-8 360	11 015	9 039	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-113	-349	-557	-741	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-6 929</b>	<b>-8 709</b>	<b>10 458</b>	<b>8 297</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	22.7%	28.0%	2.2%	9.0%	
Determined costs for the ATSP (PP) - based on actual inflation	68 806	72 165	93 271	94 775	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>3 027</b>	<b>3 175</b>	<b>1 910</b>	<b>3 891</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>9</b>	<b>9</b>	<b>17</b>	<b>18</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-3 892</b>	<b>-5 526</b>	<b>12 385</b>	<b>12 207</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	118 036	122 591	139 148	136 924	133 706
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	118 036	122 591	139 148	136 924	133 706
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	8 263	8 581	9 740	9 585	9 359
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.0%	7.0%	7.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	8 263	8 581	9 740	9 585	9 359
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>8 263</b>	<b>8 581</b>	<b>9 740</b>	<b>9 585</b>	<b>9 359</b>
<b>Revenue/costs for the en-route activity</b>	<b>72 403</b>	<b>73 634</b>	<b>99 263</b>	<b>102 109</b>	<b>102 589</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>11.4%</b>	<b>11.7%</b>	<b>9.8%</b>	<b>9.4%</b>	<b>9.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	129 575	135 770	142 514	148 467	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	129 575	135 770	142 514	148 467	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	9 070	9 504	9 976	10 393	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.0%	7.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	9 070	9 504	9 976	10 393	
Net ATSP gain(+)/loss(-) on en-route activity	-3 892	-5 526	12 385	12 207	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>5 178</b>	<b>3 978</b>	<b>22 361</b>	<b>22 599</b>	
<b>Revenue/costs for the en-route activity</b>	<b>75 327</b>	<b>76 469</b>	<b>100 633</b>	<b>105 277</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.9%</b>	<b>5.2%</b>	<b>22.2%</b>	<b>21.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.0%</b>	<b>2.9%</b>	<b>15.7%</b>	<b>15.2%</b>	



**BULGARIA: En-route ATSP (BULATSA)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 BULATSA en-route costs vs. PP**

In 2018, BULATSA actual en-route costs are -8.9% (-9.0 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-8.6%, or -6.0 M€2009), driven by i) the fact that "... BULATSA has made significant efforts to employ the optimal numbers of ACC ATCOs [...] Nevertheless, the process is slightly lagging due to shortage of appropriate candidates for the ACC working positions [...] This resulted in underspending of en-route staff costs versus the plan", and ii) "lower social security costs, since there were no changes in the maximum social security income as well as in the social security rates as planned".
- lower other operating costs (-9.7%, or -1.0 M€2009), due to "lower costs for external services versus the plan due to postponed training related to acquisition of assets and some specialised consulting services due to their complexity".
- much lower depreciation costs (-23.0%, or -2.8 M€2009), mostly reflecting delays in investment projects, in particular those planned in RP1.
- higher cost of capital (+8.4%, or +0.8 M€2009), which, since BULATSA is entirely financed through equity, is driven by higher than planned en-route asset base in real terms (+8.4%, or +11.5 M€2009).

**BULATSA net gain/loss on en-route activity in 2018**

As shown in box 9, BULATSA generated a net gain of +12.2 M€2009 on the en-route activity. This is a combination of three elements:

- a gain of +8.3 M€2009 arising from the cost sharing mechanism;
- a gain of +3.9 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.02 M€2009 (or +0.04 MBGN in nominal terms), corresponding to a bonus as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.02% of BULATSA en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission. See also **Note 2** at the end of this Report.

The gain from cost sharing mentioned above (+8.3 M€2009) includes amounts reported by BULATSA for cost exempt from cost sharing (-0.7 M€2009). Should these costs not be deemed eligible by the European Commission, BULATSA would record a net gain of +12.9 M€2009 for the en-route activity in 2018.

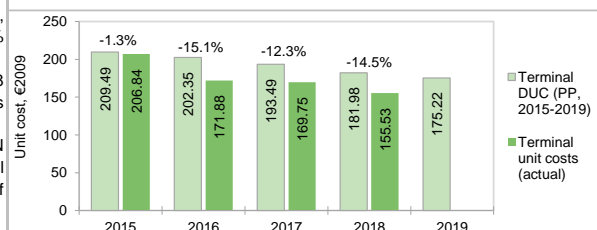
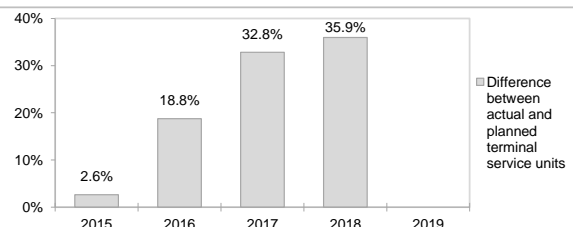
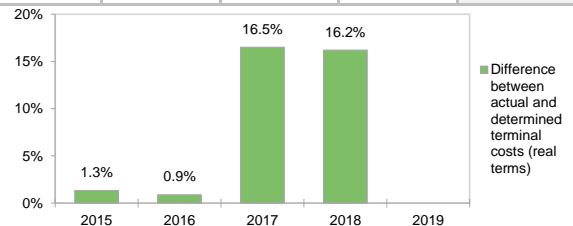
**BULATSA overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+12.2 M€2009) and the surplus embedded in the actual cost of capital (+10.4 M€2009) amounts to +22.6 M€2009 (21.5% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 15.2%, which is much higher than the 7.0% planned in the PP.

## BULGARIA: Terminal charging zone

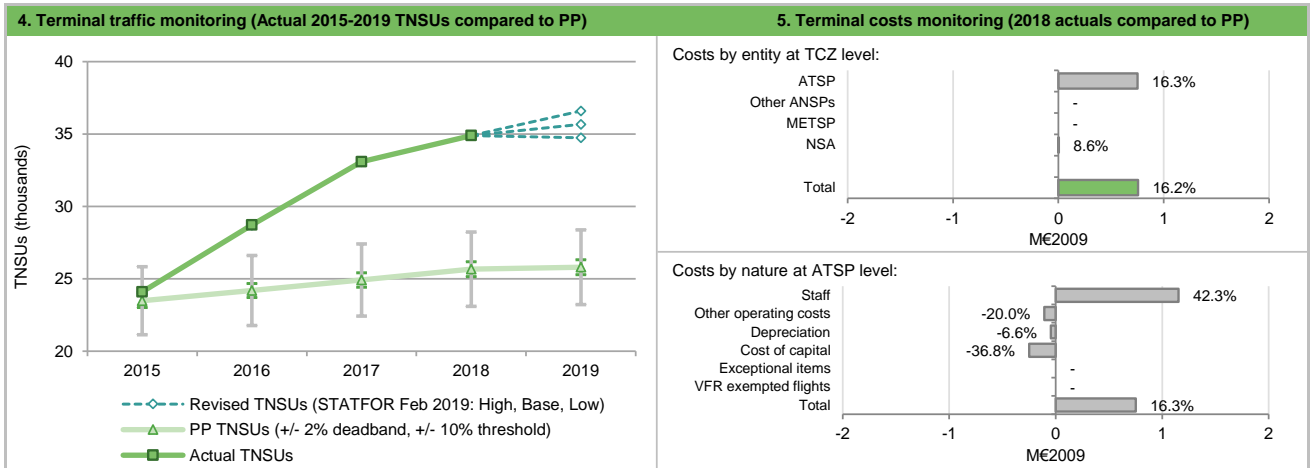
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Bulgaria TCZ represents 0.4% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes	
· ATSP: BULATSA		· Airports with fewer than 70,000 IFRs ATMs:		1	
· National currency: BGN		· Airports with between 70,000 and 225,000 IFRs ATMs:		0	
· Number of airports in charging zone in 2018: 1, of which:		· Airports with more than 225,000 IFRs ATMs:		0	
2. Terminal DUC monitoring at Charging Zone level					
Bulgaria: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal BGN)	10 590 551	10 725 206	10 795 526	10 687 693	10 572 836
Inflation %	0.9%	1.8%	2.2%	2.2%	2.2%
Inflation index (100 in 2009)	110.1	112.1	114.5	117.0	119.6
Real terminal costs (BGN2009)	9 620 450	9 571 629	9 426 992	9 131 927	8 839 324
Total terminal Service Units	23 487	24 191	24 917	25 665	25 800
<b>Real terminal unit cost per Service Unit (BGN2009)</b>	<b>409.61</b>	<b>395.66</b>	<b>378.33</b>	<b>355.82</b>	<b>342.61</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>209.49</b>	<b>202.35</b>	<b>193.49</b>	<b>181.98</b>	<b>175.22</b>
Bulgaria: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal BGN)	10 387 116	10 154 849	11 690 297	11 586 333	
Inflation %	-1.1%	-1.3%	1.2%	2.6%	
Inflation index (100 in 2009)	106.6	105.2	106.4	109.2	
Real terminal costs (BGN2009)	9 747 924	9 655 471	10 983 609	10 610 068	
Total terminal Service Units	24 103	28 729	33 092	34 889	
<b>Real terminal unit cost per Service Unit (BGN2009)</b>	<b>404.44</b>	<b>336.08</b>	<b>331.91</b>	<b>304.11</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>206.84</b>	<b>171.88</b>	<b>169.75</b>	<b>155.53</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal BGN)	in value -203 435	in value -570 357	in value 894 771	in value 898 640	
	in % -1.9%	in % -5.3%	in % 8.3%	in % 8.4%	
Inflation %	in p.p. -2.0 p.p.	in p.p. -3.1 p.p.	in p.p. -1.0 p.p.	in p.p. 0.4 p.p.	
Inflation index (100 in 2009)	in p.p. -3.5 p.p.	in p.p. -6.9 p.p.	in p.p. -8.1 p.p.	in p.p. -7.8 p.p.	
Real terminal costs (BGN2009)	in value 127 475	in value 83 843	in value 1 556 617	in value 1 478 141	
	in % 1.3%	in % 0.9%	in % 16.5%	in % 16.2%	
Total terminal Service Units	in value 616	in value 4 538	in value 8 175	in value 9 224	
	in % 2.6%	in % 18.8%	in % 32.8%	in % 35.9%	
<b>Real terminal unit cost per Service Unit (BGN2009)</b>	<b>in value -5.18</b>	<b>in value -59.58</b>	<b>in value -46.42</b>	<b>in value -51.71</b>	
	<b>in % -1.3%</b>	<b>in % -15.1%</b>	<b>in % -12.3%</b>	<b>in % -14.5%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -2.65</b>	<b>in value -30.47</b>	<b>in value -23.74</b>	<b>in value -26.45</b>	
	<b>in % -1.3%</b>	<b>in % -15.1%</b>	<b>in % -12.3%</b>	<b>in % -14.5%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Bulgaria Terminal Charging Zone (TCZ) comprising only Sofia airport (LBSF). See also <b>Note 1</b> at the end of this Report.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (304.11 BGN2009 or 155.53 €2009) is -14.5% lower than planned in the PP (355.82 BGN2009 or 181.98 €2009). This results from the combination of much higher than planned TNSUs (+35.9%) and much higher than planned terminal costs in real terms (+16.2%, or +0.8 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Bulgaria TCZ. The difference between actual and planned TNSUs (+35.9%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (BULATSA) retaining an amount of +0.2 M€2009. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Bulgaria are expected to abundantly exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2. It should be noted that the forecast TNSUs selected in the RP2 PP were mostly in line with STATFOR February 2014 <u>low</u> TNSU growth scenario.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +8.4% (+0.9 MBGN) higher than planned. However, since the actual inflation index is lower than planned (-7.8 p.p.), actual terminal costs are +16.2% (+1.5 MBGN2009 or +0.8 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by BULATSA (+16.3%, or +0.8 M€2009) and, to a lesser extent, the NSA costs (+8.6%). A detailed analysis at ATSP level is provided in box 12. Costs exempt from cost-sharing are reported for a total amount of -0.05 M€2009 (or -0.1 MBGN in nominal terms) corresponding to unforeseen changes in national taxation law. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**BULGARIA: Terminal charging zone**

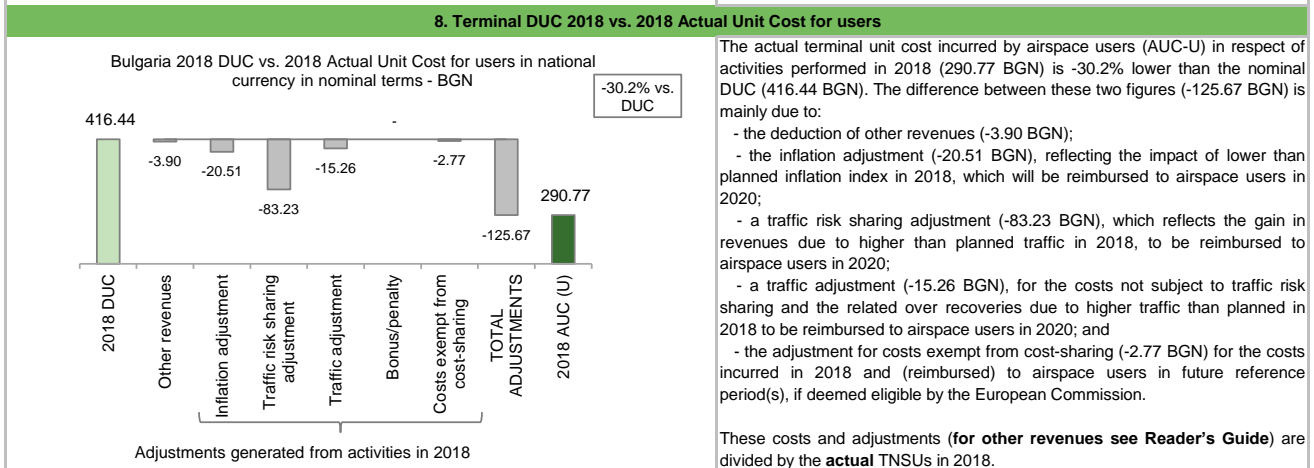
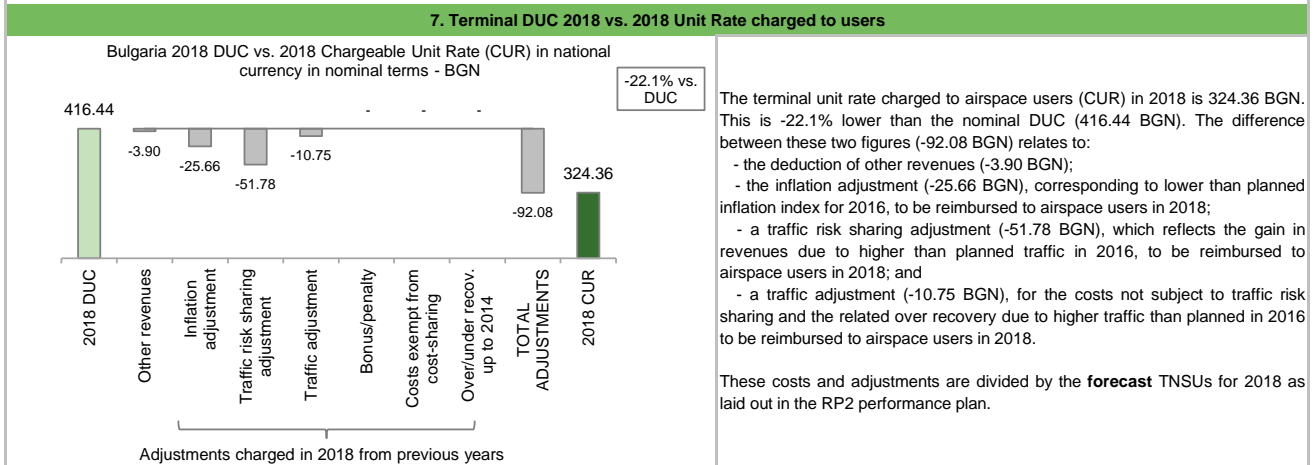
**Monitoring of terminal COST-EFFICIENCY for 2018**



#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	-7	-20	-32	-45	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	-7	-20	-32	-45	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>-7</b>	<b>-20</b>	<b>-32</b>	<b>-45</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.



## BULGARIA: Terminal ATSP (BULATSA)

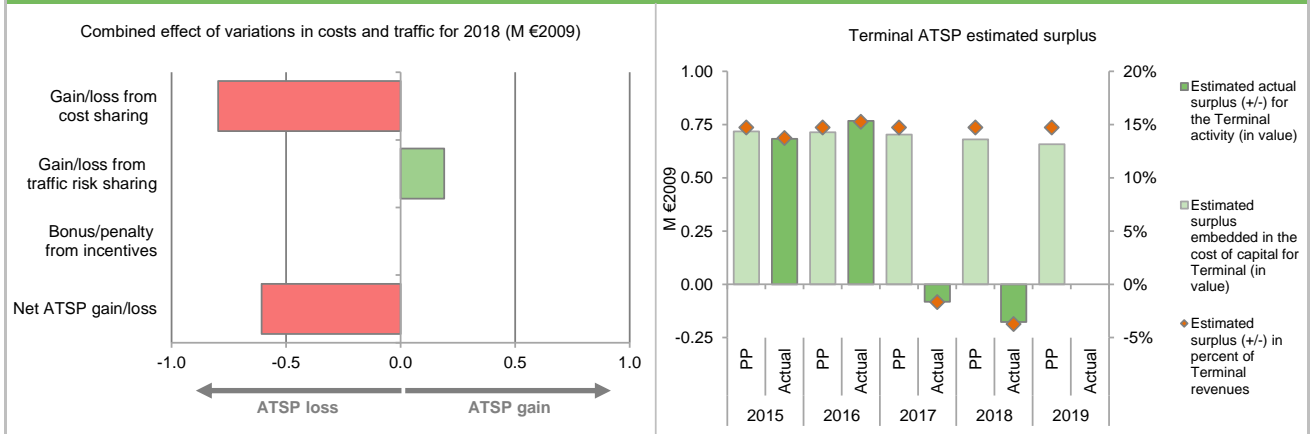
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	4 876	4 848	4 771	4 617	
Actual costs for the ATSP	4 943	4 896	5 559	5 368	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-67	-48	-788	-751	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-7	-20	-32	-45	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-74</b>	<b>-68</b>	<b>-820</b>	<b>-797</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	2.6%	18.8%	32.8%	35.9%	
Determined costs for the ATSP (PP) - based on actual inflation	4 390	4 500	4 473	4 312	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>96</b>	<b>198</b>	<b>197</b>	<b>190</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>22</b>	<b>130</b>	<b>-624</b>	<b>-607</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	10 260	10 200	10 038	9 715	9 393
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	10 260	10 200	10 038	9 715	9 393
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	718	714	703	680	658
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.0%	7.0%	7.0%
Estimated surplus embedded in the cost of capital for terminal (in value)	718	714	703	680	658
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>718</b>	<b>714</b>	<b>703</b>	<b>680</b>	<b>658</b>
<b>Revenue/costs for the terminal activity</b>	<b>4 876</b>	<b>4 848</b>	<b>4 771</b>	<b>4 617</b>	<b>4 464</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>14.7%</b>	<b>14.7%</b>	<b>14.7%</b>	<b>14.7%</b>	<b>14.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>	<b>7.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	9 439	9 093	7 742	6 142	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	9 439	9 093	7 742	6 142	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	661	637	542	430	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.0%	7.0%	
Estimated surplus embedded in the cost of capital for terminal (in value)	661	637	542	430	
Net ATSP gain(+)/loss(-) on terminal activity	22	130	-624	-607	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>683</b>	<b>767</b>	<b>-82</b>	<b>-177</b>	
<b>Revenue/costs for the terminal activity</b>	<b>4 966</b>	<b>5 026</b>	<b>4 935</b>	<b>4 761</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>13.8%</b>	<b>15.3%</b>	<b>-1.7%</b>	<b>-3.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>7.2%</b>	<b>8.4%</b>	<b>-1.1%</b>	<b>-2.9%</b>	

**BULGARIA: Terminal ATSP (BULATSA)**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 BULATSA terminal costs vs. PP**

In 2018, BULATSA actual terminal costs are +16.3% (+0.8 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much higher staff costs (+42.3%, or +1.2 M€2009), resulting from i) "increase of the salaries of ATM staff due to the significant traffic demand", and ii) the fact that "some of the candidates who failed to pass the exam for ACC ATCOs were employed at TWR working positions, thus increasing TNC staff costs".
- much lower other operating costs (-20.0%, or -0.1 M€2009), driven by "lower administrative costs related exclusively to terminal navigation services".
- lower depreciation costs (-6.6%, or -0.04 M€2009), reflecting the "the execution of CAPEX from the beginning of the reference period".
- much lower cost of capital (-36.8%, or -0.3 M€2009), which, since BULATSA is entirely financed through equity, is driven by lower than planned terminal asset base in real terms (-36.8%, or -3.6 M€2009).

It should be noted that this is the fourth consecutive year in which the actual terminal costs for BULATSA have exceeded the planned figures (in real terms).

**BULATSA net gain/loss on terminal activity in 2018**

As shown in box 9, BULATSA generated a net loss of -0.6 M€2009 on the terminal activity. This is a combination of two elements:

- a loss of -0.8 M€2009 arising from the cost sharing mechanism; and
- a gain of +0.2 M€2009 arising from the traffic risk sharing mechanism.

The loss from cost sharing mentioned above (-0.8 M€2009) includes amounts reported by BULATSA for cost exempt from cost sharing (-0.05 M€2009). Should these costs not be deemed eligible by the European Commission, BULATSA would record a net loss of -0.6 M€2009 for the terminal activity in 2018.

**BULATSA overall estimated surplus for the terminal activity.**

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity mentioned above (-0.6 M€2009) and the surplus embedded in the actual cost of capital (+0.4 M€2009) amounts to an overall loss of -0.2 M€2009 (3.7% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is negative (-2.9%). This indicates that the part of surplus embedded in the cost of capital through the RoE included in the PP (+7.0%) was not sufficient to compensate for the losses arising from the cost sharing mechanism due to higher than planned terminal cost for BULATSA.

## BULGARIA: Gate-to-gate

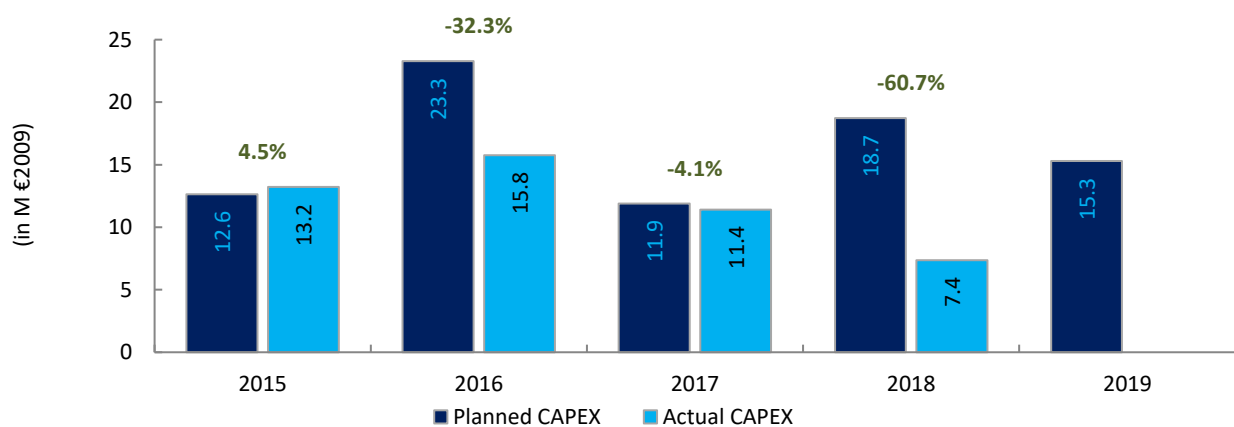
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Bulgaria: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	77 479 163	78 872 387	104 973 269	107 952 869	108 556 567																																							
Real terminal costs (EUR2009)	4 920 191	4 895 223	4 821 251	4 670 345	4 520 700																																							
Real gate-to-gate costs (EUR2009)	82 399 354	83 767 610	109 794 520	112 623 214	113 077 266																																							
En-route share (%)	94.0%	94.2%	95.6%	95.9%	96.0%																																							
<b>Bulgaria: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	83 450 775	87 022 751	93 586 339	98 578 693																																								
Real terminal costs (EUR2009)	4 985 386	4 938 102	5 617 352	5 426 312																																								
Real gate-to-gate costs (EUR2009)	88 436 161	91 960 853	99 203 691	104 005 005																																								
En-route share (%)	94.4%	94.6%	94.3%	94.8%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)	in value	6 036 807	8 193 243	-10 590 829	-8 618 210																																							
	in %	7.3%	9.8%	-9.6%	-7.7%																																							
En-route share	in p.p.	0.3 p.p.	0.5 p.p.	-1.3 p.p.	-1.1 p.p.																																							
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -7.7% (-8.6 M€2009) lower than planned, which is primarily driven by lower than planned en-route costs (-8.7%, or -9.4 M€2009), while terminal costs are higher than planned (+16.2%, or +0.8 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (94.8%) is slightly lower than planned in the PP for 2018 (95.9%).</p> <p>For BULATSA, the estimated gate-to-gate economic surplus in 2018 amounts to 22.4 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 20.4% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Category</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>94.0%</td> <td>6.0%</td> </tr> <tr> <td>Actual</td> <td>94.4%</td> <td>5.6%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>94.2%</td> <td>5.8%</td> </tr> <tr> <td>Actual</td> <td>94.6%</td> <td>5.4%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>95.6%</td> <td>4.4%</td> </tr> <tr> <td>Actual</td> <td>94.3%</td> <td>5.7%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>95.9%</td> <td>4.1%</td> </tr> <tr> <td>Actual</td> <td>94.8%</td> <td>5.2%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>96.0%</td> <td>4.0%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Category	En-route (%)	Terminal (%)	2015	Determined	94.0%	6.0%	Actual	94.4%	5.6%	2016	Determined	94.2%	5.8%	Actual	94.6%	5.4%	2017	Determined	95.6%	4.4%	Actual	94.3%	5.7%	2018	Determined	95.9%	4.1%	Actual	94.8%	5.2%	2019	Determined	96.0%	4.0%	Actual		
Year	Category	En-route (%)	Terminal (%)																																									
2015	Determined	94.0%	6.0%																																									
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2019	Determined	96.0%	4.0%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Bulgaria</b>																																												
<p><b>Note 1:</b> Bulgaria has revised their RP2 en-route cost-efficiency targets for the years 2017 to 2019. The figures shown in this report reflect: i) the initial adopted Performance Plan (EC Decision 2015/348 of 2 March 2015) for the years 2015 and 2016; and ii) the revised Performance Plan (EC Decision 2017/2376 of 15 December 2017) for the years 2017 to 2019.</p> <p>It should be noted that the revision only refers to en-route DUC for the years 2017-2019 and does <u>not</u> affect the terminal DUC for the Bulgarian terminal charging zone.</p> <p><b>Note 2:</b> A bonus of 38 909 BGN for achieving the local en-route capacity target in 2018 is reported for BULATSA in the 2018 DANUBE FAB Monitoring Report. It is noted, that this amount is <u>not</u> recorded in the June 2019 submission of en-route Reporting Tables, since, according to the additional information to the en-route Reporting Tables:</p> <p>"Further to that and to the 2015 PRB Annual monitoring report, BULATSA should receive a bonus of BGN 19,339. The calculations for 2016 also show a bonus achieved to the amount of BGN 17,813. However, in previous statements made by Bulgaria, such bonuses will be rewarded after consultations with the airspace users. In view of that and taking into account the EC letter dated 25 October 2016,[...], Bulgaria would prefer to award the said bonus, after the FAB en-route capacity incentive schemes are brought in line with article 12 of the performance regulation and article 15 of the charging regulation.</p> <p>Subsequently the bonus for 2015 and 2016 will be consulted and forwarded to next years from the reference period and would be subject to the fulfilment of the statement of the EC letter. The same is to be done for 2017. The calculated amount of the bonus for 2017 is BGN 34,782. Since the discussions the incentive mechanism to be brought in line with the above mentioned articles are still in progress, <u>any amounts for the bonuses identified in the PRB reports are not included in the calculation of the unit rate for 2019</u>. This will be done after consultations with the airspace users and in coordination with the European Commission.</p> <p>Further to the information above, the question was referred to the European commission and do expect to have a resolution of it. A small bonus is expected for 2018 but this is to be defined by the PRB report for 2018."</p> <p>With respect to the bonus for 2015, it should be noted that an amount of 38 678 BGN was recorded in the DANUBE FAB 2015 Monitoring Report. However, this is different from the amount reported in the additional information to the June 2019 en-route Reporting Tables (see extract above).</p> <p>For the purpose of consistency, the above mentioned bonuses stemming from the en-route capacity incentive scheme of 19 339 BGN for 2015, 17 813 BGN for 2016, 34 782 BGN for 2017 and 38 909 BGN for 2018 are included in this en-route cost-efficiency monitoring analysis. In particular, this affects the values presented in box 8 for 2018 actual unit cost incurred by the users, box 9 for ATSP gain/loss on en-route activity and box 10 for en-route ATSP estimated surplus.</p>																																												

## BULGARIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: BULATSA						
FAB: DANUBE FAB						
Currency: BGN						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	27.2	51.0	24.9	39.6	32.8	175.5
Main CAPEX (in nominal M)	25.7	39.7	12.5	26.7	24.7	129.2
Inflation %	0.9%	1.8%	1.1%	1.2%	1.4%	
Inflation index (100 in 2009)	110.1	112.1	106.9	108.1	109.7	
Exchange rate 2009	1.9553	1.9553	1.9553	1.9553	1.9553	
<b>Total CAPEX (in M €2009)</b>	<b>12.6</b>	<b>23.3</b>	<b>11.9</b>	<b>18.7</b>	<b>15.3</b>	<b>81.9</b>
Main CAPEX (in M €2009)	11.9	18.1	6.0	12.6	11.5	60.2
% Main of Total CAPEX	94.2%	77.8%	50.3%	67.3%	75.3%	73.5%
Real gate-to-gate ANSP costs (in M €2009)	77.3	78.5	104.0	106.7	107.1	473.6
Total CAPEX as % of Real gate-to-gate ANSP costs	16.4%	29.7%	11.4%	17.6%	14.3%	17.3%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	27.5	32.4	23.7	15.7		
Main CAPEX (in nominal M)	21.4	22.9	14.6	3.4		
Inflation %	-1.1%	-1.3%	1.2%	2.6%		
Inflation index (100 in 2009)	106.6	105.2	106.4	109.2		
Exchange rate 2009	1.9553	1.9553	1.9553	1.9553		
<b>Total CAPEX (in M €2009)</b>	<b>13.2</b>	<b>15.8</b>	<b>11.4</b>	<b>7.4</b>		
Main CAPEX (in M €2009)	10.3	11.1	7.0	1.6		
% Main of Total CAPEX	77.7%	70.6%	61.6%	21.3%		
Real gate-to-gate ANSP costs (in M €2009)	84.2	86.9	93.8	98.4		
Total CAPEX as % of Real gate-to-gate ANSP costs	15.7%	18.1%	12.2%	7.5%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	0.3	-18.6	-1.1	-23.9		
Total CAPEX (in M €2009)	0.6	-7.5	-0.5	-11.4		
<b>Total CAPEX (in %, M €2009)</b>	<b>4.5%</b>	<b>-32.3%</b>	<b>-4.1%</b>	<b>-60.7%</b>		



Note: Planned and actual inflation indices used to calculate CAPEX in real terms above, are based on the en-route Reporting Tables. Following the revision of RP2 Performance Plan these data differ from terminal Reporting Tables for the years 2017-2019. For this reason, two separate inflation indices are used to calculate the gate-to-gate ANSP costs in real terms.





# Annual Monitoring Report 2018

## Local level view

### Romania



## ROMANIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	61	B	C	C	B	B
ROMATSA	86	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			n/a	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			CIAS			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			9	0		
Legal/Judiciary			3	4		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>14</b>	<b>4</b>		
ROMATSA			Number of questions answered			
			YES	NO		
Policy and its implementation			11	2		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			6	2		
<b>TOTAL</b>			<b>19</b>	<b>5</b>		
Observations						
Two out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.						
Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only three are below Level C.						

## ROMANIA

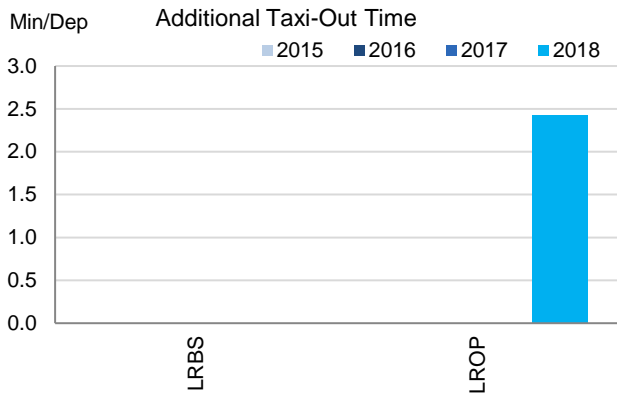
## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

Romania, as a member of the Danube FAB, has identified two airports as subject to RP2 monitoring. With the implementation of the Airport Operator Data Flow at Bucharest/Otopeni (LROP) in 2018, it is finally possible to monitor both additional times at this airport.

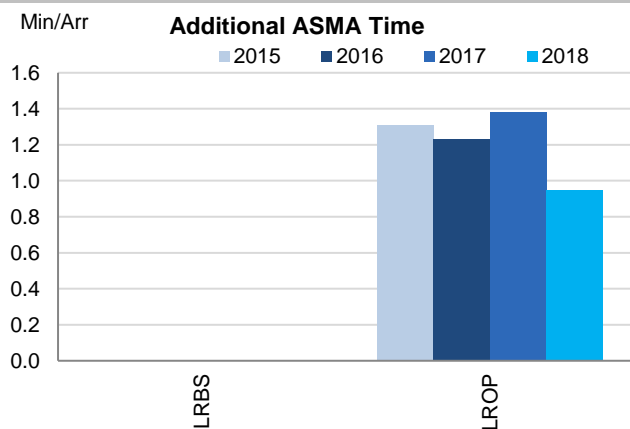
The monitoring of environmental indicators at Bucharest/Băneasa (LRBS) is not possible due to the lack of data. Member States shall empower the respective airport reporting entity to establish the Airport Operator Data Flow.

## 2. Additional Taxi-Out Time



The additional taxi-out times at Bucharest/Otopeni are commensurate with its level of traffic (LROP; 2018: 2.43 min/dep.) and well below the SES average (3.57 min/dep.)

## 3. Additional ASMA Time



Additional times in the terminal airspace of Bucharest/Otopeni have significantly improved with a reduction of almost half a minute (LROP; 2017: 1.38 min/arr.; 2018: 0.95 min/arr.)

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bucharest/ Băneasa	LRBS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Bucharest/ Otopeni	LROP	n/a	n/a	n/a	2.43		1.31	1.23	1.38	0.95	

## ROMANIA

## Monitoring of CAPACITY for 2018

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.00	0.00	0.00	0.00	0.00	Romania's incentive scheme does not include bonuses, only penalties if the performance targets are missed.
Deadband +/-	0.05	0.05	0.05	0.05	0.05	
Actual performance	0.03	0.00	0.01	0.12		

## National capacity incentive scheme

During 2018 Bucharest ACC registered for the first time an actual en-route delay of 0.12 min/flight per year (mainly due to weather).

The national incentive scheme for Romania, in accordance with Article 15 (g) of Regulation (EU) No 391/2013, is based only on the ATFM delay causes C,R,S,T,M & P.

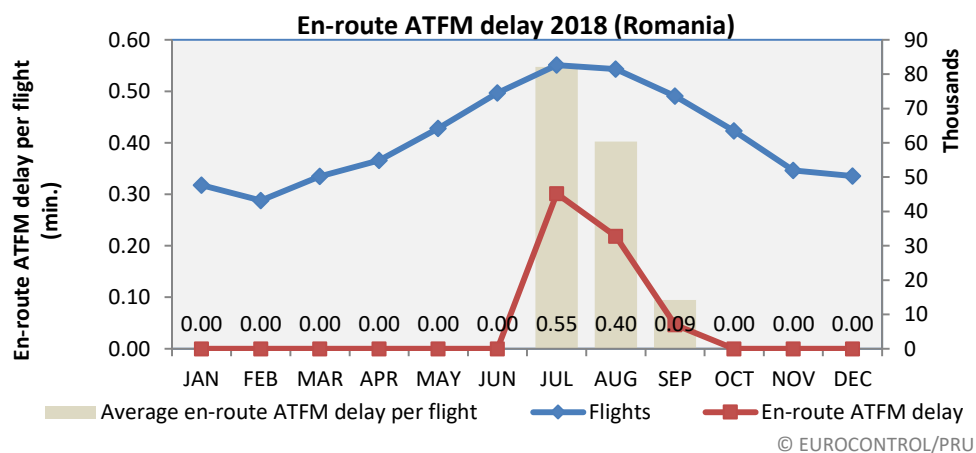
Romania reports that based on Network Manager monitoring information, the amount of delay minutes due to adverse weather (W), to be excluded, is 0.08 minutes per flight.

Therefore, for incentive purposes, the total delay for Romania is 0.04 minutes per flight which falls within the deadband of 0.05 minutes per flight, and means that no penalty is due.

## Compliance issues relating to national capacity incentive scheme

Nil

## Observations regarding national capacity incentive scheme



En-route ATFM delay per flight (Romania)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.12

EUROCONTROL 7 year forecast February 2014 – Romania										
	2014		2015		2016		2017		2018	2019
	actual	actual	actual	actual	actual	actual	actual	actual	actual	
High	542		574		607		641		672	710
Base	535	598	559	635	582	621	605	673	624	738
Low	527		544		556		568		581	597

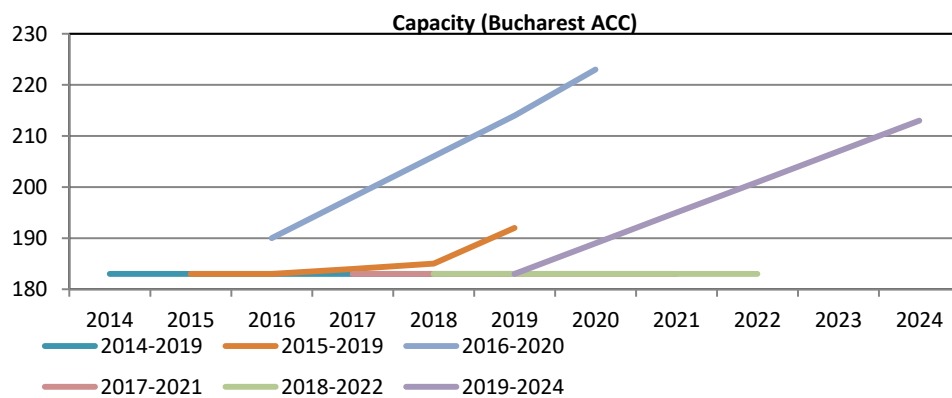
2018 witnessed a significant deterioration in capacity performance in Romania, attributed primarily to adverse weather in the period July to September. Non-weather attributed delay increased to 0,04 minutes per flight, up from 0,01 in 2017.

It is important to note that Romania experienced traffic growth of almost 10% on 2017 levels, and that Romania has been handling traffic levels above the high traffic forecast for every year of RP2 to date.

The airspace users, (IATA) commented on the good delay performance by Romania in 2018.

The Network Manager, in the latest Network Operations Plan 2019-2024, expects capacity problems in Romania in spring 2019 due to implementation of a new ATM system. The NM also comments about reaching maximum capacity in certain parts of the Bucharest FIR (South-West and West) with significant under-utilisation of the North-Eastern part due to traffic flow distribution in the context of the Black Sea situation. The Network Manager expects that by addressing complexity of some parts of the airspace, Romania will be able to provide a positive contribution to capacity for the remainder of RP2 and RP3.

Romania delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.01	0.01	0.01	0.01	N/A	N/A
NOP 2019 - 2024	0.12	0.12	0.05 – 0.08			



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### Planning and Effective Use of CDRs

Romania did not provide any data on this indicator.

### Observations on Planning and Effective Use of CDRs

It is noted that Romania, like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
68%	70%	84%	68%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
13%	4%	4%	3%	

Procedure 3 is not applicable within the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## ROMANIA

## Monitoring of Airports Contribution to CAPACITY for 2018

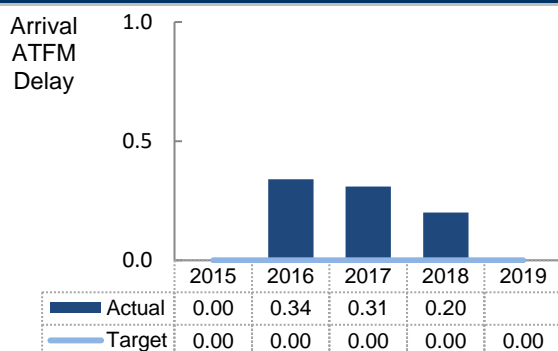
## 1. Overview

In Romania, ANS at Bucharest/Baneasa (LRBS) and Bucharest/Otopeni (LROP) are subject to RP2 monitoring. Romania has established a constant national target on arrival ATFM delay across the whole reference period (0.00 min/arr.) In 2018 the achieved arrival ATFM delay exceeds considerably the target but results in no financial penalty.

Traffic levels at these airports have drastically increased during RP2 (+27.6% with respect to 2015) along with higher values for arrival ATFM delays (0.20 min/arr. in 2018 vs. no delays in 2015).

Slot adherence at Romanian airports remains above 90%. Regarding ATC pre-departure delay, the data quality issues at LROP have been solved and the monitoring of this indicator is possible for the first time.

## 2. Arrival ATFM Delay



Bucharest/Otopeni is the main driver of Romanian performance. After the significant increase in 2016 of arrival ATFM delay (LROP: 2015: 0.00 min/arr.; 2016: 0.35 min/arr.; 2017: 0.32 min/arr.), during 2018 delays have moderately decreased (2018: 0.20 min/arr)

Except for some weather related delays in March, delays at LROP took place in May (aerodrome capacity), June (non ATC disruption) and July (non ATC event).

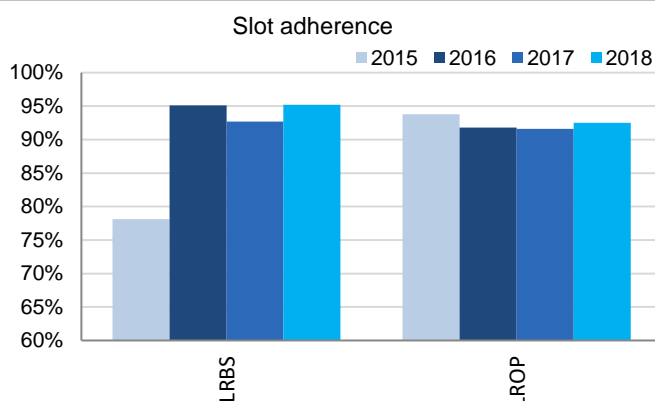
Just like in 2017, DANUBE FAB explains in its monitoring report that the *terminal target was not met in 2018 due to infrastructure issues at LROP (maintenance works at runways, taxiways and aprons) followed by traffic regularisation actions, by case.*

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Romania has established a national target on arrival ATFM delay.

The DANUBE FAB PP presents an incentive scheme based on CRSTMP reasons. Although the achieved performance (all reasons) (2018: 0.20 min/arr.) does not meet the target (i.e. 0.00 min/arr.), the actual value associated to CRSTMP reasons only falls within the deadband of the incentive scheme.

## 4. ATFM Slot Adherence



The compliance with ATFM slots in Romania sits above 90%.

Slot adherence at Bucharest/Baneasa (LRBS) reaches the 95% mark which is an improvement compared to 2017, while at Bucharest/Otopeni (LROP) the adherence is similar to previous years, slightly above the 90%.

## 5. ATC Pre-departure Delay

ATC pre-departure delay at Bucharest Otopeni (LROP) is 0.36 min/dep., similar to other airports in Europe with that traffic level.

The ATC pre-departure delay indicator is based exclusively on data reported by the airports through the Airport Operator Data Flow and is only calculated provided a minimum data quality. In the case of LROP the share of unexplained delay exceeded the allowed amount in previous years, but in 2018 the quality of the data has improved enough to allow the monitoring of the indicator. Nevertheless, the levels of unidentified delay are still high and it should be monitored.

The Airport Operator Data Flow, required for the monitoring of this indicator is not yet established for LRBS.

## 6. Appendix

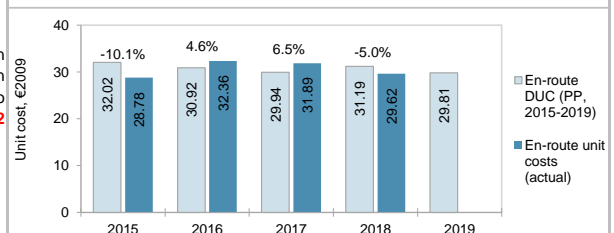
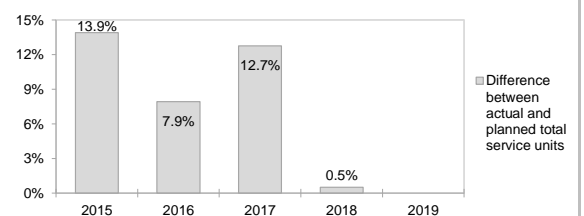
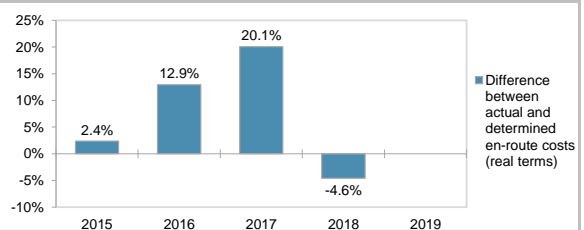
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bucharest/ Băneasa	LRBS	0.00	0.00	0.00	0.00		78.1%	95.1%	92.7%	95.2%		n/a	n/a	n/a	n/a	
Bucharest/ Otopeni	LROP	0.00	0.35	0.32	0.21		93.8%	91.8%	91.6%	92.5%		n/a	n/a	n/a	0.36	

## ROMANIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

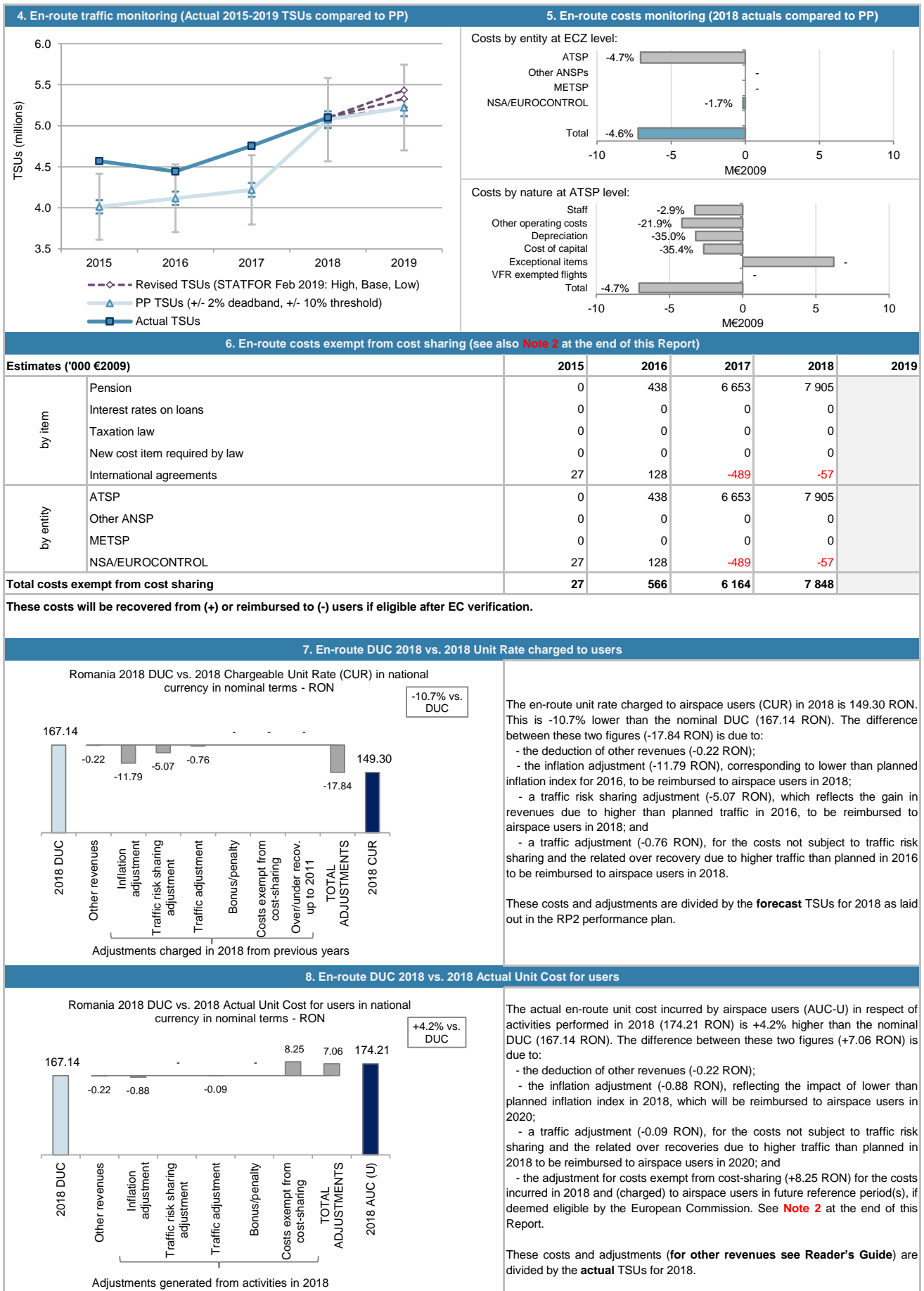
1. Contextual economic information: en-route air navigation services					
· Romania ECZ represents 2.3% of the SES en-route ANS determined costs in 2018					
· ATSP: ROMATSA					
· FAB: DANUBE FAB					
· National currency: RON Exchange rate 2009: 1 EUR = 4.23303 RON					
2. En-route DUC monitoring at Charging Zone level					
Romania: Data from RP2 Performance Plan (EC Decision 2018/2021 of 17 December 2018)					
	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal RON)	690 507 397	704 650 329	718 659 958	848 257 273	859 757 273
Inflation %	3.1%	3.0%	2.8%	4.7%	3.1%
Inflation index (100 in 2009)	126.9	130.7	134.4	126.6	130.5
Real en-route costs (RON2009)	543 963 841	538 937 162	534 681 066	670 078 574	658 908 133
Total en-route Service Units	4 012 887	4 117 019	4 219 063	5 075 000	5 222 000
<b>Real en-route unit cost per Service Unit (RON2009)</b>	<b>135.55</b>	<b>130.90</b>	<b>126.73</b>	<b>132.04</b>	<b>126.18</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>32.02</b>	<b>30.92</b>	<b>29.94</b>	<b>31.19</b>	<b>29.81</b>
Romania: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal RON)	673 646 297	728 174 165	776 680 739	805 268 470	
Inflation %	-0.4%	-1.1%	1.1%	4.1%	
Inflation index (100 in 2009)	121.0	119.6	121.0	125.9	
Real en-route costs (RON2009)	556 843 745	608 611 836	642 090 888	639 504 989	
Total en-route Service Units	4 570 684	4 442 936	4 756 852	5 100 776	
<b>Real en-route unit cost per Service Unit (RON2009)</b>	<b>121.83</b>	<b>136.98</b>	<b>134.98</b>	<b>125.37</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>28.78</b>	<b>32.36</b>	<b>31.89</b>	<b>29.62</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
En-route costs (nominal RON)					
in value	-16 861 100	23 523 837	58 020 780	-42 988 803	
in %	-2.4%	3.3%	8.1%	-5.1%	
Inflation %					
in p.p.	-3.5 p.p.	-4.1 p.p.	-1.7 p.p.	-0.6 p.p.	
Inflation index (100 in 2009)					
in p.p.	-6.0 p.p.	-11.1 p.p.	-13.4 p.p.	-0.7 p.p.	
Real en-route costs (RON2009)					
in value	12 879 904	69 674 674	107 409 822	-30 573 585	
in %	2.4%	12.9%	20.1%	-4.6%	
Total en-route Service Units					
in value	557 797	325 917	537 789	25 776	
in %	13.9%	7.9%	12.7%	0.5%	
<b>Real en-route unit cost per Service Unit (RON2009)</b>	<b>in value</b>	<b>-13.72</b>	<b>6.08</b>	<b>8.25</b>	<b>-6.66</b>
<b>in %</b>	<b>-10.1%</b>	<b>4.6%</b>	<b>6.5%</b>	<b>-5.0%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-3.24</b>	<b>1.44</b>	<b>1.95</b>	<b>-1.57</b>
<b>in %</b>	<b>-10.1%</b>	<b>4.6%</b>	<b>6.5%</b>	<b>-5.0%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (125.37 RON2009 or 29.62 €2009) is -5.0% lower than planned in the PP (132.04 RON2009 or 31.19 €2009). This results from the combination of slightly higher than planned TSUs (+0.5%) and lower than planned en-route costs in real terms (-4.6%, or -7.2 M€2009). See <b>Note 1</b> at the end of this Report.					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+0.5%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues (+0.7 M€2009) is therefore fully retained by the main ATSP (ROMATSA). According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Romania are expected to slightly exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -5.1% (-43.0 MRON) lower than planned. However, since the actual inflation index is also lower than planned (-0.7 p.p.), actual en-route costs are -4.6% (-30.6 MRON2009 or -7.2 M€2009) below plans when expressed in real terms. The lower than planned en-route costs in real terms are driven by ROMATSA (-4.7%, or -7.1 M€2009) and, to a lower extent, the NSA/EUROCONTROL costs (-1.7%, or -0.2 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +7.8 M€2009 (+42.1 MRON in nominal terms) comprising +7.9 M€2009 for pension costs and -0.1 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission. See <b>Note 2</b> at the end of this Report.					





ROMANIA: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



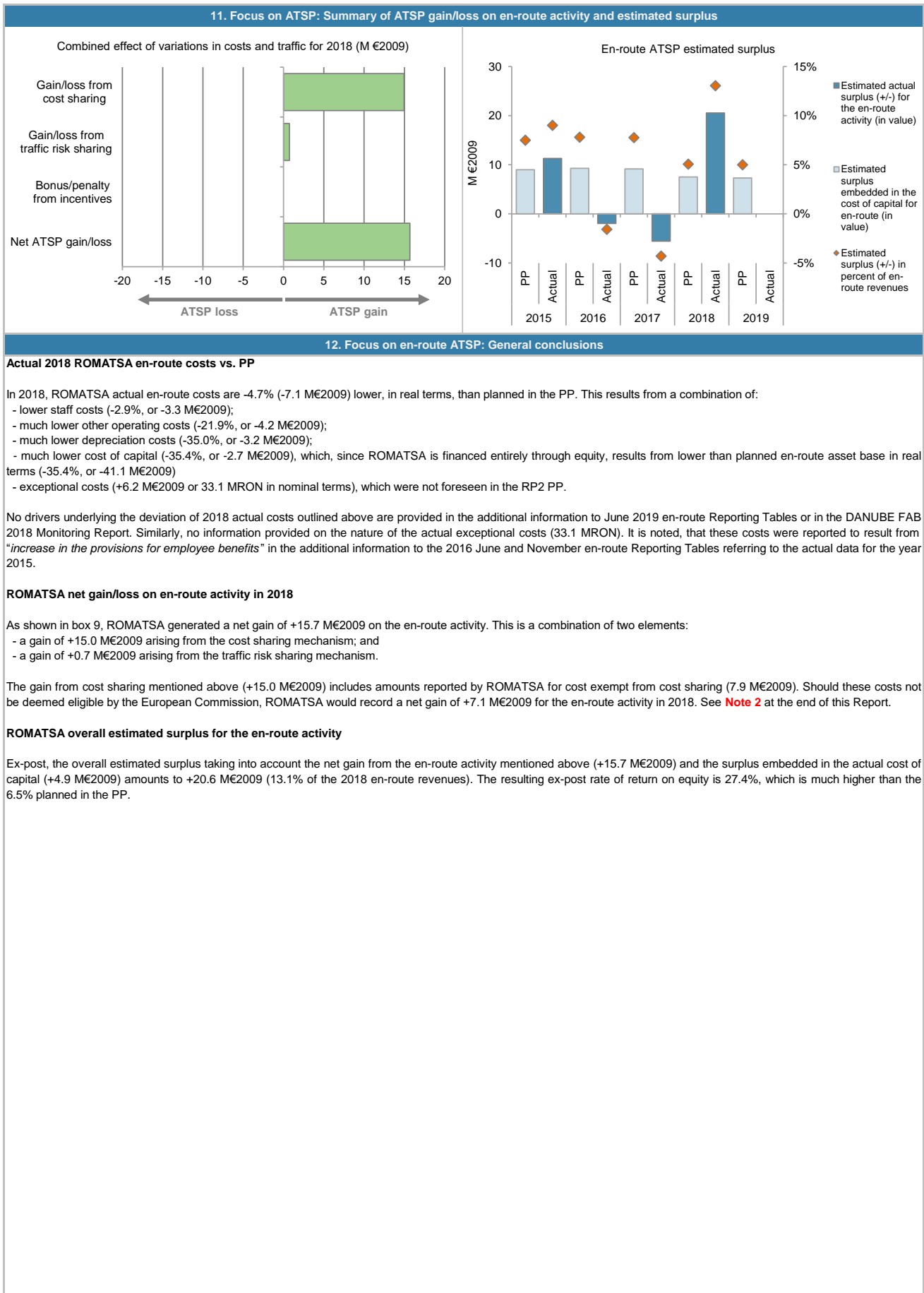
## ROMANIA: En-route ATSP (ROMATSA)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	119 885	118 602	117 543	148 697	
Actual costs for the ATSP	122 482	134 180	142 518	141 636	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-2 597	-15 579	-24 975	7 061	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	438	6 653	7 905	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-2 597</b>	<b>-15 140</b>	<b>-18 323</b>	<b>14 966</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	13.9%	7.9%	12.7%	0.5%	
Determined costs for the ATSP (PP) - based on actual inflation	119 127	122 737	123 687	141 564	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>5 242</b>	<b>4 633</b>	<b>5 442</b>	<b>719</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>2 644</b>	<b>-10 507</b>	<b>-12 881</b>	<b>15 685</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	136 694	137 931	134 442	116 211	112 745
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	136 694	137 931	134 442	116 211	112 745
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	9 008	9 275	9 140	7 533	7 309
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.6%	6.7%	6.8%	6.5%	6.5%
Estimated surplus embedded in the cost of capital for en-route (in value)	9 008	9 275	9 140	7 533	7 309
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>9 008</b>	<b>9 275</b>	<b>9 140</b>	<b>7 533</b>	<b>7 309</b>
<b>Revenue/costs for the en-route activity</b>	<b>119 885</b>	<b>118 602</b>	<b>117 543</b>	<b>148 697</b>	<b>146 055</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>7.5%</b>	<b>7.8%</b>	<b>7.8%</b>	<b>5.1%</b>	<b>5.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.6%</b>	<b>6.7%</b>	<b>6.8%</b>	<b>6.5%</b>	<b>6.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	131 269	127 296	107 592	75 072	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	131 269	127 296	107 592	75 072	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	8 651	8 560	7 315	4 867	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.6%	6.7%	6.8%	6.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	8 650	8 560	7 315	4 867	
Net ATSP gain(+)/loss(-) on en-route activity	2 644	-10 507	-12 881	15 685	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>11 294</b>	<b>-1 947</b>	<b>-5 566</b>	<b>20 552</b>	
<b>Revenue/costs for the en-route activity</b>	<b>125 126</b>	<b>123 673</b>	<b>129 638</b>	<b>157 321</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>9.0%</b>	<b>-1.6%</b>	<b>-4.3%</b>	<b>13.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>8.6%</b>	<b>-1.5%</b>	<b>-5.2%</b>	<b>27.4%</b>	

**ROMANIA: En-route ATSP (ROMATSA)**

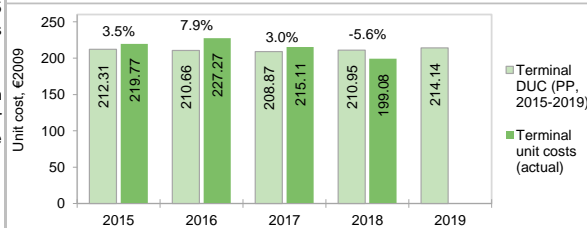
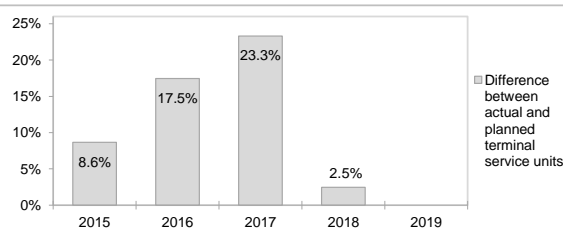
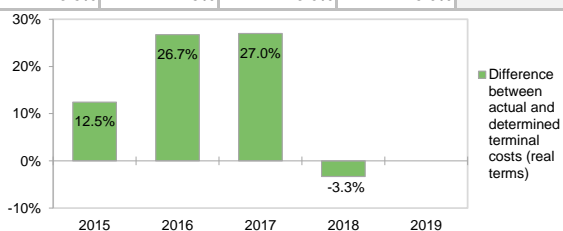
**Monitoring of en-route COST-EFFICIENCY for 2018**



## ROMANIA: Terminal charging zone

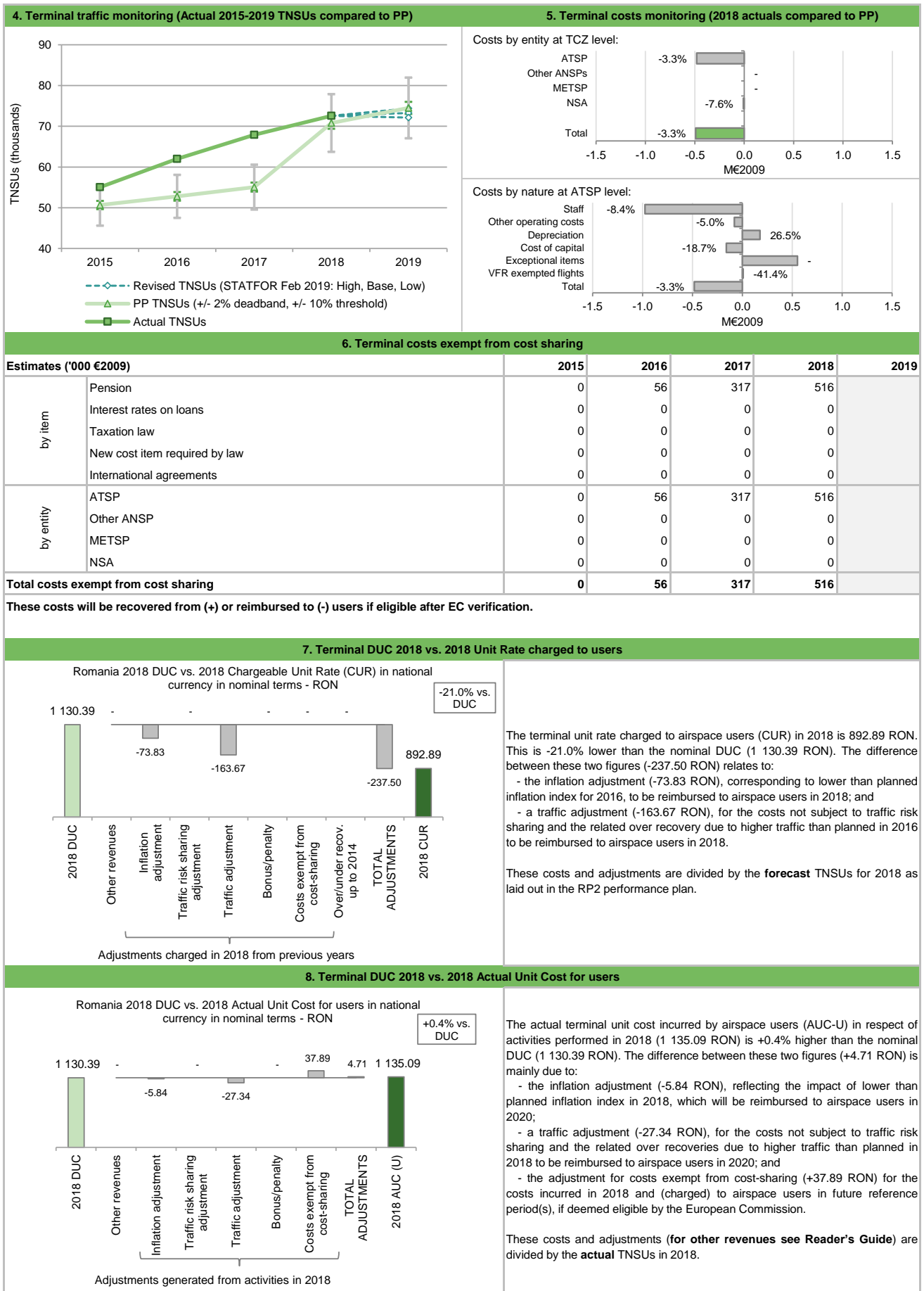
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Romania TCZ represents 1.3% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No		
· ATSP:	ROMATSA	· Airports with fewer than 70,000 IFRs ATMs:		1		
· National currency:	RON	· Airports with between 70,000 and 225,000 IFRs ATMs:		1		
· Number of airports in charging zone in 2018:	2,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Romania: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal RON)	57 805 814	61 551 138	65 441 925	80 031 502	88 114 502	
Inflation %	3.1%	3.0%	2.8%	4.7%	3.1%	
Inflation index (100 in 2009)	126.9	130.7	134.4	126.6	130.5	
Real terminal costs (RON2009)	45 537 923	47 076 109	48 688 615	63 220 672	67 529 945	
Total terminal Service Units	50 670	52 793	55 069	70 800	74 500	
<b>Real terminal unit cost per Service Unit (RON2009)</b>	<b>898.72</b>	<b>891.71</b>	<b>884.14</b>	<b>892.95</b>	<b>906.44</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>212.31</b>	<b>210.66</b>	<b>208.87</b>	<b>210.95</b>	<b>214.14</b>	
Romania: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal RON)	61 954 069	71 379 012	74 801 229	76 990 115		
Inflation %	-0.4%	-1.1%	1.1%	4.1%		
Inflation index (100 in 2009)	121.0	119.6	121.0	125.9		
Real terminal costs (RON2009)	51 211 943	59 658 958	61 839 035	61 141 798		
Total terminal Service Units	55 050	62 012	67 912	72 555		
<b>Real terminal unit cost per Service Unit (RON2009)</b>	<b>930.28</b>	<b>962.05</b>	<b>910.58</b>	<b>842.70</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>219.77</b>	<b>227.27</b>	<b>215.11</b>	<b>199.08</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal RON)	in value	4 148 255	9 827 874	9 359 304	-3 041 387	
	in %	7.2%	16.0%	14.3%	-3.8%	
Inflation %	in p.p.	-3.5 p.p.	-4.1 p.p.	-1.7 p.p.	-0.6 p.p.	
Inflation index (100 in 2009)	in p.p.	-6.0 p.p.	-11.1 p.p.	-13.4 p.p.	-0.7 p.p.	
Real terminal costs (RON2009)	in value	5 674 021	12 582 849	13 150 420	-2 078 873	
	in %	12.5%	26.7%	27.0%	-3.3%	
Total terminal Service Units	in value	4 380	9 219	12 843	1 755	
	in %	8.6%	17.5%	23.3%	2.5%	
<b>Real terminal unit cost per Service Unit (RON2009)</b>	in value	<b>31.57</b>	<b>70.34</b>	<b>26.44</b>	<b>-50.25</b>	
	in %	<b>3.5%</b>	<b>7.9%</b>	<b>3.0%</b>	<b>-5.6%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>7.46</b>	<b>16.62</b>	<b>6.25</b>	<b>-11.87</b>	
	in %	<b>3.5%</b>	<b>7.9%</b>	<b>3.0%</b>	<b>-5.6%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Romania Terminal Charging Zone (TCZ) comprising Bucuresti / HenriCoanda (LROP) and Bucuresti / Baneasa-Aurel Vlaicu (LRBS) airports. See <b>Note 1</b> at the end of this Report.						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (842.70 RON2009 or 199.08 €2009) is -5.6% lower than planned in the PP (892.95 RON2009 or 210.95 €2009). This results from the combination of higher than planned TNSUs (+2.5%) and lower than planned terminal costs in real terms (-3.3%, or -0.5 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism does not apply in Romania TCZ. In 2018, the actual TNSUs in Romania TCZ are +2.5% higher than planned in the PP. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Romania are expected to remain slightly below the planned values for the remainder of RP2.						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are -3.8% (-3.0 MRON) lower than planned. However, since the actual inflation index is also lower than planned (-0.7 p.p.), actual terminal costs are -3.3% (-3.0 MRON2009 or -0.5 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by ROMATSA (-3.3%, or -0.5 M€2009) and the NSA (-7.6%, or -0.01 M€2009) costs. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of +0.5 M€2009 (+2.7 MRON in nominal terms) corresponding to pension costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



ROMANIA: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018



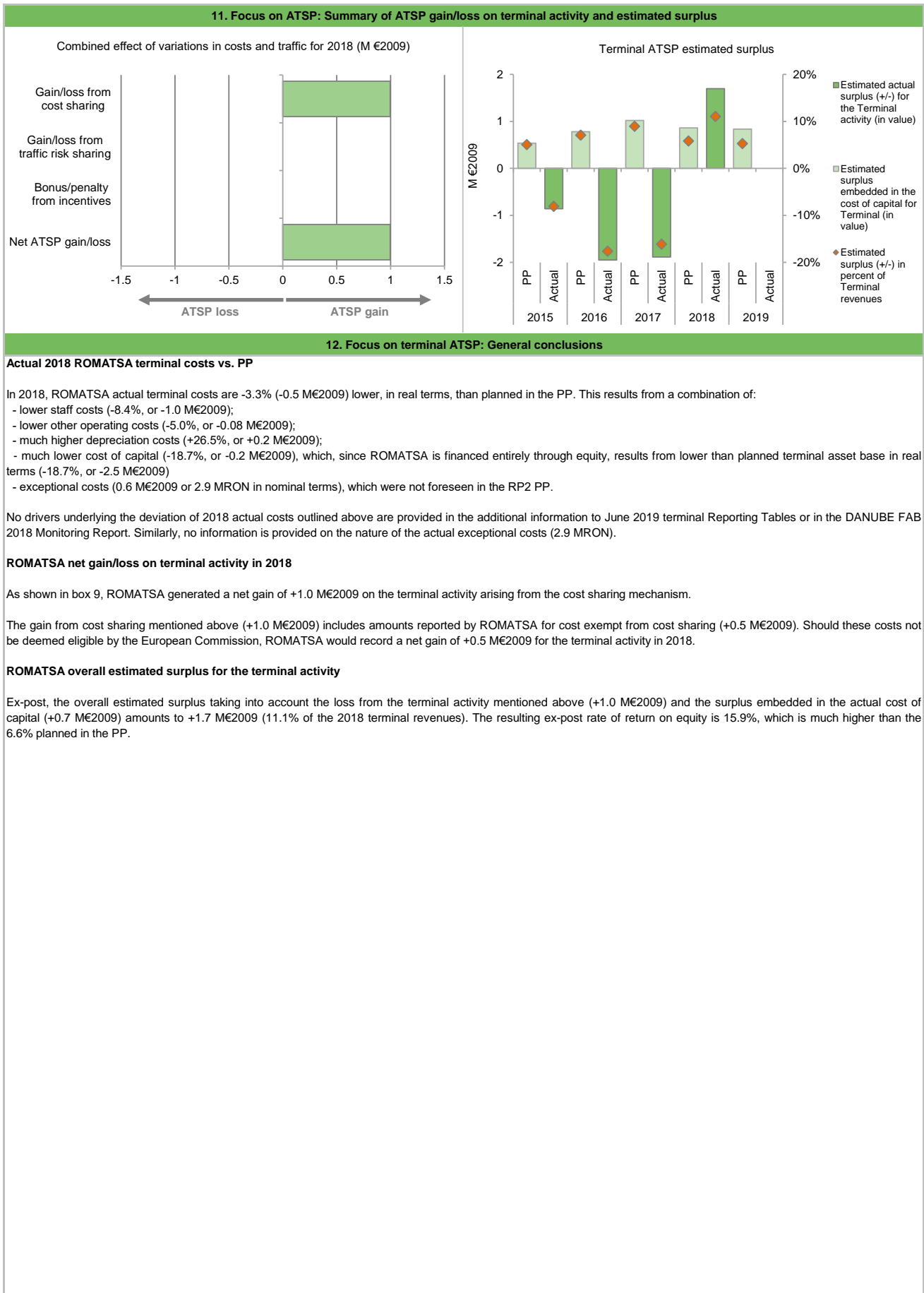
## ROMANIA: Terminal ATSP (ROMATSA)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	10 641	11 005	11 386	14 809	
Actual costs for the ATSP	11 975	13 966	14 485	14 327	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-1 335	-2 962	-3 099	482	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	56	317	516	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-1 335</b>	<b>-2 905</b>	<b>-2 783</b>	<b>997</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-1 335</b>	<b>-2 905</b>	<b>-2 783</b>	<b>997</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	7 869	10 850	13 805	13 110	12 719
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	7 869	10 850	13 805	13 110	12 719
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	538	780	1 018	861	835
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.8%	7.2%	7.4%	6.6%	6.6%
Estimated surplus embedded in the cost of capital for terminal (in value)	538	780	1 018	861	835
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>538</b>	<b>780</b>	<b>1 018</b>	<b>861</b>	<b>835</b>
<b>Revenue/costs for the terminal activity</b>	<b>10 641</b>	<b>11 005</b>	<b>11 386</b>	<b>14 809</b>	<b>15 827</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.1%</b>	<b>7.1%</b>	<b>8.9%</b>	<b>5.8%</b>	<b>5.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.8%</b>	<b>7.2%</b>	<b>7.4%</b>	<b>6.6%</b>	<b>6.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	6 945	13 292	12 125	10 656	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	6 945	13 292	12 125	10 656	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	475	955	894	700	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.8%	7.2%	7.4%	6.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	475	955	894	700	
Net ATSP gain(+)/loss(-) on terminal activity	-1 335	-2 905	-2 783	997	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-860</b>	<b>-1 950</b>	<b>-1 888</b>	<b>1 697</b>	
<b>Revenue/costs for the terminal activity</b>	<b>10 641</b>	<b>11 061</b>	<b>11 703</b>	<b>15 324</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-8.1%</b>	<b>-17.6%</b>	<b>-16.1%</b>	<b>11.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>-12.4%</b>	<b>-14.7%</b>	<b>-15.6%</b>	<b>15.9%</b>	

**ROMANIA: Terminal ATSP (ROMATSA)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## ROMANIA: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

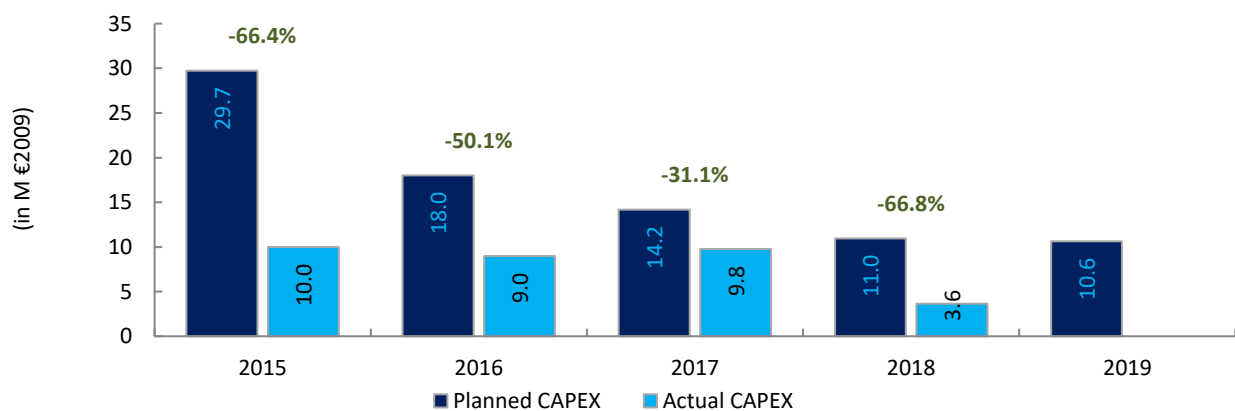
1. Monitoring of gate-to-gate ANS costs																																												
<b>Romania: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	128 504 603	127 317 114	126 311 665	158 297 620	155 658 744																																							
Real terminal costs (EUR2009)	10 757 760	11 121 138	11 502 072	14 935 087	15 953 099																																							
Real gate-to-gate costs (EUR2009)	139 262 364	138 438 251	137 813 736	173 232 707	171 611 843																																							
En-route share (%)	92.3%	92.0%	91.7%	91.4%	90.7%																																							
<b>Romania: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	131 547 318	143 776 878	151 685 882	151 074 996																																								
Real terminal costs (EUR2009)	12 098 176	14 093 677	14 608 693	14 443 979																																								
Real gate-to-gate costs (EUR2009)	143 645 495	157 870 555	166 294 575	165 518 975																																								
En-route share (%)	91.6%	91.1%	91.2%	91.3%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	4 383 131	19 432 303	28 480 838	-7 713 732																																								
in %	3.1%	14.0%	20.7%	-4.5%																																								
En-route share in p.p.	-0.7 p.p.	-0.9 p.p.	-0.4 p.p.	-0.1 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
In 2018, actual gate-to-gate ANS costs are -4.5% (-7.7 M€2009) lower than planned due to lower than planned en-route costs (-4.6%, or -7.2 M€2009) and terminal costs (-3.3%, or -0.5 M€2009).																																												
The actual share of en-route in gate-to-gate ANS costs (91.3%) is mostly in line with that planned in the PP for 2018 (91.4%).																																												
For ROMATSA, the estimated gate-to-gate economic surplus in 2018 amounts to 22.2 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 12.9% of gate-to-gate ANS revenues.																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>92.3%</td> <td>7.7%</td> </tr> <tr> <td>Actual</td> <td>91.6%</td> <td>8.4%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>92.0%</td> <td>8.0%</td> </tr> <tr> <td>Actual</td> <td>91.1%</td> <td>8.9%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>91.7%</td> <td>8.3%</td> </tr> <tr> <td>Actual</td> <td>91.2%</td> <td>8.8%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>91.4%</td> <td>8.6%</td> </tr> <tr> <td>Actual</td> <td>91.3%</td> <td>8.7%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>90.7%</td> <td>9.3%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	92.3%	7.7%	Actual	91.6%	8.4%	2016	Determined	92.0%	8.0%	Actual	91.1%	8.9%	2017	Determined	91.7%	8.3%	Actual	91.2%	8.8%	2018	Determined	91.4%	8.6%	Actual	91.3%	8.7%	2019	Determined	90.7%	9.3%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	92.3%	7.7%																																									
	Actual	91.6%	8.4%																																									
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	Actual	91.3%	8.7%																																									
2019	Determined	90.7%	9.3%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Romania</b>																																												
<b>Note 1:</b> Romania has revised their RP2 en-route cost-efficiency targets for the years 2018 to 2019. The figures shown in this report reflect: i) the initial adopted Performance Plan (EC Decision 2015/348 of 2 March 2015) for the years 2015 and 2017; and ii) the revised Performance Plan (EC Decision 2018/2021 of 17 December 2018) for the years 2018 to 2019.																																												
It is also noted that a similar revision was also done for the terminal determined unit costs in Romania terminal charging zone for the period 2018 to 2019.																																												
<b>Note 2:</b> It is noted that Romania has submitted two different sets of data relating to 2018 actual costs exempt from cost sharing figures for pension costs for en-route charging zones:																																												
<ul style="list-style-type: none"> <li>-25.7 MRON or -4.8 M€2009 to be reimbursed to the airspace users in the June 2019 submission of en-route reporting tables.</li> <li>+42.1 MRON or +7.9 M€2009 to be charged to the airspace users in the submission of NSA report on costs exempt from cost-sharing for 2018 received on 11 July 2019.</li> </ul>																																												
For the purposes of the analysis in this Monitoring Report the actual figures reported for cost-exempt for en-route charging zone are based on the NSA report on costs exempt from cost sharing for 2018 (i.e. +7.9 M€2009).																																												
However, it should be noted, that due to the significant difference between the values reported in the two sources (see above), the analysis presented in this Monitoring Report is severely affected by the figures used. This affects the figures and analysis presented in the boxes 6, 8, 9, 10, 11 and 12 in particular. In this respect, the eligibility of these costs, as well as the final amounts, will be assessed by the European Commission.																																												



## ROMANIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ROMATSA						
FAB: DANUBE FAB						
Currency: RON						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	159.7	99.7	80.7	58.7	58.7	457.7
Main CAPEX (in nominal M)	108.3	35.2	38.4	15.2	0.0	197.1
Inflation %	3.1%	3.0%	2.8%	4.7%	3.1%	
Inflation index (100 in 2009)	126.9	130.7	134.4	126.6	130.5	
Exchange rate 2009	4.23303	4.23303	4.23303	4.23303	4.23303	
<b>Total CAPEX (in M €2009)</b>	<b>29.7</b>	<b>18.0</b>	<b>14.2</b>	<b>11.0</b>	<b>10.6</b>	<b>83.5</b>
Main CAPEX (in M €2009)	20.2	6.4	6.7	2.8	0.0	36.1
% Main of Total CAPEX	67.8%	35.3%	47.5%	25.8%	0.0%	43.2%
Real gate-to-gate ANSP costs (in M €2009)	130.5	129.6	128.9	163.5	161.9	714.4
Total CAPEX as % of Real gate-to-gate ANSP costs	22.8%	13.9%	11.0%	6.7%	6.6%	11.7%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	51.2	45.6	50.1	19.4		
Main CAPEX (in nominal M)	18.4	17.6	40.0	4.9		
Inflation %	-0.4%	-1.1%	1.1%	4.1%		
Inflation index (100 in 2009)	121.0	119.6	121.0	125.9		
Exchange rate 2009	4.23303	4.23303	4.23303	4.23303		
<b>Total CAPEX (in M €2009)</b>	<b>10.0</b>	<b>9.0</b>	<b>9.8</b>	<b>3.6</b>		
Main CAPEX (in M €2009)	3.6	3.5	7.8	0.9		
% Main of Total CAPEX	36.0%	38.6%	80.0%	25.3%		
Real gate-to-gate ANSP costs (in M €2009)	134.5	148.1	157.0	156.0		
Total CAPEX as % of Real gate-to-gate ANSP costs	7.4%	6.1%	6.2%	2.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-108.6	-54.2	-30.7	-39.3		
Total CAPEX (in M €2009)	-19.7	-9.0	-4.4	-7.3		
<b>Total CAPEX (in %, M €2009)</b>	<b>-66.4%</b>	<b>-50.1%</b>	<b>-31.1%</b>	<b>-66.8%</b>		





# Annual Monitoring Report 2018

Local level view

DK SE FAB



## DK-SE FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	A	A	A	B	
	ANSPs	For Safety Culture MO	D	D	D	D	
	ANSPs	For all other MOs	C	C	C	C	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		67%	100%	100%	100%	
	Runway Incursions (RIs)		100%	100%	100%	100%	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		57%	100%	100%	100%	
	Runway Incursions (RIs)		75%	100%	100%	100%	
	ATM Specific occurrences (ATM-S)		100%	100%	100%	95%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

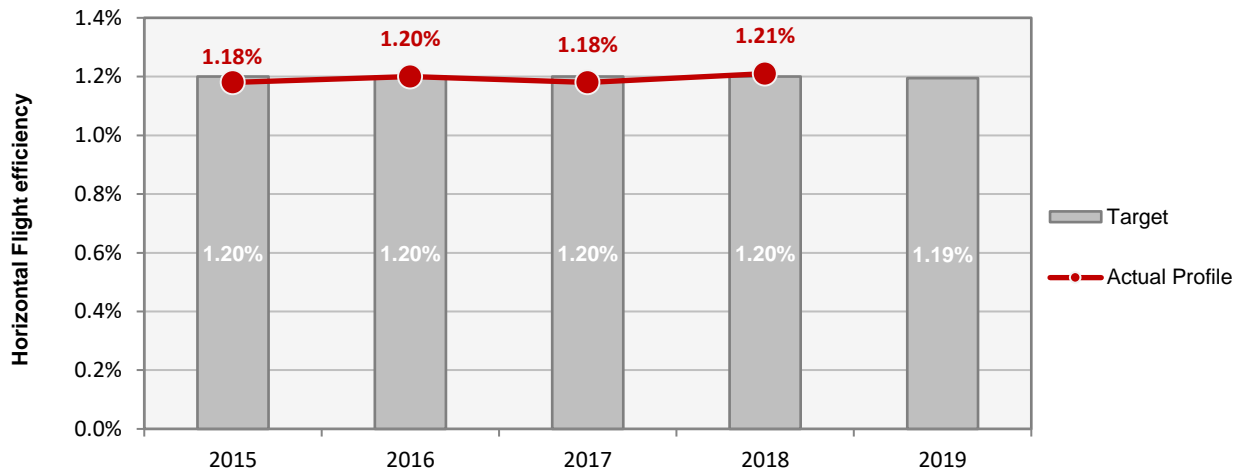
#### Observations

The lowest level in the EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. Safety Risk Management is already at the 2019 EoSM target level.

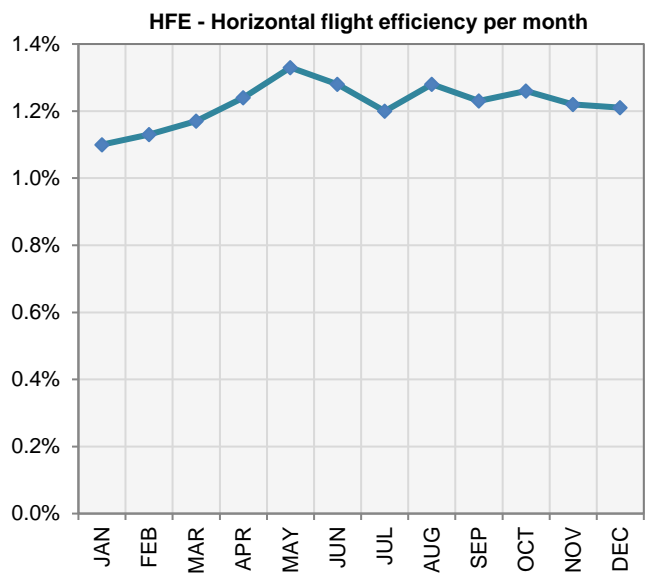
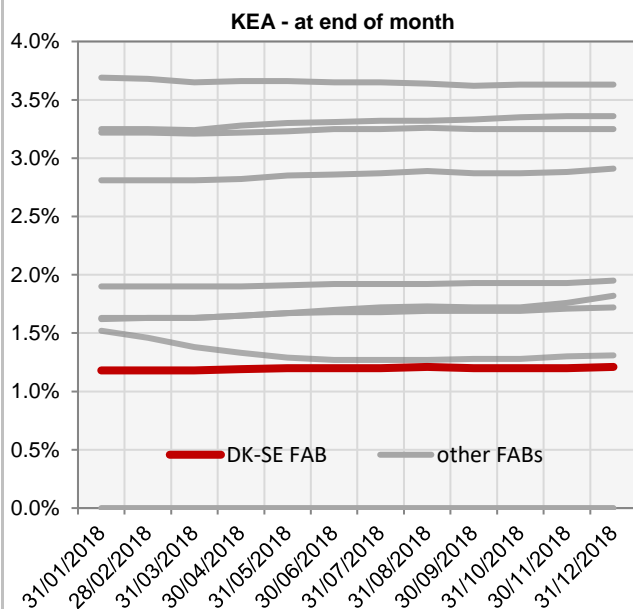
**DK-SE FAB**

**Monitoring of ENVIRONMENT for 2018**

KEA					
	2015	2016	2017	2018	2019
<b>FAB Target</b>	1.20%	1.20%	1.20%	1.20%	1.19%
<b>Actual performance</b>	1.18%	1.20%	1.18%	1.21%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
<b>KEA (at end of month)</b>	1.18%	1.18%	1.18%	1.19%	1.20%	1.20%	1.20%	1.21%	1.20%	1.20%	1.20%	1.21%
<b>HFE</b>	1.10%	1.13%	1.17%	1.24%	1.33%	1.28%	1.20%	1.28%	1.23%	1.26%	1.22%	1.21%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**DK-SE FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

The future values will be monitored but the deviation is not considered of a magnitude to demand corrective measures at this stage.

**Observations****NM evaluation:**

2019 European target will be achieved.

**NM proposed measures:**

Expand cross-border operations within Borealis project and in the future with FABEC.

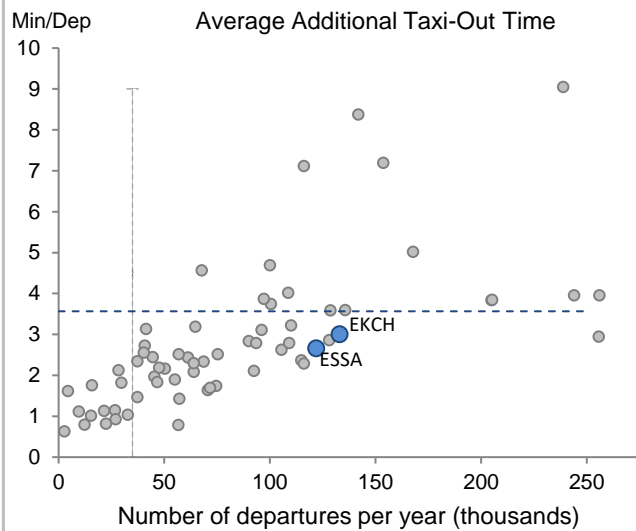
**DK-SE FAB**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

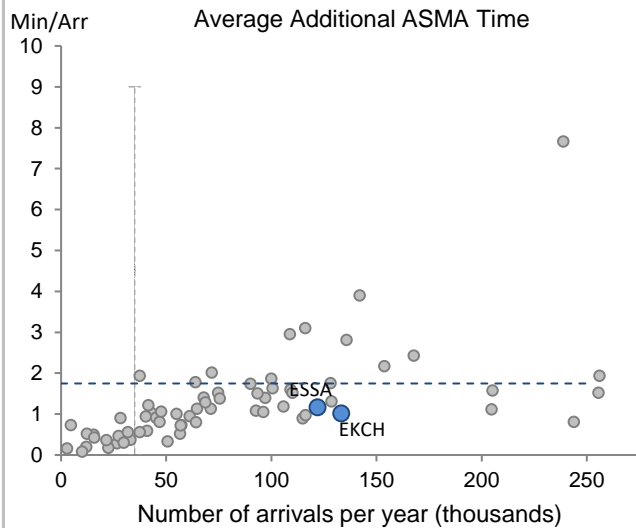
DK-SE FAB is monitored for RP2 at the two main national airports: Copenhagen/Kastrup and Stockholm/Arlanda. Both airports have a fully implemented Airport Operator Data Flow and show very similar performance regarding additional taxi-out times, well below the averages for airports under RP2 monitoring. DK-SE FAB contributes remarkably to the airport-related ANS Capacity performance in Europe.

**2. Additional Taxi-Out Time**



The additional taxi-out times at both Copenhagen and Stockholm/Arlanda airports show, for the fourth year in a row, best-in-class performance for airports with a yearly traffic around or above 250000 flights. Technical issues derived from the A-CDM implementation at Stockholm (ESSA) had a detrimental impact on the additional taxi-out times.

**3. Additional ASMA Time**



The observed additional ASMA times at the airports within the DK-SE FAB are in line or below those at similar airports in terms of movements.



## DK-SE FAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.10	0.10	0.10	0.09	0.09	
FAB Target	0.10	0.10	0.10	0.09	0.09	
Actual performance	0.01	0.05	0.02	0.04		

## DK - SE assessment of capacity performance

No justification required, FAB targets were met.

## Monitoring process for capacity performance

The en-route ATFM delay per flight is monitored during the reference period using PRU website Pan-European ANS Performance repository.

## Application of Corrective Measures for Capacity

Not applicable

## Capacity Planning

The capacity planning is consistent with required performance.

## Assessment of capacity performance

EUROCONTROL 7 year forecast February 2014 – DK SE FAB											
	2014		2015		2016		2017		2018	2019	
		actual		actual		actual		actual		actual	
High	1034		1072		1118		1156		1196		1236
Base	1023	<b>1005</b>	1052	<b>1011</b>	1082	<b>1035</b>	1105	<b>1061</b>	1130	<b>1089</b>	1155
Low	1012		1029		1036		1044		1052		1060

It is noted that the DK SE FAB provided a positive contribution to the Union-wide en route capacity performance in 2018, as it has for each year of RP2 to date.

The evolution of traffic in DK SE FAB is shown above and, with an annual traffic growth of almost 3% in 2018, traffic levels are now above the baseline scenario, having consistently remained below the forecasted baseline scenario as calculated by STATFOR (and available when the FAB performance plans and associated capacity plans were being determined).

In the latest version of the Network Operations Plan (NOP) 2019 – 2024, the Network Manager expects some capacity issues in DK – SE FAB during 2019 and 2020, primarily due to a lack of available staff in (Sweden) Malmo ACC. Otherwise, the DK – SE FAB is expected to meet the required level of capacity for the rest of RP3.

DK SE FAB delay forecast							
	2019	2020	2021	2022	2023	2024	
NOP 2018 - 2022	0.04	0.04	0.06	0.07	N/A	N/A	
NOP 2019 - 2024	0.11	0.13	0.15 – 0.22				

### En route Capacity Incentive Scheme

A FAB wide incentive scheme was applicable for en route capacity performance. The bonuses and penalties are as illustrated below.

	2015	2016	2017	2018	2019
0,00	0,50%	0,50%	0,50%	0,50%	0,50%
0,01	0,25%	0,25%	0,25%	0,25%	0,25%
0,02	Dead band	Dead band	Dead band	Dead band	Dead band
0,03					
0,04					
0,05					
0,06					
0,07					
0,08					
0,09	Target	Target	Target	Target	Target
0,10	Target	Target	Target	Dead band	Dead band
0,11	Dead band	Dead band	Dead band		
0,12					
0,13					
0,14					
0,15	-0,25%	-0,25%	-0,25%		
0,16					
0,17					
0,18	-0,50%	-0,50%	-0,50%		
0,19					
0,20	-0,50%	-0,50%	-0,50%		

### Result of FAB Capacity Incentive Scheme

The verified actual value of the FAB en route capacity performance was 0,04 minutes delay per flight which falls within the deadband of the FAB wide incentive scheme. Therefore, even though the FAB en route capacity performance was better than the FAB target, and provided a positive contribution to the Union-wide target, no bonus will be applicable to the ANSPs in the DK-SE FAB for 2018 performance.

### Update on Military dimension of the plan

No new information provided

### Observations on Military dimension of the plan

Nil

### Application of FUA

No new information provided

### Observations of the Application of FUA

Nil

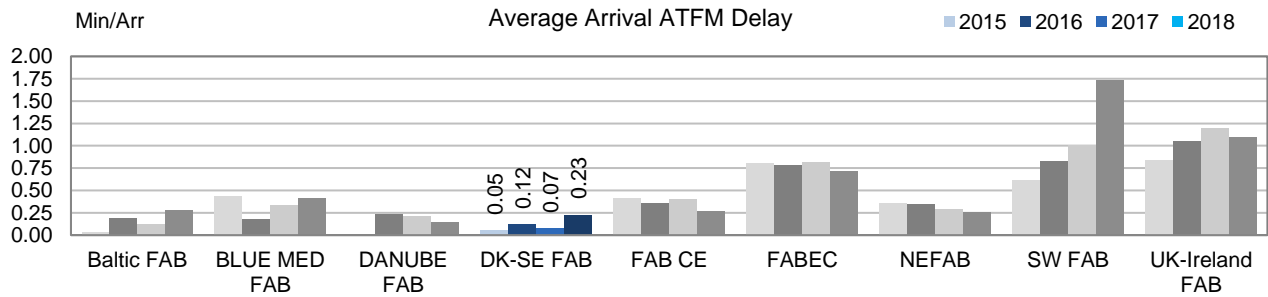
**DK-SE FAB**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

DK-SE FAB contributes adequately to the airport-related ANS Capacity performance in Europe. The observed performance in RP2 range within the best-in-class category. Nevertheless, the accrued average arrival ATFM delay by these two airports, Copenhagen (EKCH) and Stockholm/Arlanda (ESSA), is now more than 4 times the level of delays at the beginning of RP2 (2015: 0.05 min/arr.: 2018: 0.23 min/arr.) driven by the increase in arrival ATFM delay at Stockholm during 2018. Both airports range above 95% in terms of ATFM slot adherence and accrue low ATC pre-departure delay. Considering the level of traffic in Denmark and Sweden, both around 250 000 flights in 2018, DK-SE FAB certainly serves as a benchmark for airport-related ANS Capacity contributions across Europe at airports around and below that level of traffic.

**2. Arrival ATFM Delay**



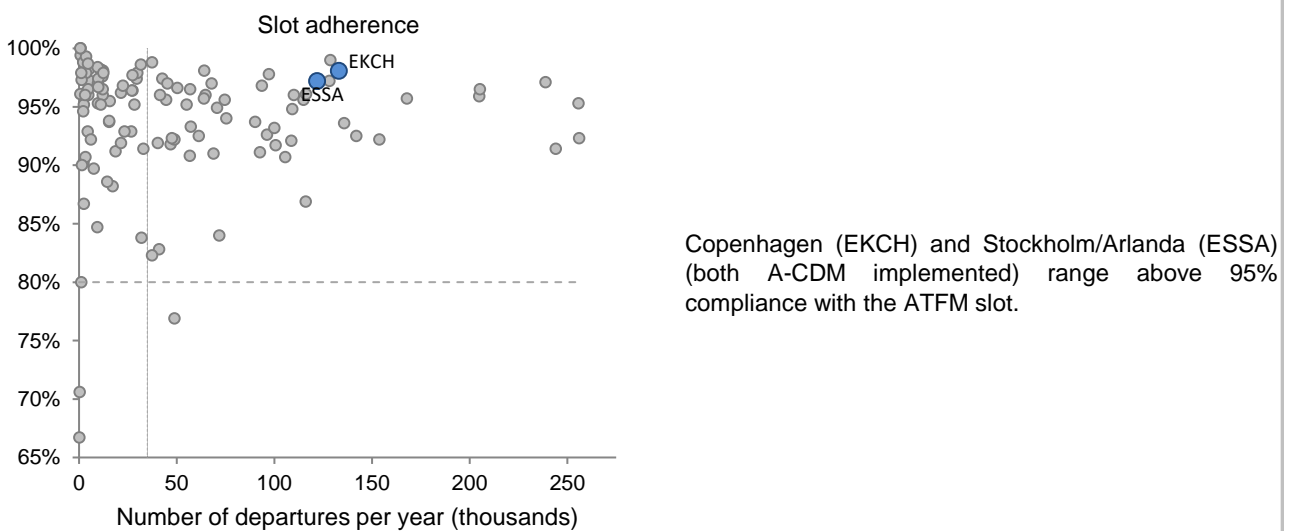
Regulations associated to weather are the main contributor to the delays registered in 2018 at both airports, together with aerodrome capacity regulations and ATC equipment failure at Stockholm/Arlanda (ESSA)

**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

The DK-SE FAB performance plan sets a national target on arrival ATFM delay for each of the states with a breakdown per airport for each of the years of the reference period. For both states, the national target on arrival ATFM delay is consistent with the observed historical performance. The Danish target is challenging, setting the target value at 50% of the historical performance. The target is met in 2018. Sweden sets an upper bound in line with the maximum of arrival ATFM delay observed throughout the recent years. The target for Stockholm/Arlanda is missed in 2018.

The DK-SE FAB performance plan presents no incentive schemes for the national targets on arrival ATFM delay.

**4. ATFM Slot Adherence**



**5. ATC Pre-departure Delay**

Although increasing, there is only a negligible share of ATC pre-departure delay accrued within DK-SE FAB during RP2.



# Annual Monitoring Report 2018

## Local level view

### Denmark



## DENMARK

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	50	C	C	B	B	B
NAVIAIR	85	D	D	D	C	D

Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.

Application of the severity classification of the Risk Analysis Tool (RAT)		
	RAT application (%)	
	ATM Ground	ATM Overall
Separation Minima Infringements (SMIs)	100%	100%
Runway Incursions (RIs)	100%	100%
ATM Specific Occurrences (ATM-S)		90%
Source of RAT data:	CAA	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

Just culture		
State level	Number of questions answered	
	YES	NO
Policy and its implementation	6	3
Legal/Judiciary	5	2
Occurrence reporting and Investigation	2	0
<b>TOTAL</b>	<b>13</b>	<b>5</b>

NAVIAIR	Number of questions answered	
	YES	NO
Policy and its implementation	9	4
Legal/Judiciary	2	1
Occurrence reporting and Investigation	6	2
<b>TOTAL</b>	<b>17</b>	<b>7</b>

### Observations

Two out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.

Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only four are below Level C.

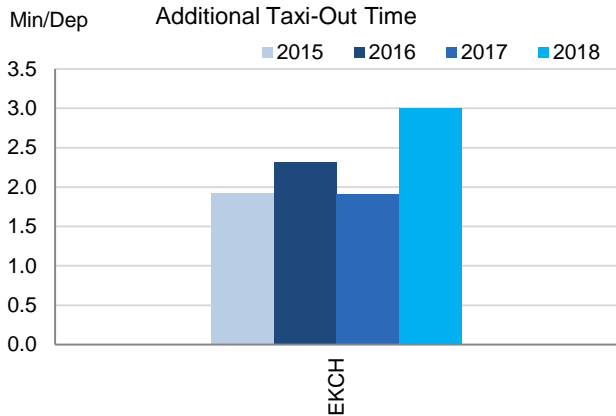
**DENMARK**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

Denmark only has Copenhagen/Kastrup (EKCH) airport subject to RP2 monitoring for which the APDF is successfully established. Traffic at Copenhagen has only slightly increased during RP2, with 5% more movements in 2018 than in 2015. The overall environmental ANS performance at EKCH is excellent, with lower additional times than other airports in the network with similar number of movements.

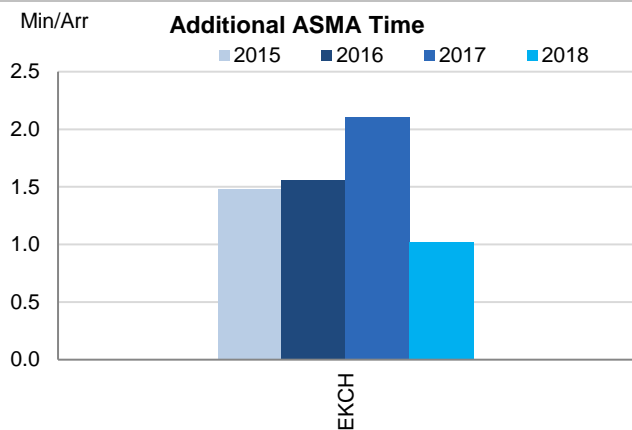
**2. Additional Taxi-Out Time**



Additional taxi-out times at Copenhagen/Kastrup (EKCH) have significantly increased, reaching 3 min/dep. The longest taxi-out times are observed in March which could be related to de-icing. According to the DK-SE monitoring report, the higher taxi-out times in 2018 are most probably related to the increased regulations in Europe, which creates the need for a “push and hold” because of limited airport-gates and increased traffic. The aircrafts then get their pushback in time even though they are not holding with engines running, i.e. limited environmental effect.

Despite this increase, these additional times are still well below the SES average (3.57 min/dep.)

**3. Additional ASMA Time**



The additional times in the terminal airspace have notably improved in 2018 (EKCH:2017: 2.11 min/arr.; 2018: 1.02 min/arr.). The lowest additional ASMA time is observed in July (0.36 min/arr.)

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Copenhagen/ Kastrup	EKCH	1.92	2.32	1.91	3.00		1.48	1.56	2.11	1.02	



**DENMARK**

**Monitoring of CAPACITY for 2018**

**En route Capacity incentive scheme**

	2015	2016	2017	2018	2019	Observations
National Capacity target	N/A	N/A	N/A	N/A	N/A	
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.00	0.00	0.00	0.01		

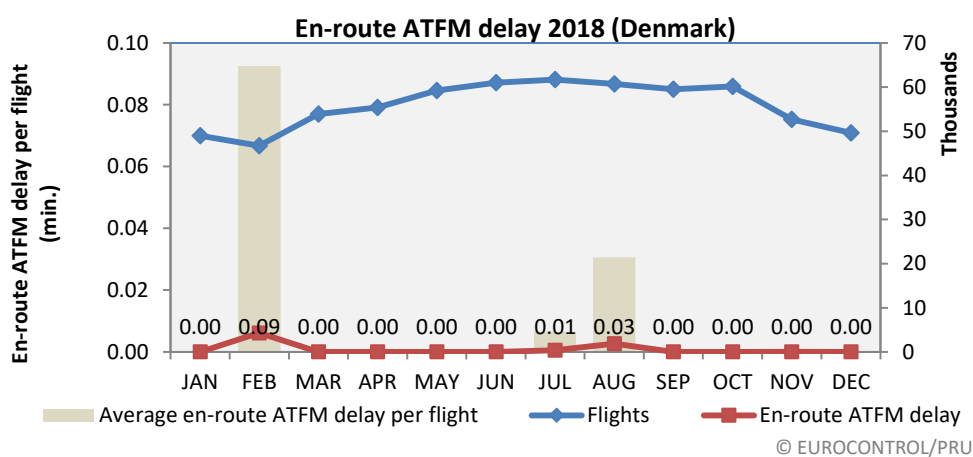
**National capacity incentive scheme**

Not applicable

**Compliance issues relating to national capacity incentive scheme**

Not applicable

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Denmark)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1.91	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01

EUROCONTROL 7 year forecast February 2014 – Denmark										
	2014		2015		2016		2017		2018	2019
	actual	actual	actual	actual	actual	actual	actual	actual	actual	actual
High	638		662		688		710		734	757
Base	632	<b>619</b>	650	<b>626</b>	667	<b>640</b>	681	<b>647</b>	696	<b>670</b>
Low	624		635		639		643		648	653

Denmark continues to provide excellent en route capacity performance in 2018, as it has done since the beginning of RP1. Traffic levels in Denmark have remained below those initially predicted for the baseline scenario in the STATFOR forecast available when FAB performance plans and associated capacity plans were being determined.

The Network Manager, in the latest NOP 2019 - 2024, states that Denmark is expected to provide similar capacity performance for the remainder of RP2, and for RP3.

Denmark delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.01	0.01	0.01	0.01	N/A	N/A
NOP 2019 - 2024	0.05	0.05	0.03 – 0.04			

### Planning and Effective Use of CDRs

Denmark has implemented Free Route Airspace operations.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
89%	24%	27%	30%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
23%	8%	4%	5%	

Procedure 3 is not applicable within the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## DENMARK

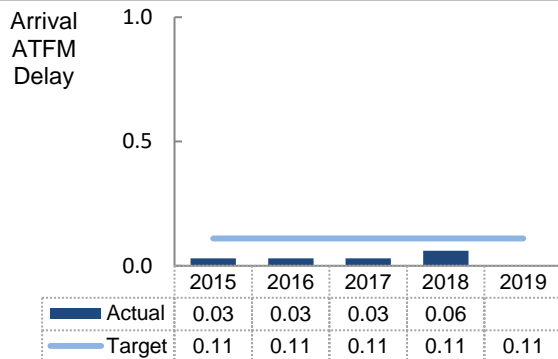
## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

In Denmark, ANS at Copenhagen (EKCH) airport are subject to RP2 monitoring, where traffic has slightly increased during the reference period (+4.5% with respect to 2015). The actual performance observed in all years of RP2 fully meets the established national target on arrival ATFM delay.

The local performance is amongst the best-in-class and shows no capacity-related constraints. Denmark adequately contributes to the DK-SE FAB and European ANS Capacity performance.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Denmark have moderately increased with respect to the previous year (2017: 0.03 min/arr, 2018: 0.06 min/arr) but remain very low and the achieved performance fully meets the national target.

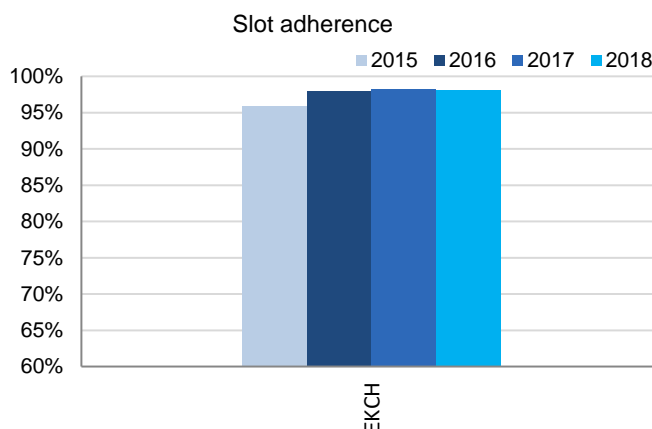
The delays are registered mainly in March (associated to weather) and May (due to aerodrome capacity).

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Denmark established a challenging national target on arrival ATFM delay at the level of approximately 50% of the average performance observed throughout the years preceding RP2. This target is met once again in 2018.

No incentive scheme is established. Although a reference is provided in the supporting documentation that the establishment of an incentive scheme for terminal ANS might be reviewed in 2017, nothing in this regard is presented in the DK-SE FAB monitoring report.

## 4. ATFM Slot Adherence



The compliance with the ATFM slots remains one more year amongst best-in-class performance and adds positively to the predictability in the network.

## 5. ATC Pre-departure Delay

There is a progressive increase in the ATC pre-departure delay from 0.03 min/dep in 2015 until 0.14 min/dep. reached in 2018.

Despite this increase, Copenhagen/Kastrup (EKCH) shows lower ATC pre-departure delay compared to similar European airports.

## 6. Appendix

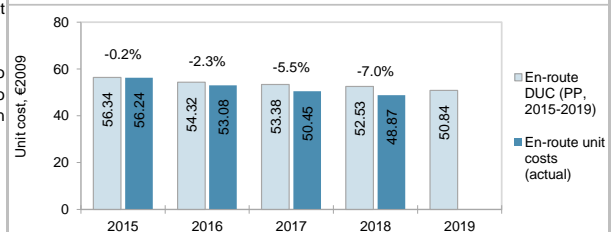
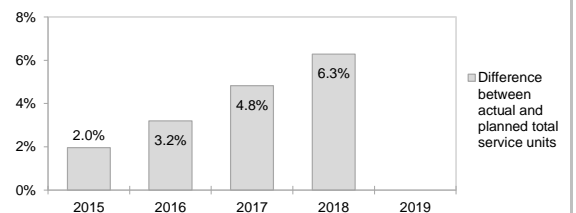
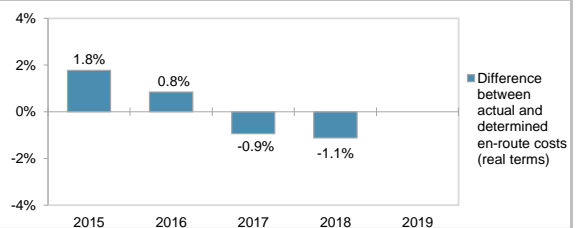
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Copenhagen/ Kastrup	EKCH	0.03	0.03	0.03	0.06		95.9%	97.9%	98.2%	98.1%		0.03	0.07	0.09	0.14	

## DENMARK: En-route charging zone

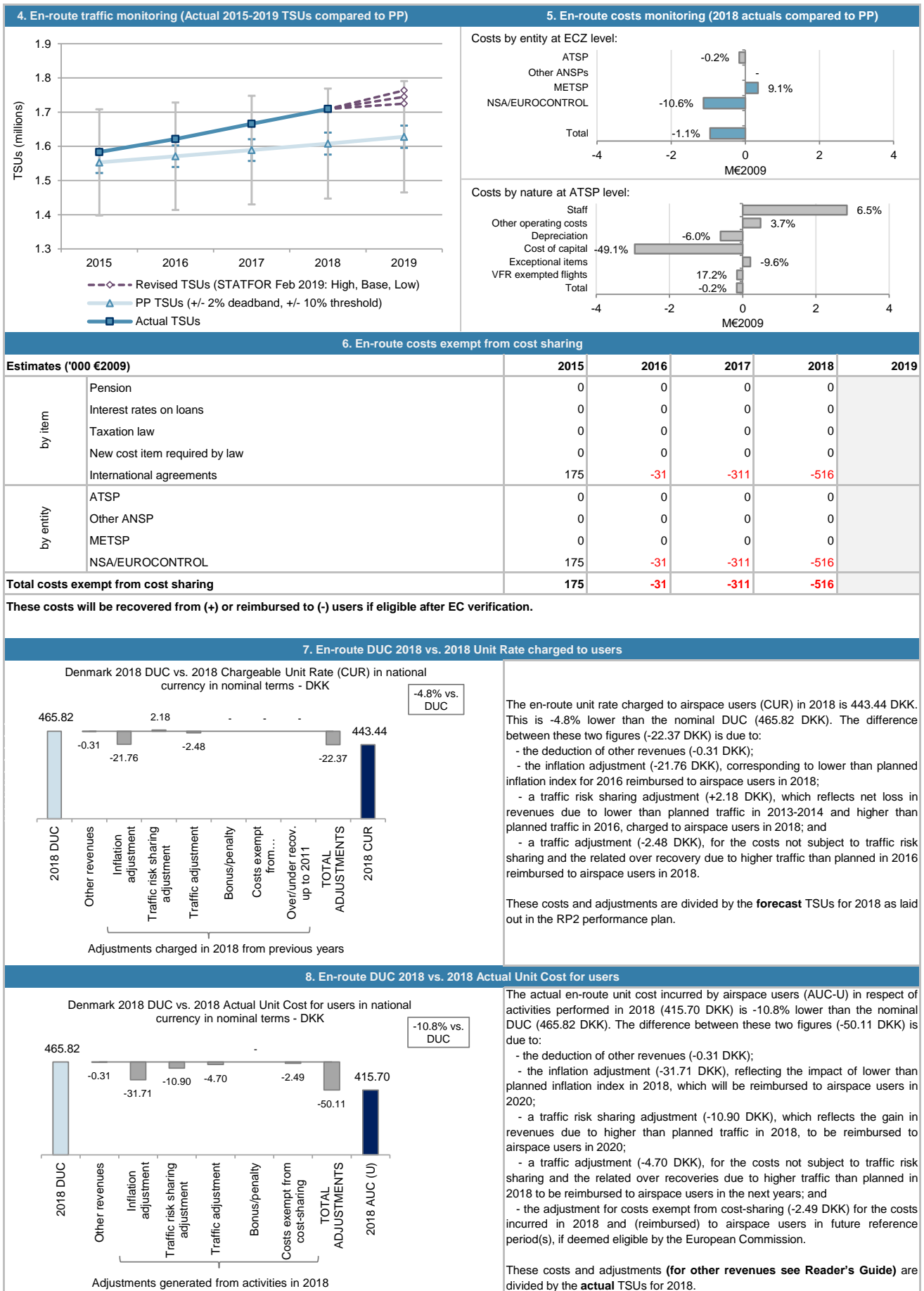
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· Denmark ECZ represents 1.4% of the SES en-route ANS determined costs in 2018						
· ATSP: NAVIAIR						
· FAB: DK-SE FAB						
· National currency: DKK Exchange rate 2009: 1 EUR = 7.44337 DKK						
2. En-route DUC monitoring at Charging Zone level						
Denmark: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)		2015D	2016D	2017D	2018D	2019D
En-route costs (nominal DKK)		726 872 134	724 495 393	735 983 926	749 032 040	750 157 741
Inflation %		1.8%	2.2%	2.2%	2.2%	2.2%
Inflation index (100 in 2009)		111.6	114.1	116.6	119.1	121.8
Real en-route costs (DKK2009)		651 263 654	635 160 606	631 342 985	628 704 443	616 095 213
Total en-route Service Units		1 553 000	1 571 000	1 589 000	1 608 000	1 628 000
<b>Real en-route unit cost per Service Unit (DKK2009)</b>		<b>419.36</b>	<b>404.30</b>	<b>397.32</b>	<b>390.99</b>	<b>378.44</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>56.34</b>	<b>54.32</b>	<b>53.38</b>	<b>52.53</b>	<b>50.84</b>
Denmark: Actual data from Reporting Tables		2015A	2016A	2017A	2018A	2019A
En-route costs (nominal DKK)		719 545 995	695 318 991	686 419 641	687 049 103	
Inflation %		0.2%	0.0%	1.1%	0.7%	
Inflation index (100 in 2009)		108.6	108.6	109.8	110.5	
Real en-route costs (DKK2009)		662 830 597	640 513 192	625 435 508	621 657 444	
Total en-route Service Units		1 583 445	1 621 145	1 665 678	1 709 063	
<b>Real en-route unit cost per Service Unit (DKK2009)</b>		<b>418.60</b>	<b>395.10</b>	<b>375.48</b>	<b>363.74</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>56.24</b>	<b>53.08</b>	<b>50.45</b>	<b>48.87</b>	
Difference between Actuals and Planned		2015	2016	2017	2018	2019
En-route costs (nominal DKK)	in value	-7 326 139	-29 176 402	-49 564 285	-61 982 936	
	in %	-1.0%	-4.0%	-6.7%	-8.3%	
Inflation %	in p.p.	-1.6 p.p.	-2.2 p.p.	-1.1 p.p.	-1.5 p.p.	
Inflation index (100 in 2009)	in p.p.	-3.1 p.p.	-5.5 p.p.	-6.8 p.p.	-8.6 p.p.	
Real en-route costs (DKK2009)	in value	11 566 943	5 352 586	-5 907 478	-7 046 999	
	in %	1.8%	0.8%	-0.9%	-1.1%	
Total en-route Service Units	in value	30 445	50 145	76 678	101 063	
	in %	2.0%	3.2%	4.8%	6.3%	
<b>Real en-route unit cost per Service Unit (DKK2009)</b>	in value	<b>-0.76</b>	<b>-9.20</b>	<b>-21.84</b>	<b>-27.24</b>	
	in %	<b>-0.2%</b>	<b>-2.3%</b>	<b>-5.5%</b>	<b>-7.0%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	in value	<b>-0.10</b>	<b>-1.24</b>	<b>-2.93</b>	<b>-3.66</b>	
	in %	<b>-0.2%</b>	<b>-2.3%</b>	<b>-5.5%</b>	<b>-7.0%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (48.87 €2009) is -7.0% lower than planned in the PP (52.53 €2009). This results from the combination of higher than planned TSUs (+6.3%) and slightly lower than planned en-route costs in real terms (-1.1%, or -0.9 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+6.3%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (NAVIAIR) retaining an amount of +2.5 M€2009.						
According to STATFOR February 2019 base forecast scenario, the en-route TSUs for Denmark are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -8.3% (-62.0 MDKK) lower than planned. However, since the actual inflation index is also lower than planned (-8.6 p.p.), actual en-route costs are -1.1% (-0.9 M€2009) below plans when expressed in real terms.						
The slightly lower than planned en-route costs in real terms are driven by NAVIAIR (-0.2%, or -0.2 M€2009) and the NSA/EUROCONTROL (-10.6%, or -1.1 M€2009), while the costs for the MET service provider are higher than planned (+9.1%, or +0.3 M€2009). A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -0.5 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



**DENMARK: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



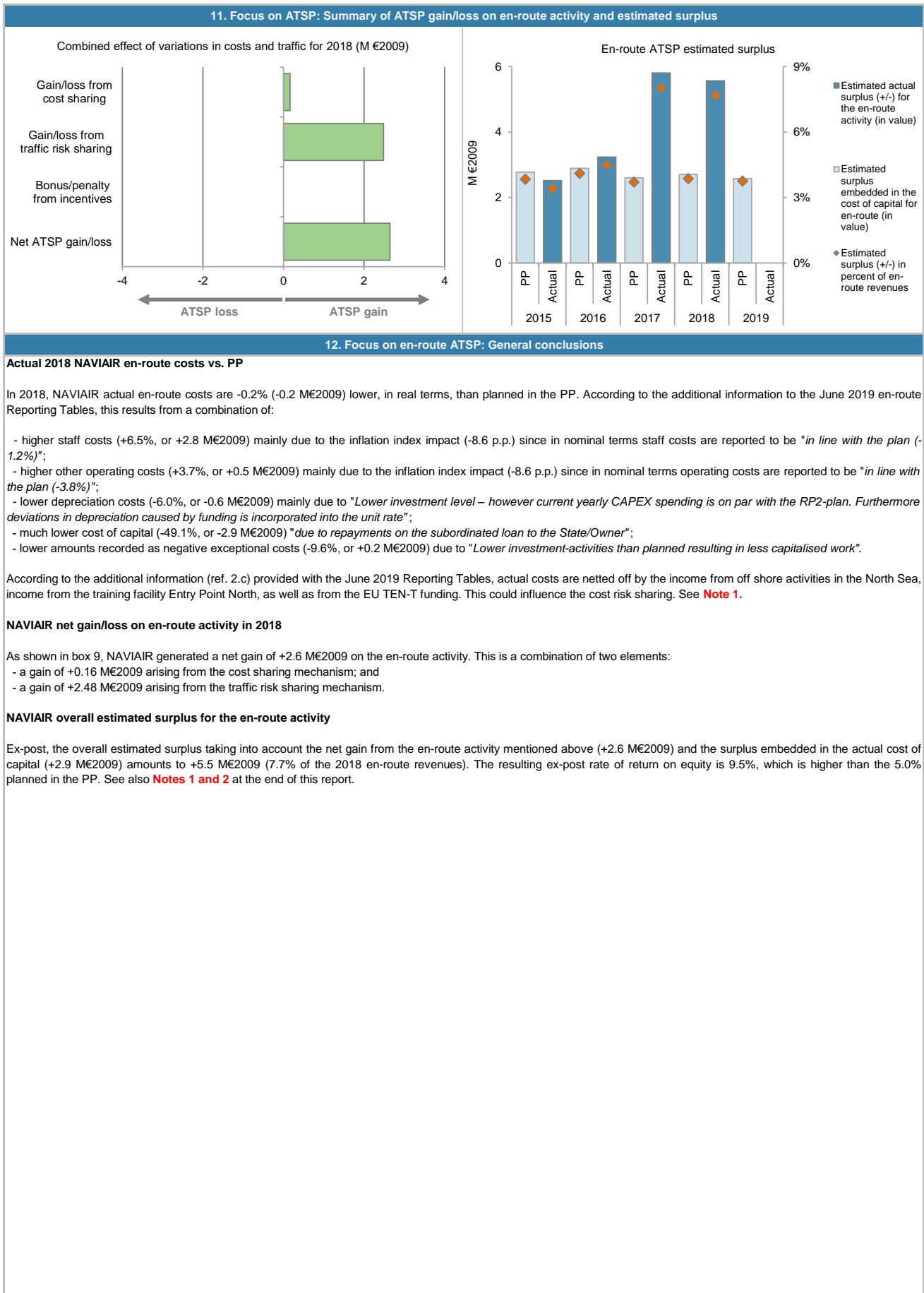
## DENMARK: En-route ATSP (NAVIAR)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	72 364	70 391	70 121	70 039	
Actual costs for the ATSP	74 365	71 764	69 362	69 876	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-2 001	-1 373	759	163	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-2 001</b>	<b>-1 373</b>	<b>759</b>	<b>163</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	2.0%	3.2%	4.8%	6.3%	
Determined costs for the ATSP (PP) - based on actual inflation	74 399	73 963	74 481	75 502	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 459</b>	<b>1 744</b>	<b>2 121</b>	<b>2 481</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>190</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-353</b>	<b>371</b>	<b>2 880</b>	<b>2 643</b>	
	<i>*see Note 1</i>				
10. Focus on ATSP: En-route ATSP estimated surplus *					
<small>* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&amp;L accounts of the ATSP.</small>					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	162 405	160 889	159 999	160 494	160 817
Estimated proportion of financing through equity (in %)	34.2%	36.0%	32.6%	33.7%	32.0%
Estimated proportion of financing through equity (in value)	55 546	57 849	52 092	54 147	51 526
Estimated proportion of financing through debt (in %)	65.8%	64.0%	67.4%	66.3%	68.0%
Estimated proportion of financing through debt (in value)	106 859	103 040	107 907	106 347	109 291
Cost of capital pre-tax (in value)	7 372	6 499	6 273	6 004	5 746
Average interest on debt (in %)	4.3%	3.5%	3.4%	3.1%	2.9%
Interest on debt (in value)	4 595	3 606	3 669	3 297	3 169
Determined RoE pre-tax rate (in %)	5.0%	5.0%	5.0%	5.0%	5.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	<i>*see Note 2</i>	2 777	2 892	2 707	2 576
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b><i>*see Note 2</i></b>	<b>2 777</b>	<b>2 892</b>	<b>2 605</b>	<b>2 707</b>
<b>Revenue/costs for the en-route activity</b>	<b>72 364</b>	<b>70 391</b>	<b>70 121</b>	<b>70 039</b>	<b>68 601</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.8%</b>	<b>4.1%</b>	<b>3.7%</b>	<b>3.9%</b>	<b>3.8%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>	<b>5.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	150 659	149 569	159 393	170 351	
Estimated proportion of financing through equity (in %)	38.1%	38.3%	36.7%	34.3%	
Estimated proportion of financing through equity (in value)	57 412	57 340	58 493	58 386	
Estimated proportion of financing through debt (in %)	61.9%	61.7%	63.3%	65.7%	
Estimated proportion of financing through debt (in value)	93 247	92 229	100 901	111 965	
Cost of capital pre-tax (in value)	7 067	5 542	3 541	3 057	
Average interest on debt (in %)	4.5%	2.9%	0.6%	0.1%	
Interest on debt (in value)	4 196	2 675	616	138	
Determined RoE pre-tax rate (in %)	5.0%	5.0%	5.0%	5.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	<i>*see Note 2</i>	2 871	2 867	2 919	
Net ATSP gain(+)/loss(-) on en-route activity	-353	371	2 880	2 643	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b><i>*see Notes 1-2</i></b>	<b>2 518</b>	<b>3 238</b>	<b>5 805</b>	<b>5 563</b>
<b>Revenue/costs for the en-route activity</b>	<b>74 012</b>	<b>72 135</b>	<b>72 242</b>	<b>72 520</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.4%</b>	<b>4.5%</b>	<b>8.0%</b>	<b>7.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.4%</b>	<b>5.6%</b>	<b>9.9%</b>	<b>9.5%</b>	

**DENMARK: En-route ATSP (NAVIAIR)**

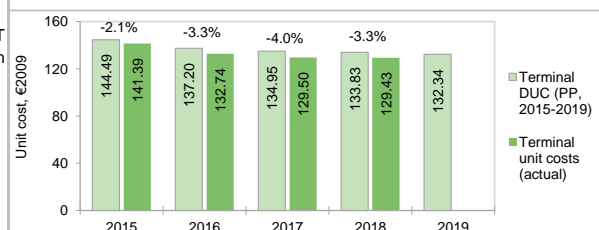
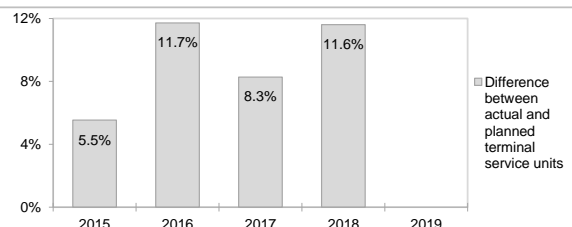
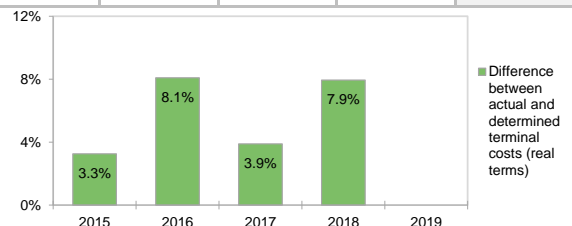
**Monitoring of en-route COST-EFFICIENCY for 2018**



## DENMARK: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

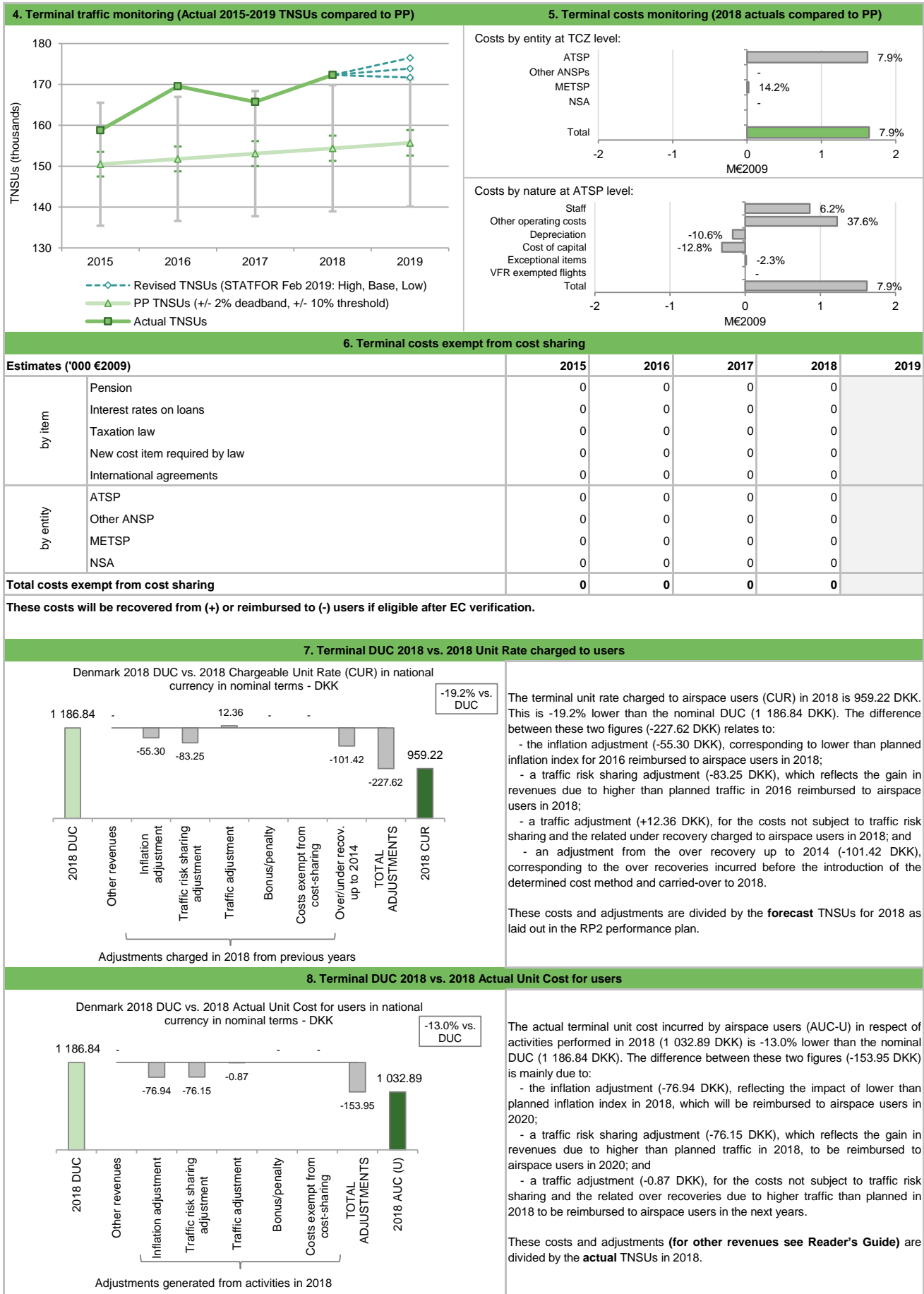
1. Contextual economic information: terminal air navigation services					
Denmark TCZ represents 1.9% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes	
ATSP:	NAVIAIR	Airports with fewer than 70,000 IFRs ATMs:		0	
National currency:	DKK	Airports with between 70,000 and 225,000 IFRs ATMs:		0	
Number of airports in charging zone in 2018:	1,	of which:		Airports with more than 225,000 IFRs ATMs: 1	
2. Terminal DUC monitoring at Charging Zone level					
Denmark: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal DKK)	180 631 201	176 790 835	179 242 261	183 226 026	186 756 637
Inflation %	1.8%	2.2%	2.2%	2.2%	2.2%
Inflation index (100 in 2009)	111.6	114.1	116.6	119.1	121.8
Real terminal costs (DKK2009)	161 842 132	154 991 426	153 757 902	153 791 841	153 380 900
Total terminal Service Units	150 479	151 768	153 069	154 381	155 704
<b>Real terminal unit cost per Service Unit (DKK2009)</b>	<b>1 075.51</b>	<b>1 021.24</b>	<b>1 004.50</b>	<b>996.18</b>	<b>985.08</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>144.49</b>	<b>137.20</b>	<b>134.95</b>	<b>133.83</b>	<b>132.34</b>
Denmark: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal DKK)	181 422 000	181 867 000	175 324 000	183 458 381	
Inflation %	0.2%	0.0%	1.1%	0.7%	
Inflation index (100 in 2009)	108.6	108.6	109.8	110.5	
Real terminal costs (DKK2009)	167 122 121	167 532 045	159 747 549	165 997 259	
Total terminal Service Units	158 800	169 561	165 730	172 308	
<b>Real terminal unit cost per Service Unit (DKK2009)</b>	<b>1 052.41</b>	<b>988.03</b>	<b>963.90</b>	<b>963.38</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>141.39</b>	<b>132.74</b>	<b>129.50</b>	<b>129.43</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal DKK)	in value 790 799	5 076 165	-3 918 261	232 355	
	in % 0.4%	2.9%	-2.2%	0.1%	
Inflation %	in p.p. -1.6 p.p.	-2.2 p.p.	-1.1 p.p.	-1.5 p.p.	
Inflation index (100 in 2009)	in p.p. -3.1 p.p.	-5.5 p.p.	-6.8 p.p.	-8.6 p.p.	
Real terminal costs (DKK2009)	in value 5 279 988	12 540 620	5 989 647	12 205 418	
	in % 3.3%	8.1%	3.9%	7.9%	
Total terminal Service Units	in value 8 321	17 793	12 661	17 926	
	in % 5.5%	11.7%	8.3%	11.6%	
<b>Real terminal unit cost per Service Unit (DKK2009)</b>	<b>in value -23.11</b>	<b>-33.20</b>	<b>-40.60</b>	<b>-32.80</b>	
	<b>in % -2.1%</b>	<b>-3.3%</b>	<b>-4.0%</b>	<b>-3.3%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -3.10</b>	<b>-4.46</b>	<b>-5.45</b>	<b>-4.41</b>	
	<b>in % -2.1%</b>	<b>-3.3%</b>	<b>-4.0%</b>	<b>-3.3%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Denmark Terminal Charging Zone (TCZ) comprising only Copenhagen airport (EKCH).					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (129.43 €2009) is -3.3% lower than planned in the PP (133.83 €2009). This results from the combination of much higher than planned TNSUs (+11.6%) and higher than planned terminal costs in real terms (+7.9%, or +1.6 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in the Denmark TCZ. The difference between actual and planned TNSUs (+11.6%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (NAVIAIR) retaining an amount of +1.0 M€2009. According to STATFOR February 2019 base forecast scenario, the TNSUs for Denmark are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +0.1% (+0.2 MDKK) in line with plans. However, since the actual inflation is lower than planned (-8.6 p.p.), actual terminal costs are +7.9% (+1.6 M€2009) above plans when expressed in real terms. The differences in real terms are noted for NAVIAIR (+7.9%, or +1.6 M€2009) and the MET service provider (+14.2%, or +0.02 M€2009). A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported for terminal.					





**DENMARK: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



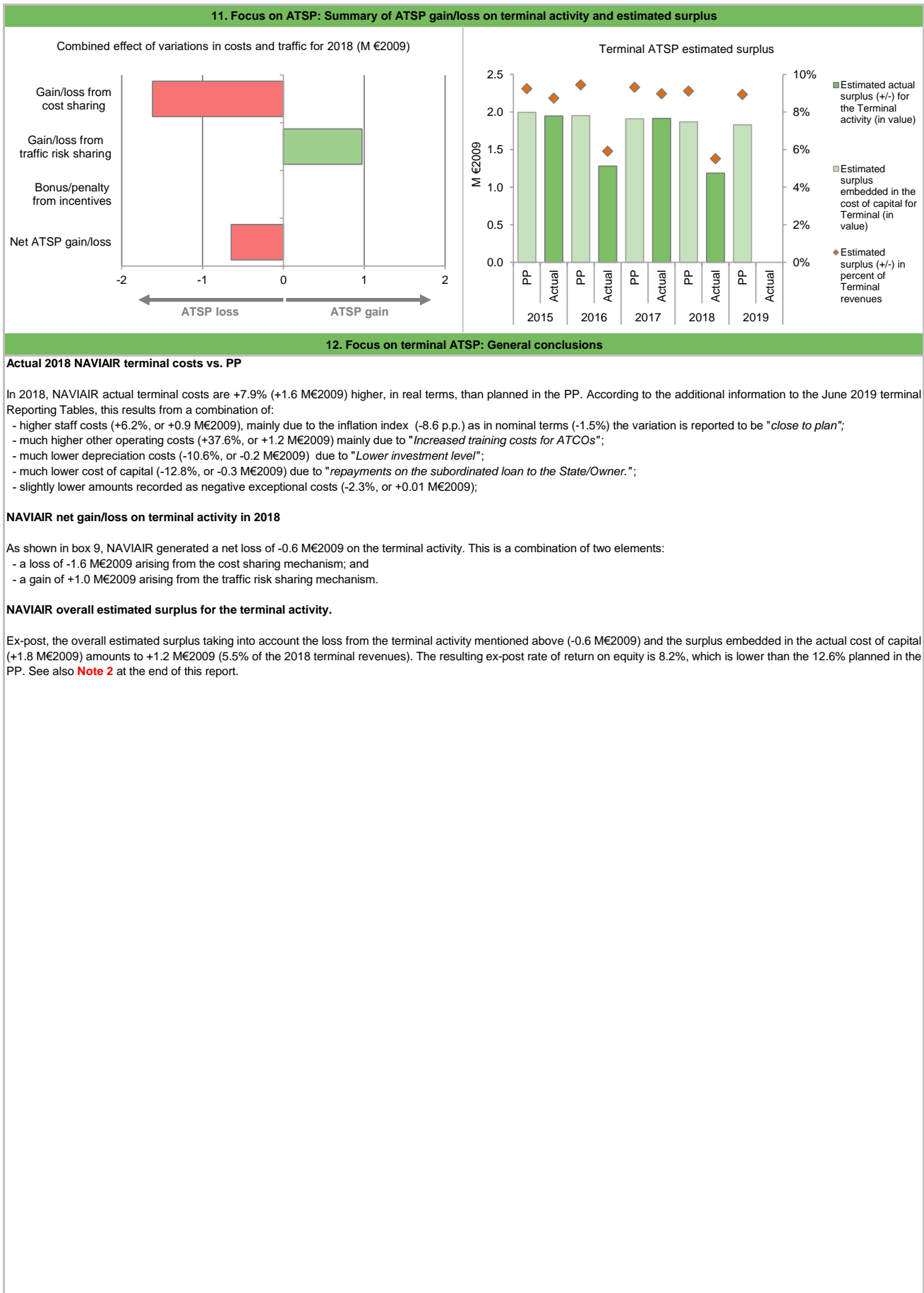
## DENMARK: Terminal ATSP (NAVIAR)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	21 588	20 671	20 508	20 516	
Actual costs for the ATSP	22 314	22 369	21 320	22 135	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-726	-1 698	-812	-1 619	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-726</b>	<b>-1 698</b>	<b>-812</b>	<b>-1 619</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	5.5%	11.7%	8.3%	11.6%	
Determined costs for the ATSP (PP) - based on actual inflation	22 195	21 720	21 784	22 116	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>679</b>	<b>956</b>	<b>846</b>	<b>973</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-47</b>	<b>-743</b>	<b>34</b>	<b>-646</b>	
	<i>*see Note 1</i>				
10. Focus on ATSP: Terminal ATSP estimated surplus *					
<small>* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&amp;L accounts of the ATSP.</small>					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	25 448	25 211	25 071	25 149	25 199
Estimated proportion of financing through equity (in %)	62.0%	61.2%	60.2%	58.7%	57.4%
Estimated proportion of financing through equity (in value)	15 769	15 430	15 097	14 772	14 454
Estimated proportion of financing through debt (in %)	38.0%	38.8%	39.8%	41.3%	42.6%
Estimated proportion of financing through debt (in value)	9 679	9 781	9 974	10 376	10 745
Cost of capital pre-tax (in value)	2 813	2 574	2 497	2 409	2 325
Average interest on debt (in %)	8.5%	6.4%	5.9%	5.2%	4.6%
Interest on debt (in value)	818	622	587	541	497
Determined RoE pre-tax rate (in %)	12.6%	12.6%	12.6%	12.6%	12.6%
Estimated surplus embedded in the cost of capital for terminal (in value)	<i>*see Note 2</i>	1 995	1 952	1 869	1 828
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b><i>*see Note 1</i></b>	<b>1 995</b>	<b>1 952</b>	<b>1 910</b>	<b>1 869</b>
<b>Revenue/costs for the terminal activity</b>	<b>21 588</b>	<b>20 671</b>	<b>20 508</b>	<b>20 516</b>	<b>20 464</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>9.2%</b>	<b>9.4%</b>	<b>9.3%</b>	<b>9.1%</b>	<b>8.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>12.6%</b>	<b>12.6%</b>	<b>12.6%</b>	<b>12.6%</b>	<b>12.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	26 082	22 342	23 279	25 073	
Estimated proportion of financing through equity (in %)	60.4%	71.6%	63.9%	57.8%	
Estimated proportion of financing through equity (in value)	15 755	15 988	14 878	14 480	
Estimated proportion of financing through debt (in %)	39.6%	28.4%	36.1%	42.2%	
Estimated proportion of financing through debt (in value)	10 327	6 355	8 401	10 593	
Cost of capital pre-tax (in value)	2 726	2 451	2 143	2 100	
Average interest on debt (in %)	7.1%	6.7%	3.1%	2.5%	
Interest on debt (in value)	733	429	261	268	
Determined RoE pre-tax rate (in %)	12.6%	12.6%	12.6%	12.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	<i>*see Note 2</i>	1 993	2 022	1 882	
Net ATSP gain(+)/loss(-) on terminal activity	-47	-743	34	-646	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b><i>*see Notes 1-2</i></b>	<b>1 946</b>	<b>1 280</b>	<b>1 916</b>	<b>1 186</b>
<b>Revenue/costs for the terminal activity</b>	<b>22 267</b>	<b>21 627</b>	<b>21 354</b>	<b>21 489</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>8.7%</b>	<b>5.9%</b>	<b>9.0%</b>	<b>5.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>12.4%</b>	<b>8.0%</b>	<b>12.9%</b>	<b>8.2%</b>	

**DENMARK: Terminal ATSP (NAVIAIR)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## DENMARK: Gate-to-gate

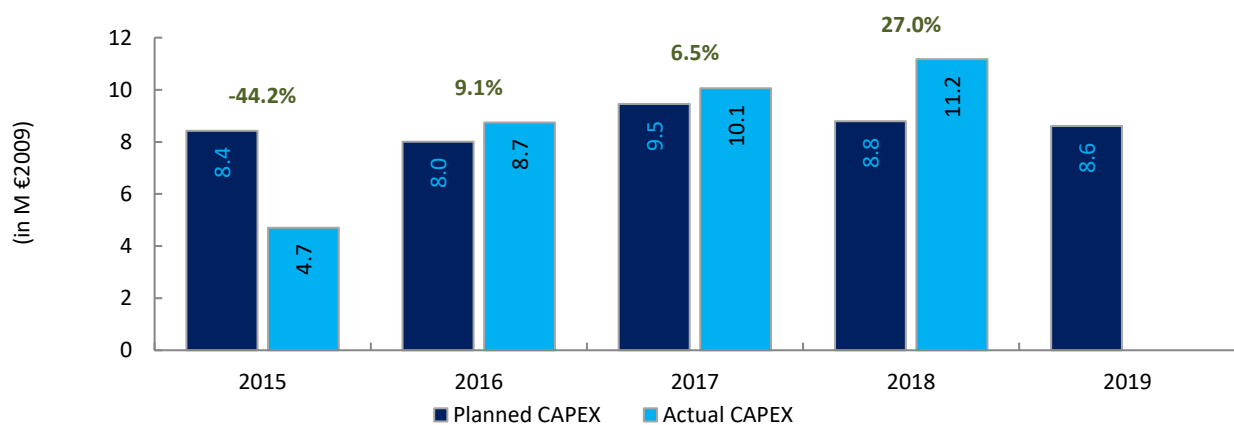
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Denmark: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	87 495 806	85 332 397	84 819 509	84 465 026	82 771 005																																							
Real terminal costs (EUR2009)	21 743 126	20 822 749	20 657 028	20 661 588	20 606 379																																							
Real gate-to-gate costs (EUR2009)	109 238 932	106 155 146	105 476 537	105 126 614	103 377 383																																							
En-route share (%)	80.1%	80.4%	80.4%	80.3%	80.1%																																							
<b>Denmark: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	89 049 798	86 051 505	84 025 852	83 518 278																																								
Real terminal costs (EUR2009)	22 452 481	22 507 553	21 461 723	22 301 358																																								
Real gate-to-gate costs (EUR2009)	111 502 279	108 559 058	105 487 576	105 819 636																																								
En-route share (%)	79.9%	79.3%	79.7%	78.9%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	2 263 347	2 403 912	11 039	693 022																																								
in %	2.1%	2.3%	0.0%	0.7%																																								
En-route share in p.p.	-0.2 p.p.	-1.1 p.p.	-0.8 p.p.	-1.4 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +0.7% (+0.7 M€2009) higher than planned due to higher than planned terminal costs (+7.9%, or +1.6 M€2009) while en-route costs are lower than planned (-1.1%, or -0.9 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (78.9%) is slightly lower than planned in the PP for 2018 (80.3%).</p> <p>For NAVIAIR, the estimated gate-to-gate economic surplus in 2018 amounts to 6.7 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 7.2% of gate-to-gate ANS revenues. See also <a href="#">Notes 1 and 2</a> at the end of this report.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>80.1%</td> <td>19.9%</td> </tr> <tr> <td>Actual</td> <td>79.9%</td> <td>20.1%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>80.4%</td> <td>19.6%</td> </tr> <tr> <td>Actual</td> <td>79.3%</td> <td>20.7%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>80.4%</td> <td>19.6%</td> </tr> <tr> <td>Actual</td> <td>79.7%</td> <td>20.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>80.3%</td> <td>19.7%</td> </tr> <tr> <td>Actual</td> <td>78.9%</td> <td>21.1%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>80.1%</td> <td>19.9%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	80.1%	19.9%	Actual	79.9%	20.1%	2016	Determined	80.4%	19.6%	Actual	79.3%	20.7%	2017	Determined	80.4%	19.6%	Actual	79.7%	20.3%	2018	Determined	80.3%	19.7%	Actual	78.9%	21.1%	2019	Determined	80.1%	19.9%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Denmark</b>																																												
<b>Note 1: Reporting of 2015-2018 actual costs</b>																																												
<p>Denmark reports in the June 2019 en-route Reporting Tables (see Additional Information 2.c) that actual costs are netted-off by the income from off shore activities in the North Sea, income from the training facility Entry Point North, as well as from EU TEN-T funding. Denmark clarified during the validation of June 2017 Reporting Tables that back in 2014 the determined costs were netted-off by corresponding estimated amounts. These issues, which affect actual costs may possibly affect the cost sharing for Denmark.</p>																																												
<b>Note 2: Naviair capital structure</b>																																												
<p>There is an inconsistency in the assumptions for the calculation of the cost of capital between en-route and terminal activities (in respect of the proportion of financing through equity and the interest rates on debts). This may affect the calculation of the surplus embedded in the cost of capital and the assessment of the Naviair overall estimated surplus on the en-route and terminal activity calculated in box 10.</p> <p>According to the June 2019 Reporting Tables, Naviair does not split the balance sheet based on the various cost bases, and there is no specific capital structure for en-route and terminal activities. Moreover, Naviair cost of capital is the combined amount of return on equity, interest payment on debt, and the deduction of capitalisation of interim interest.</p>																																												

## DENMARK

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: NAVIAIR						
FAB: DK-SE FAB						
Currency: DKK						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	70.0	68.0	82.0	78.0	78.0	376.0
Main CAPEX (in nominal M)	70.0	68.0	82.0	78.0	78.0	376.0
Inflation %	1.8%	2.2%	2.2%	2.2%	2.2%	
Inflation index (100 in 2009)	111.6	114.1	116.6	119.1	121.8	
Exchange rate 2009	7.44337	7.44337	7.44337	7.44337	7.44337	
<b>Total CAPEX (in M €2009)</b>	<b>8.4</b>	<b>8.0</b>	<b>9.5</b>	<b>8.8</b>	<b>8.6</b>	<b>43.3</b>
Main CAPEX (in M €2009)	8.4	8.0	9.5	8.8	8.6	43.3
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	94.0	91.1	90.6	90.6	89.1	455.3
Total CAPEX as % of Real gate-to-gate ANSP costs	9.0%	8.8%	10.4%	9.7%	9.7%	9.5%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	38.0	70.6	82.2	91.9		
Main CAPEX (in nominal M)	38.0	70.6	82.2	91.9		
Inflation %	0.2%	0.0%	1.1%	0.7%		
Inflation index (100 in 2009)	108.6	108.6	109.8	110.5		
Exchange rate 2009	7.44337	7.44337	7.44337	7.44337		
<b>Total CAPEX (in M €2009)</b>	<b>4.7</b>	<b>8.7</b>	<b>10.1</b>	<b>11.2</b>		
Main CAPEX (in M €2009)	4.7	8.7	10.1	11.2		
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%		
Real gate-to-gate ANSP costs (in M €2009)	96.7	94.1	90.7	92.0		
Total CAPEX as % of Real gate-to-gate ANSP costs	4.9%	9.3%	11.1%	12.1%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-32.0	2.6	0.2	13.9		
Total CAPEX (in M €2009)	-3.7	0.7	0.6	2.4		
<b>Total CAPEX (in %, M €2009)</b>	<b>-44.2%</b>	<b>9.1%</b>	<b>6.5%</b>	<b>27.0%</b>		





# Annual Monitoring Report 2018

## Local level view

### Sweden





## SWEDEN

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	64	B	C	C	C	B
LFV NUAC	77	D	D	D	C	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			STA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			6	1		
Legal/Judiciary			5	2		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>13</b>	<b>3</b>		
LFV			Number of questions answered			
			YES	NO		
Policy and its implementation			9	4		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			6	2		
<b>TOTAL</b>			<b>17</b>	<b>7</b>		
Observations						
<p>One (Safety Policy and Objectives) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only three are below Level C.</p>						

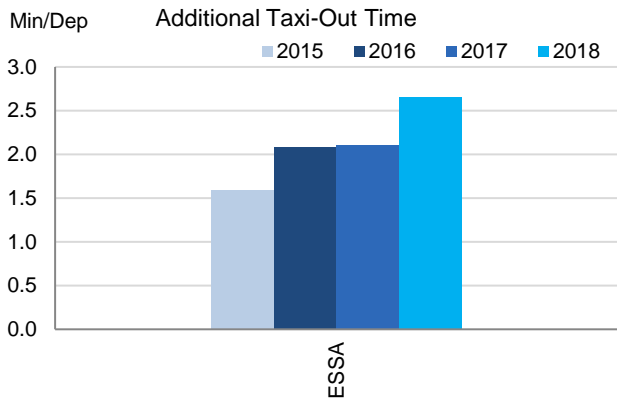
## SWEDEN

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

Stockholm/Arlanda (ESSA) is the only Swedish airport subject to RP2 monitoring. The APDF is successfully established and the data shows a remarkable environmental performance at ESSA, with lower additional times than other airports in the network with similar number of movements. Traffic slightly decreased in 2018 with respect to 2017 (-2%)

## 2. Additional Taxi-Out Time



Additional taxi-out times at Stockholm have increased by half a minute in 2018 (ESSA: 2017: 2.11 min/dep.; 2018: 2.66 min/dep.). Arlanda became a fully integrated A-CDM airport in June 2017. Since then, the DK-SE FAB reports they have experienced numerous technical problems, causing several disruptions in the DPI transmission to Eurocontrol. The main reason for the technical problems has been the delay in transferring data between the airport database (AODB) to the e-strip system in the tower, operated by LFV. In July 2018, the problems became so severe, that a decision was made to stop the whole process, until the technical problems were resolved.

In addition to the technical problems, Swedavia has changed the AODB on all 10 Swedavia airports (for Arlanda 28th of November 2018), leading to a mandatory revalidation of the whole A-CDM process with Eurocontrol.

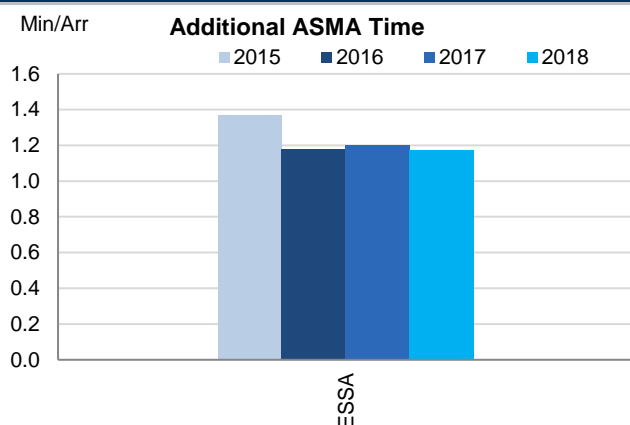
This validation is now halfway and with a very good result, so far. A re-connection to the Eurocontrol Operational system is foreseen to take place before summer 2019.

Without A-CDM in operation, Arlanda has no possibility to control the length of the actual taxitime (difference between ATOT=Actual Take Off Time and AOBT=Actual off Block Time). Aircrafts will receive start-up clearance based on their estimated off block time, not considering any constraints at the airport. This leads to longer taxitimes, as aircrafts have to wait on the taxiway for their turn to depart.

With A-CDM in operation, we will issue a unique start-up time to each aircraft, in order to minimise the taxitime/waiting time on the taxiway. This start up time is called TSAT (Target Start-up Time) and is produced by a sequence tool, provided by Swedavia.

The fact that the additional taxi out time has increased at Arlanda during 2018, is due to the fact that we have not been operating according to the A-CDM process. We can, since the validation with Eurocontrol started (1st of April 2019) see a significant reduction in taxi out times, during peak hours.

## 3. Additional ASMA Time



The additional time in the terminal area at Stockholm Arlanda is very stable and around 1.2 min/arr for the last three years. The indicator for ESSA is, like the additional taxi-out time, lower than most of the airports in its range of yearly movements, and well below the RP2 average (1.75 min/arr.).

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Stockholm/ Arlanda	ESSA	1.59	2.08	2.11	2.66		1.37	1.18	1.20	1.17	

**SWEDEN**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	N/A	N/A	N/A	N/A	N/A	
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.02	0.07	0.03	0.04		

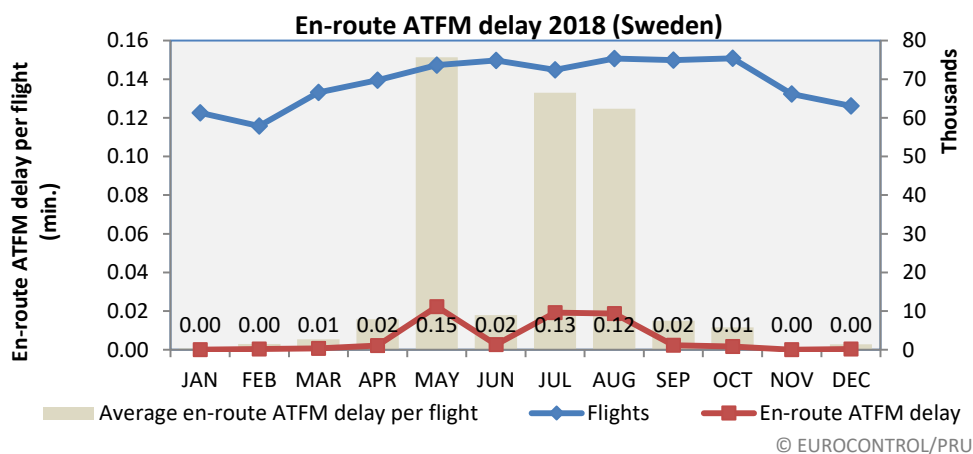
**National capacity incentive scheme**

Not applicable

**Compliance issues relating to national capacity incentive scheme**

Not applicable

**Observations regarding national capacity incentive scheme**



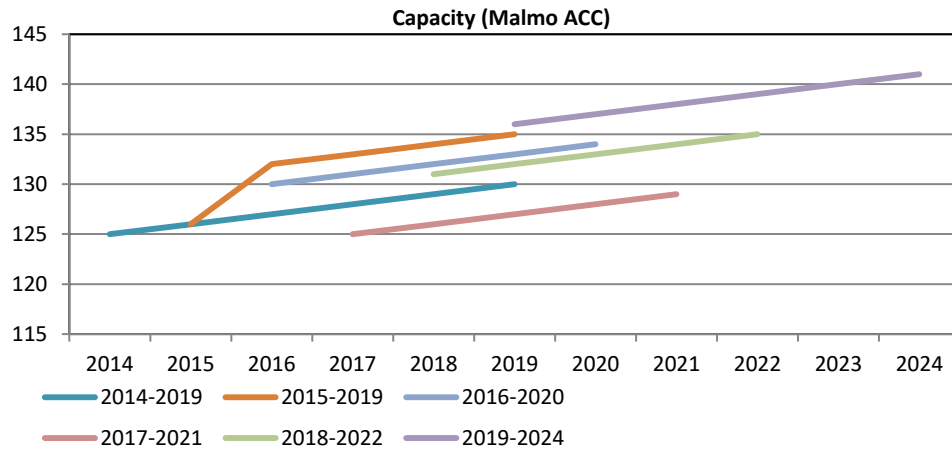
En-route ATFM delay per flight (Sweden)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.11	0.03	0.16	0.11	0.04	0.03	0.03	0.02	0.07	0.03	0.04

EUROCONTROL 7 year forecast February 2014 – Sweden										
	2014		2015		2016		2017		2018	2019
		actual		actual		actual		actual		actual
High	745		776		813		843		875	907
Base	737	<b>739</b>	761	<b>751</b>	784	<b>767</b>	802	<b>808</b>	822	<b>831</b>
Low	728		743		750		756		763	770

Sweden continues to satisfy the national contribution required to meet the FAB target for en route capacity in 2017. Traffic levels in Sweden have remained between the baseline and high scenario in the STATFOR forecast available when FAB performance plans and associated capacity plans were being determined.

The Network Manager, in the latest NOP 2019 - 2024, highlights potential capacity problems in Sweden (Malmo ACC) over the next two years due to staffing availability. Otherwise, Sweden is expected to provide sufficient capacity for RP3.

Sweden delay forecast							
		2019	2020	2021	2022	2023	2024
NOP 2018	-	0.05	0.06	0.08	0.10	N/A	N/A
NOP 2019	-	<b>0.12</b>	<b>0.16</b>	<b>0.18 – 0.30</b>			



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**Planning and Effective Use of CDRs**

Sweden has implemented Free Route Airspace operations.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
86%	99%	78%	65%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	1%	3%	4%	

Procedure 3 is not applicable within the State

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## SWEDEN

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

In Sweden, ANS at Stockholm/Arlanda (ESSA) airport are subject to RP2 monitoring.

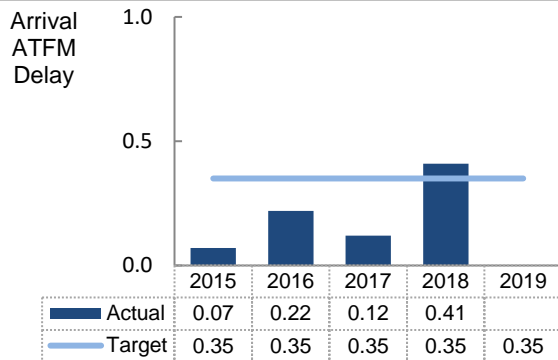
Traffic levels at Arlanda have moderately increased during RP2 (+7.8% with respect to 2015), although 2018 showed a reduction with respect to 2017 (-2%)

In terms of arrival ATFM delays, values are drastically higher than those in the beginning of the reference period (almost 6 times the delays in 2015), and the performance in 2018 misses the target for the first time in RP2.

ATFM slot adherence is very high (2018: 97.2%) and performance is stable along RP2.

Sweden adequately contributes to the DK-SE FAB and European ANS Capacity performance.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Sweden are significantly higher with respect to the previous year (2017: 0.12 min/arr, 2018: 0.41 min/arr). Majority of these delays happened during January and February (weather reasons) and December (ATC disruption)

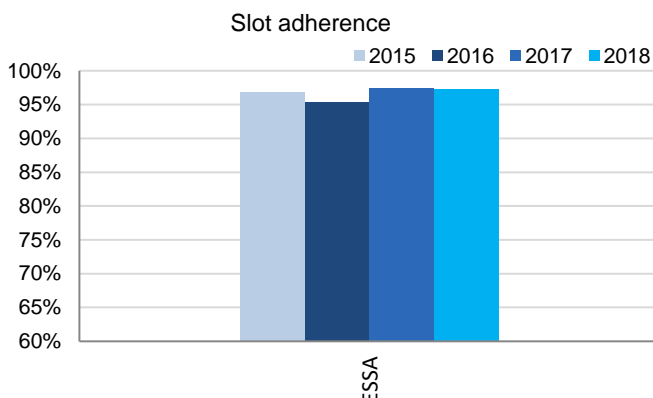
The DK-SE FAB monitoring report explains that this disruption in December was *mainly due to disturbances in Swedavia's IT network, which meant that inter alia ground traffic and other airport-owned equipment were affected. The air traffic control initially took an extra buffer in the event of deteriorating visibility conditions to ensure flight safety until a more thorough analysis of the problem picture is made.*

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Sweden established a national target on arrival ATFM delay based on an upper bound of the maximum arrival ATFM delay observed throughout the years preceding RP2. This target is missed in 2018 by 0.06 min/arr.

No incentive scheme is established. A reference is provided in the supporting documentation that the establishment of an incentive scheme for terminal ANS may be reviewed in 2017, but nothing is presented in the DK-SE monitoring report.

## 4. ATFM Slot Adherence



Slot adherence at Stockholm/Arlanda (ESSA) is similar to last year (97.2% in 2018) and it again ranges in the group of best-in-class performers across Europe.

## 5. ATC Pre-departure Delay

ATC pre-departure delay at ESSA has decreased in 2018 to a negligible 0.07 min/dep. However at the same time, the quality of the data used for the calculation of this indicator has decreased, where a higher share of minutes of pre-departure delay are not explained.

## 6. Appendix

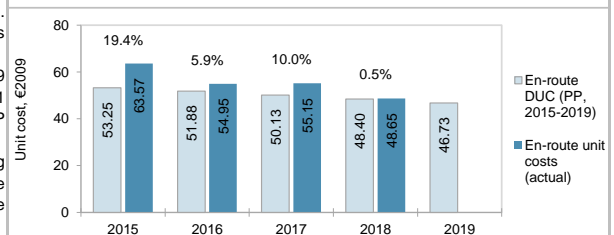
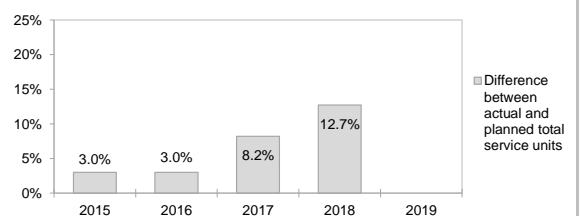
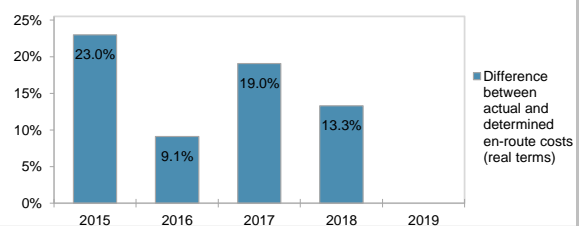
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Stockholm/ Arlanda	ESSA	0.07	0.22	0.12	0.41		96.9%	95.4%	97.5%	97.2%		0.04	0.09	0.12	0.07	

## SWEDEN: En-route charging zone

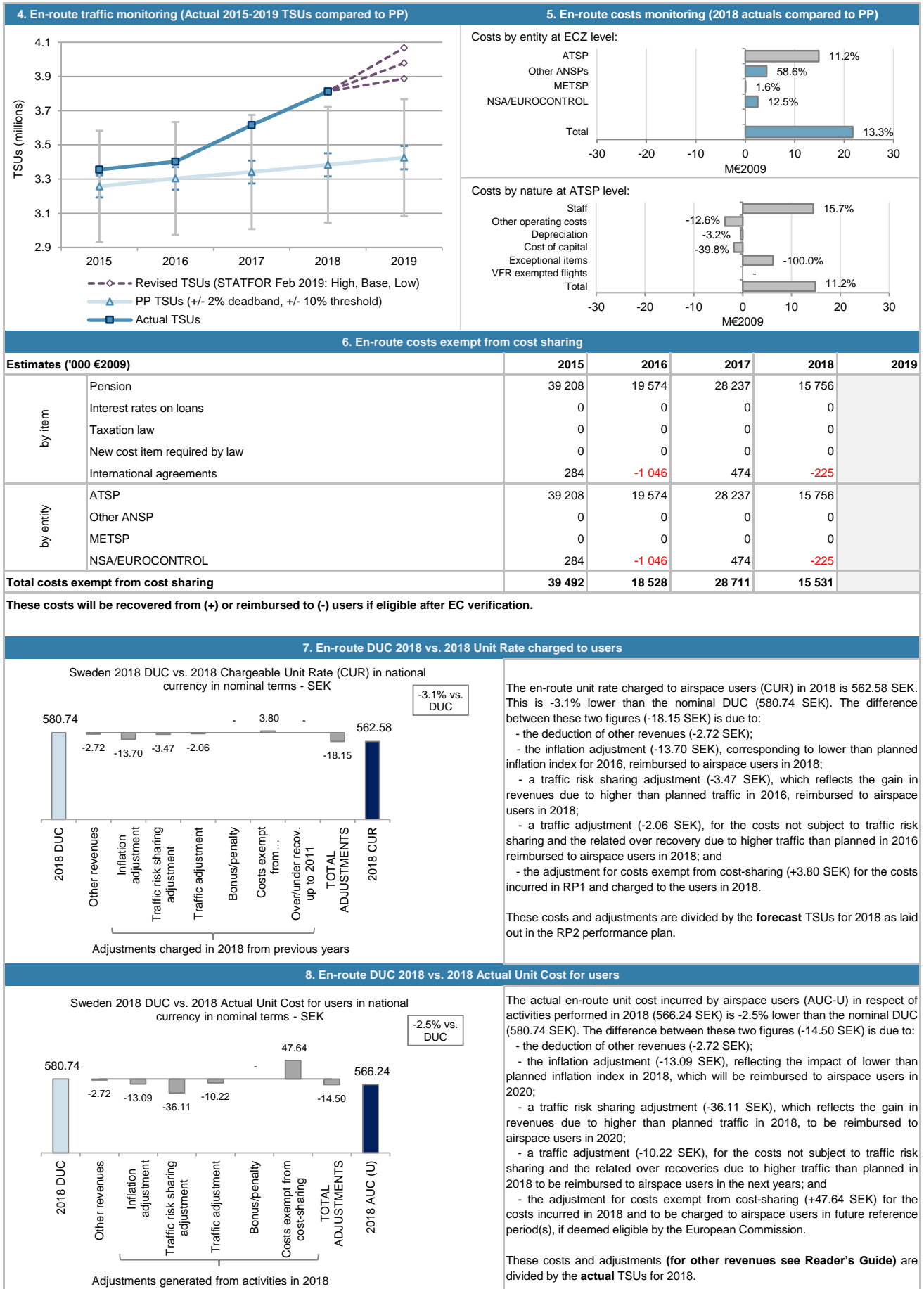
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Sweden ECZ represents 2.7% of the SES en-route ANS determined costs in 2018					
· ATSP: LFV					
· FAB: DK-SE FAB					
· National currency: SEK Exchange rate 2009: 1 EUR = 10.6102 SEK					
2. En-route DUC monitoring at Charging Zone level					
Sweden: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal SEK)	1 951 544 485	1 974 263 091	1 970 314 688	1 964 628 986	1 958 887 595
Inflation %	1.6%	2.4%	2.1%	2.0%	2.0%
Inflation index (100 in 2009)	106.1	108.6	110.9	113.1	115.4
Real en-route costs (SEK2009)	1 840 204 091	1 817 994 673	1 777 040 937	1 737 169 570	1 698 130 296
Total en-route Service Units	3 257 000	3 303 000	3 341 000	3 383 000	3 425 000
<b>Real en-route unit cost per Service Unit (SEK2009)</b>	<b>565.00</b>	<b>550.41</b>	<b>531.89</b>	<b>513.50</b>	<b>495.80</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>53.25</b>	<b>51.88</b>	<b>50.13</b>	<b>48.40</b>	<b>46.73</b>
Sweden: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal SEK)	2 373 538 863	2 103 180 988	2 286 059 042	2 169 308 416	
Inflation %	0.7%	1.1%	1.9%	2.0%	
Inflation index (100 in 2009)	104.9	106.0	108.1	110.2	
Real en-route costs (SEK2009)	2 262 850 219	1 983 284 204	2 115 541 574	1 968 136 661	
Total en-route Service Units	3 354 938	3 401 901	3 615 171	3 812 797	
<b>Real en-route unit cost per Service Unit (SEK2009)</b>	<b>674.48</b>	<b>582.99</b>	<b>585.18</b>	<b>516.19</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>63.57</b>	<b>54.95</b>	<b>55.15</b>	<b>48.65</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal SEK)	421 994 378	128 917 896	315 744 354	204 679 430	
in %	21.6%	6.5%	16.0%	10.4%	
Inflation %	-0.9 p.p.	-1.3 p.p.	-0.2 p.p.	0.0 p.p.	
Inflation index (100 in 2009)	-1.2 p.p.	-2.6 p.p.	-2.8 p.p.	-2.9 p.p.	
Real en-route costs (SEK2009)	422 646 128	165 289 531	338 500 637	230 967 091	
in %	23.0%	9.1%	19.0%	13.3%	
Total en-route Service Units	97 938	98 901	274 171	429 797	
in %	3.0%	3.0%	8.2%	12.7%	
<b>Real en-route unit cost per Service Unit (SEK2009)</b>	<b>109.48</b>	<b>32.59</b>	<b>53.30</b>	<b>2.69</b>	
in %	<b>19.4%</b>	<b>5.9%</b>	<b>10.0%</b>	<b>0.5%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>10.32</b>	<b>3.07</b>	<b>5.02</b>	<b>0.25</b>	
in %	<b>19.4%</b>	<b>5.9%</b>	<b>10.0%</b>	<b>0.5%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (48.65 €2009) is +0.5% higher than planned in the PP (48.40 €2009). This results from the combination of much higher than planned TSUs (+12.7%) and much higher than planned en-route costs in real terms (+13.3%, or +21.8 M€2009).					
It should be noted that the deviation in en-route costs is mainly driven by higher than planned LFV pension costs reported as costs exempt from cost-sharing. Excluding this impact, the actual en-route unit cost in real terms would be 472.35 SEK2009 (or 44.52 €2009), which would be -8.0% lower than the 2018 DUC target.					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+12.7%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (LFV) retaining an amount of +5.9 M€2009.					
According to STATFOR February 2019 base forecast scenario, the en-route TSUs for Sweden are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are +10.4% (+204.7 M€SEK) higher than planned. However, since the actual inflation index is lower than planned (-2.9 p.p.), actual en-route costs are +13.3% (+21.8 M€2009) above plans when expressed in real terms.					
The higher than planned en-route costs in real terms are driven by LFV (+11.2%, or +14.9 M€2009), the other ANSPs (+58.6%, or +4.3 M€2009), the MET service provider (+1.6%, or +0.1 M€2009) and the NSA/EUROCONTROL (+12.5%, or +2.5 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +15.5 M€2009 comprising +15.8 M€2009 for pension and -0.2 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**SWEDEN: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



## SWEDEN: En-route ATSP (LFV)

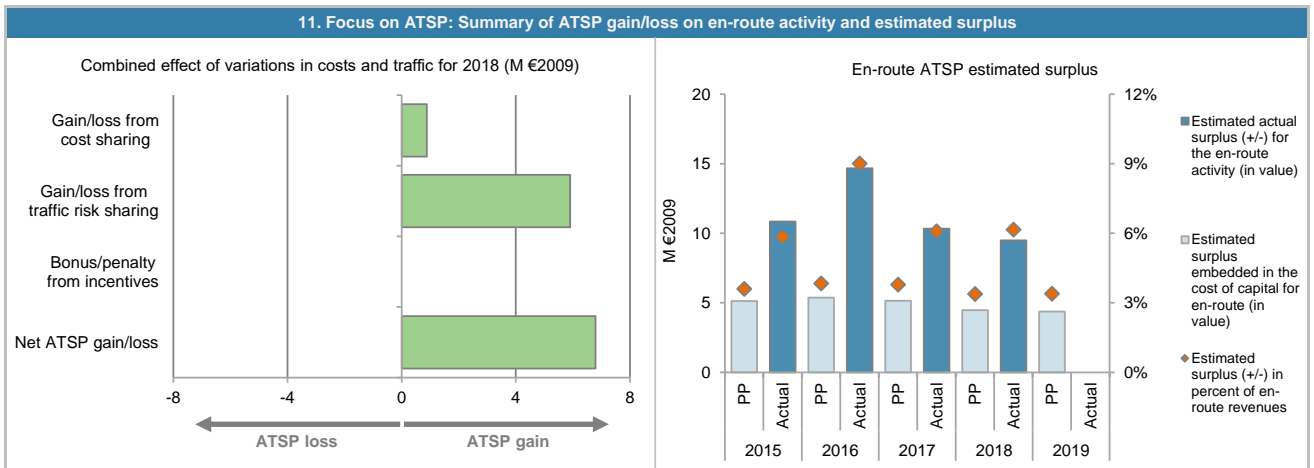
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	142 525	140 007	136 052	132 252	
Actual costs for the ATSP	178 067	151 533	162 360	147 122	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-35 542	-11 526	-26 308	-14 870	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	39 208	19 574	28 237	15 756	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>3 666</b>	<b>8 048</b>	<b>1 930</b>	<b>886</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	3.0%	3.0%	8.2%	12.7%	
Determined costs for the ATSP (PP) - based on actual inflation	142 582	141 910	138 139	134 236	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>3 282</b>	<b>3 261</b>	<b>5 335</b>	<b>5 906</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>384</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>7 332</b>	<b>11 309</b>	<b>7 264</b>	<b>6 792</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	143 708	127 587	116 010	105 112	102 862
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	143 708	127 587	116 010	105 112	102 862
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	5 135	5 373	5 152	4 479	4 375
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	3.6%	4.2%	4.4%	4.3%	4.3%
Estimated surplus embedded in the cost of capital for en-route (in value)	5 135	5 373	5 152	4 479	4 375
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>*see Note 2</b>	<b>5 135</b>	<b>5 373</b>	<b>5 152</b>	<b>4 479</b>
<b>Revenue/costs for the en-route activity</b>	<b>142 525</b>	<b>140 007</b>	<b>136 052</b>	<b>132 252</b>	<b>128 529</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.6%</b>	<b>3.8%</b>	<b>3.8%</b>	<b>3.4%</b>	<b>3.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>3.6%</b>	<b>4.2%</b>	<b>4.4%</b>	<b>4.3%</b>	<b>4.3%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	112 788	107 724	98 309	109 637	
Estimated proportion of financing through equity (in %)	*see Note 1	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	112 788	107 724	98 309	109 637	
Estimated proportion of financing through debt (in %)	*see Note 1	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	3 516	3 367	3 074	2 697	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	*see Note 1	3.1%	3.1%	2.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	3 516	3 367	3 074	2 697	
Net ATSP gain(+)/loss(-) on en-route activity	7 332	11 309	7 264	6 792	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>*see Note 2</b>	<b>10 848</b>	<b>14 676</b>	<b>10 338</b>	<b>9 490</b>
<b>Revenue/costs for the en-route activity</b>	<b>185 399</b>	<b>162 842</b>	<b>169 624</b>	<b>153 914</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>5.9%</b>	<b>9.0%</b>	<b>6.1%</b>	<b>6.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>9.6%</b>	<b>13.6%</b>	<b>10.5%</b>	<b>8.7%</b>	



**SWEDEN: En-route ATSP (LFV)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 LFV en-route costs vs. PP**

In 2018, LFV actual en-route costs are +11.2% (+14.9 M€2009) higher, in real terms, than planned in the PP. See also **Note 2**. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- much higher staff costs (+15.7%, or +14.5 M€2009) due to "higher pension costs (reported as costs exempt from cost sharing). This is a result of lower interest rate than assumed in the performance plan of RP2. There are also some changes in the internal accounting which affects both staff costs and other operation costs compared to when the plan for RP2 was established. The effect of these changes is a bit lower operating costs and higher staff costs – it does however not affect the total cost of LFV";
- much lower other operating costs (-12.6%, or -3.6 M€2009) "mainly as a result of the cost-cutting programme. Among other things LFV have lower costs for maintenance as a result of negotiations with suppliers";
- lower depreciation costs (-3.2%, or -0.4 M€2009) "mainly a result of some assets being taken into operation slightly later than planned.";
- much lower cost of capital (-39.8%, or -1.8 M€2009) mainly due to a lower than planned RoE rate (2.5% instead of 4.3%) to compute the actual cost of capital. See also **Note 1**.

It is also noteworthy that a deduction of -6.2 M€2009 was foreseen in the PP as (negative) exceptional costs for LFV, reflecting a "top-down" approach used by Sweden to ensure that each party in Sweden en-route cost-base contributes to the objective of cost-efficiency. This deduction also contributes to the observed deviation between LFV actual and determined costs in 2018.

**LFV net gain/loss on en-route activity in 2018**

As shown in box 9, LFV generated a net gain of +6.8 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +0.9 M€2009 arising from the cost sharing mechanism; and,
- a gain of +5.9 M€2009 arising from the traffic risk sharing mechanism.

The gain from cost sharing mentioned above (+0.9 M€2009) includes amounts reported by LFV for costs exempt from cost sharing (+15.8 M€2009). Should these costs not be deemed eligible by the European Commission, LFV would record a net loss of -9.0 M€2009 for the en-route activity in 2018.

According to the 2018 NSA Monitoring Report, the en-route capacity performance in 2018 remained within the dead-band and therefore no bonus or penalty is foreseen.

**LFV overall estimated surplus for the en-route activity (See also **Note 2**)**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+6.8 M€2009) and the surplus embedded in the actual cost of capital (+2.7 M€2009) amounts to +9.5 M€2009 (6.2% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 8.7%, which is much higher than the 4.3% planned in the PP.

Excluding the effect of the costs exempt from cost-sharing, LFV would incur a negative surplus of -6.3 M€2009 in 2018 or 4.5% of the 2018 en-route revenue in absolute terms.

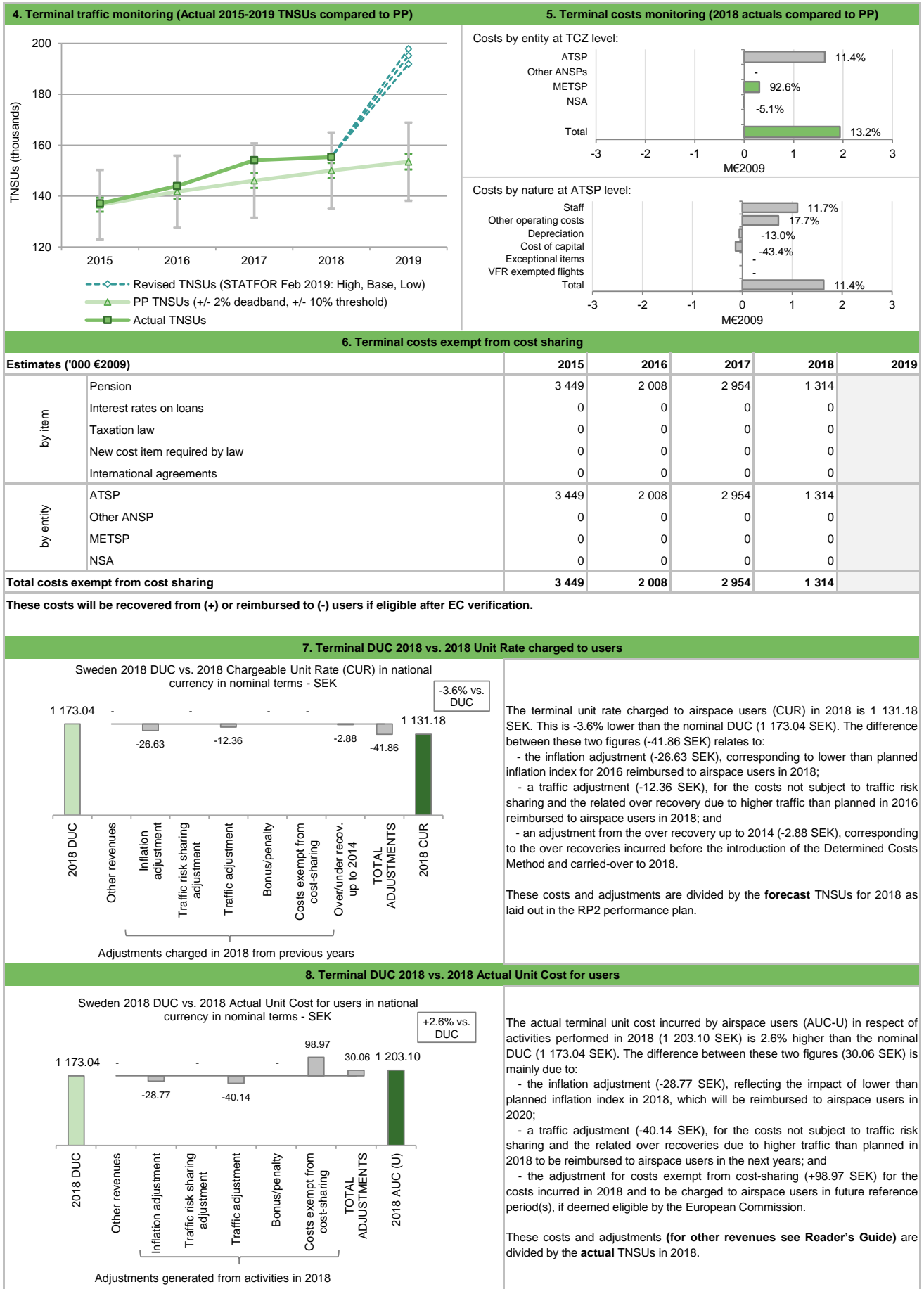
## SWEDEN: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Sweden TCZ represents 1.4% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No		
· ATSP:	LFV	· Airports with fewer than 70,000 IFRs ATMs:		0		
· National currency:	SEK	· Airports with between 70,000 and 225,000 IFRs ATMs:		1		
· Number of airports in charging zone in 2018:	1,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Sweden: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal SEK)	169 678 803	170 109 786	172 098 429	175 956 588	178 967 182	
Inflation %	1.6%	2.4%	2.1%	2.0%	2.0%	
Inflation index (100 in 2009)	106.1	108.6	110.9	113.1	115.4	
Real terminal costs (SEK2009)	159 998 211	156 645 123	155 216 806	155 584 812	155 143 968	
Total terminal Service Units	136 600	141 700	146 100	150 000	153 500	
<b>Real terminal unit cost per Service Unit (SEK2009)</b>	<b>1 171.29</b>	<b>1 105.47</b>	<b>1 062.40</b>	<b>1 037.23</b>	<b>1 010.71</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>110.39</b>	<b>104.19</b>	<b>100.13</b>	<b>97.76</b>	<b>95.26</b>	
Sweden: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal SEK)	207 983 086	196 748 751	205 739 690	194 141 214		
Inflation %	0.7%	1.1%	1.9%	2.0%		
Inflation index (100 in 2009)	104.9	106.0	108.1	110.2		
Real terminal costs (SEK2009)	198 283 912	185 532 625	190 393 538	176 137 445		
Total terminal Service Units	137 100	143 900	154 056	155 314		
<b>Real terminal unit cost per Service Unit (SEK2009)</b>	<b>1 446.27</b>	<b>1 289.32</b>	<b>1 235.87</b>	<b>1 134.07</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>136.31</b>	<b>121.52</b>	<b>116.48</b>	<b>106.88</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal SEK)	in value	38 304 283	26 638 965	33 641 262	18 184 626	
	in %	22.6%	15.7%	19.5%	10.3%	
Inflation %	in p.p.	-0.9 p.p.	-1.3 p.p.	-0.2 p.p.	0.0 p.p.	
Inflation index (100 in 2009)	in p.p.	-1.2 p.p.	-2.6 p.p.	-2.8 p.p.	-2.9 p.p.	
Real terminal costs (SEK2009)	in value	38 285 701	28 887 502	35 176 732	20 552 633	
	in %	23.9%	18.4%	22.7%	13.2%	
Total terminal Service Units	in value	500	2 200	7 956	5 314	
	in %	0.4%	1.6%	5.4%	3.5%	
<b>Real terminal unit cost per Service Unit (SEK2009)</b>	<b>in value</b>	<b>274.98</b>	<b>183.85</b>	<b>173.47</b>	<b>96.84</b>	
	<b>in %</b>	<b>23.5%</b>	<b>16.6%</b>	<b>16.3%</b>	<b>9.3%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>25.92</b>	<b>17.33</b>	<b>16.35</b>	<b>9.13</b>	
	<b>in %</b>	<b>23.5%</b>	<b>16.6%</b>	<b>16.3%</b>	<b>9.3%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Sweden Terminal Charging Zone (TCZ) comprising only Stockholm-Arlanda airport (ESSA). No traffic risk-sharing applies.						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (106.88 €2009) is +9.3% higher than planned in the PP (97.76 €2009). This results from the combination of higher than planned TNSUs (+3.5%) and much higher than planned terminal costs in real terms (+13.2%, or +1.9 M€2009). It should be noted that the deviation in terminal costs is mainly driven by higher than planned LfV pension costs reported as costs exempt from cost-sharing. Excluding this impact, the actual terminal unit cost in real terms would be 1044.28 SEK2009 (or 98.42 €2009), which is only +0.7% higher than the 2018 DUC target.						
<b>Terminal service units</b>						
The traffic risk sharing mechanism does not apply in Sweden TCZ. In 2018, the actual TNSUs in Sweden TCZ are +3.5% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Sweden are expected to remain largely above the planned values for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +10.3% (+18.2 MSEK) higher than planned. However, since the actual inflation is lower than planned (-2.9 p.p.), actual terminal costs are +13.2% (+1.9 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by LfV (+11.4%, or +1.6 M€2009) and the MET service provider (+92.6%, or +0.3 M€2009), while the costs for the NSA (-5.1%) are lower than planned. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of +1.3 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						

**SWEDEN: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## SWEDEN: Terminal ATSP (LFV)

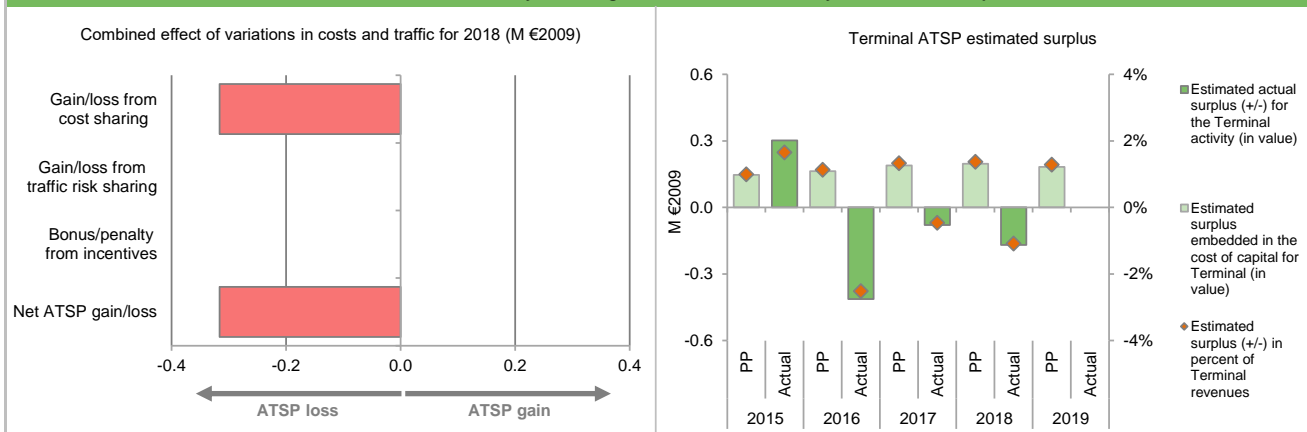
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	14 731	14 382	14 262	14 294	
Actual costs for the ATSP	18 173	17 073	17 607	15 924	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-3 442	-2 691	-3 345	-1 631	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	3 449	2 008	2 954	1 314	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>7</b>	<b>-683</b>	<b>-391</b>	<b>-316</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>7</b>	<b>-683</b>	<b>-391</b>	<b>-316</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	4 588	4 764	4 974	5 078	4 613
Estimated proportion of financing through equity (in %)	27.7%	29.7%	32.9%	33.5%	34.4%
Estimated proportion of financing through equity (in value)	1 273	1 416	1 639	1 701	1 586
Estimated proportion of financing through debt (in %)	72.3%	70.3%	67.1%	66.5%	65.6%
Estimated proportion of financing through debt (in value)	3 316	3 348	3 335	3 377	3 027
Cost of capital pre-tax (in value)	263	281	306	314	289
Average interest on debt (in %)	3.5%	3.5%	3.5%	3.5%	3.5%
Interest on debt (in value)	116	117	117	118	106
Determined RoE pre-tax rate (in %)	11.5%	11.5%	11.5%	11.5%	11.5%
Estimated surplus embedded in the cost of capital for terminal (in value)	147	163	189	196	183
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>147</b>	<b>163</b>	<b>189</b>	<b>196</b>	<b>183</b>
<b>Revenue/costs for the terminal activity</b>	<b>14 731</b>	<b>14 382</b>	<b>14 262</b>	<b>14 294</b>	<b>14 242</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.3%</b>	<b>1.4%</b>	<b>1.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>11.5%</b>	<b>11.5%</b>	<b>11.5%</b>	<b>11.5%</b>	<b>11.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	4 682	4 034	3 298	2 830	
Estimated proportion of financing through equity (in %)	54.5%	58.1%	81.8%	45.0%	
Estimated proportion of financing through equity (in value)	2 553	2 344	2 698	1 273	
Estimated proportion of financing through debt (in %)	45.5%	41.9%	18.2%	55.0%	
Estimated proportion of financing through debt (in value)	2 128	1 690	600	1 556	
Cost of capital pre-tax (in value)	342	308	325	178	
Average interest on debt (in %)	2.2%	2.2%	2.2%	2.0%	
Interest on debt (in value)	48	38	13	31	
Determined RoE pre-tax rate (in %)	11.5%	11.5%	11.5%	11.5%	
Estimated surplus embedded in the cost of capital for terminal (in value)	295	271	311	147	
Net ATSP gain(+)/loss(-) on terminal activity	7	-683	-391	-316	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>302</b>	<b>-413</b>	<b>-80</b>	<b>-169</b>	
<b>Revenue/costs for the terminal activity</b>	<b>18 180</b>	<b>16 390</b>	<b>17 216</b>	<b>15 608</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.7%</b>	<b>-2.5%</b>	<b>-0.5%</b>	<b>-1.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>11.8%</b>	<b>-17.6%</b>	<b>-2.9%</b>	<b>-13.3%</b>	

## SWEDEN: Terminal ATSP (LFV)

## Monitoring of terminal COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



## 12. Focus on terminal ATSP: General conclusions

## Actual 2018 ATSPs (LFV and Swedavia) terminal costs vs. PP

In 2018, the ATSPs (LFV and Swedavia) actual terminal costs are +11.4% (+1.6 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much higher staff costs (+11.7%, or +1.1 M€2009) "due to higher pension costs of LFV (reported as costs exempt from cost sharing). This is a result of lower interest rate than assumed in the performance plan of RP2.";
- much higher other operating costs (+17.7%, or +0.7 M€2009);
- much lower depreciation costs (-13.0%, or -0.06 M€2009);
- much lower cost of capital (-43.4%, or -0.1 M€2009);

It is noteworthy that no capital related costs (depreciation and cost of capital) are reported for LFV in the terminal Reporting Tables. These costs are fully borne by the airport operator (Swedavia, see also **Note 2**) owning the CNS infrastructure used by LFV to provide terminal ANS.

According to the June 2019 terminal Reporting Tables "Swedavia's determined costs contain a calculation error which make the comparison of actual costs and determined costs by each row in the table [reported in additional information 1.k] not applicable for RP2. The actual costs 2018 were higher than determined costs. Among other things due to increased joint expertise in ATM centrally in Swedavia and to operational cost of procedures."

## ATSPs (LFV and Swedavia) net gain/loss on terminal activity in 2018

As shown in box 9, the ATSPs (LFV and Swedavia) generated a net loss of -0.3 M€2009 on the terminal activity arising from the cost sharing mechanism.

The loss from cost sharing mentioned above (-0.3 M€2009) includes amounts reported by LFV for cost exempt from cost sharing (+1.3 M€2009). Should these costs not be deemed eligible by the European Commission, the ATSPs would record a net loss of -1.6 M€2009 for the terminal activity in 2018.

## ATSPs (LFV and Swedavia) overall estimated surplus for the terminal activity in 2018.

Ex-post, the overall estimated surplus for ATSPs (LFV and Swedavia) taking into account the loss from the terminal activity mentioned above (-0.3 M€2009) and the surplus embedded in the actual cost of capital (+0.1 M€2009) amounts to -0.2 M€2009. This implies a negative surplus (1.1% of the 2018 terminal revenues in absolute terms) and a negative ex-post RoE of -13.3%. This indicates that the surplus embedded in the actual cost of capital through the return on equity was not sufficient to compensate for the loss arising from the higher than planned actual costs.

Excluding the costs exempt from cost sharing, the ATSPs would incur even larger negative surplus of -1.5 M€2009 in 2018 or 10.4% of the 2018 terminal revenues in absolute terms.

Finally, considering the fact that LFV does not report any cost of capital (i.e. there is no surplus embedded in the cost of capital), the 2018 overall economic surplus for LFV (excluding Swedavia's part) is equal to the net loss of -0.2 M€2009, as shown in the table below.

Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	10 498	10 299	10 299	10 269	
Actual costs for the ATSP	13 895	12 389	13 500	11 758	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-3 397	-2 091	-3 201	-1 490	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	3 449	2 008	2 954	1 314	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>52</b>	<b>-83</b>	<b>-247</b>	<b>-175</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bon</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>*see Note 2</b>	<b>52</b>	<b>-83</b>	<b>-247</b>	<b>-175</b>

## SWEDEN: Gate-to-gate

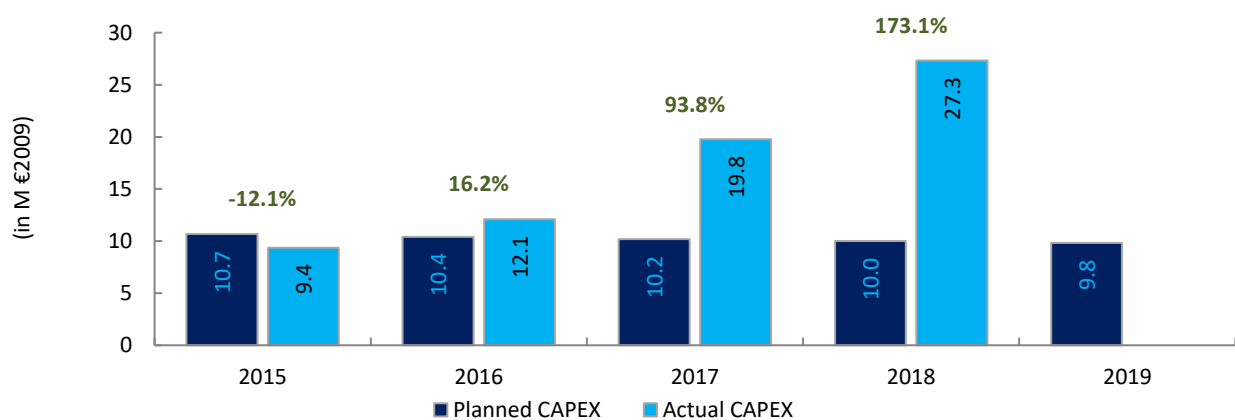
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																			
<b>Sweden: Data from RP2 Performance Plan</b>																																			
	2015D	2016D	2017D	2018D	2019D																														
Real en-route costs (EUR2009)	173 437 267	171 344 053	167 484 207	163 726 374	160 046 964																														
Real terminal costs (EUR2009)	15 079 660	14 763 635	14 629 018	14 663 702	14 622 153																														
Real gate-to-gate costs (EUR2009)	188 516 927	186 107 688	182 113 225	178 390 076	174 669 117																														
En-route share (%)	92.0%	92.1%	92.0%	91.8%	91.6%																														
<b>Sweden: Actual data from Reporting Tables</b>																																			
	2015A	2016A	2017A	2018A	2019A																														
Real en-route costs (EUR2009)	213 271 212	186 922 415	199 387 530	185 494 775																															
Real terminal costs (EUR2009)	18 688 047	17 486 251	17 944 387	16 600 766																															
Real gate-to-gate costs (EUR2009)	231 959 259	204 408 666	217 331 918	202 095 541																															
En-route share (%)	91.9%	91.4%	91.7%	91.8%																															
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																			
	2015	2016	2017	2018	2019																														
Real gate-to-gate costs (EUR2009) in value	43 442 332	18 300 978	35 218 692	23 705 465																															
in %	23.0%	9.8%	19.3%	13.3%																															
En-route share in p.p.	-0.1 p.p.	-0.6 p.p.	-0.2 p.p.	0.0 p.p.																															
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																			
<p>In 2018, actual gate-to-gate ANS costs are +13.3% (+23.7 M€2009) higher than planned due to higher than planned en-route costs (+13.3%, or +21.8 M€2009) and terminal costs (+13.2%, or +1.9 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (91.8%) is in line with that planned in the PP for 2018 (91.8%).</p> <p>For LFV, the estimated gate-to-gate economic surplus in 2018 amounts to 9.3 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 5.5% of gate-to-gate ANS revenues.</p>																																			
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Determined En-route (%)</th> <th>Determined Terminal (%)</th> <th>Actual En-route (%)</th> <th>Actual Terminal (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>92.0%</td> <td>8.0%</td> <td>91.9%</td> <td>8.1%</td> </tr> <tr> <td>2016</td> <td>92.1%</td> <td>7.9%</td> <td>91.4%</td> <td>8.6%</td> </tr> <tr> <td>2017</td> <td>92.0%</td> <td>8.0%</td> <td>91.7%</td> <td>8.3%</td> </tr> <tr> <td>2018</td> <td>91.8%</td> <td>8.2%</td> <td>91.8%</td> <td>8.2%</td> </tr> <tr> <td>2019</td> <td>91.6%</td> <td>8.4%</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Determined En-route (%)	Determined Terminal (%)	Actual En-route (%)	Actual Terminal (%)	2015	92.0%	8.0%	91.9%	8.1%	2016	92.1%	7.9%	91.4%	8.6%	2017	92.0%	8.0%	91.7%	8.3%	2018	91.8%	8.2%	91.8%	8.2%	2019	91.6%	8.4%		
Year	Determined En-route (%)	Determined Terminal (%)	Actual En-route (%)	Actual Terminal (%)																															
2015	92.0%	8.0%	91.9%	8.1%																															
2016	92.1%	7.9%	91.4%	8.6%																															
2017	92.0%	8.0%	91.7%	8.3%																															
2018	91.8%	8.2%	91.8%	8.2%																															
2019	91.6%	8.4%																																	
<b>3. Technical notes on en-route and terminal information reported by Sweden</b>																																			
<b>Note 1: ATSP return on equity (RoE) and cost of capital</b>																																			
<p>In preparing this report, some 'adjustments' were made to the en-route data disclosed by Sweden relating to the LFV cost of capital. According to the Additional Information provided with the June 2019 en-route Reporting Tables "LFV has no financing through loans, the debt consists of the pensions debt. The used interest for this equals inflation in our wacc-calculations." On the other hand, it is noted that the asset base does not include the pension debt. To reflect this, the table in box 10 has been amended, by changing the actual proportion of financing through equity to 100% and aligning the actual RoE pre-tax rate (in %) with the WACC pre-tax rate (in %).</p> <p>It is noted that the actual en-route cost of capital reported for LFV is calculated using a lower RoE pre-tax rate (2.5%) compared to the planned one (4.3%, see also <b>Note 2</b> below).</p>																																			
<b>Note 2: ATSP costs reported in en-route and terminal Reporting Tables</b>																																			
<p>In the en-route Reporting Tables, the data provided for the ATSPs (LFV and ACR) include also the costs relating to the CNS infrastructure owned by the airport operators. This reporting impairs the analysis of the overall estimated en-route surplus for LFV calculated in box 10.</p> <p>For compliance with the charging regulation, it is required to present separately the costs of the different ATSPs and other entities (i.e. here the airport operators).</p> <p>In the terminal Reporting Tables, the costs of the main terminal ATSP (LFV) and airport operator (Swedavia) are presented separately. For monitoring purposes, the overall estimated terminal surplus for ATSPs (LFV and Swedavia) is presented in box 10, while the estimation of LFV surplus is provided in box 12.</p>																																			

## SWEDEN

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: LFV						
FAB: DK-SE FAB						
Currency: SEK						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	120.0	120.0	120.0	120.0	120.0	600.0
Main CAPEX (in nominal M)	110.0	101.0	66.0	60.0	55.0	392.0
Inflation %	1.6%	2.4%	2.1%	2.0%	2.0%	
Inflation index (100 in 2009)	106.1	108.6	110.9	113.1	115.4	
Exchange rate 2009	10.6102	10.6102	10.6102	10.6102	10.6102	
<b>Total CAPEX (in M €2009)</b>	<b>10.7</b>	<b>10.4</b>	<b>10.2</b>	<b>10.0</b>	<b>9.8</b>	<b>51.1</b>
Main CAPEX (in M €2009)	9.8	8.8	5.6	5.0	4.5	33.6
% Main of Total CAPEX	91.7%	84.2%	55.0%	50.0%	45.8%	65.9%
Real gate-to-gate ANSP costs (in M €2009)	157.3	154.4	150.3	146.5	142.8	751.3
Total CAPEX as % of Real gate-to-gate ANSP costs	6.8%	6.7%	6.8%	6.8%	6.9%	6.8%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	104.3	136.2	226.7	319.4		
Main CAPEX (in nominal M)	47.9	89.4	134.6	232.6		
Inflation %	0.7%	1.1%	1.9%	2.0%		
Inflation index (100 in 2009)	104.9	106.0	108.1	110.2		
Exchange rate 2009	10.6102	10.6102	10.6102	10.6102		
<b>Total CAPEX (in M €2009)</b>	<b>9.4</b>	<b>12.1</b>	<b>19.8</b>	<b>27.3</b>		
Main CAPEX (in M €2009)	4.3	7.9	11.7	19.9		
% Main of Total CAPEX	45.9%	65.6%	59.4%	72.8%		
Real gate-to-gate ANSP costs (in M €2009)	196.2	168.6	180.0	163.1		
Total CAPEX as % of Real gate-to-gate ANSP costs	4.8%	7.2%	11.0%	16.7%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-15.7	16.2	106.7	199.4		
Total CAPEX (in M €2009)	-1.3	1.7	9.6	17.3		
<b>Total CAPEX (in %, M €2009)</b>	<b>-12.1%</b>	<b>16.2%</b>	<b>93.8%</b>	<b>173.1%</b>		







# Annual Monitoring Report 2018

Local level view  
FAB CE



## FAB CE

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	B	B	B	
	ANSPs	For Safety Culture MO	C	D	D	D	
	ANSPs	For all other MOs	C	C	C	C	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	96%	88%	
	Runway Incursions (RIs)		100%	100%	100%	100%	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	97%	100%	
	Runway Incursions (RIs)		95%	100%	100%	100%	
	ATM Specific occurrences (ATM-S)		91%	85%	100%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

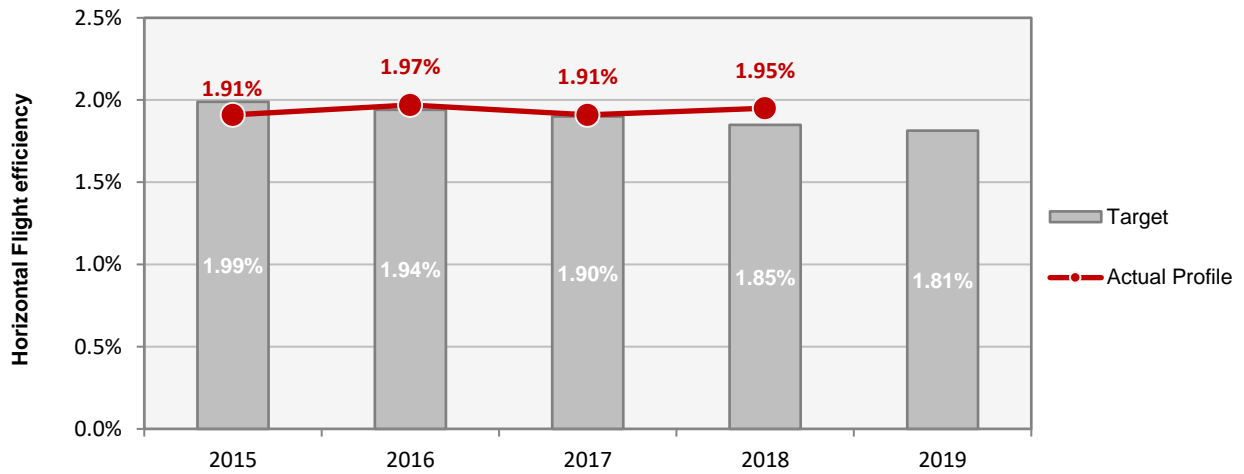
#### Observations

The lowest level in each EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. All components are at this level.

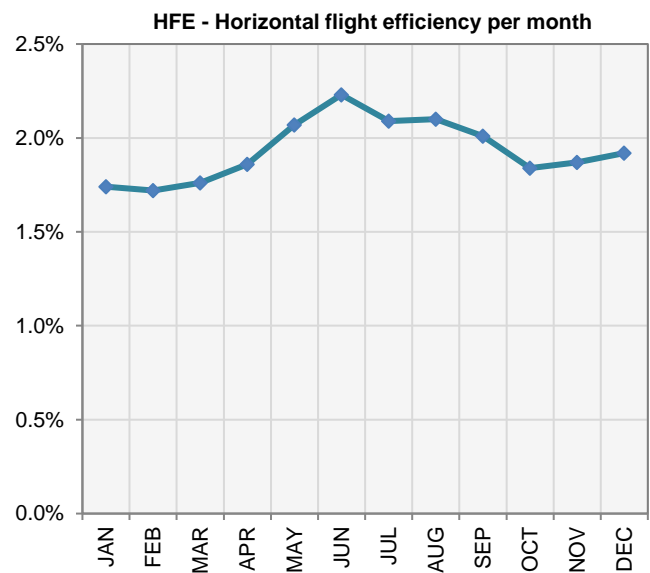
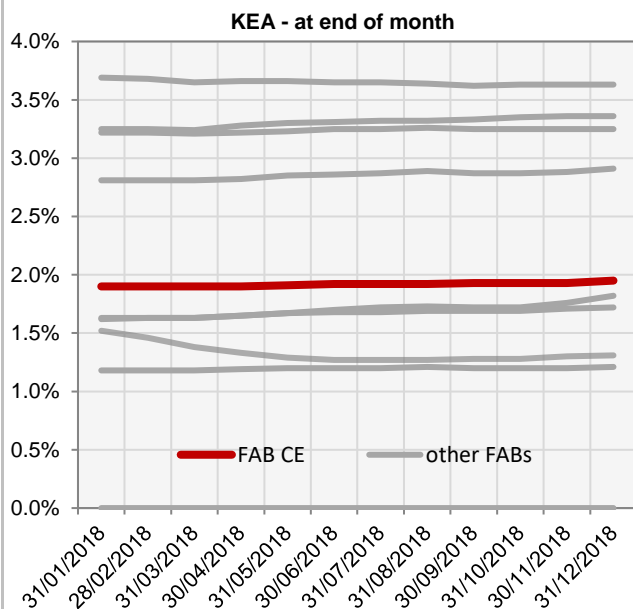
FAB CE

Monitoring of ENVIRONMENT for 2018

KEA					
	2015	2016	2017	2018	2019
FAB Target	1.99%	1.94%	1.90%	1.85%	1.81%
Actual performance	1.91%	1.97%	1.91%	1.95%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KEA (at end of month)	1.90%	1.90%	1.90%	1.90%	1.91%	1.92%	1.92%	1.92%	1.93%	1.93%	1.93%	1.95%
HFE	1.74%	1.72%	1.76%	1.86%	2.07%	2.23%	2.09%	2.10%	2.01%	1.84%	1.87%	1.92%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**FAB CE****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

Any corrective measures are applied as necessary during the review process performed annually for regular updates of the FAB CE Network Operations Plan and the FAB CE Airspace Plan. The two documents are annually updated and the 2019 issues of both documents have been approved by the FAB CE Council in May 2019. The network and sector design principles and criteria are compliant with the principles and criteria outlined in the European Route Network Improvement Plan (ERNIP) developed by EUROCONTROL.

**Observations****NM evaluation:**

Plans in line with expected European targets.

**NM proposed measures:**

Maintain current implementation plans in FABCE, including cross-border plans.

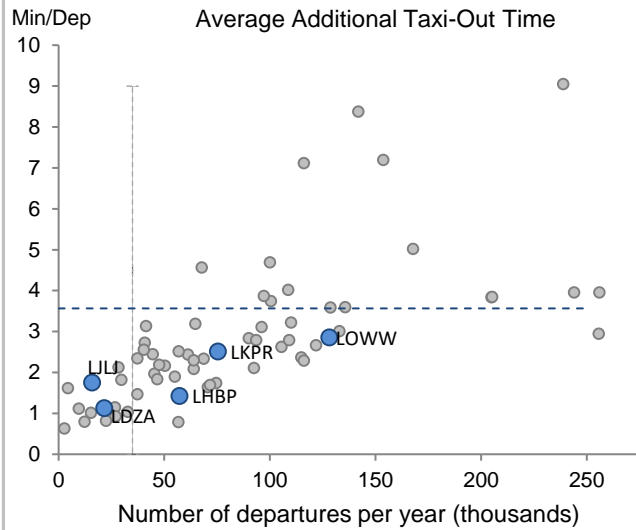
**FAB CE**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

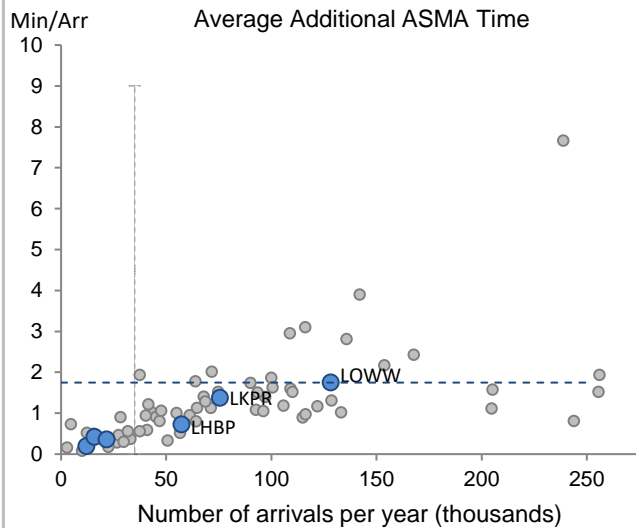
There are 16 airports in FAB CE under RP2 monitoring. Nevertheless, the monitoring of 11 of them cannot be performed due to the lack of data. Only 6 airports have properly established the Airport Operator Data Flow. The performance of these few airports that can be monitored show values in line with the European trend.

**2. Additional Taxi-Out Time**



Available data only allows for calculation of additional taxi-out times at Vienna (LOWW), Prague (LKPR), Budapest (LHBP), Zagreb (LDZA) and Ljubljana (LJLJ). All of them show performances below the RP2 average.

**3. Additional ASMA Time**



The additional ASMA times at available airports in FAB CE are commensurate with the level of traffic.

## FAB CE

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
<b>FAB Reference Value</b>	0.30	0.29	0.29	0.29	0.29	FAB total includes post operations adjustment.
<b>FAB Target</b>	0.29	0.29	0.28	0.28	0.27	
<b>Actual performance</b>	0.21	0.08	0.18	0.82		

## FAB CE assessment of capacity performance

FAB CE experienced an unprecedented growth in traffic in 2018 with +7.3% in terms of IFR movements and +8.6% in terms of SUs. The number of SUs was +12.8% higher than the level foreseen in the Performance Plan for 2018. Four states have experienced a growth of IFR movements of around +10% (Hungary 10%, Croatia 10.2%, Slovakia 10.1% and Slovenia 9.7%) while the growth was still above the high traffic growth forecast for Austria (5.6%) and the Czech Republic (7.4%). The situation was further complicated by participation of a number of the FAB CE states in the NM's 4ACC initiative (mainly Vienna and Prague ACCs helping Karlsruhe UAC). While the FAB CE ANSPs' efforts helped to reduce the delays at the network level, a fact that was appreciated by the Network Manager, the situation had an impact on the capacity in several FAB CE states. For example, the initiative brought an unforeseen shift in traffic flows and an additional increase in complexity within the FIR Prague where the complexity rose from 8.29 in 2017 (already above average) to 8.87 in 2018. Despite the ANS CR's efforts to implement measures for further increase of the capacity in 2018, this development resulted in an actual drop of the hourly capacity, as calculated by the NM. The sector complexity for Vienna ACC also rose from 7.70 in 2017 to 8.64 in 2018. In addition, a number of states continued to face weather phenomena (especially CB thunderstorms during the summer period) which resulted in high delays due to weather reasons (around 45% of the delay in FAB CE was caused by weather). NM acknowledged in the Network Operations Report 2018 that there was a higher impact of disturbances within the network (e.g. adverse weather) due to saturation of sector capacities compared to former years. Trajectory prediction decreased due to: added traffic flows, deviations due to weather, intruding aircraft from adjacent ATC units due to weather/CBs. There was a lack of Flight Plan adherence: 'creative routings' as filed in flight plans were very frequently subject to short term changes and time consuming adaptations / coordination. High traffic growth already in late spring caused an increased ATCO allocation during May and June, which resulted in partial lower availability of staff during the high season in some ACCs, notably in Vienna ACC. Limited availability and readiness of ATCO staff to compensate for staff shortfall (numerous consecutive days with CBs, high and extensive workload) had impacted the ability to provide sufficient capacity to cope with high traffic levels.

Facing the increased high traffic demand, capacity gaps in several ACCs and additional weather-caused delays, FAB CE did not meet its en-route capacity target set for 0.28 minutes and achieved 0.82 minutes. There is currently a capacity gap in all of the FAB CE ANSPs in the SES area except for Slovenia and this will further impact the performance in the region.

## Monitoring process for capacity performance

The FAB CE monitoring process is established through the FAB CE Network OPS Group (FNOGP) responsible for the development and annual maintenance of the FAB CE Network Operations Plan (FNOP), in line with the European Network Operations Plan (process coordinated and managed by the Network Manager and the Network Manager reports to the member states via the Single Sky Committee) and European Performance Scheme, satisfying FAB CE operational needs. The FNOP includes and considers ANSP strategic operational planning issues, State strategic operational planning (National Performance Plans) and contributes to the FAB CE Performance Plan and its coordination and validation.

## Application of Corrective Measures for Capacity

Any corrective measures are applied as necessary during the review process performed annually for regular updates of the FAB CE Network Operations Plan and the FAB CE Airspace Plan.

## Capacity Planning

Planned capacity enhancement measures of individual States are listed in detail in the European Network Operations Plan 2019-2024, as well as in the national LSSIPs (Chapter 2) and updated version of the FAB CE Network Operations Plan 2019-2020/24.

## Assessment of capacity performance

EUROCONTROL 7 year forecast February 2014 – FAB CE										
	2014		2015		2016		2017		2018	2019
		actual		actual		actual		actual		actual
<b>High</b>	1917		1994		2104		2201		2300	2402
<b>Base</b>	1889	1928	1942	2001	2008	2060	2067	2153	2122	2304
<b>Low</b>	1861		1889		1912		1936		1962	1991

For the first time in RP2, FAB CE did not achieve the required level of en route capacity performance to be consistent with the union-wide target of 0.5 minutes average ATFM delay per flight. The FAB CE target was 0.28 minutes per flight, whereas the actual result was 0.82 minutes, for all causes of delay.

Traffic levels for FAB CE increased by 7% on 2017 which is slightly higher than the high traffic scenario forecasted by STATFOR in 2014 when the performance plans and associated capacity plans were being determined.

In Annex I to the Annual Network Operations Report 2018, IATA commented on the overall good performance from several of ACCs within FAB CE including Prague, Zagreb, Bratislava and Ljubljana. However the airspace users noted that Vienna ACC struggled with the amount of traffic, mainly on weekends with ATC staffing being an issue.

Another representative of the airspace users, A4E, highlighted that the increase in capacity delays in Vienna ACC were a consequence of the 4ACC initiative (a collaborative effort between NM/ANSPs aimed to reduce the demand in Karlsruhe UAC of up to 500 flights per day, and to reduce the demand in Maastricht UAC by up to 100 flights a day to reduce network delays).

In the latest NOP 2019-2024 the Network Manager predicts a significant deterioration in planned capacity performance for the FAB CE in the years 2019-2022 since the previous NOP 2018-2023 published in June 2018. The forecasted delays quadruple for the four years 2019 – 2022 that is common to both NOPS.

The Network Manager highlights in particular reduced capacity plans in Hungary, Czech Republic and Austria compared to the capacity plans presented the year before. The Network Manager also highlights increased traffic growth in Slovakia.

FAB CE delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>		<b>0.33</b>	<b>0.35</b>	<b>0.37</b>	<b>0.38</b>	N/A	N/A
<b>NOP 2019 - 2024</b>		<b>1.48</b>	<b>1.51</b>	<b>1.58 – 1.83</b>			

#### En route Capacity Incentive Scheme

Annex E of the revised FAB CE performance plan, submitted in July 2015, contained details of the en route capacity incentive scheme to be implemented within FAB CE during RP2. The incentive scheme would be based upon both FAB-wide and national performance levels according to the formula: Bonus/Penalty = FAB PONDER x NATIONAL ANSP ELEMENT x 0.5% ANSP EN ROUTE REVENUE. In cases where the FAB capacity performance is better than the FAB target, then ONLY bonuses would be paid - no penalty would apply even if the local ANSP performed worse than the national target. (Vice versa, if FAB capacity performance was worse than the FAB target, then only penalties would be paid - no bonuses even if the local ANSP performed better than the national target.)

#### Result of FAB Capacity Incentive Scheme

The FAB CE reports that the actual FAB delay of 0,82 minutes per flight, instead of the FAB target of 0,28 minutes per flight, results in a FAB PONDER of 100% to be applied to the five States that failed to meet their national capacity targets, by at least the 3pp dead-band: Austria; Croatia; Czech Republic; Hungary and Slovakia. No bonus, or penalty, will be applied to Slovenia; because although Slovenia exceeded its national target, the overall FAB target was not achieved. Further details of capacity related incentives are presented in the national reports following.

#### Compliance Issues Regarding FAB Capacity Incentive Scheme

The PRB noted a compliance issue relating to the en route capacity incentive scheme proposed in the FAB CE revised performance plan, in the assessment of the RP2 FAB Performance Plans - FAB CE. The compliance issue concerned the fact that the ANSP contribution was not consistent with the FAB targets or the FAB reference value.

The FAB CE monitoring report stated that no compliance issues were addressed.

#### Update on Military dimension of the plan

No new information was provided by FAB CE.

#### Observations on Military dimension of the plan

Nil

#### Application of FUA

No new information was provided on the application of FUA within FAB CE.

#### Observations of the Application of FUA

In the annual monitoring report 2017, the PRB suggested that it could be useful for FAB CE to share information on how FUA level 3 practices in FAB CE has established procedures to avoid traffic peaks whilst still enabling military priorities when necessary. FAB CE did not provide any further information on this in the 2018 annual monitoring report.



FAB CE

Monitoring of Airports Contribution to CAPACITY for 2018

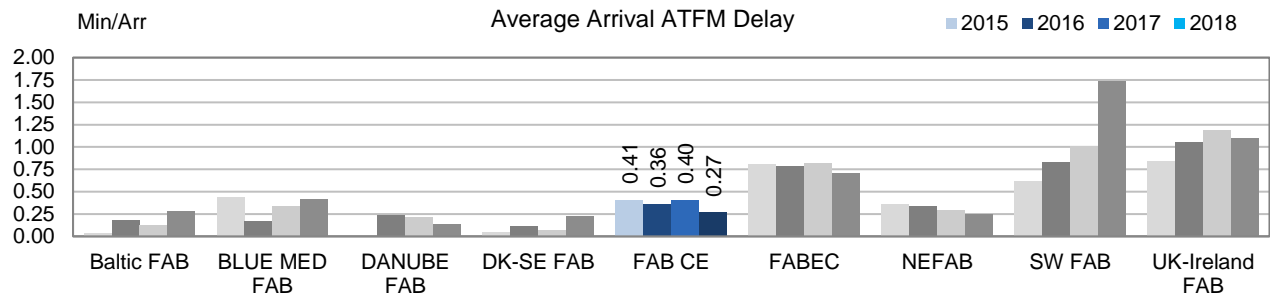
1. Overview

FAB CE contributes adequately to the airport-related ANS Capacity performance in Europe. The FAB aggregated value of arrival ATFM delay (0.27 min/arr.) shows a moderate decrease in 2018 and it still ranges well below the European average (0.78 min/arr.).

The overall performance of the airports in FAB CE is driven primarily by Vienna (LOWW) and to a lesser extent by Prague (LKPR) and Budapest (LHBP)

The ANS performance at other FAB CE airports is commensurate with the level of traffic and shows no specific capacity constraint. These airports accrue negligible arrival ATFM delay and most of them demonstrate a best-in-class compliance with ATFM slots.

2. Arrival ATFM Delay



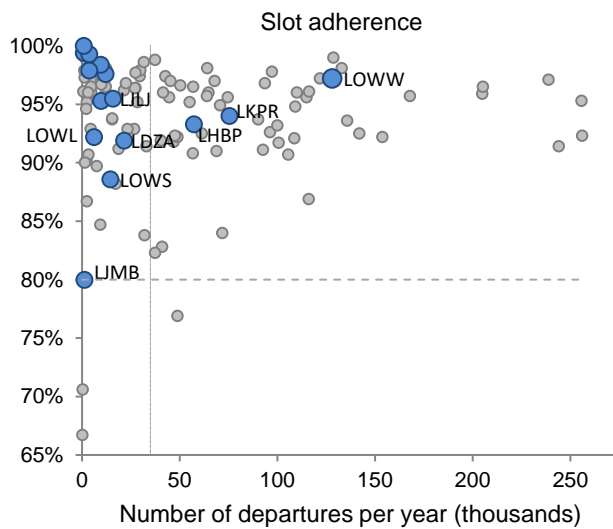
Across Europe, FAB CE achieves a good performance in terms of arrival ATFM delay of 0.27 min/arr. in 2018.

3. Arrival ATFM Delay – National Targets and Incentive Schemes

The plan sets a national target on arrival ATFM delay with a breakdown for each of the major airports per FAB CE Member State. For Austria, a challenging target has been established entailing an improvement of 0.5 minutes per arrival as of 2016.

All 6 states in the FAB have met their target on arrival ATFM delay in previous years, while in 2018 only Slovenia misses the national target.

The FAB CE performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for FAB CE Member States.



While the majority of airports in FABCE range around and above 95% compliance with ATFM slots, a couple of airports sit below the 90%. Nevertheless, the amount of regulated traffic at these airports is almost negligible and therefore this performance has no deteriorating effect on the predictability of the network.

5. ATC Pre-departure Delay

Across FAB CE the implementation of the Airport Operator Data Flow is still limited. FAB CE is encouraged to strengthen the effort to ensure the timely implementation and consistency of monitoring of pre-departure delay.



# Annual Monitoring Report 2018

## Local level view

### Austria



## AUSTRIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	67	C	C	C	C	C
<b>Austro Control</b>	91	D	E	D	D	D

Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.

Application of the severity classification of the Risk Analysis Tool (RAT)		
	RAT application (%)	
	ATM Ground	ATM Overall
Separation Minima Infringements (SMIs)	100%	100%
Runway Incursions (RIs)	100%	100%
ATM Specific Occurrences (ATM-S)		100%
<b>Source of RAT data:</b>	AustroControl	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

Just culture		
State level	Number of questions answered	
	YES	NO
Policy and its implementation	8	1
Legal/Judiciary	6	1
Occurrence reporting and Investigation	2	0
<b>TOTAL</b>	<b>16</b>	<b>2</b>

Austro Control	Number of questions answered	
	YES	NO
Policy and its implementation	13	0
Legal/Judiciary	2	1
Occurrence reporting and Investigation	6	2
<b>TOTAL</b>	<b>21</b>	<b>3</b>

Observations
All four reviewed EoSM Components/areas of the State meet the target level "C"

## AUSTRIA

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

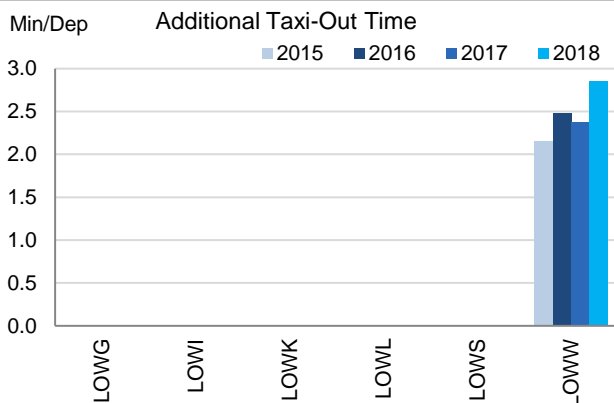
## 1. Overview

Austria identified six airports as subject to RP2 monitoring. However there is only data available from Vienna (LOWW) as the rest of airports have not yet established the Airport Operator Data Flow.

Vienna's performance is commensurate to its number of movements, which has only increased by 6% since 2015.

The rest of Austrian airports should implement the APDF for an adequate monitoring.

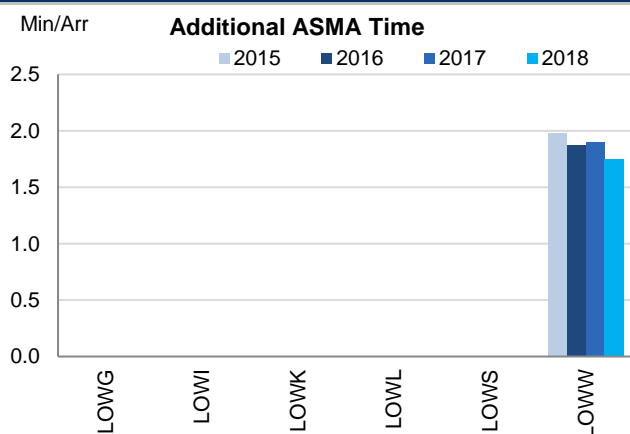
## 2. Additional Taxi-Out Time



Average additional taxi-out time at Vienna in 2018 have increased by half a minute (LOWW: 2017: 2.38 min/dep.; 2018: 2.85 min/dep.), and they remain well below the SES average of 3.57 min/dep.

The longest additional taxi-out times can be observed in February, November and December, probably related to de-icing procedures.

## 3. Additional ASMA Time



Additional times in the terminal airspace for LOWW remain below 2 min/arr. and have even further improved in 2018 (LOWW: 2017: 1.90 min/arr.; 2018: 1.75 min/arr.).

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Graz	LOWG	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Innsbruck	LOWI	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Klagenfurt	LOWK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Linz	LOWL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Salzburg	LOWS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Vienna	LOWW	2.15	2.48	2.38	2.85		1.98	1.87	1.90	1.75	

**AUSTRIA**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.21	0.21	0.20	0.19	0.19	FAB CE reports national performance for Austria according to the Vienna FIR, consistent with the FAB CE performance plan. National total includes post operations adjustment.
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.06	0.05	0.20	0.54		

**National capacity incentive scheme**

The Network Management Board (NMB) agreed to protect ACCs affected by extra traffic from 4ACC initiative (RAD or scenarios) and reassign delay to the ANSPs causing the initial capacity problem. Under this process, the Network Manager, via the post-operations adjustment process, deducted 99,838 minutes of en route ATFM delay from the total for Austria and reassigned it to Karlsruhe UAC & Maastricht UAC.

The adjusted national total for Austria of 0.54 minutes of en route delay per flight incurs a penalty for the ANSP Austro Control. The penalty is determined by a formula which considers both local and FAB performance.

FAB 'ponder' value \* 'national element' \* 0.5% of ANS en route revenue

The failure of FAB CE to meet the FAB target results in a 'ponder' value of 100%.

The failure to meet the required national target by more than 100% results in a national element of 100%.

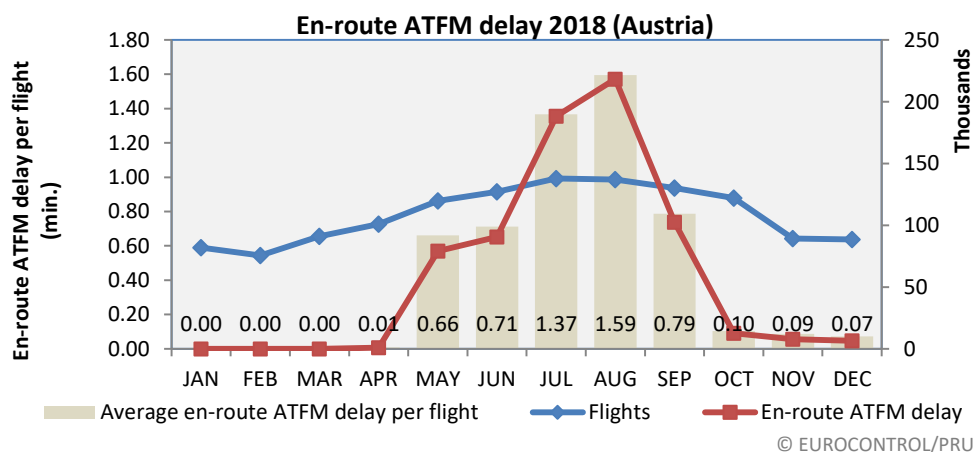
The ANS en route revenue of Austro Control in 2018 was €228,194,281.

Using the above formula, the penalty for Austro Control is calculated as €1,140,971

**Compliance issues relating to national capacity incentive scheme**

The FAB CE monitoring report states that there were no compliance issues despite the PRB previously highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Austria)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1.10	0.97	1.23	0.18	0.13	0.21	0.02	0.06	0.05	0.20	0.54

EUROCONTROL 7 year forecast February 2014 – Austria										
	2014		2015		2016		2017		2018	2019
	actual		actual		actual		actual		actual	
High	1132		1183		1242		1293		1346	1397
Base	1116	1152	1153	1168	1188	1174	1218	1232	1248	1301
Low	1099		1121		1132		1143		1157	1172

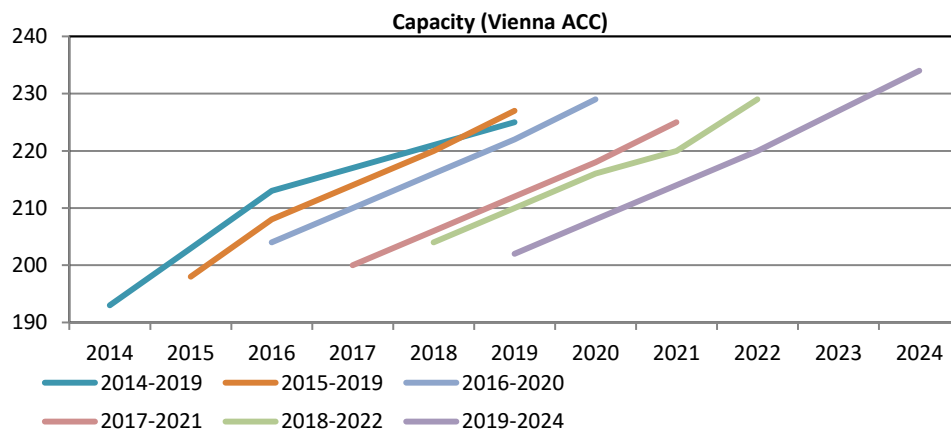
Although traffic levels grew by almost 6% on 2017 levels they remained below the high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined. The 6% increase in traffic resulted in a trebling of delay to 0.62 (including the 100k of minutes reassigned in the post operations process).

The annual monitoring report 2017 highlighted that a high proportion of delays were occurring in collapsed sectors, which generally indicates an issue with staffing problem. This trend continued in 2018 with more than 50% of delays occurring in collapsed sectors (including 28% of delays attributed to weather) and the airspace users commenting on both Vienna ACC and Karlsruhe UAC (which provides ATC in the Tyrol region) having staffing issues.

There is a dramatic increase in forecasted delay for Vienna ACC for the years 2019 to 2022 when compared to the Network Operations Plan 2018 – 2022.

Vienna ACC delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.21</b>	<b>0.20</b>	<b>0.20</b>	<b>0.19</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>1.07</b>	<b>1.07</b>	<b>1.07 – 1.08</b>			

The Network Manager reports that Vienna ACC has reduced its capacity plans compared to the plans presented in the previous year. Vienna ACC plans to provide fewer sector hours for summer 2019 than it did in summer 2018. Although the Network Manager does not specify that staffing is a reason for lack of capacity, continued effort to increase staffing levels is proposed as a NM measure to mitigate or resolve the performance gap.



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The capacity plans for Vienna ACC show continued postponement as the planned capacity for 2023 (227) is what had already been planned for 2019 in the plans from 2014.

**Planning and Effective Use of CDRs**

Not applicable since AIRAC Nov 2016, Austria has declared Free Route Airspace from GND-UNL.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
70%	74%	70%	75%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	N/A	N/A	N/A	

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.



**AUSTRIA**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

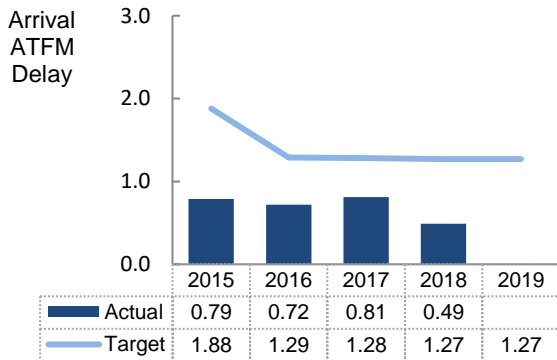
In Austria, ANS at a total of 6 airports is subject to RP2 monitoring. Traffic levels at these airports have slightly increased during RP2 (+3.7% with respect to 2015), while arrival ATFM delays are moderately lower than those in the beginning of the reference period (-38% in 2018 with respect to 2015), thanks to the reduction in 2018.

In parallel, ATFM slot adherence has significantly improved during the reference period (2015: 87%; 2018: 96%).

Austria established a national target on Arrival ATFM delay but no associated incentive scheme.

To ensure the consistent monitoring of pre-departure delay, Austria is encouraged to strengthen the level of implementation of the Airport Operator Data Flow across the airports. The flow is currently only implemented for LOWW.

**2. Arrival ATFM Delay**



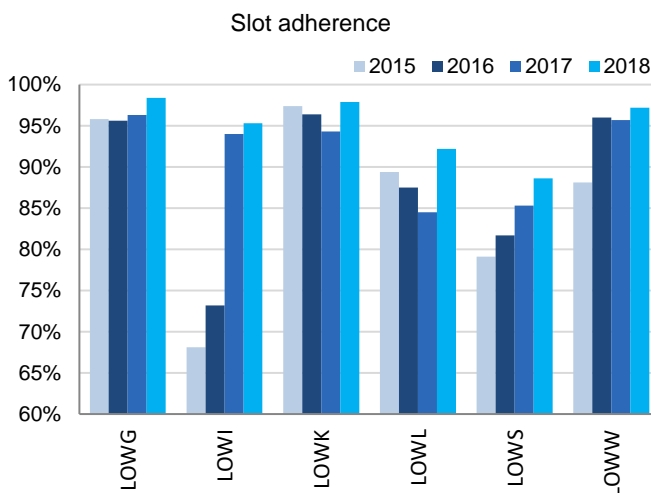
During 2018, arrival ATFM delays in Austria have significantly decreased with respect to the previous year (2017: 0.81 min/arr, 2018: 0.49 min/arr). This change is driven by an important reduction of the delays at Vienna (LOWW), where delays due to Aerodrome Capacity that took place in previous years have reduced drastically, together with a significant reduction of the weather related delays.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

The FAB CE performance plan sets a national target on arrival ATFM delay for Austria. This target was met in every year of the RP2 so far.

The performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for Austria, so no bonuses apply.

**4. ATFM Slot Adherence**



Slot adherence at all Austrian airports has increased in 2018. The most significant improvement is observed at Linz (LOWL: 2017: 84.5%; 2018: 92.2%), where the performance had been decreasing since the beginning of RP2.

These improvements have raised the compliance at national level and contributed positively to the predictability of the network.

**5. ATC Pre-departure Delay**

The Airport Operator Data Flow is currently only established for Vienna (LOWW). To ensure consistency of the reporting, Austria shall encourage and empower the respective airport operator reporting entities to implement the Airport Operator Data Flow.

The observed performance at LOWW has deteriorated in 2018 reaching 1.62 min/dep., the second highest ATC pre-departure delay in the SES area.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Graz	LOWG	0.00	0.00	0.00	0.00		95.8%	95.6%	96.3%	98.4%		n/a	n/a	n/a	n/a	
Innsbruck	LOWI	0.01	0.05	0.22	0.15		68.1%	73.2%	94.0%	95.3%		n/a	n/a	n/a	n/a	
Klagenfurt	LOWK	0.00	0.00	0.00	0.00		97.4%	96.4%	94.3%	97.9%		n/a	n/a	n/a	n/a	
Linz	LOWL	0.00	0.00	0.00	0.00		89.4%	87.5%	84.5%	92.2%		n/a	n/a	n/a	n/a	
Salzburg	LOWS	0.07	0.12	0.05	0.11		79.1%	81.7%	85.3%	88.6%		n/a	n/a	n/a	n/a	
Vienna	LOWW	1.06	0.96	1.08	0.64		88.1%	96.0%	95.7%	97.2%		1.00	1.16	1.07	1.62	

## AUSTRIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Austria ECZ represents 2.9% of the SES en-route ANS determined costs in 2018					
· ATSP: Austro Control					
· FAB: FAB CE					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
Austria: Data from RP2 Performance Plan (EC Decision 2016/599 of 15 April 2016)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	188 243 000	194 934 000	204 696 000	209 564 000	207 200 000
Inflation %	1.7%	1.7%	1.7%	1.7%	1.7%
Inflation index (100 in 2009)	114.2	116.1	118.1	120.1	122.1
Real en-route costs (EUR2009)	164 901 573	167 908 470	173 369 786	174 525 859	169 672 673
Total en-route Service Units	2 693 000	2 777 000	2 850 000	2 928 000	3 014 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>61.23</b>	<b>60.46</b>	<b>60.83</b>	<b>59.61</b>	<b>56.29</b>
Austria: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	177 369 528	185 344 157	187 301 607	210 038 747	
Inflation %	0.8%	1.0%	2.2%	2.1%	
Inflation index (100 in 2009)	113.1	114.3	116.8	119.2	
Real en-route costs (EUR2009)	156 763 660	162 189 938	160 374 611	176 143 974	
Total en-route Service Units	2 739 285	2 749 863	2 973 819	3 198 238	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>57.23</b>	<b>58.98</b>	<b>53.93</b>	<b>55.08</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-10 873 472	-9 589 843	-17 394 393	474 747	
in %	-5.8%	-4.9%	-8.5%	0.2%	
Inflation %					
in p.p.	-0.9 p.p.	-0.7 p.p.	0.5 p.p.	0.4 p.p.	
Inflation index (100 in 2009)					
in p.p.	-1.0 p.p.	-1.8 p.p.	-1.3 p.p.	-0.8 p.p.	
Real en-route costs (EUR2009)					
in value	-8 137 913	-5 718 531	-12 995 175	1 618 116	
in %	-4.9%	-3.4%	-7.5%	0.9%	
Total en-route Service Units					
in value	46 285	-27 137	123 819	270 238	
in %	1.7%	-1.0%	4.3%	9.2%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-4.01</b>	<b>-1.48</b>	<b>-6.90</b>	<b>-4.53</b>	
in %	<b>-6.5%</b>	<b>-2.5%</b>	<b>-11.3%</b>	<b>-7.6%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (55.08 €2009) is -7.6% lower than planned in the PP (59.61 €2009). This results from the combination of higher than planned TSUs (+9.2%) and slightly higher than planned en-route costs in real terms (+0.9%, or +1.6 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+9.2%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Austro Control) retaining an amount of +6.2 M€2009.					
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Austria are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are +0.2% (+0.5 M€) higher than planned. However, since the actual inflation index is lower than planned (-0.8 p.p.), actual en-route costs are +0.9% (+1.6 M€2009) above plans when expressed in real terms.					
The slightly higher than planned en-route costs in real terms are driven by Austro Control (+4.0%, or +6.0 M€2009), while the costs for the MET service provider (-21.8%, or -3.3 M€2009) and the NSA/EUROCONTROL (-9.6%, or -1.1 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +15.8 M€2009 comprising +16.9 M€2009 for pension and -1.1 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

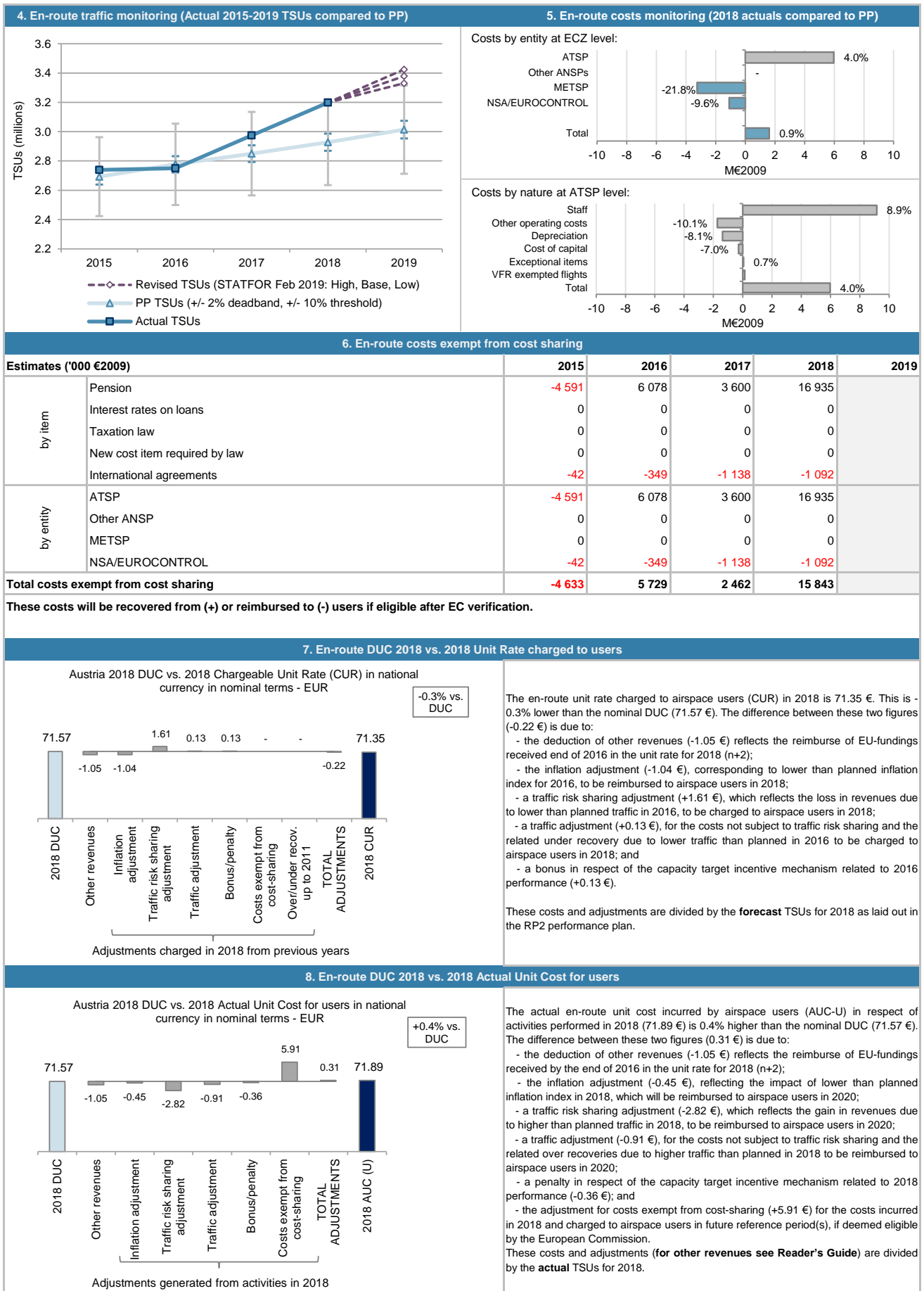
Year	Difference (%)
2015	-4.9%
2016	-3.4%
2017	-7.5%
2018	0.9%
2019	0.9%

Year	Difference (%)
2015	1.7%
2016	-1.0%
2017	4.3%
2018	9.2%
2019	9.2%

Year	En-route DUC (PP, 2015-2019)	En-route unit costs (actual)	Difference (%)
2015	61.23	57.23	-6.5%
2016	60.46	58.98	-2.5%
2017	60.83	53.93	-11.3%
2018	59.61	55.08	-7.6%
2019	56.29	56.29	0%

**AUSTRIA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



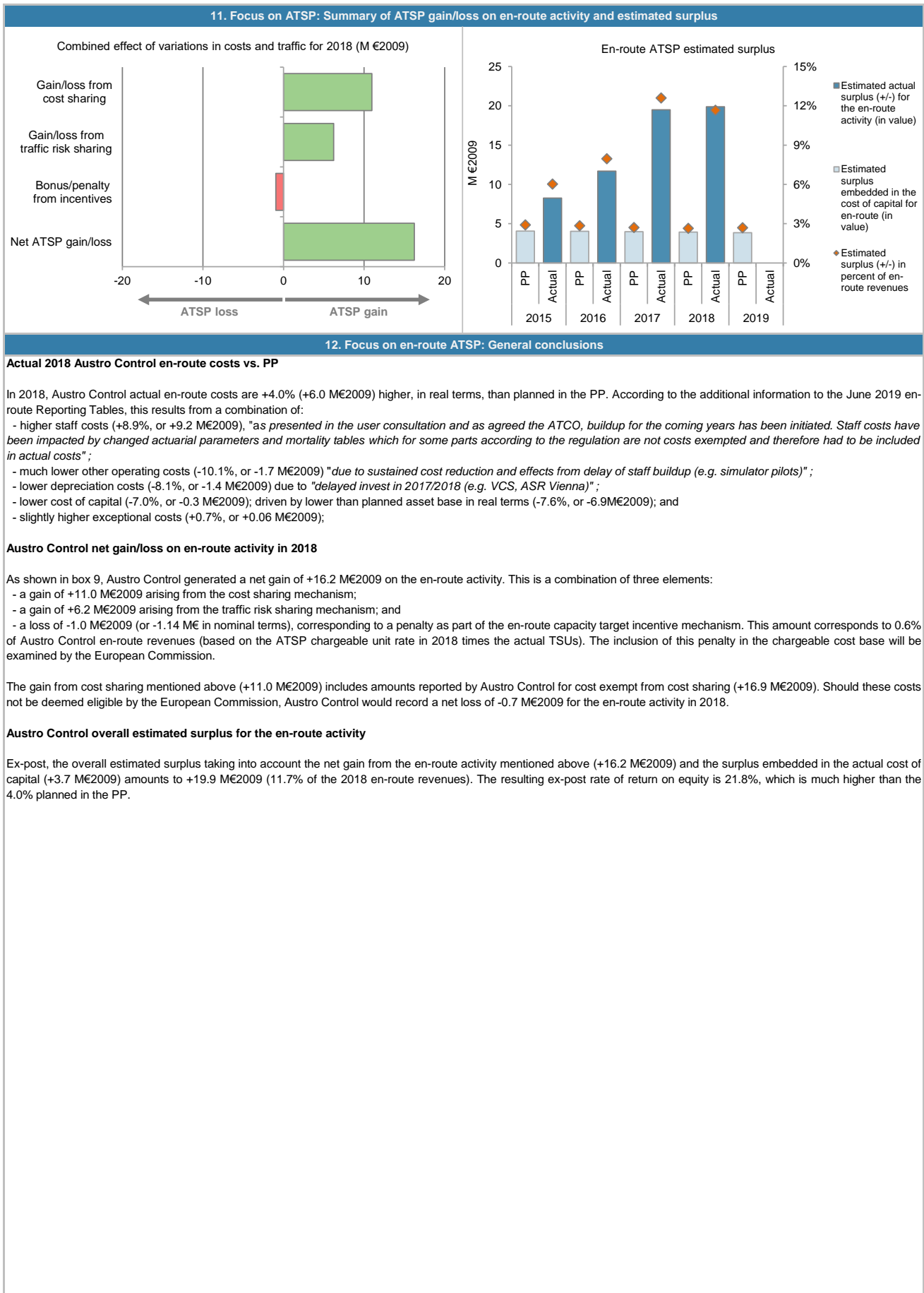
## AUSTRIA: En-route ATSP (Austro Control)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	139 252	141 598	147 184	148 168	
Actual costs for the ATSP	133 108	139 005	139 274	154 136	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	6 144	2 593	7 911	-5 968	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-4 591	6 078	3 600	16 935	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 554</b>	<b>8 671</b>	<b>11 510</b>	<b>10 967</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.7%	-1.0%	4.3%	9.2%	
Determined costs for the ATSP (PP) - based on actual inflation	140 496	143 853	148 796	149 203	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>2 415</b>	<b>-1 406</b>	<b>4 022</b>	<b>6 220</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>127</b>	<b>337</b>	<b>0</b>	<b>-957</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 095</b>	<b>7 603</b>	<b>15 533</b>	<b>16 230</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	101 595	100 801	99 772	98 292	96 669
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	101 595	100 801	99 772	98 292	96 669
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	4 064	4 032	3 991	3 932	3 867
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	4.0%	4.0%	4.0%	4.0%	4.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	4 064	4 032	3 991	3 932	3 867
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 064</b>	<b>4 032</b>	<b>3 991</b>	<b>3 932</b>	<b>3 867</b>
<b>Revenue/costs for the en-route activity</b>	<b>139 252</b>	<b>141 598</b>	<b>147 184</b>	<b>148 168</b>	<b>143 170</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>2.9%</b>	<b>2.8%</b>	<b>2.7%</b>	<b>2.7%</b>	<b>2.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>4.0%</b>	<b>4.0%</b>	<b>4.0%</b>	<b>4.0%</b>	<b>4.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	104 379	102 024	99 324	91 386	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	104 379	102 024	99 320	91 386	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	4	0	
Cost of capital pre-tax (in value)	4 175	4 081	3 973	3 655	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	4.0%	4.0%	4.0%	4.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	4 175	4 081	3 973	3 655	
Net ATSP gain(+)/loss(-) on en-route activity	4 095	7 603	15 533	16 230	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>8 270</b>	<b>11 684</b>	<b>19 506</b>	<b>19 886</b>	
<b>Revenue/costs for the en-route activity</b>	<b>137 203</b>	<b>146 608</b>	<b>154 806</b>	<b>170 366</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.0%</b>	<b>8.0%</b>	<b>12.6%</b>	<b>11.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>7.9%</b>	<b>11.5%</b>	<b>19.6%</b>	<b>21.8%</b>	

**AUSTRIA: En-route ATSP (Austro Control)**

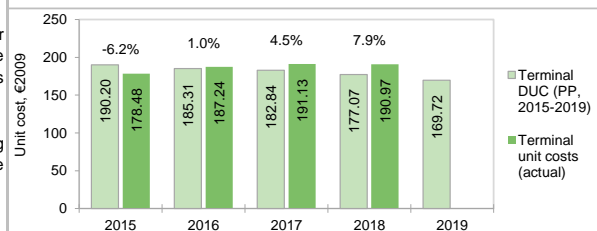
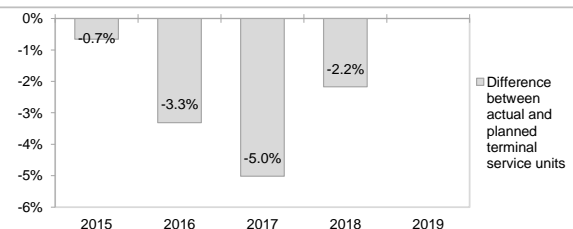
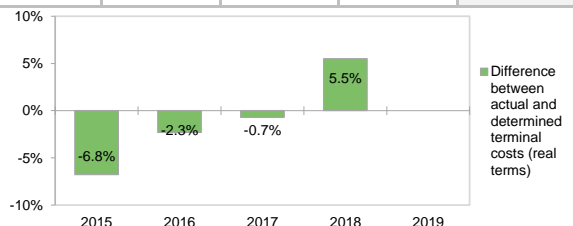
**Monitoring of en-route COST-EFFICIENCY for 2018**



## AUSTRIA: Terminal charging zone

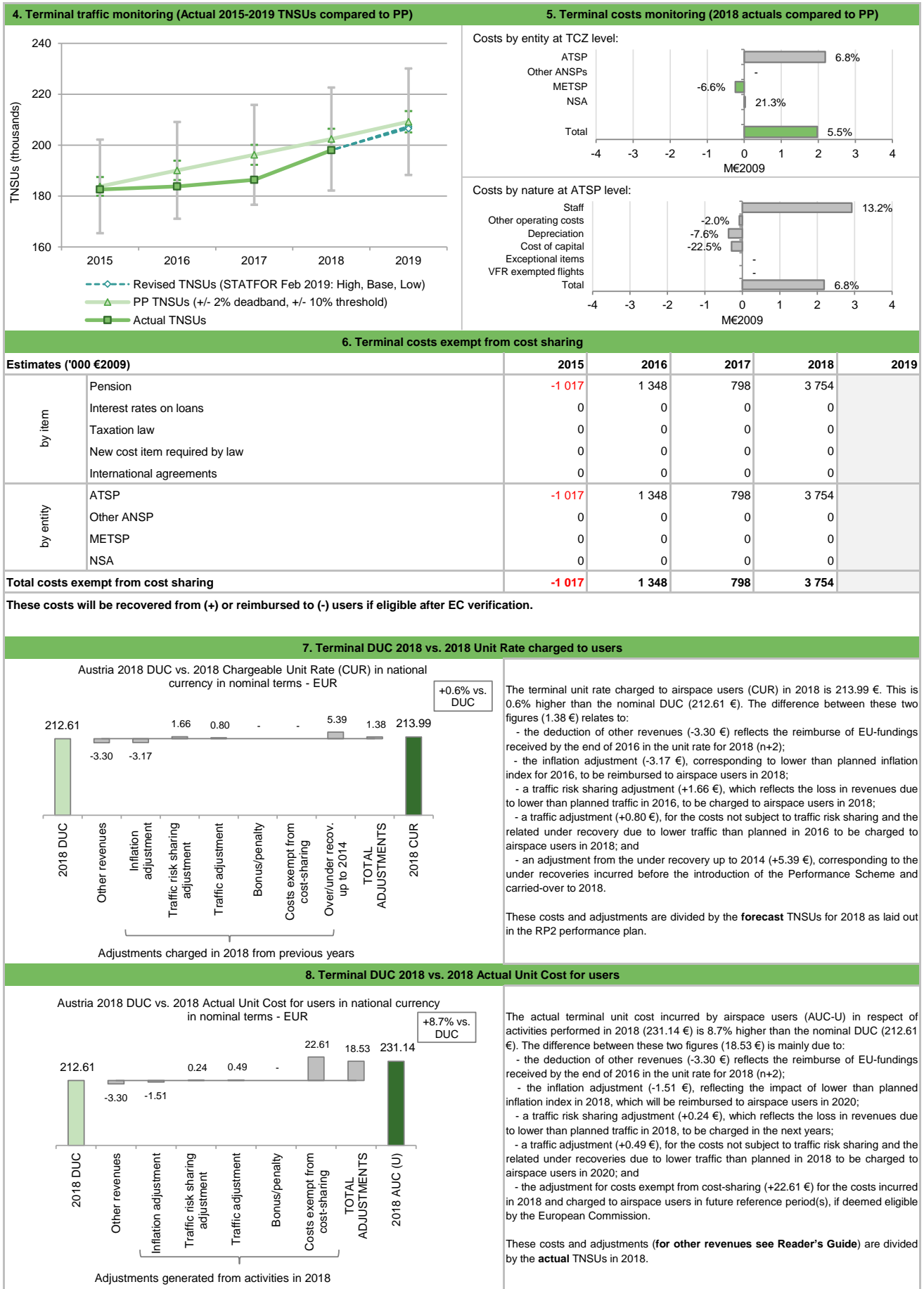
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Austria TCZ represents 3.3% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	Austro Control	· Airports with fewer than 70,000 IFRs ATMs:		5		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	6,	of which:	· Airports with more than 225,000 IFRs ATMs:	1		
2. Terminal DUC monitoring at Charging Zone level						
Austria: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	39 907 000	40 897 000	42 355 000	43 033 000	43 359 000	
Inflation %	1.7%	1.7%	1.7%	1.7%	1.7%	
Inflation index (100 in 2009)	114.2	116.1	118.1	120.1	122.1	
Real terminal costs (EUR2009)	34 958 681	35 227 065	35 873 086	35 838 079	35 505 972	
Total terminal Service Units	183 800	190 100	196 200	202 400	209 200	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>190.20</b>	<b>185.31</b>	<b>182.84</b>	<b>177.07</b>	<b>169.72</b>	
Austria: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	36 870 804	39 327 723	41 599 715	45 087 018		
Inflation %	0.8%	1.0%	2.2%	2.1%		
Inflation index (100 in 2009)	113.1	114.3	116.8	119.2		
Real terminal costs (EUR2009)	32 587 346	34 414 686	35 619 225	37 811 150		
Total terminal Service Units	182 586	183 801	186 361	197 998		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>178.48</b>	<b>187.24</b>	<b>191.13</b>	<b>190.97</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-3 036 196	-1 569 277	-755 285	2 054 018	
	in %	-7.6%	-3.8%	-1.8%	4.8%	
Inflation %	in p.p.	-0.9 p.p.	-0.7 p.p.	0.5 p.p.	0.4 p.p.	
Inflation index (100 in 2009)	in p.p.	-1.0 p.p.	-1.8 p.p.	-1.3 p.p.	-0.8 p.p.	
Real terminal costs (EUR2009)	in value	-2 371 335	-812 379	-253 861	1 973 071	
	in %	-6.8%	-2.3%	-0.7%	5.5%	
Total terminal Service Units	in value	-1 214	-6 299	-9 839	-4 402	
	in %	-0.7%	-3.3%	-5.0%	-2.2%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-11.72</b>	<b>1.93</b>	<b>8.29</b>	<b>13.90</b>	
	<b>in %</b>	<b>-6.2%</b>	<b>1.0%</b>	<b>4.5%</b>	<b>7.9%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Austria Terminal Charging Zone (TCZ) comprising 6 airports.						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (190.97 €2009) is +7.9% higher than planned in the PP (177.07 €2009). This results from the combination of slightly lower than planned TNSUs (-2.2%) and higher than planned terminal costs in real terms (+5.5%, or +2.0 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in Austria TCZ. The difference between actual and planned TNSUs (-2.2%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Austro Control) bearing a loss of -0.7 M€2009.						
According to STATFOR February 2019 base scenario, the TNSUs for Austria are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +4.8% (+2.1 M€) higher than planned. However, since the actual inflation index is lower than planned (-0.8 p.p.), actual terminal costs are +5.5% (+2.0 M€2009) above plans when expressed in real terms.						
The higher than planned terminal costs in real terms are driven by Austro Control (+6.8%, or +2.2 M€2009) and the NSA (+21.3%, or +0.03 M€2009), while the costs for the MET service provider (-6.6%, or -0.2 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of +3.8 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



**AUSTRIA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**





## AUSTRIA: Terminal ATSP (Austro Control)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	31 251	31 502	32 138	32 118	
Actual costs for the ATSP	29 324	31 110	32 252	34 305	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 928	392	-114	-2 187	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-1 017	1 348	798	3 754	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>910</b>	<b>1 740</b>	<b>684</b>	<b>1 567</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.7%	-3.3%	-5.0%	-2.2%	
Determined costs for the ATSP (PP) - based on actual inflation	31 530	32 003	32 490	32 342	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-208</b>	<b>-766</b>	<b>-944</b>	<b>-664</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>702</b>	<b>973</b>	<b>-259</b>	<b>903</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	33 945	33 378	32 714	32 167	31 629
Estimated proportion of financing through equity (in %)	100.0%	100.0%	15.4%	15.4%	15.4%
Estimated proportion of financing through equity (in value)	33 945	33 378	5 033	4 949	4 866
Estimated proportion of financing through debt (in %)	0.0%	0.0%	84.6%	84.6%	84.6%
Estimated proportion of financing through debt (in value)	0	0	27 681	27 218	26 763
Cost of capital pre-tax (in value)	679	668	1 309	1 287	1 265
Average interest on debt (in %)	0.0%	0.0%	3.4%	3.4%	3.4%
Interest on debt (in value)	0	0	941	925	910
Determined RoE pre-tax rate (in %)	2.0%	2.0%	7.3%	7.3%	7.3%
Estimated surplus embedded in the cost of capital for terminal (in value)	679	668	367	361	355
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>679</b>	<b>668</b>	<b>367</b>	<b>361</b>	<b>355</b>
<b>Revenue/costs for the terminal activity</b>	<b>31 251</b>	<b>31 502</b>	<b>32 138</b>	<b>32 118</b>	<b>31 805</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.2%</b>	<b>2.1%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>1.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>2.0%</b>	<b>2.0%</b>	<b>7.3%</b>	<b>7.3%</b>	<b>7.3%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	26 555	25 514	29 048	24 941	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	15.4%	15.4%	
Estimated proportion of financing through equity (in value)	26 555	25 514	4 469	3 837	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	84.6%	84.6%	
Estimated proportion of financing through debt (in value)	0	0	24 579	21 104	
Cost of capital pre-tax (in value)	531	510	1 162	998	
Average interest on debt (in %)	0.0%	0.0%	3.4%	3.4%	
Interest on debt (in value)	0	0	836	718	
Determined RoE pre-tax rate (in %)	2.0%	2.0%	7.3%	7.3%	
Estimated surplus embedded in the cost of capital for terminal (in value)	531	510	326	280	
Net ATSP gain(+)/loss(-) on terminal activity	702	973	-259	903	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 233</b>	<b>1 484</b>	<b>67</b>	<b>1 183</b>	
<b>Revenue/costs for the terminal activity</b>	<b>30 026</b>	<b>32 083</b>	<b>31 992</b>	<b>35 208</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>4.1%</b>	<b>4.6%</b>	<b>0.2%</b>	<b>3.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.6%</b>	<b>5.8%</b>	<b>1.5%</b>	<b>30.8%</b>	

**AUSTRIA: Terminal ATSP (Austro Control)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



**AUSTRIA: Gate-to-gate**

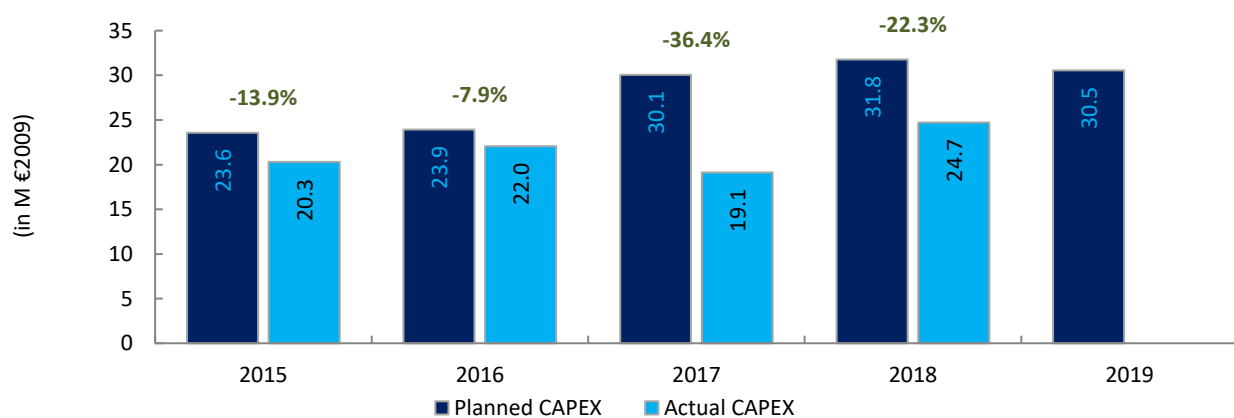
**Monitoring of gate-to-gate COST-EFFICIENCY for 2018**

1. Monitoring of gate-to-gate ANS costs																																												
<b>Austria: Data from RP2 Performance Plan</b>																																												
	<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																																							
Real en-route costs (EUR2009)	164 901 573	167 908 470	173 369 786	174 525 859	169 672 673																																							
Real terminal costs (EUR2009)	34 958 681	35 227 065	35 873 086	35 838 079	35 505 972																																							
Real gate-to-gate costs (EUR2009)	199 860 254	203 135 535	209 242 872	210 363 938	205 178 645																																							
En-route share (%)	82.5%	82.7%	82.9%	83.0%	82.7%																																							
<b>Austria: Actual data from Reporting Tables</b>																																												
	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																																							
Real en-route costs (EUR2009)	156 763 660	162 189 938	160 374 611	176 143 974																																								
Real terminal costs (EUR2009)	32 587 346	34 414 686	35 619 225	37 811 150																																								
Real gate-to-gate costs (EUR2009)	189 351 006	196 604 624	195 993 837	213 955 125																																								
En-route share (%)	82.8%	82.5%	81.8%	82.3%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																																							
Real gate-to-gate costs (EUR2009) in value	-10 509 249	-6 530 910	-13 249 036	3 591 187																																								
in %	-5.3%	-3.2%	-6.3%	1.7%																																								
En-route share in p.p.	0.3 p.p.	-0.2 p.p.	-1.0 p.p.	-0.6 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +1.7% (+3.6 M€2009) higher than planned due to higher than planned terminal costs (+5.5%, or +2.0 M€2009) and en-route costs (+0.9%, or +1.6 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (82.3%) is slightly lower than planned in the PP for 2018 (83.0%).</p> <p>For Austro Control, the estimated gate-to-gate economic surplus in 2018 amounts to 21.1 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 10.2% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td>Actual</td> <td>82.8%</td> <td>17.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>82.7%</td> <td>17.3%</td> </tr> <tr> <td>Actual</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>82.9%</td> <td>17.1%</td> </tr> <tr> <td>Actual</td> <td>81.8%</td> <td>18.2%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>83.0%</td> <td>17.0%</td> </tr> <tr> <td>Actual</td> <td>82.3%</td> <td>17.7%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>82.7%</td> <td>17.3%</td> </tr> <tr> <td>Actual</td> <td>-</td> <td>-</td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	82.5%	17.5%	Actual	82.8%	17.2%	2016	Determined	82.7%	17.3%	Actual	82.5%	17.5%	2017	Determined	82.9%	17.1%	Actual	81.8%	18.2%	2018	Determined	83.0%	17.0%	Actual	82.3%	17.7%	2019	Determined	82.7%	17.3%	Actual	-	-
Year	Type	En-route (%)	Terminal (%)																																									
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2019	Determined	82.7%	17.3%																																									
	Actual	-	-																																									
<b>3. Technical notes on en-route and terminal information reported by Austria</b>																																												

## AUSTRIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Austro Control						
FAB: FAB CE						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	26.9	27.8	35.5	38.2	37.3	165.6
Main CAPEX (in nominal M)	23.1	20.7	30.5	33.4	33.3	140.9
Inflation %	1.7%	1.7%	1.7%	1.7%	1.7%	
Inflation index (100 in 2009)	114.2	116.1	118.1	120.1	122.1	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>23.6</b>	<b>23.9</b>	<b>30.1</b>	<b>31.8</b>	<b>30.5</b>	<b>139.9</b>
Main CAPEX (in M €2009)	20.3	17.8	25.8	27.8	27.2	118.9
% Main of Total CAPEX	85.9%	74.5%	85.9%	87.4%	89.2%	85.0%
Real gate-to-gate ANSP costs (in M €2009)	170.5	173.1	179.3	180.3	175.0	878.2
Total CAPEX as % of Real gate-to-gate ANSP costs	13.8%	13.8%	16.8%	17.6%	17.5%	15.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	23.0	25.2	22.3	29.5		
Main CAPEX (in nominal M)	19.2	22.1	19.3	26.1		
Inflation %	0.8%	1.0%	2.2%	2.1%		
Inflation index (100 in 2009)	113.1	114.3	116.8	119.2		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>20.3</b>	<b>22.0</b>	<b>19.1</b>	<b>24.7</b>		
Main CAPEX (in M €2009)	17.0	19.3	16.6	21.9		
% Main of Total CAPEX	83.6%	87.7%	86.6%	88.5%		
Real gate-to-gate ANSP costs (in M €2009)	162.4	170.1	171.5	188.4		
Total CAPEX as % of Real gate-to-gate ANSP costs	12.5%	13.0%	11.1%	13.1%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-4.0	-2.6	-13.2	-8.7		
Total CAPEX (in M €2009)	-3.3	-1.9	-10.9	-7.1		
<b>Total CAPEX (in %, M €2009)</b>	<b>-13.9%</b>	<b>-7.9%</b>	<b>-36.4%</b>	<b>-22.3%</b>		



# Annual Monitoring Report 2018

## Local level view

### Croatia



## CROATIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	57	C	C	C	C	B
<b>Croatia Control</b>	87	D	D	D	C	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			n/a	n/a		
ATM Specific Occurrences (ATM-S)				100%		
<b>Source of RAT data:</b>			TAIA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			6	3		
Legal/Judiciary			5	2		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>13</b>	<b>5</b>		
<b>Croatia Control</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			12	1		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			6	2		
<b>TOTAL</b>			<b>20</b>	<b>4</b>		
Observations						
Only one question out of 36 in the EoS M Component/area of the State in Safety Culture does not meet the 2019 EoS M target level.						

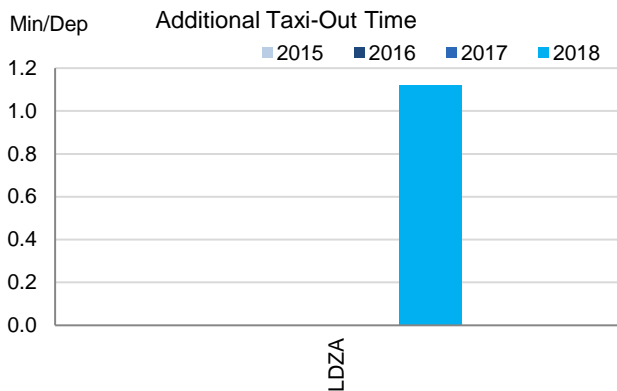
**CROATIA**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

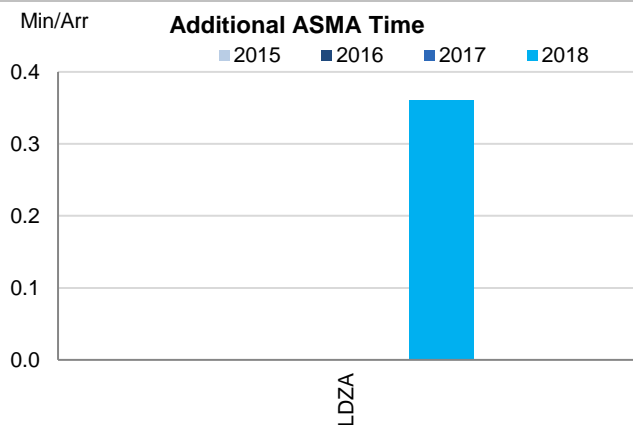
Initially 2 Croatian airports, Zagreb and Lucko, were subject to RP2 monitoring. In 2016 Lucko was removed from the list leaving only the main national airport Zagreb. Zagreb (LDZA) implemented the Airport Operator Data Flow, necessary for the proper monitoring of the terminal and airports performance, in August 2017, so 2018 is the first year that the environmental indicators can be calculated. Additional taxi-out and ASMA times at Zagreb are low and commensurate with the level of traffic.

**2. Additional Taxi-Out Time**



The additional taxi-out times in Zagreb during 2018 resulted in an annual average of 1.12 min/dep. Nevertheless, most of the year the additional times were very close to 1 min/dep., except for February (2.39 min/dep.) and March (1.58 min/dep.).

**3. Additional ASMA Time**



Additional ASMA times in Zagreb were most of the year 2018 very close to zero, and only February and November showed values above 0.50 min/arr.)

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Zagreb	LDZA	n/a	n/a	n/a	1.12		n/a	n/a	n/a	0.36	



**CROATIA**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.23	0.22	0.21	0.21	0.19	Actual national performance for Croatia according to the Zagreb FIR, consistent with the FAB CE performance plan. National total includes post operations adjustment.
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.54	0.04	0.12	0.60		

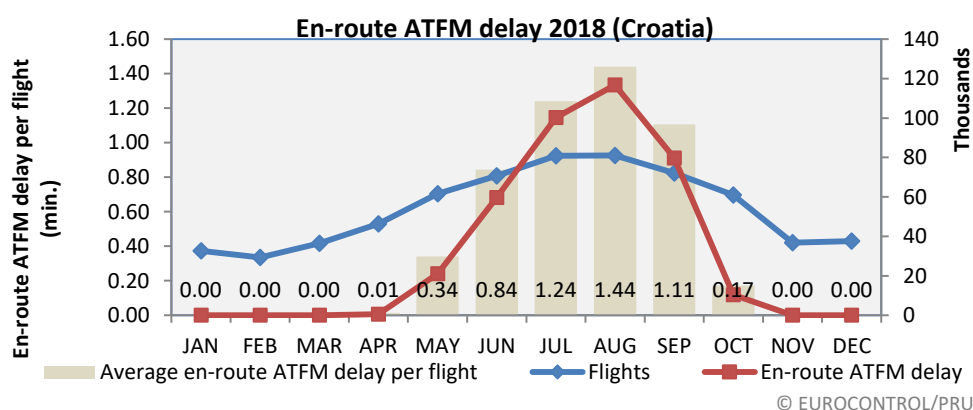
**National capacity incentive scheme**

FAB CE missed its target by more than +100% which results in a 'ponder' value of 100%. Croatia Control missed its target by more than +100% which results in a national element of 100%. The en-route ANS revenue of Croatia Control in 2018 was 610,221,743 HRK (excluding exempted flights). The applied formula is 100% x 100% x 0.5% x en-route revenue which gives the penalty: 3,051,109 HRK.

**Compliance issues relating to national capacity incentive scheme**

The FAB CE monitoring report states that there were no compliance issues despite the PRB highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Croatia)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1.96	0.67	1.03	0.52	0.26	0.09	0.31	0.54	0.04	0.12	0.60

EUROCONTROL 7 year forecast February 2014 – Croatia										
	2014		2015		2016		2017		2018	2019
	actual		actual		actual		actual		actual	
High	519		544		573		599		625	654
Base	511	520	530	535	548	540	565	587	580	647
Low	503		515		522		530		538	548

Traffic levels grew by just over 10% on 2017 levels to above the high traffic scenario for 2018 forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined.

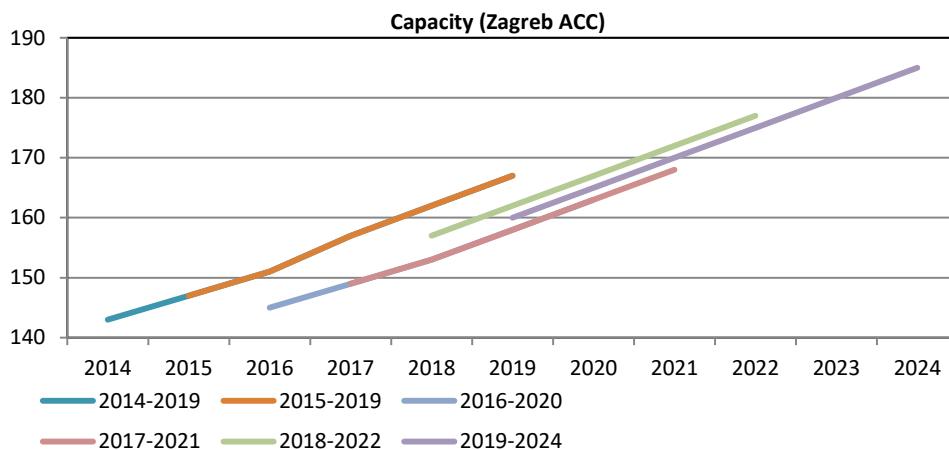
The 10% increase in traffic saw five times as many delays in 2018 as there were in 2017. 54% of delays were attributed to ATC capacity and 43% attributed to adverse weather 2% attributed to staffing. However, 42% of all en route delays occurred in collapsed sectors which would indicate an issue with availability of staff.

Staff shortages was flagged in the NSA monitoring report as being one of the main reasons for regulations in Croatia, although this is not apparent from the coding of the ATFM regulations.

The airspace users commented on the good overall performance from Zagreb ACC.

The Network Operations Plan shows significantly higher delays in Croatia for the years 2019 – 2022 than were previously forecast in NOP 2018-2022. Although traffic levels are expected to increase, the planned sector opening hours are the same for 2019 as they were for 2018. This will most likely lead to significant delays.

Zagreb ACC delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.24</b>	<b>0.26</b>	<b>0.25</b>	<b>0.23</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.49</b>	<b>0.44</b>	<b>0.42 – 0.43</b>			



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Zagreb ACC continues to plan additional capacity year on year.

**Planning and Effective Use of CDRs**

Not applicable due to no CDRs in Croatian airspace.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
97%	86%	90%	89%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
<1%	<1%	1%	<2%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
100%	100%	100%	96%	

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## CROATIA

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

In Croatia, as of 2016 only ANS at Zagreb (LDZA) are subject to RP2 monitoring, where traffic levels have significantly increased during RP2 (+12.9% with respect to 2015).

In terms of arrival ATFM delays, values have remained similar to those in the beginning of the reference period and ATFM slot adherence has improved.

Croatia has established a national target on arrival ATFM delay that was fully met in every year of RP2 so far.

Zagreb implemented the Airport Operator Data Flow, necessary for the proper monitoring of the terminal and airports performance, in August 2017. This allows for the first time the annual monitoring of the ATC pre-departure delay in 2018.

## 2. Arrival ATFM Delay

Arrival ATFM Delay

1.0  
0.5  
0.0

	2015	2016	2017	2018	2019
Actual	0.01	0.00	0.00	0.00	
Target	0.05	0.05	0.05	0.05	0.05

Croatia has established a national target on arrival ATFM delay of 0.05 min/arr. for the whole reference period.

The achieved performance remained stable with zero arrival ATFM delay in 2016, 2017 and 2018, demonstrating the absence of capacity constraints at LDZA.

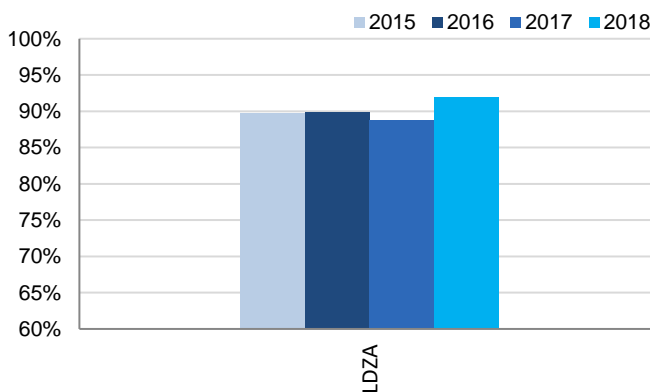
The national target is fully met.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The FAB CE performance plan sets a national target on arrival ATFM delay for Croatia but no associated incentive scheme, so although the national target is met, no bonus applies.

## 4. ATFM Slot Adherence

Slot adherence



The adherence to ATFM slots at Zagreb has improved in 2017 and now sits above 90%

## 5. ATC Pre-departure Delay

The accrued level of ATC pre-departure delay in Zagreb during is very low in line with the lack of capacity constraints.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Zagreb	LDZA	0.01	0.00	0.00	0.00		89.7%	89.9%	88.7%	91.9%		n/a	n/a	n/a	0.09	

## CROATIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Croatia ECZ represents 1.3% of the SES en-route ANS determined costs in 2018					
· ATSP: Croatia Control					
· FAB: FAB CE					
· National currency: HRK Exchange rate 2009: 1 EUR = 7.33804 HRK					
2. En-route DUC monitoring at Charging Zone level					
Croatia: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal HRK)	670 066 531	687 516 987	691 440 691	687 394 177	674 346 800
Inflation %	0.2%	1.0%	1.5%	2.5%	2.5%
Inflation index (100 in 2009)	109.2	110.4	112.0	114.8	117.7
Real en-route costs (HRK2009)	613 414 184	622 991 131	617 287 272	598 707 050	573 017 597
Total en-route Service Units	1 763 000	1 783 000	1 808 000	1 863 185	1 926 787
<b>Real en-route unit cost per Service Unit (HRK2009)</b>	<b>347.94</b>	<b>349.41</b>	<b>341.42</b>	<b>321.34</b>	<b>297.40</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>47.42</b>	<b>47.62</b>	<b>46.53</b>	<b>43.79</b>	<b>40.53</b>
Croatia: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal HRK)	644 631 574	645 102 631	654 094 149	671 356 104	
Inflation %	-0.3%	-0.6%	1.3%	1.6%	
Inflation index (100 in 2009)	109.3	108.6	110.0	111.8	
Real en-route costs (HRK2009)	589 828 471	593 822 416	594 372 343	600 450 986	
Total en-route Service Units	1 790 210	1 787 992	1 799 166	1 993 898	
<b>Real en-route unit cost per Service Unit (HRK2009)</b>	<b>329.47</b>	<b>332.12</b>	<b>330.36</b>	<b>301.14</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>44.90</b>	<b>45.26</b>	<b>45.02</b>	<b>41.04</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal HRK)	-25 434 957	-42 414 356	-37 346 542	-16 038 073	
in value					
in %	-3.8%	-6.2%	-5.4%	-2.3%	
Inflation %	-0.5 p.p.	-1.6 p.p.	-0.2 p.p.	-0.9 p.p.	
in p.p.					
Inflation index (100 in 2009)	0.1 p.p.	-1.7 p.p.	-2.0 p.p.	-3.0 p.p.	
in p.p.					
Real en-route costs (HRK2009)	-23 585 713	-29 168 716	-22 914 930	1 743 936	
in value					
in %	-3.8%	-4.7%	-3.7%	0.3%	
Total en-route Service Units	27 210	4 992	-8 834	130 713	
in value					
in %	1.5%	0.3%	-0.5%	7.0%	
<b>Real en-route unit cost per Service Unit (HRK2009)</b>	<b>-18.46</b>	<b>-17.29</b>	<b>-11.06</b>	<b>-20.19</b>	
in value					
in %	-5.3%	-4.9%	-3.2%	-6.3%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>-2.52</b>	<b>-2.36</b>	<b>-1.51</b>	<b>-2.75</b>	
in value					
in %	-5.3%	-4.9%	-3.2%	-6.3%	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (41.04 €2009) is -6.3% lower than planned in the PP (43.79 €2009). This results from the combination of higher than planned TSUs (+7.0%) while en-route costs remained stable in real terms (+0.3%).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+7.0%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Croatia Control) retaining an amount of +2.6 M€2009.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Croatia are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -2.3% (-16.0 MHRK) lower than planned. However, since the actual inflation index is also lower than planned (-3.0 p.p.), actual en-route costs are close to the plan when expressed in real terms i.e. +0.3% (+0.2 M€2009).					
The slightly higher than planned en-route costs in real terms are driven by Croatia Control (+1.0%, or +0.8 M€2009), while the costs for the NSA/EUROCONTROL are lower than planned (8.6%, or -0.5 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.4 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

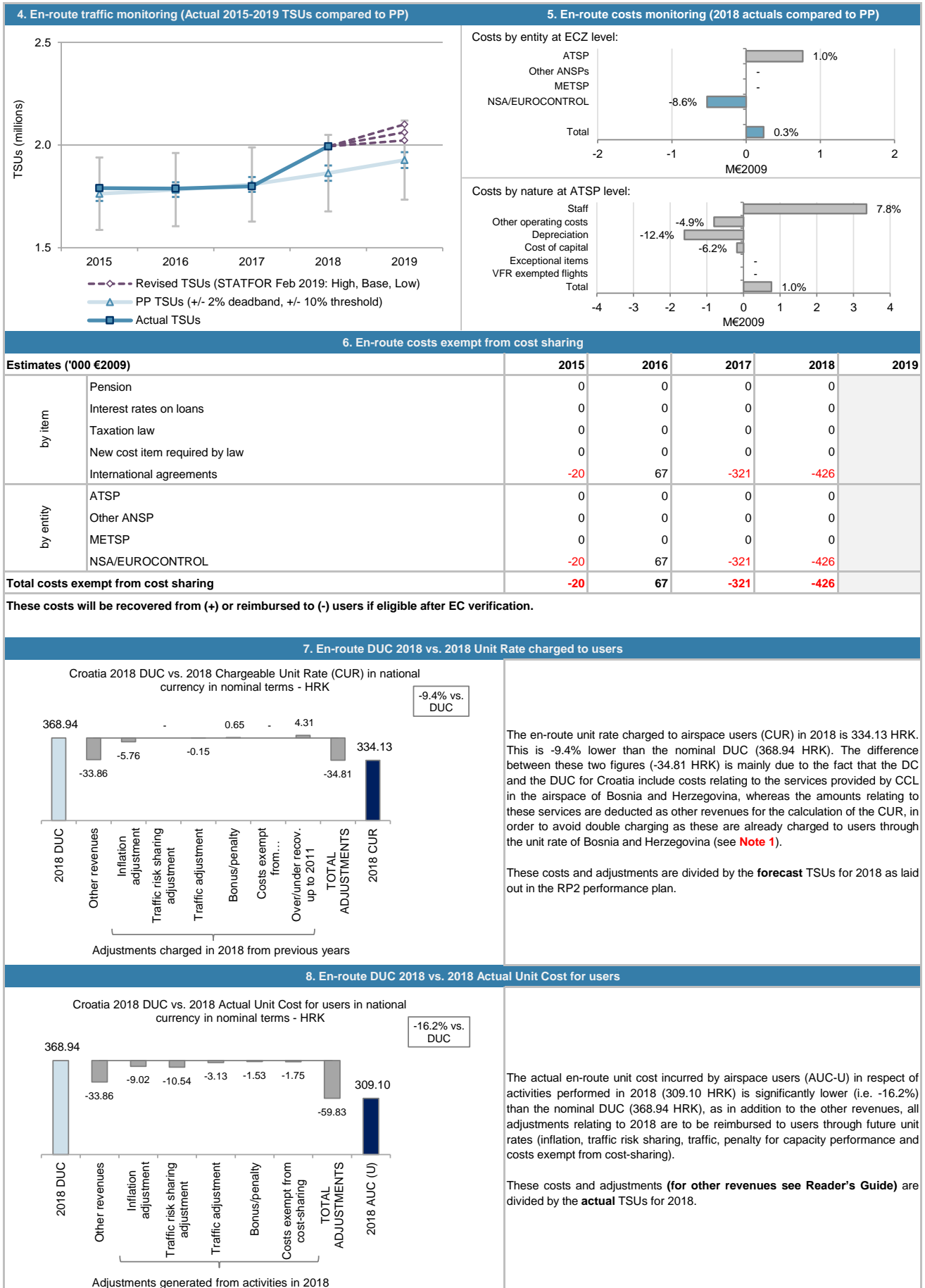
Year	Difference (%)
2015	-3.8%
2016	-4.7%
2017	-3.7%
2018	0.3%
2019	0.3%

Year	Difference (%)
2015	1.5%
2016	0.3%
2017	-0.5%
2018	7.0%
2019	7.0%

Year	En-route DUC (PP, €2009)	En-route unit costs (actual, €2009)	Difference (%)
2015	47.42	44.90	-5.3%
2016	47.62	45.26	-4.9%
2017	46.53	45.02	-3.2%
2018	43.79	41.04	-6.3%
2019	40.53	40.53	0%

CROATIA: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



## CROATIA: En-route ATSP (Croatia Control)

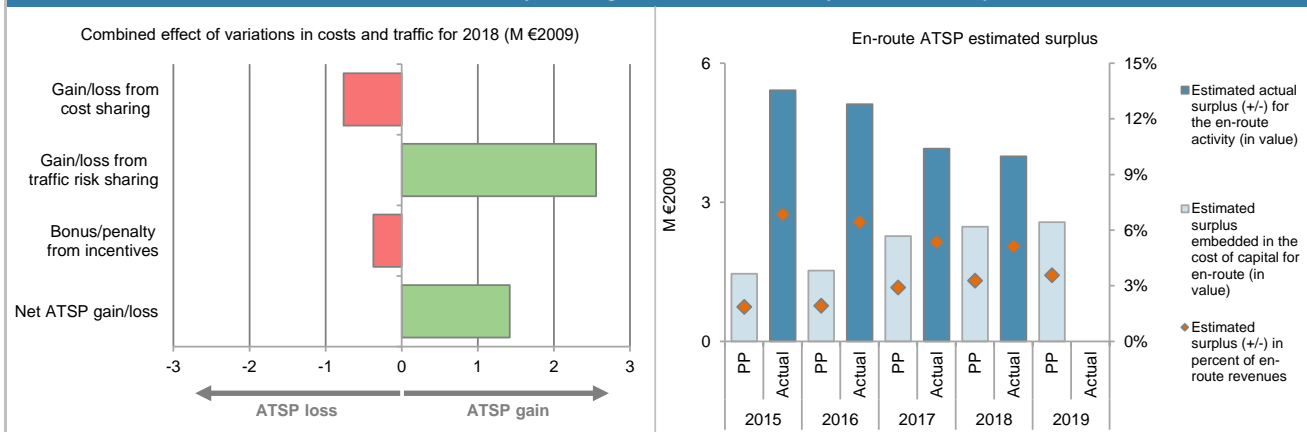
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	77 773	78 951	77 953	75 442	
Actual costs for the ATSP	74 864	75 529	75 535	76 205	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	2 909	3 422	2 418	-763	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>2 909</b>	<b>3 422</b>	<b>2 418</b>	<b>-763</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.5%	0.3%	-0.5%	7.0%	
Determined costs for the ATSP (PP) - based on actual inflation	73 265	75 582	74 758	72 934	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 131</b>	<b>212</b>	<b>-365</b>	<b>2 556</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>152</b>	<b>38</b>	<b>-372</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 040</b>	<b>3 785</b>	<b>2 091</b>	<b>1 421</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	73 705	69 855	64 242	57 466	51 076
Estimated proportion of financing through equity (in %)	57.7%	61.9%	66.8%	71.3%	76.4%
Estimated proportion of financing through equity (in value)	42 525	43 240	42 916	40 974	39 023
Estimated proportion of financing through debt (in %)	42.3%	38.1%	33.2%	28.7%	23.6%
Estimated proportion of financing through debt (in value)	31 180	26 614	21 325	16 492	12 053
Cost of capital pre-tax (in value)	2 185	2 148	2 768	2 860	2 852
Average interest on debt (in %)	2.3%	2.3%	2.3%	2.3%	2.3%
Interest on debt (in value)	727	620	497	384	281
Determined RoE pre-tax rate (in %)	3.4%	3.5%	5.3%	6.0%	6.6%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 458	1 528	2 271	2 476	2 572
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 458</b>	<b>1 528</b>	<b>2 271</b>	<b>2 476</b>	<b>2 572</b>
<b>Revenue/costs for the en-route activity</b>	<b>77 773</b>	<b>78 951</b>	<b>77 953</b>	<b>75 442</b>	<b>71 962</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>1.9%</b>	<b>1.9%</b>	<b>2.9%</b>	<b>3.3%</b>	<b>3.6%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>3.4%</b>	<b>3.5%</b>	<b>5.3%</b>	<b>6.0%</b>	<b>6.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	66 166	58 867	55 072	55 370	
Estimated proportion of financing through equity (in %)	60.6%	64.0%	70.9%	76.8%	
Estimated proportion of financing through equity (in value)	40 097	37 658	39 055	42 523	
Estimated proportion of financing through debt (in %)	39.4%	36.0%	29.1%	23.2%	
Estimated proportion of financing through debt (in value)	26 069	21 209	16 018	12 847	
Cost of capital pre-tax (in value)	1 733	1 595	2 227	2 683	
Average interest on debt (in %)	1.4%	1.2%	1.0%	0.9%	
Interest on debt (in value)	359	264	161	113	
Determined RoE pre-tax rate (in %)	3.4%	3.5%	5.3%	6.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	1 375	1 331	2 067	2 570	
Net ATSP gain(+)/loss(-) on en-route activity	4 040	3 785	2 091	1 421	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>5 415</b>	<b>5 116</b>	<b>4 158</b>	<b>3 991</b>	
<b>Revenue/costs for the en-route activity</b>	<b>78 904</b>	<b>79 314</b>	<b>77 626</b>	<b>77 626</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.9%</b>	<b>6.5%</b>	<b>5.4%</b>	<b>5.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>13.5%</b>	<b>13.6%</b>	<b>10.6%</b>	<b>9.4%</b>	

## CROATIA: En-route ATSP (Croatia Control)

## Monitoring of en-route COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on en-route activity and estimated surplus



## 12. Focus on en-route ATSP: General conclusions

## Actual 2018 Croatia Control en-route costs vs. PP

In 2018, Croatia Control actual en-route costs are +1.0% (+0.8 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- higher staff costs (+7.8%, or +3.4 M€2009), "as a result of accommodating a significantly higher YoY traffic demand than expected for RP2. In addition to this, 2018 indirect costs were also affected by substantially intensified investment activities which recorded a RP2 historical highest (realised was +46% compared to determined 2018 PP)";
- lower other operating costs (-4.9%, or -0.8 M€2009), "due to savings realised in external services consumed (based on the 2016/2017 favourable outcomes of the price down push associated with the extensive public procurement processes undertaken), further due to absence of significant additional (chargeable) provisions following the previously created funds in prior periods which proved substantially adequate for the future business risk reflected in 2018A and due to decreased level of short term asset value impairment.";
- much lower depreciation costs (-12.4%, or -1.6 M€2009), as a result of the "CAPEX gap recorded in the beginning of RP2 together with recorded combination of asset structure and actually applied depreciation rates mix"; and,
- lower cost of capital (-6.2%, or -0.2 M€2009), "for two reasons:
  - 1) actual CoD% was lower than planned and
  - 2) CAPEX gap recorded in the beginning of RP2 and excess RP2 traffic materialised in cash liquidity, resulted in realised capital employed value in 2018A still lower than planned."

## Croatia Control net gain/loss on en-route activity in 2018

As shown in box 9, Croatia Control generated a net gain of +1.4 M€2009 on the en-route activity. This is a combination of three elements:

- a loss of -0.8 M€2009 arising from the cost sharing mechanism;
- a gain of +2.6 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of -0.4 M€2009 (or -3.05 MHRK in nominal terms), corresponding to a penalty as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.5% of Croatia Control en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

## Croatia Control overall estimated surplus for the en-route activity

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+1.4 M€2009) and the surplus embedded in the actual cost of capital (+2.6 M€2009) amounts to +4.0 M€2009 (5.1% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 9.4%, which is higher than the 6.0% planned in the PP 9.4%, comprises:

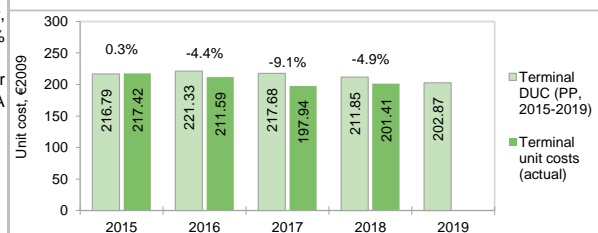
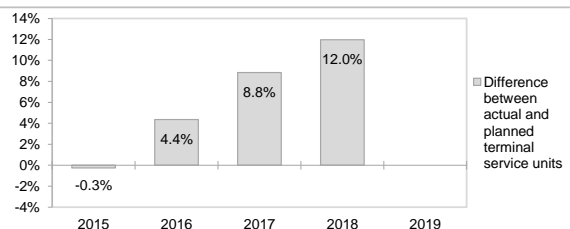
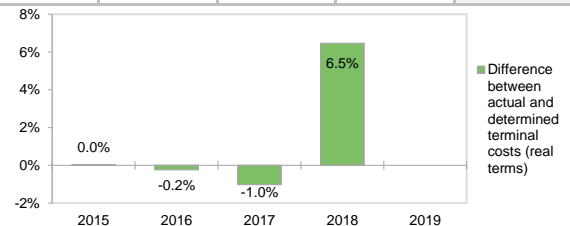
- Actual RoE of 6.0% realized according to approved RP2 PP; and the remaining 3.4% additional 2018 actual surplus is mainly due to application of the traffic risk sharing mechanism (EU No 391/2013) given the significantly traffic increase compared to the planned.

Further, Croatia did not plan neither did charge eligible RoE% neither CoC% during RP2, which implied lower rates (see note 2). Should this have not been the case, 2018 Actual estimated surplus would have been less dynamic compared to the the planned.

## CROATIA: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

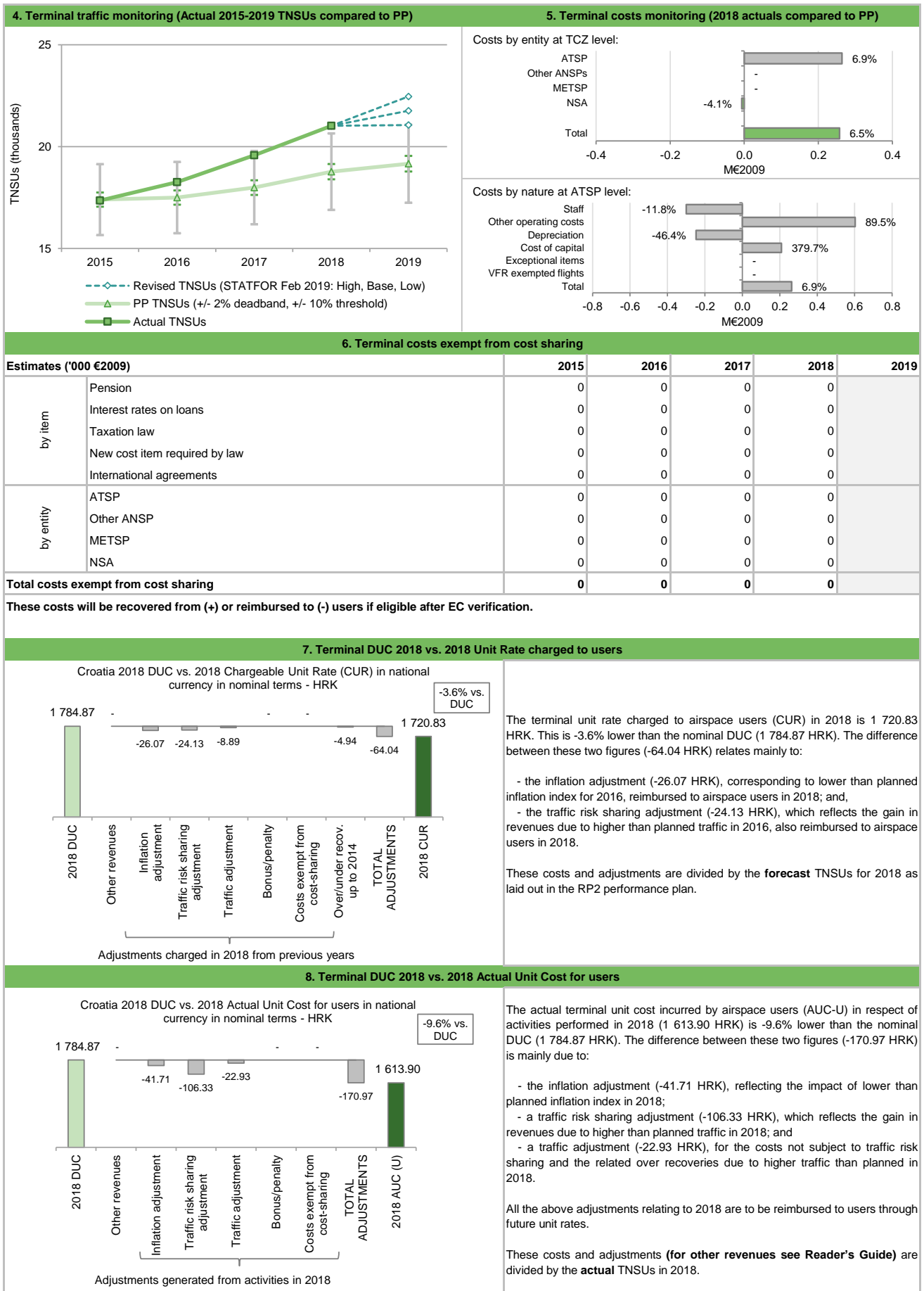
1. Contextual economic information: terminal air navigation services						
· Croatia TCZ represents 0.4% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	Croatia Control	· Airports with fewer than 70,000 IFRs ATMs:		1		
· National currency:	HRK	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	1,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Croatia: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal HRK)	30 236 645	31 366 706	32 186 136	33 503 704	33 569 846	
Inflation %	0.2%	1.0%	1.5%	2.5%	2.5%	
Inflation index (100 in 2009)	109.2	110.4	112.0	114.8	117.7	
Real terminal costs (HRK2009)	27 680 217	28 422 832	28 734 340	29 181 079	28 525 549	
Total terminal Service Units	17 400	17 500	17 989	18 771	19 162	
<b>Real terminal unit cost per Service Unit (HRK2009)</b>	<b>1 590.82</b>	<b>1 624.16</b>	<b>1 597.34</b>	<b>1 554.59</b>	<b>1 488.65</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>216.79</b>	<b>221.33</b>	<b>217.68</b>	<b>211.85</b>	<b>202.87</b>	
Croatia: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal HRK)	30 261 203	30 803 249	31 297 535	34 735 536		
Inflation %	-0.3%	-0.6%	1.3%	1.6%		
Inflation index (100 in 2009)	109.3	108.6	110.0	111.8		
Real terminal costs (HRK2009)	27 688 558	28 354 651	28 439 926	31 066 950		
Total terminal Service Units	17 355	18 262	19 580	21 020		
<b>Real terminal unit cost per Service Unit (HRK2009)</b>	<b>1 595.42</b>	<b>1 552.65</b>	<b>1 452.49</b>	<b>1 477.97</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>217.42</b>	<b>211.59</b>	<b>197.94</b>	<b>201.41</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal HRK)	in value	24 557	-563 457	-888 600	1 231 832	
	in %	0.1%	-1.8%	-2.8%	3.7%	
Inflation %	in p.p.	-0.5 p.p.	-1.6 p.p.	-0.2 p.p.	-0.9 p.p.	
Inflation index (100 in 2009)	in p.p.	0.1 p.p.	-1.7 p.p.	-2.0 p.p.	-3.0 p.p.	
Real terminal costs (HRK2009)	in value	8 341	-68 181	-294 414	1 885 872	
	in %	0.0%	-0.2%	-1.0%	6.5%	
Total terminal Service Units	in value	-45	762	1 591	2 249	
	in %	-0.3%	4.4%	8.8%	12.0%	
<b>Real terminal unit cost per Service Unit (HRK2009)</b>	in value	<b>4.61</b>	<b>-71.51</b>	<b>-144.85</b>	<b>-76.62</b>	
	in %	<b>0.3%</b>	<b>-4.4%</b>	<b>-9.1%</b>	<b>-4.9%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>0.63</b>	<b>-9.75</b>	<b>-19.74</b>	<b>-10.44</b>	
	in %	<b>0.3%</b>	<b>-4.4%</b>	<b>-9.1%</b>	<b>-4.9%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Croatia Terminal Charging zone comprising Zagreb/Pleso airport (including Zagreb/Lucko airfield).						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (201.41 €2009) is -4.9% lower than planned in the PP (211.85 €2009). This results from the combination of much higher than planned TNSUs (+12.0%) and higher than planned terminal costs in real terms (+6.5%, or +0.3 ME2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in Croatia TCZ. The difference between actual and planned TNSUs (+12.0%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Croatia Control) retaining an amount of +0.2 ME2009.						
According to STATFOR February 2019 base scenario, the TNSUs for Croatia are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +3.7% (+1.2 MHRK) higher than planned. However, since the actual inflation index is lower than planned (-3.0 p.p.), actual terminal costs are +6.5% (+0.3 ME2009) above plans when expressed in real terms.						
The higher than planned terminal costs in real terms are driven by Croatia Control (+6.9%, or +0.3 ME2009), while the costs for the NSA are lower than planned (-4.1%, or -0.01 ME2009). A detailed analysis at ATSP level is provided in box 12.						
There are no costs exempt from cost-sharing reported.						





**CROATIA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



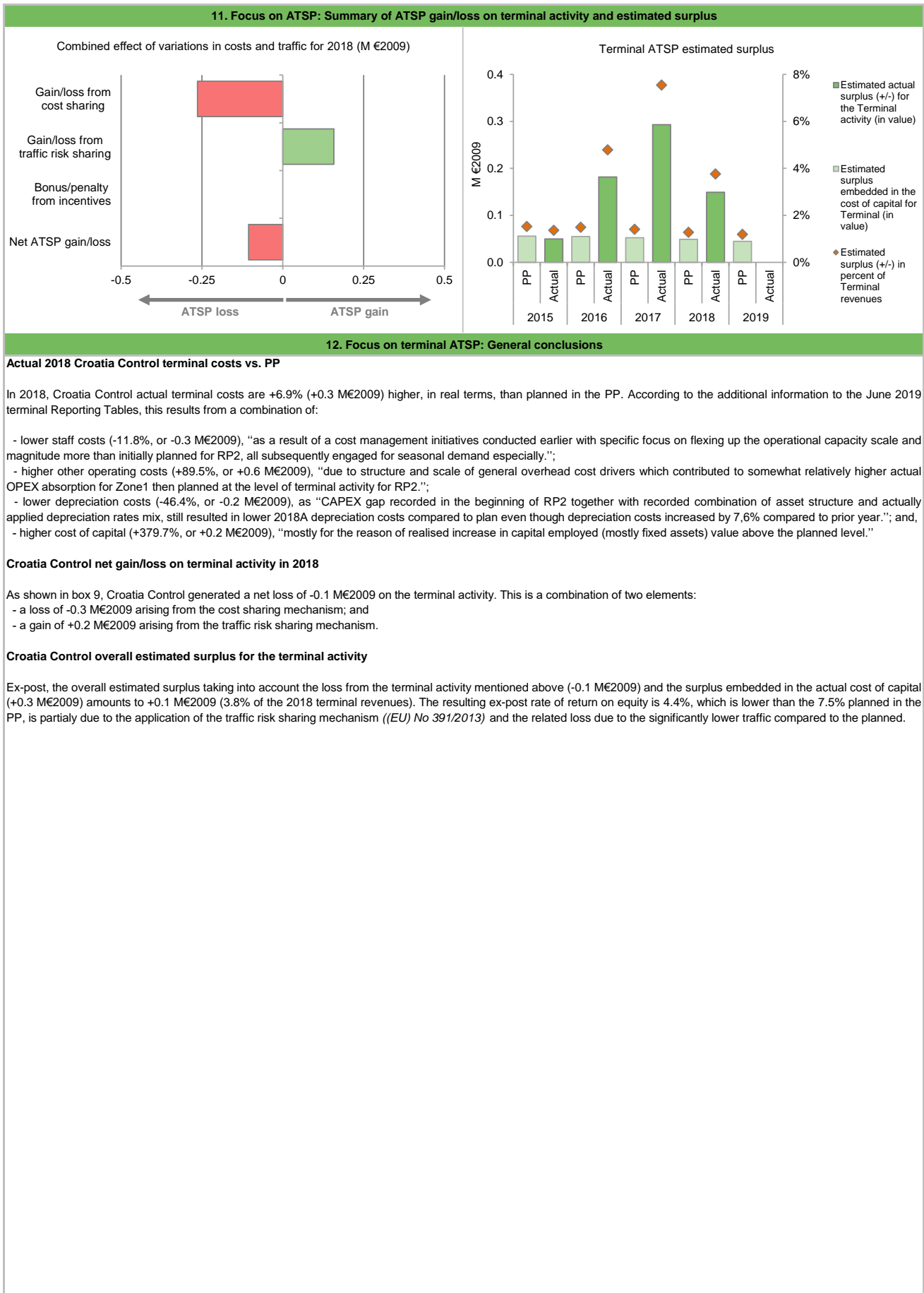
## CROATIA: Terminal ATSP (Croatia Control)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	3 646	3 695	3 742	3 810	
Actual costs for the ATSP	3 671	3 713	3 720	4 074	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-25	-18	22	-264	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-25</b>	<b>-18</b>	<b>22</b>	<b>-264</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.3%	4.4%	8.8%	12.0%	
Determined costs for the ATSP (PP) - based on actual inflation	3 348	3 447	3 501	3 593	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-9</b>	<b>93</b>	<b>142</b>	<b>158</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-34</b>	<b>75</b>	<b>164</b>	<b>-106</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 180	1 118	1 028	920	817
Estimated proportion of financing through equity (in %)	57.7%	61.9%	66.8%	71.3%	76.4%
Estimated proportion of financing through equity (in value)	681	692	687	656	625
Estimated proportion of financing through debt (in %)	42.3%	38.1%	33.2%	28.7%	23.6%
Estimated proportion of financing through debt (in value)	499	426	341	264	193
Cost of capital pre-tax (in value)	67	65	61	55	49
Average interest on debt (in %)	2.3%	2.3%	2.3%	2.3%	2.3%
Interest on debt (in value)	12	10	8	6	4
Determined RoE pre-tax rate (in %)	8.2%	8.0%	7.7%	7.5%	7.2%
Estimated surplus embedded in the cost of capital for terminal (in value)	56	55	53	49	45
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>56</b>	<b>55</b>	<b>53</b>	<b>49</b>	<b>45</b>
<b>Revenue/costs for the terminal activity</b>	<b>3 646</b>	<b>3 695</b>	<b>3 742</b>	<b>3 810</b>	<b>3 727</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.5%</b>	<b>1.5%</b>	<b>1.4%</b>	<b>1.3%</b>	<b>1.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.2%</b>	<b>8.0%</b>	<b>7.7%</b>	<b>7.5%</b>	<b>7.2%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	1 675	2 082	2 375	4 452	
Estimated proportion of financing through equity (in %)	60.6%	64.0%	70.9%	76.8%	
Estimated proportion of financing through equity (in value)	1 015	1 332	1 684	3 419	
Estimated proportion of financing through debt (in %)	39.4%	36.0%	29.1%	23.2%	
Estimated proportion of financing through debt (in value)	660	750	691	1 033	
Cost of capital pre-tax (in value)	92	116	136	264	
Average interest on debt (in %)	1.4%	1.2%	1.0%	0.9%	
Interest on debt (in value)	9	9	7	9	
Determined RoE pre-tax rate (in %)	8.2%	8.0%	7.7%	7.5%	
Estimated surplus embedded in the cost of capital for terminal (in value)	83	106	129	255	
Net ATSP gain(+)/loss(-) on terminal activity	-34	75	164	-106	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>50</b>	<b>182</b>	<b>293</b>	<b>149</b>	
<b>Revenue/costs for the terminal activity</b>	<b>3 637</b>	<b>3 789</b>	<b>3 884</b>	<b>3 968</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.4%</b>	<b>4.8%</b>	<b>7.5%</b>	<b>3.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>4.9%</b>	<b>13.6%</b>	<b>17.4%</b>	<b>4.4%</b>	

**CROATIA: Terminal ATSP (Croatia Control)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## CROATIA: Gate-to-gate

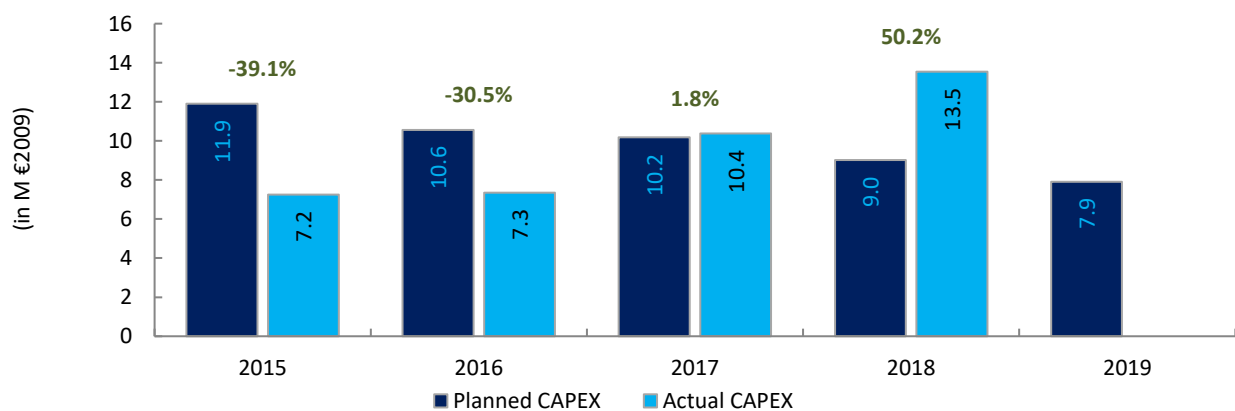
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																			
<b>Croatia: Data from RP2 Performance Plan</b>																																			
	2015D	2016D	2017D	2018D	2019D																														
Real en-route costs (EUR2009)	83 593 737	84 898 846	84 121 546	81 589 505	78 088 644																														
Real terminal costs (EUR2009)	3 772 154	3 873 355	3 915 806	3 976 686	3 887 353																														
Real gate-to-gate costs (EUR2009)	87 365 891	88 772 201	88 037 352	85 566 191	81 975 997																														
En-route share (%)	95.7%	95.6%	95.6%	95.4%	95.3%																														
<b>Croatia: Actual data from Reporting Tables</b>																																			
	2015A	2016A	2017A	2018A	2019A																														
Real en-route costs (EUR2009)	80 379 566	80 923 846	80 998 788	81 827 162																															
Real terminal costs (EUR2009)	3 773 291	3 864 063	3 875 684	4 233 685																															
Real gate-to-gate costs (EUR2009)	84 152 857	84 787 909	84 874 472	86 060 847																															
En-route share (%)	95.5%	95.4%	95.4%	95.1%																															
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																			
	2015	2016	2017	2018	2019																														
Real gate-to-gate costs (EUR2009)																																			
in value	-3 213 034	-3 984 292	-3 162 880	494 656																															
in %	-3.7%	-4.5%	-3.6%	0.6%																															
En-route share																																			
in p.p.	-0.2 p.p.	-0.2 p.p.	-0.1 p.p.	-0.3 p.p.																															
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																			
<p>In 2018, actual gate-to-gate ANS costs are +0.6% (+0.5 M€2009) higher than planned due to higher than planned terminal costs (+6.5%, or +0.3 M€2009) and en-route costs (+0.3%, or +0.2 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (95.1%) is in line with that planned in the PP for 2018 (95.4%).</p> <p>For Croatia Control, the estimated gate-to-gate economic surplus in 2018 amounts to 4.1 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 5.1% of gate-to-gate ANS revenues, as a combination of the given RoE% (embedded in actual costs of capital) included in the RP2 plans plus the outcome of the net gain/loss on en-route and terminal activity in 2018. Highly impacted for the traffic variations with respect to the planned in the RP2 PP and the application of the traffic risk sharing mechanism ((EU) No 391/2013).</p> <p>Further, Croatia did not plan neither did charge eligible RoE% neither CoC% during RP2, which implied lower rates (see note 2). Should this have not been the case, 2018 Actual estimated surplus would have been less dynamic compared to the the planned.</p>																																			
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Determined (%)</th> <th>Actual (%)</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>95.7%</td> <td>95.5%</td> <td>91.2%</td> <td>4.3%</td> </tr> <tr> <td>2016</td> <td>95.6%</td> <td>95.4%</td> <td>90.8%</td> <td>4.6%</td> </tr> <tr> <td>2017</td> <td>95.6%</td> <td>95.4%</td> <td>90.8%</td> <td>4.6%</td> </tr> <tr> <td>2018</td> <td>95.4%</td> <td>95.1%</td> <td>90.2%</td> <td>4.9%</td> </tr> <tr> <td>2019</td> <td>95.3%</td> <td>95.3%</td> <td>90.6%</td> <td>4.7%</td> </tr> </tbody> </table>						Year	Determined (%)	Actual (%)	En-route (%)	Terminal (%)	2015	95.7%	95.5%	91.2%	4.3%	2016	95.6%	95.4%	90.8%	4.6%	2017	95.6%	95.4%	90.8%	4.6%	2018	95.4%	95.1%	90.2%	4.9%	2019	95.3%	95.3%	90.6%	4.7%
Year	Determined (%)	Actual (%)	En-route (%)	Terminal (%)																															
2015	95.7%	95.5%	91.2%	4.3%																															
2016	95.6%	95.4%	90.8%	4.6%																															
2017	95.6%	95.4%	90.8%	4.6%																															
2018	95.4%	95.1%	90.2%	4.9%																															
2019	95.3%	95.3%	90.6%	4.7%																															
<b>3. Technical notes on en-route and terminal information reported by Croatia</b>																																			
<b>Note 1: ANS provision in Sarajevo FIR (Bosnia and Herzegovina - BiH)</b>																																			
Croatia's determined and actual en-route costs for RP2 include costs for services provided by CCL in Sarajevo FIR (Bosnia and Herzegovina - BiH). In agreement with the European Commission, Croatia committed to deduct the income received for the services provided to the Sarajevo FIR (Bosnia and Herzegovina - BiH) as 'other revenues' in the Croatian cost base to avoid double charging. This ensures that these amounts are only charged once (through the BiH unit rate, outside the SES area).																																			
<b>Note 2:</b> As indicated in the additional information of the June 2019 Reporting tables, "Implied RoE% planned/charged for PP 2018D represents a part of eligible PP 2018D RoE, recalculated down in order to fit in the chargeable (i.e. implied) CoC% for PP 2018D."																																			

## CROATIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Croatia Control						
FAB: FAB CE						
Currency: HRK						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	95.4	85.6	83.7	76.0	68.3	409.1
Main CAPEX (in nominal M)	75.8	69.3	67.5	63.3	56.6	332.4
Inflation %	0.2%	1.0%	1.5%	2.5%	2.5%	
Inflation index (100 in 2009)	109.2	110.4	112.0	114.8	117.7	
Exchange rate 2009	7.33804	7.33804	7.33804	7.33804	7.33804	
<b>Total CAPEX (in M €2009)</b>	<b>11.9</b>	<b>10.6</b>	<b>10.2</b>	<b>9.0</b>	<b>7.9</b>	<b>49.6</b>
Main CAPEX (in M €2009)	9.5	8.6	8.2	7.5	6.6	40.3
% Main of Total CAPEX	79.4%	81.0%	80.6%	83.2%	82.8%	81.2%
Real gate-to-gate ANSP costs (in M €2009)	81.4	82.6	81.7	79.3	75.7	400.7
Total CAPEX as % of Real gate-to-gate ANSP costs	14.6%	12.8%	12.5%	11.4%	10.5%	12.4%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	58.1	58.6	83.8	111.2		
Main CAPEX (in nominal M)	41.5	45.3	69.2	95.7		
Inflation %	-0.3%	-0.6%	1.3%	1.6%		
Inflation index (100 in 2009)	109.3	108.6	110.0	111.8		
Exchange rate 2009	7.33804	7.33804	7.33804	7.33804		
<b>Total CAPEX (in M €2009)</b>	<b>7.2</b>	<b>7.3</b>	<b>10.4</b>	<b>13.5</b>		
Main CAPEX (in M €2009)	5.2	5.7	8.6	11.7		
% Main of Total CAPEX	71.3%	77.3%	82.6%	86.1%		
Real gate-to-gate ANSP costs (in M €2009)	78.5	79.2	79.3	80.3		
Total CAPEX as % of Real gate-to-gate ANSP costs	9.2%	9.3%	13.1%	16.9%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-37.3	-27.0	0.1	35.1		
Total CAPEX (in M €2009)	-4.7	-3.2	0.2	4.5		
<b>Total CAPEX (in %, M €2009)</b>	<b>-39.1%</b>	<b>-30.5%</b>	<b>1.8%</b>	<b>50.2%</b>		





**Annual Monitoring Report 2018**  
Local level view  
Czech Republic





## CZECH REPUBLIC

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	80	C	C	C	D	D
ANS CR	83	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
		RAT application (%)				
		ATM Ground	ATM Overall			
Separation Minima Infringements (SMIs)		100%	100%			
Runway Incursions (RIs)		100%	100%			
ATM Specific Occurrences (ATM-S)			100%			
Source of RAT data:		UZPLN				
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level		Number of questions answered				
		YES	NO			
Policy and its implementation		5	4			
Legal/Judiciary		6	1			
Occurrence reporting and Investigation		2	0			
<b>TOTAL</b>		<b>13</b>	<b>5</b>			
ANS CR		Number of questions answered				
		YES	NO			
Policy and its implementation		13	0			
Legal/Judiciary		2	1			
Occurrence reporting and Investigation		8	0			
<b>TOTAL</b>		<b>23</b>	<b>1</b>			
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

**CZECH REPUBLIC**

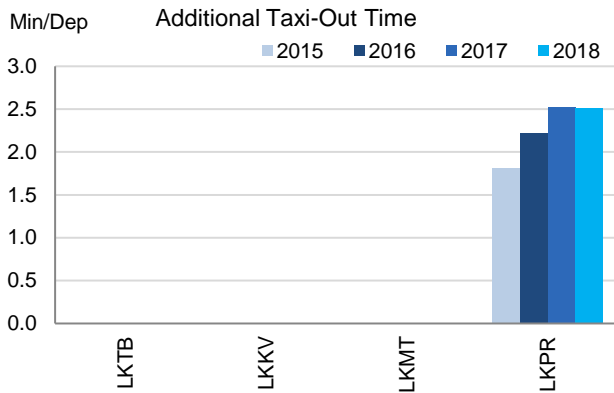
**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

There are four airports in Czech Republic subject to RP2 monitoring. Nevertheless, the airport operator data flow is only established for Prague. The implementation of the APDF at the rest of Czech airports is required to be able to monitor the performance.

The indicators show that Prague performs in line with the general European trend, although both indicators have significantly worsened since the beginning of RP2, with a 22% traffic increase with respect to 2015.

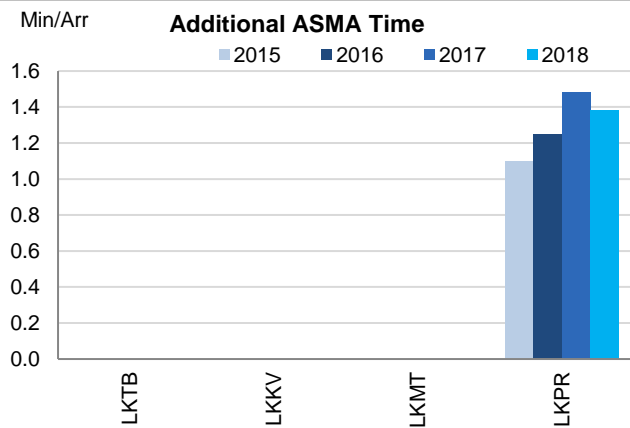
**2. Additional Taxi-Out Time**



The performance regarding additional taxi-out times at Prague (LKPR) in 2018 is very similar to the performance in 2017.

The longer taxi-out times are observed mainly during March, November and December.

**3. Additional ASMA Time**



Additional times in the terminal area of Prague have slightly decreased with respect to 2017 (LKPR: 2017: 1.48 min/arr.;2018: 1.38 min/arr.)

The performance evolution in the year does not show a particular seasonal pattern.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Brno-Tuřany	LKTB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Karlovy Vary	LKKV	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Ostrava	LKMT	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Prague	LKPR	1.81	2.22	2.53	2.51		1.10	1.25	1.48	1.38	

**CZECH REPUBLIC**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.09	0.10	0.09	0.10	0.10	National total includes post operations adjustment.
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.01	0.01	0.05	0.38		

**National capacity incentive scheme**

The Network Management Board (NMB) agreed to protect ACCs affected by extra traffic from 4ACC initiative (RAD or scenarios) and reassign delay to the ANSPs causing the initial capacity problem. Under this process, the Network Manager, via the post-operations adjustment process, deducted 92,086 minutes of en route ATFM delay from the total for Czech Republic and reassigned it to Karlsruhe UAC & Maastricht UAC.

The adjusted national total for Czech Republic of 0.38 minutes of en route delay per flight incurs a penalty for the ANSP ANS CR. The penalty is determined by a formula which considers both local and FAB performance.

FAB 'ponder' value \* 'national element' \* 0.5% of ANS en route revenue

The failure of FAB CE to meet the FAB target results in a 'ponder' value of 100%.

The failure to meet the required national target by more than 100% results in a national element of 100%.

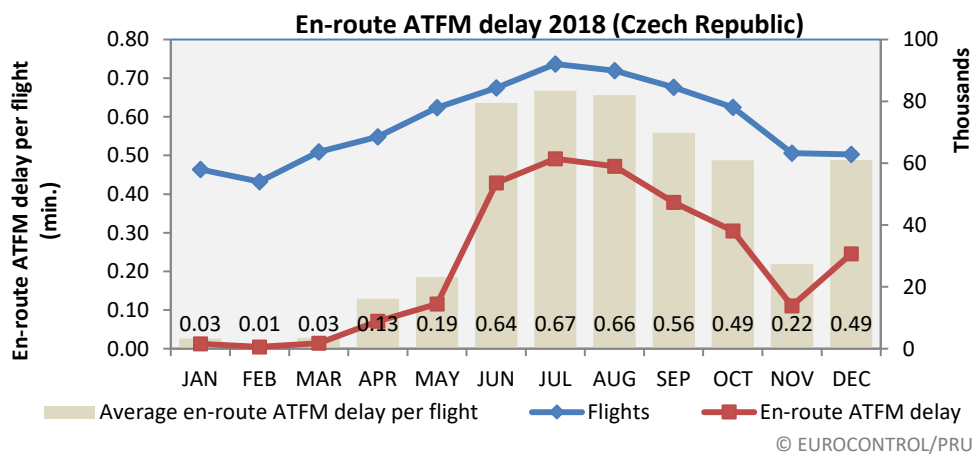
The ANS en route revenue of ANS CR in 2018 was 2,875,880 thousand CZK.

Using the above formula, the penalty for ANS CR is calculated as 14,379,400 CZK

**Compliance issues relating to national capacity incentive scheme**

The FAB CE monitoring report states that there were no compliance issues despite the PRB highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Czech Republic)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.44	0.29	0.15	0.01	0.00	0.04	0.01	0.01	0.01	0.05	0.38

EUROCONTROL 7 year forecast February 2014 – Czech Republic										
	2014		2015		2016		2017		2018	2019
	actual		actual		actual		actual		actual	
High	702		739		784		823		864	905
Base	692	<b>700</b>	719	<b>746</b>	746	<b>797</b>	770	<b>817</b>	791	<b>877</b>
Low	682		699		709		719		728	738

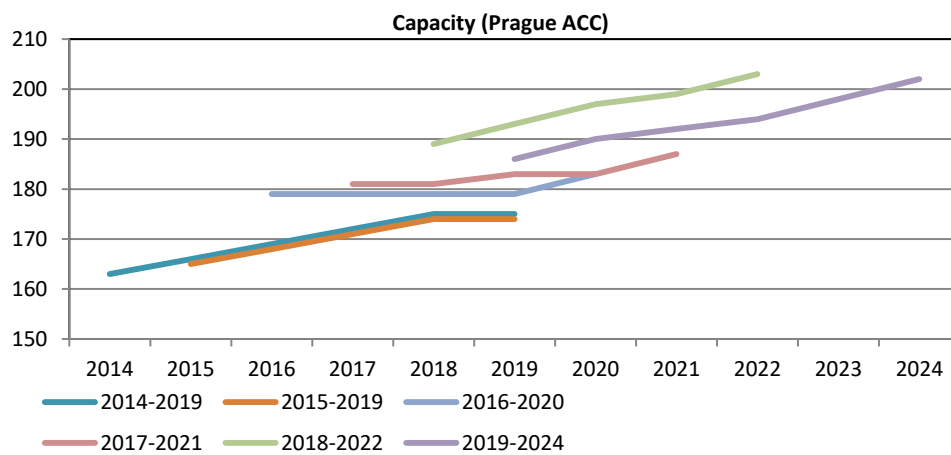
Traffic levels grew by just over 7% on 2017 levels to approximately 2% above the high traffic scenario for 2018 forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined. The 7% increase in traffic corresponded with a dramatic increase in en route ATFM delays to 0.48 minutes per flight (including the 92k of minutes reassigned in the post operations process.) almost ten times as many as there were in 2017 (0.05).

62% of delays were attributed to ATC capacity; 25% attributed to adverse weather and 10% attributed to staffing. However, 83% of all en route delays occurred in collapsed sectors which would indicate an issue with availability of staff.

The airspace users commented on the good overall performance from Prague ACC.

The Network Operations Plan predicts at least twice the delays in the Czech Republic for the years 2019 – 2022 than were previously forecast in NOP 2018-2022. Although traffic levels are expected to increase, the network manager reports that the capacity plans are 4% lower than in previous NOP edition.

Prague ACC delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.34</b>	<b>0.37</b>	<b>0.39</b>	<b>0.39</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.81</b>	<b>0.86</b>	<b>0.94 – 1.28</b>			



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### Planning and Effective Use of CDRs

The Czech Republic states "The CDRs indicators are set and should be monitored at Union-wide Level (see Annex 1 of EC Regulation 390/2013). The local data allows for monitoring and reporting number of aircraft filing FPLs via DCTs which are CDR1-like routes. " No data was provided in the annual monitoring report.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
41%	39%	45%	42%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	N/A	N/A	N/A	

Sum of number of hours still allocated at H-3 is not monitored by CAA CZ.

Procedure 3 is not used.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## CZECH REPUBLIC

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

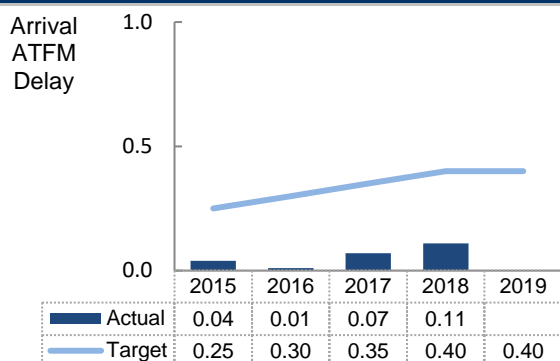
ANS at a total of 4 airports are subject to RP2 monitoring in the Czech Republic. Traffic levels at these airports have drastically increased during RP2 (+20.0% with respect to 2015).

In terms of arrival ATFM delays, values have tripled along RP2, while ATFM slot adherence has further improved and continues to range within the top class across Europe.

Pre-departure delay can only be monitored at the time being for Prague (LKPR).

The Airport Operator Data Flow is currently only established for LKPR. The Czech Republic may consider the establishment of the data flow for the other airports.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Czech Republic have moderately increased with respect to the previous year (2017: 0.07 min/arr, 2018: 0.11 min/arr) but the established national target (0.40 min/arr.) is still fully met.

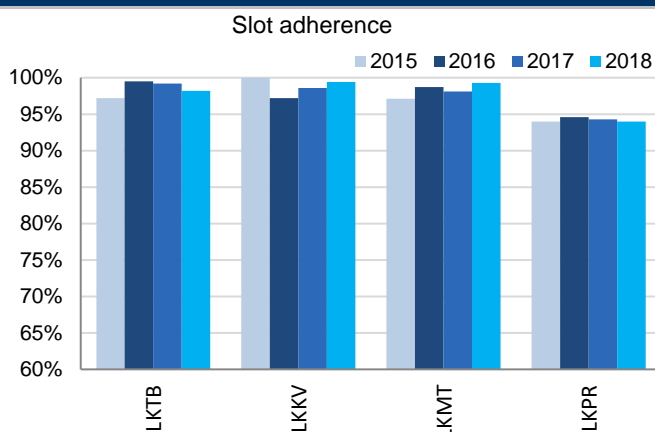
The national performance is completely driven by Prague (LKPR) as the rest of Czech airports do not present any arrival ATFM delays.

The majority of the delays at LKPR are attributed to weather, except for the month of September, where the high delays were the result of a mix of aerodrome capacity issues, ATC staffing and capacity and weather.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The FAB CE performance plan sets a national target on arrival ATFM delay for Czech Republic but no associated incentive scheme, so although the national target is met, no bonus applies.

## 4. ATFM Slot Adherence



Slot adherence at Czech airports is quite stable across RP2 years. The performance at Prague (LKPR) ranges for another year just below the 95% threshold which is exceeded by all other airports. This national outcome is amongst the best-in-class across Europe.

It is noteworthy that this also applies for the smaller airports in terms of traffic well below 10 000 movements a year. This is not common across Europe.

## 5. ATC Pre-departure Delay

ATC pre-departure at Prague (LKPR) delay reduced slightly in 2018 to 0.48 min/dep., a similar performance to other airports in the same range of movements.

To ensure the consistency of the monitoring, Czech Republic may consider the establishment of the data flow for the other airports.

## 6. Appendix

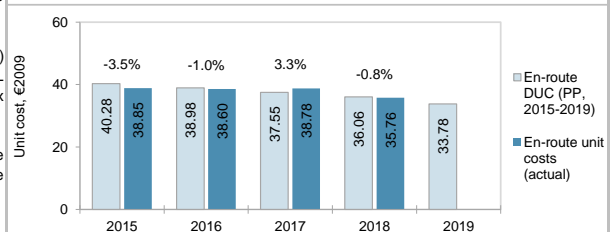
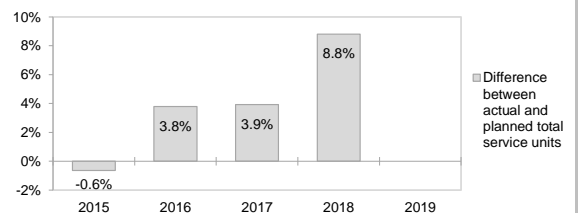
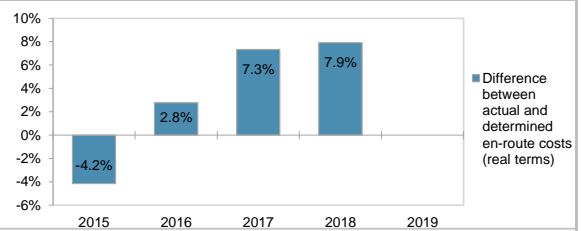
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Brno-Tuřany	LKTB	0.00	0.00	0.00	0.00		97.2%	99.5%	99.2%	98.2%		n/a	n/a	n/a	n/a	
Karlovy Vary	LKKV	0.00	0.00	0.00	0.00		100.0%	97.2%	98.6%	99.4%		n/a	n/a	n/a	n/a	
Ostrava	LKMT	0.00	0.00	0.00	0.00		97.1%	98.7%	98.1%	99.3%		n/a	n/a	n/a	n/a	
Prague	LKPR	0.04	0.02	0.08	0.13		94.0%	94.6%	94.3%	94.0%		0.36	0.53	0.55	0.48	

## CZECH REPUBLIC: En-route charging zone

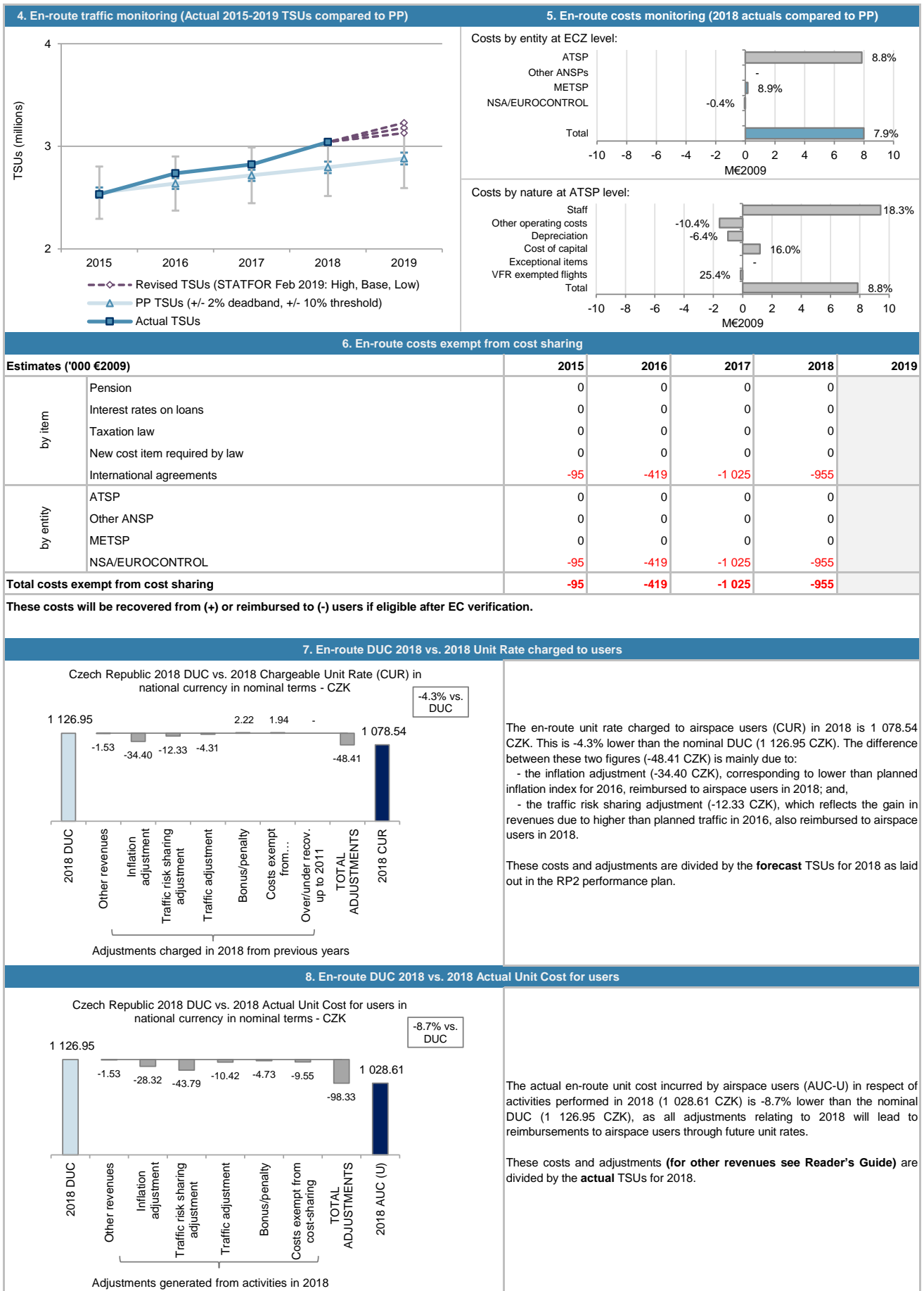
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Czech Republic ECZ represents 1.6% of the SES en-route ANS determined costs in 2018					
· ATSP:	ANS CR				
· FAB:	FAB CE				
· National currency:	CZK Exchange rate 2009: 1 EUR = 26.4147 CZK				
2. En-route DUC monitoring at Charging Zone level					
Czech Republic: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal CZK)	3 022 287 900	3 087 882 700	3 126 037 100	3 149 817 800	3 102 014 900
Inflation %	1.9%	2.0%	2.0%	2.0%	2.0%
Inflation index (100 in 2009)	111.5	113.7	116.0	118.3	120.7
Real en-route costs (CZK2009)	2 710 775 667	2 715 303 433	2 694 955 079	2 662 212 166	2 570 401 338
Total en-route Service Units	2 548 000	2 637 000	2 717 000	2 795 000	2 881 000
<b>Real en-route unit cost per Service Unit (CZK2009)</b>	<b>1 063.88</b>	<b>1 029.69</b>	<b>991.89</b>	<b>952.49</b>	<b>892.19</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>40.28</b>	<b>38.98</b>	<b>37.55</b>	<b>36.06</b>	<b>33.78</b>
Czech Republic: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal CZK)	2 845 608 972	3 074 649 841	3 263 571 568	3 306 459 387	
Inflation %	0.3%	0.6%	2.4%	2.0%	
Inflation index (100 in 2009)	109.5	110.2	112.8	115.1	
Real en-route costs (CZK2009)	2 598 187 485	2 790 570 169	2 892 613 899	2 873 163 553	
Total en-route Service Units	2 531 815	2 737 047	2 823 895	3 041 481	
<b>Real en-route unit cost per Service Unit (CZK2009)</b>	<b>1 026.22</b>	<b>1 019.56</b>	<b>1 024.33</b>	<b>944.66</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>38.85</b>	<b>38.60</b>	<b>38.78</b>	<b>35.76</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal CZK)	-176 678 928	-13 232 859	137 534 468	156 641 587	
in value					
in %	-5.8%	-0.4%	4.4%	5.0%	
Inflation %	-1.6 p.p.	-1.4 p.p.	0.4 p.p.	0.0 p.p.	
in p.p.					
Inflation index (100 in 2009)	-2.0 p.p.	-3.5 p.p.	-3.2 p.p.	-3.2 p.p.	
in p.p.					
Real en-route costs (CZK2009)	-112 588 182	75 266 735	197 658 819	210 951 387	
in value					
in %	-4.2%	2.8%	7.3%	7.9%	
Total en-route Service Units	-16 185	100 047	106 895	246 481	
in value					
in %	-0.6%	3.8%	3.9%	8.8%	
<b>Real en-route unit cost per Service Unit (CZK2009)</b>	<b>-37.67</b>	<b>-10.14</b>	<b>32.45</b>	<b>-7.83</b>	
in value					
in %	<b>-3.5%</b>	<b>-1.0%</b>	<b>3.3%</b>	<b>-0.8%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>-1.43</b>	<b>-0.38</b>	<b>1.23</b>	<b>-0.30</b>	
in value					
in %	<b>-3.5%</b>	<b>-1.0%</b>	<b>3.3%</b>	<b>-0.8%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (35.76 €2009) is -0.8% lower than planned in the PP (36.06 €2009). This results from the combination of higher than planned TSUs (+8.8%) and higher than planned en-route costs in real terms (+7.9%, or +8.0 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+8.8%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ANS CR) retaining an amount of +3.7 M€2009.					
The difference between actual and planned TSUs is partially explained by the effects of the participation of the Czech Republic in the NM 4ACCs initiative aiming at the optimisation of the available capacity across some of the most critical parts of the European ATM network.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Czech Republic are expected to slightly exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are +5.0% (+156.6 M€2009) higher than planned. However, since the actual inflation index is lower than planned (-3.2 p.p.), actual en-route costs are +7.9% (+8.0 M€2009) above plans when expressed in real terms. See <b>Note 1</b> .					
The higher than planned en-route costs in real terms are driven by ANS CR (+8.8%, or +7.9 M€2009) and the MET service provider (+8.9%, or +0.2 M€2009), while the costs for the NSA/EUROCONTROL are lower than planned (-0.4%, or -0.04 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -1.0 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**CZECH REPUBLIC: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



## CZECH REPUBLIC: En-route ATSP (ANS CR)

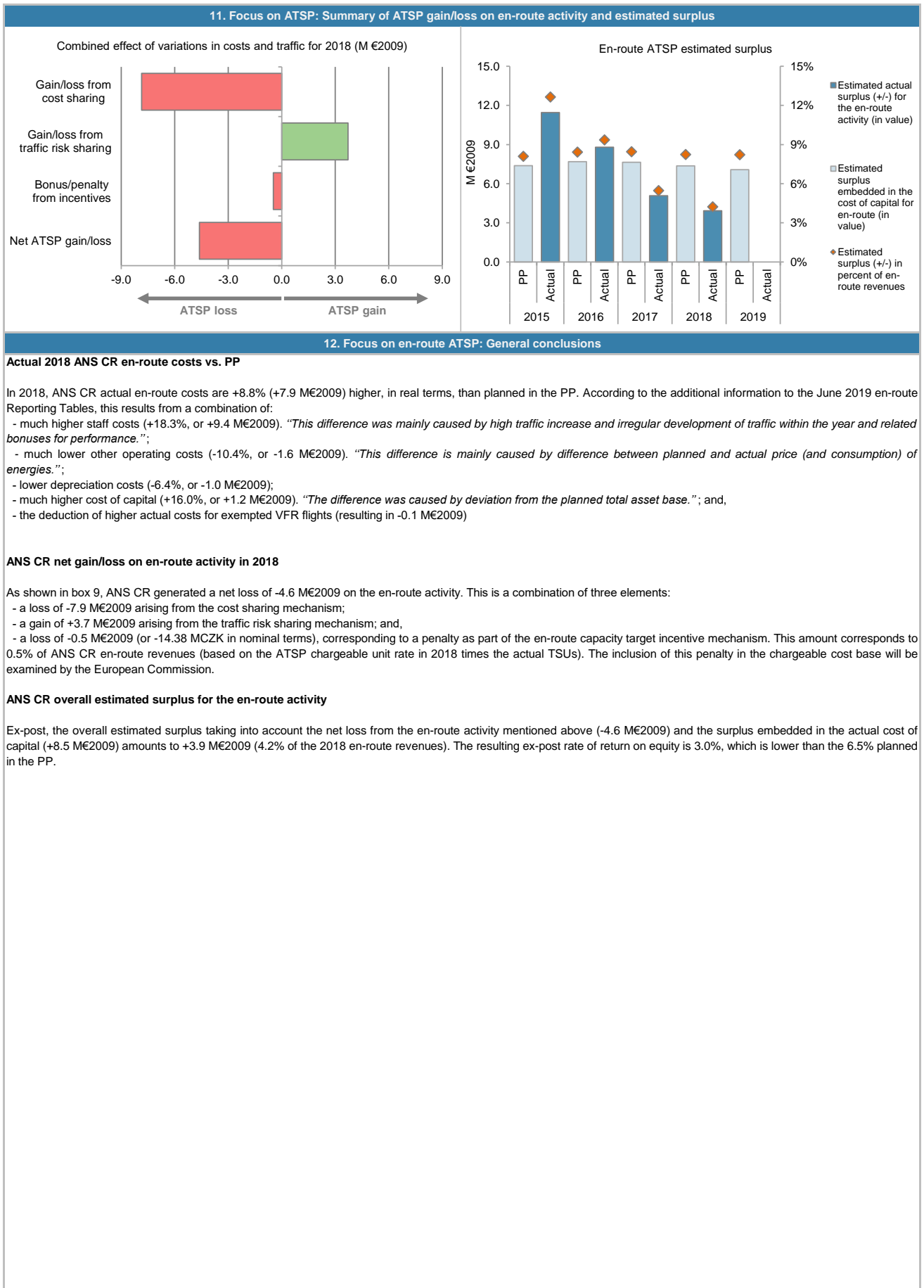
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	91 070	91 337	90 424	89 284	
Actual costs for the ATSP	86 485	93 260	96 195	97 142	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	4 585	-1 923	-5 771	-7 858	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>4 585</b>	<b>-1 923</b>	<b>-5 771</b>	<b>-7 858</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.6%	3.8%	3.9%	8.8%	
Determined costs for the ATSP (PP) - based on actual inflation	92 707	94 273	92 966	91 794	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-589</b>	<b>2 393</b>	<b>2 399</b>	<b>3 714</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>101</b>	<b>213</b>	<b>52</b>	<b>-473</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 097</b>	<b>683</b>	<b>-3 320</b>	<b>-4 618</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	113 529	118 314	117 666	113 293	108 744
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	113 529	118 314	117 666	113 294	108 744
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	7 379	7 690	7 648	7 364	7 068
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.5%	6.5%	6.5%	6.5%	6.5%
Estimated surplus embedded in the cost of capital for en-route (in value)	7 379	7 690	7 648	7 364	7 068
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>7 379</b>	<b>7 690</b>	<b>7 648</b>	<b>7 364</b>	<b>7 068</b>
<b>Revenue/costs for the en-route activity</b>	<b>91 070</b>	<b>91 337</b>	<b>90 424</b>	<b>89 284</b>	<b>85 879</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>8.1%</b>	<b>8.4%</b>	<b>8.5%</b>	<b>8.2%</b>	<b>8.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	113 202	124 797	129 313	131 349	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	113 202	124 797	129 314	131 383	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	-34	
Cost of capital pre-tax (in value)	7 358	8 112	8 405	8 540	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.5%	6.5%	6.5%	6.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	7 358	8 112	8 405	8 540	
Net ATSP gain(+)/loss(-) on en-route activity	4 097	683	-3 320	-4 618	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>11 456</b>	<b>8 795</b>	<b>5 085</b>	<b>3 922</b>	
<b>Revenue/costs for the en-route activity</b>	<b>90 582</b>	<b>93 943</b>	<b>92 875</b>	<b>92 524</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>12.6%</b>	<b>9.4%</b>	<b>5.5%</b>	<b>4.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>10.1%</b>	<b>7.0%</b>	<b>3.9%</b>	<b>3.0%</b>	



**CZECH REPUBLIC: En-route ATSP (ANS CR)**

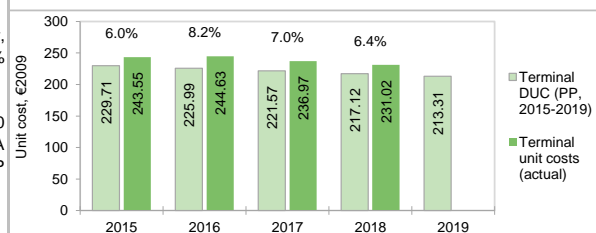
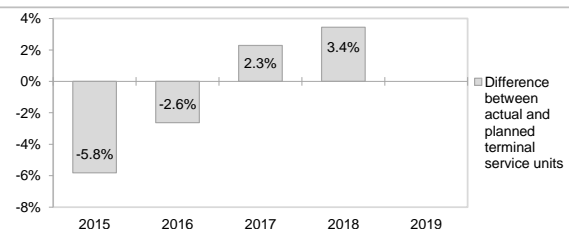
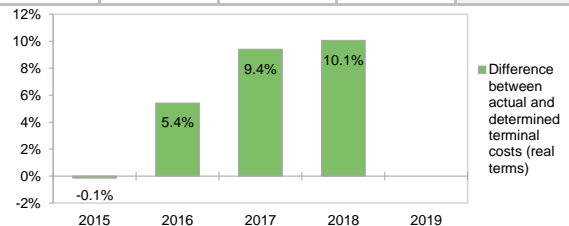
**Monitoring of en-route COST-EFFICIENCY for 2018**



## CZECH\_REPUBLIC: Terminal charging zone

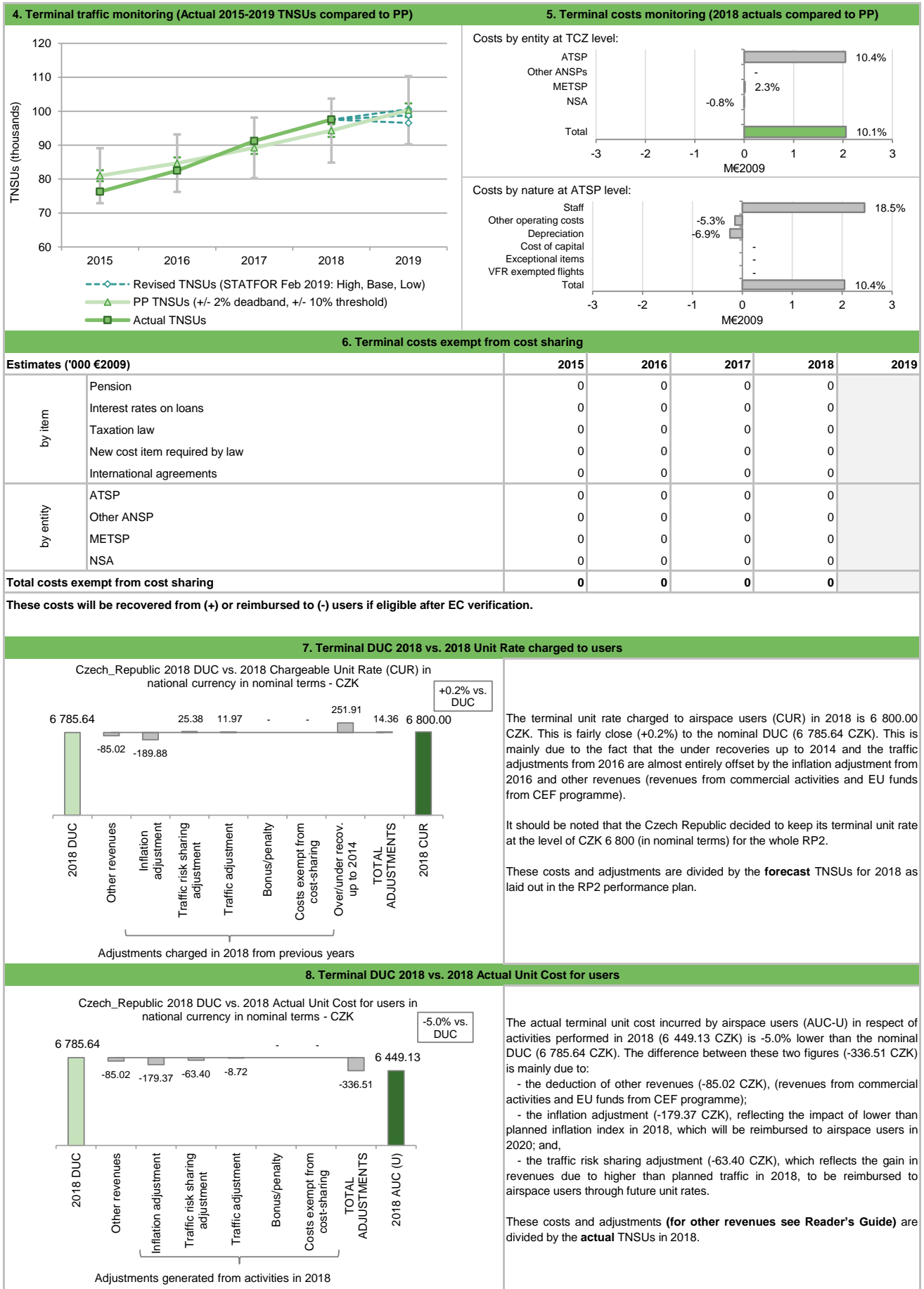
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Czech_Republic TCZ represents 1.9% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	ANS CR	· Airports with fewer than 70,000 IFRs ATMs:		3		
· National currency:	CZK	· Airports with between 70,000 and 225,000 IFRs ATMs:		1		
· Number of airports in charging zone in 2018:	4,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Czech_Republic: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal CZK)	547 963 000	574 984 000	605 574 000	639 886 000	682 085 000	
Inflation %	1.9%	2.0%	2.0%	2.0%	2.0%	
Inflation index (100 in 2009)	111.5	113.7	116.0	118.3	120.7	
Real terminal costs (CZK2009)	491 483 544	505 607 298	522 065 054	540 828 836	565 191 417	
Total terminal Service Units	81 000	84 700	89 200	94 300	100 307	
<b>Real terminal unit cost per Service Unit (CZK2009)</b>	<b>6 067.70</b>	<b>5 969.39</b>	<b>5 852.75</b>	<b>5 735.19</b>	<b>5 634.64</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>229.71</b>	<b>225.99</b>	<b>221.57</b>	<b>217.12</b>	<b>213.31</b>	
Czech_Republic: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal CZK)	537 535 000	587 224 000	644 361 000	684 983 000		
Inflation %	0.3%	0.6%	2.4%	2.0%		
Inflation index (100 in 2009)	109.5	110.2	112.8	115.1		
Real terminal costs (CZK2009)	490 797 128	532 967 935	571 118 955	595 219 224		
Total terminal Service Units	76 290	82 481	91 240	97 540		
<b>Real terminal unit cost per Service Unit (CZK2009)</b>	<b>6 433.29</b>	<b>6 461.73</b>	<b>6 259.52</b>	<b>6 102.29</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>243.55</b>	<b>244.63</b>	<b>236.97</b>	<b>231.02</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal CZK)	in value	-10 428 000	12 240 000	38 787 000	45 097 000	
	in %	-1.9%	2.1%	6.4%	7.0%	
Inflation %	in p.p.	-1.6 p.p.	-1.4 p.p.	0.4 p.p.	0.0 p.p.	
Inflation index (100 in 2009)	in p.p.	-2.0 p.p.	-3.5 p.p.	-3.2 p.p.	-3.2 p.p.	
Real terminal costs (CZK2009)	in value	-686 416	27 360 637	49 053 901	54 390 388	
	in %	-0.1%	5.4%	9.4%	10.1%	
Total terminal Service Units	in value	-4 710	-2 219	2 040	3 240	
	in %	-5.8%	-2.6%	2.3%	3.4%	
<b>Real terminal unit cost per Service Unit (CZK2009)</b>	in value	<b>365.59</b>	<b>492.34</b>	<b>406.78</b>	<b>367.10</b>	
	in %	<b>6.0%</b>	<b>8.2%</b>	<b>7.0%</b>	<b>6.4%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>13.84</b>	<b>18.64</b>	<b>15.40</b>	<b>13.90</b>	
	in %	<b>6.0%</b>	<b>8.2%</b>	<b>7.0%</b>	<b>6.4%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Czech Republic Terminal Charging zone comprising 4 airports, Praha/Ruzyně, Karlovy/Vary, Ostrava/Mosnov and Brno/Turany.						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (231.02 €2009) is +6.4% higher than planned in the PP (217.12 €2009). This results from the combination of higher than planned TNSUs (+3.4%) and significantly higher than planned terminal costs in real terms (+10.1%, or +2.1 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in Czech Republic TCZ. The difference between actual and planned TNSUs (+3.4%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ANS CR) retaining an amount of +0.5 M€2009.						
According to STATFOR February 2019 base scenario, the TNSUs for Czech Republic are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +7.0% (+45.1 MCZK) higher than planned. However, since the actual inflation index is lower than planned (-3.2 p.p.), actual terminal costs are +10.1% (+2.1 M€2009) above plans when expressed in real terms.						
The higher than planned terminal costs in real terms are driven by ANS CR (+10.4%, or +2.0 M€2009) and the MET service provider (+2.3%, or +0.01 M€2009), while the costs for the NSA remained close to what was planned (-0.8%, or -0.02 M€2009). A detailed analysis at ATSP level is provided in box 12.						
There are no costs exempt from cost-sharing reported.						



**CZECH\_REPUBLIC: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



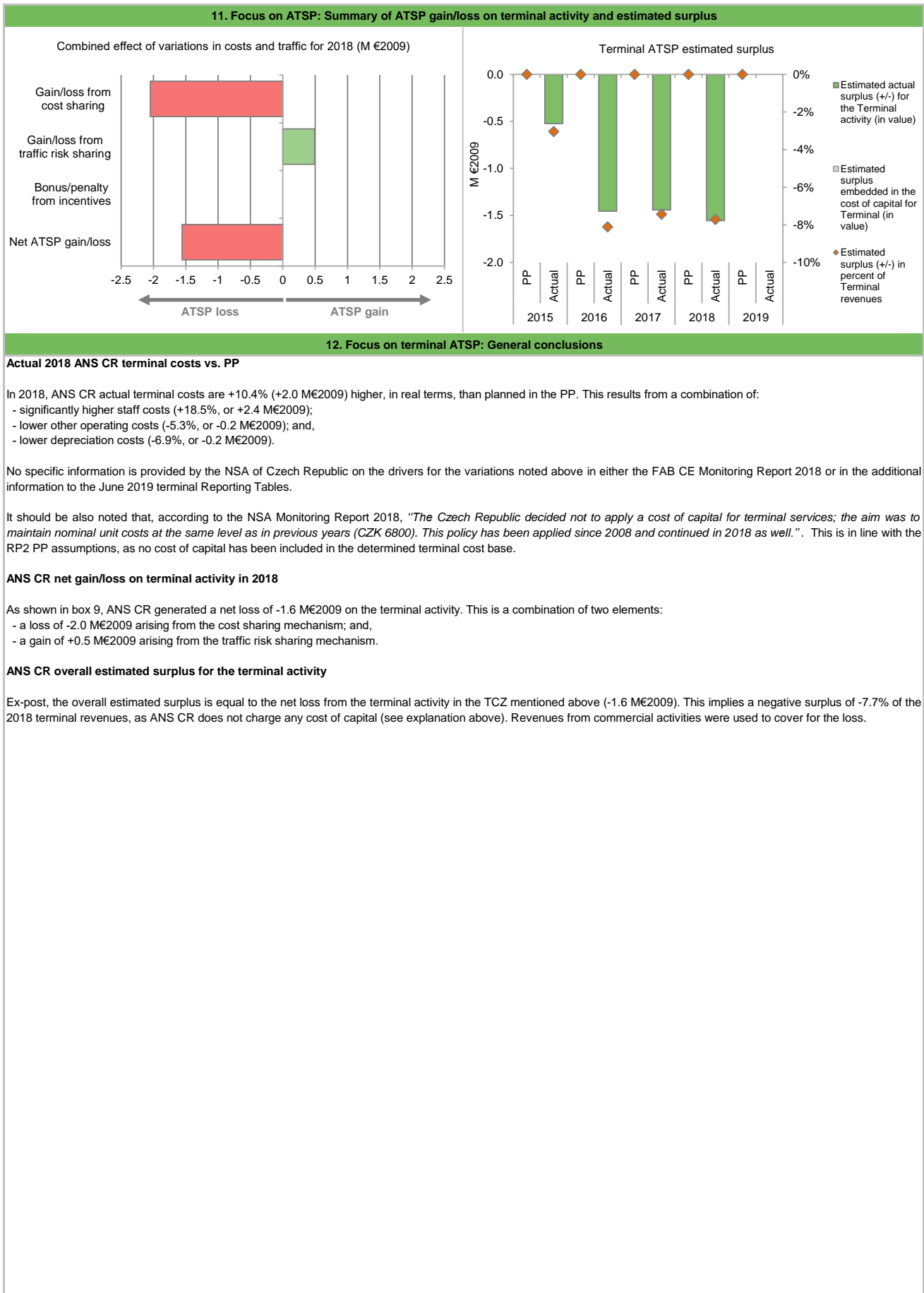
## CZECH REPUBLIC: Terminal ATSP (ANS CR)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	17 817	18 352	18 973	19 683	
Actual costs for the ATSP	17 770	19 394	20 821	21 731	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	47	-1 042	-1 849	-2 049	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>47</b>	<b>-1 042</b>	<b>-1 849</b>	<b>-2 049</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-5.8%	-2.6%	2.3%	3.4%	
Determined costs for the ATSP (PP) - based on actual inflation	18 137	18 942	19 506	20 236	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-570</b>	<b>-414</b>	<b>407</b>	<b>492</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-523</b>	<b>-1 456</b>	<b>-1 442</b>	<b>-1 557</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	21 235	22 661	22 677	22 017	22 522
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	21 235	22 661	22 677	22 017	22 522
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	0	0	0	0	0
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	-	-	-	-	-
Estimated surplus embedded in the cost of capital for terminal (in value)	0	0	0	0	0
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Revenue/costs for the terminal activity</b>	<b>17 817</b>	<b>18 352</b>	<b>18 973</b>	<b>19 683</b>	<b>20 610</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	21 189	23 474	24 693	25 240	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	21 189	23 474	24 693	25 240	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	0	0	0	0	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	-	-	-	-	
Estimated surplus embedded in the cost of capital for terminal (in value)	0	0	0	0	
Net ATSP gain(+)/loss(-) on terminal activity	-523	-1 456	-1 442	-1 557	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-523</b>	<b>-1 456</b>	<b>-1 442</b>	<b>-1 557</b>	
<b>Revenue/costs for the terminal activity</b>	<b>17 246</b>	<b>17 938</b>	<b>19 379</b>	<b>20 175</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-3.0%</b>	<b>-8.1%</b>	<b>-7.4%</b>	<b>-7.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	

**CZECH REPUBLIC: Terminal ATSP (ANS CR)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## CZECH REPUBLIC: Gate-to-gate

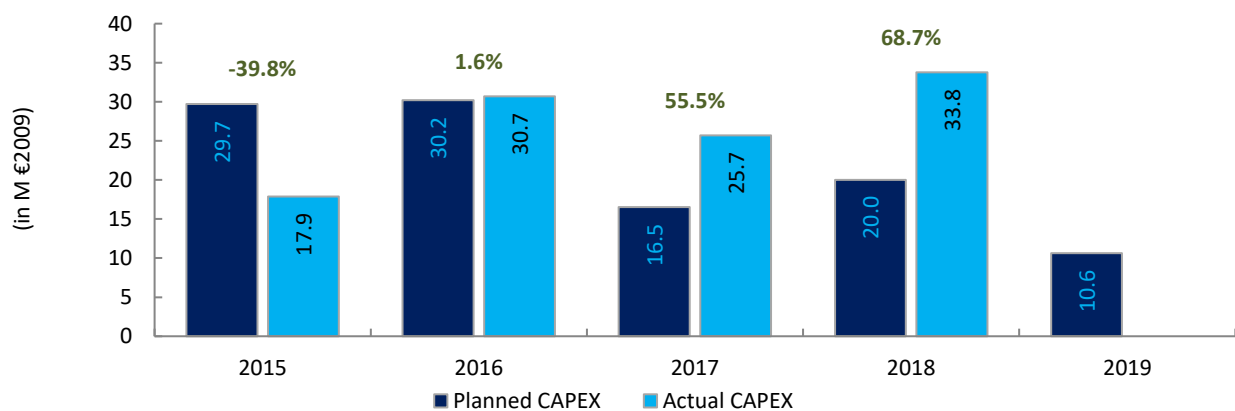
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Czech Republic: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	102 623 754	102 795 165	102 024 823	100 785 251	97 309 503																																							
Real terminal costs (EUR2009)	18 606 440	19 141 133	19 764 186	20 474 540	21 396 852																																							
Real gate-to-gate costs (EUR2009)	121 230 194	121 936 298	121 789 009	121 259 791	118 706 355																																							
En-route share (%)	84.7%	84.3%	83.8%	83.1%	82.0%																																							
<b>Czech Republic: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	98 361 423	105 644 591	109 507 732	108 771 387																																								
Real terminal costs (EUR2009)	18 580 454	20 176 944	21 621 255	22 533 636																																								
Real gate-to-gate costs (EUR2009)	116 941 878	125 821 535	131 128 987	131 305 022																																								
En-route share (%)	84.1%	84.0%	83.5%	82.8%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-4 288 317	3 885 237	9 339 978	10 045 231																																								
in %	-3.5%	3.2%	7.7%	8.3%																																								
En-route share in p.p.	-0.5 p.p.	-0.3 p.p.	-0.3 p.p.	-0.3 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +8.3% (+10.0 M€2009) higher than planned due to higher than planned en-route costs (+7.9%, or +8.0 M€2009) and terminal costs (+10.1%, or +2.1 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (82.8%) is in line with that planned in the PP for 2018 (83.1%).</p> <p>For ANS CR, the estimated gate-to-gate economic surplus in 2018 amounts to 2.4 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 2.1% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>84.7%</td> <td>15.3%</td> </tr> <tr> <td>Actual</td> <td>84.1%</td> <td>15.9%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>84.3%</td> <td>15.7%</td> </tr> <tr> <td>Actual</td> <td>84.0%</td> <td>16.0%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>83.8%</td> <td>16.2%</td> </tr> <tr> <td>Actual</td> <td>83.5%</td> <td>16.5%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>83.1%</td> <td>16.9%</td> </tr> <tr> <td>Actual</td> <td>82.8%</td> <td>17.2%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>82.0%</td> <td>18.0%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	84.7%	15.3%	Actual	84.1%	15.9%	2016	Determined	84.3%	15.7%	Actual	84.0%	16.0%	2017	Determined	83.8%	16.2%	Actual	83.5%	16.5%	2018	Determined	83.1%	16.9%	Actual	82.8%	17.2%	2019	Determined	82.0%	18.0%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	84.7%	15.3%																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Czech Republic</b>																																												
<b>Note 1: Increase in en-route costs</b>																																												
<p>The FAB CE Monitoring Report 2018 includes the following information on the increase in costs:  <i>"The main driver for costs increase was staff costs development, in particular ATCOs overtimes for coping with increased demand for ANS services which was mainly caused by participation in 4ACCs initiatives."</i>  <i>"The en-route costs were higher than planned as a result of the 'Air Traffic Services (ATS) optimisation' restructuring project which focusses on significant changes in the airspace structure and optimising the way ATS is provided in the Czech airspace, in order to meet the anticipated demand and deliver the required performance in the coming period. (...) The restructuring project application was submitted to the Commission in May 2019 and is subject to approval."</i></p>																																												

## CZECH REPUBLIC

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ANS CR						
FAB: FAB CE						
Currency: CZK						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	874.9	908.0	506.3	625.6	338.6	3 253.4
Main CAPEX (in nominal M)	818.2	846.4	450.6	556.0	286.6	2 957.8
Inflation %	1.9%	2.0%	2.0%	2.0%	2.0%	
Inflation index (100 in 2009)	111.5	113.7	116.0	118.3	120.7	
Exchange rate 2009	26.4147	26.4147	26.4147	26.4147	26.4147	
<b>Total CAPEX (in M €2009)</b>	<b>29.7</b>	<b>30.2</b>	<b>16.5</b>	<b>20.0</b>	<b>10.6</b>	<b>107.1</b>
Main CAPEX (in M €2009)	27.8	28.2	14.7	17.8	9.0	97.4
% Main of Total CAPEX	93.5%	93.2%	89.0%	88.9%	84.6%	91.0%
Real gate-to-gate ANSP costs (in M €2009)	108.9	109.7	109.4	109.0	106.5	543.4
Total CAPEX as % of Real gate-to-gate ANSP costs	27.3%	27.6%	15.1%	18.4%	10.0%	19.7%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	517.2	893.8	765.7	1 026.5		
Main CAPEX (in nominal M)	466.2	824.1	403.7	777.4		
Inflation %	0.3%	0.6%	2.4%	2.0%		
Inflation index (100 in 2009)	109.5	110.2	112.8	115.1		
Exchange rate 2009	26.4147	26.4147	26.4147	26.4147		
<b>Total CAPEX (in M €2009)</b>	<b>17.9</b>	<b>30.7</b>	<b>25.7</b>	<b>33.8</b>		
Main CAPEX (in M €2009)	16.1	28.3	13.5	25.6		
% Main of Total CAPEX	90.1%	92.2%	52.7%	75.7%		
Real gate-to-gate ANSP costs (in M €2009)	104.3	112.7	117.0	118.9		
Total CAPEX as % of Real gate-to-gate ANSP costs	17.1%	27.3%	22.0%	28.4%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-357.7	-14.2	259.4	400.9		
Total CAPEX (in M €2009)	-11.8	0.5	9.2	13.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-39.8%</b>	<b>1.6%</b>	<b>55.5%</b>	<b>68.7%</b>		







# Annual Monitoring Report 2018

Local level view  
Hungary



## HUNGARY

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	46	B	B	B	B	B
<b>Hungarocontrol</b>	77	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			62%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
<b>Source of RAT data:</b>			KBSZ			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			2	7		
Legal/Judiciary			3	4		
Occurrence reporting and Investigation			1	1		
<b>TOTAL</b>			<b>6</b>	<b>12</b>		
<b>Hungarocontrol</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			13	0		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
<p>The four reviewed EoSM Components/areas of the State does not meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), six are below Level C.</p>						

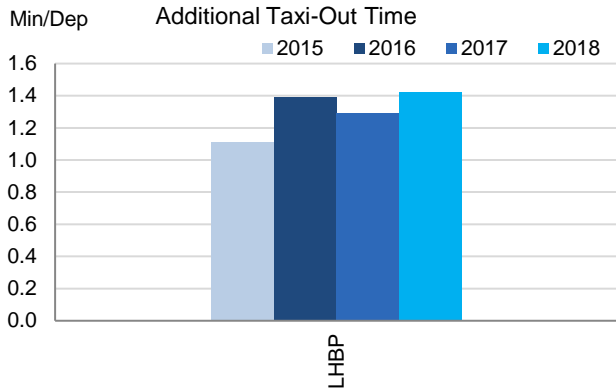
**HUNGARY**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

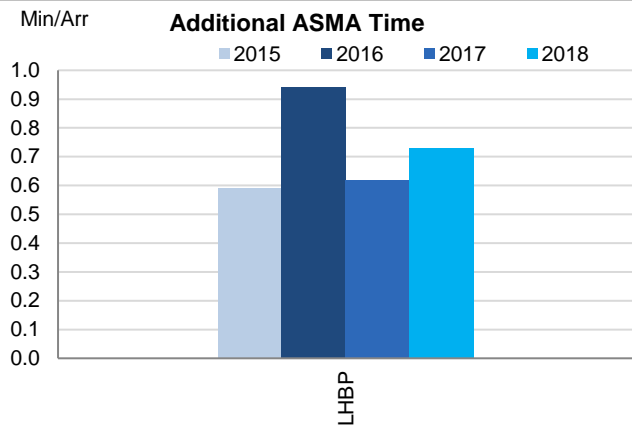
Hungary identified only its main airport Budapest as subject to RP2 monitoring. The Airport Operator Data Flow is correctly established and, with a significant 12% increase in movements in 2018 with respect to 2017 (+25% with respect to 2015), performance has only moderately worsened, with values well below the SES average for both environmental indicators.

**2. Additional Taxi-Out Time**



Additional taxi-out times in Budapest have slightly increased with respect to 2017 (LHBP: 2017: 1.29 min/dep.; 2018: 1.42 min/dep.), but still show very good performance compared to similar airports in terms of movements. The additional taxi-out times are considerably higher in June (2.63 min/dep.) and to a lesser extent in the period from March to May.

**3. Additional ASMA Time**



The additional times in the terminal area at Budapest are slightly higher than last year (LHBP: 2017:0.62 min/arr.; 2018: 0.73 min/arr.) The NSA reported, in the 2017 monitoring report, the introduction of new arrival procedures that had a positive impact; nevertheless the improvement observed in 2017 is not sustained this year after the 12% increase in traffic.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Budapest/ Ferihegy	LHBP	1.11	1.39	1.29	1.42		0.59	0.94	0.62	0.73	

**HUNGARY**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.06	0.05	0.05	0.04	0.05	The delay total for Hungary includes approximately 27k minutes of delay attributed by the Budapest FMP to KFOR airspace which is outside the Budapest FIR. From 2019, KFOR delay is excluded from performance in Hungary.
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.03	0.07	0.01	0.39		

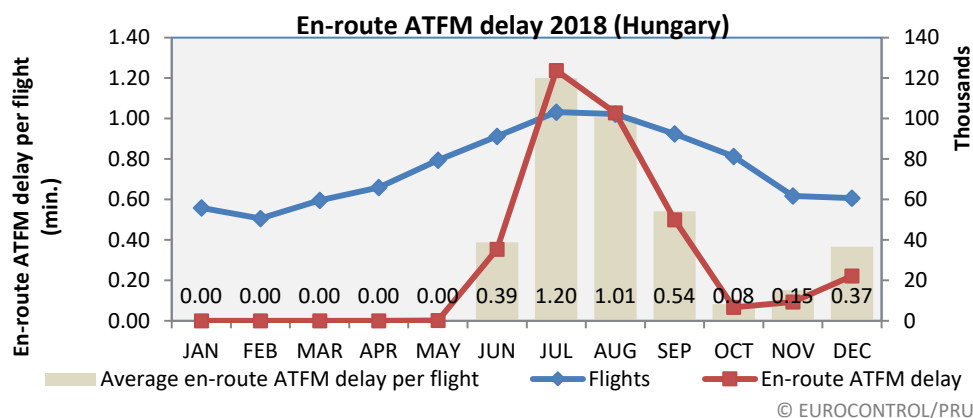
**National capacity incentive scheme**

FAB CE missed its target by more than +100% which results in a 'ponder' value of 100%. Hungaro Control missed its target by more than +100% which results in a national element of 100%. The en-route ANS revenue of Hungaro Control in 2018 was 29,451,162 thousand HUF (excluding exempted flights). The applied formula is 100% x 100% x 0.5% x en-route revenue which gives the penalty: 147,255,810 HUF.

**Compliance issues relating to national capacity incentive scheme**

The FAB CE monitoring report states that there were no compliance issues despite the PRB highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Hungary)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.07	0.01	0.39

EUROCONTROL 7 year forecast February 2014 – Hungary											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
High	631		666		705		742		778		819
Base	622	670	648	744	673	776	697	822	719	904	748
Low	613		630		641		653		666		680

For the fifth year in a row, traffic levels were above the high traffic scenario that STATFOR forecasted back in 2014, when the FAB performance plans and associated capacity plans were being determined. Traffic rose almost 10% on 2017 figures which was already above the highest traffic forecast by the end of RP2.

The airspace users commented on the good overall performance from Budapest ACC.

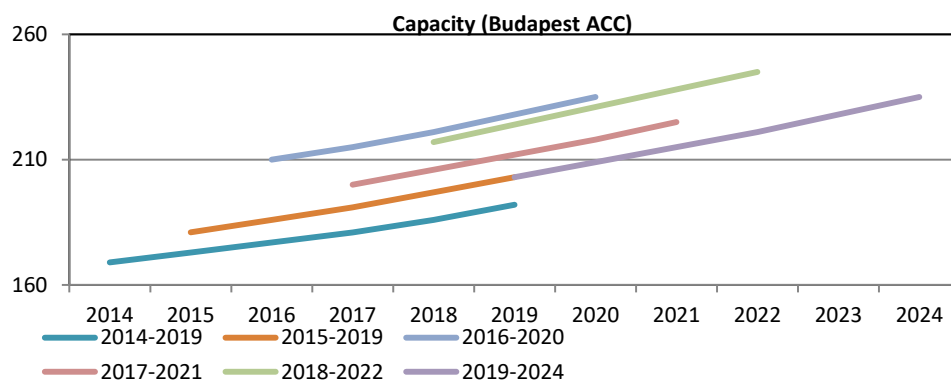
The 10% increase in traffic corresponded with a dramatic increase in en route ATFM delays to 0.36 minutes per flight (excluding the 27k of minutes attributed to Kosovo airspace) compared to the 2017 actual delay of 0.01 minutes per flight.

Excluding the delays attributed to Kosovo: 54% of delays in Hungary were attributed to adverse weather; 30% were attributed to ATC capacity and 15% were attributed to staffing issues. However, 74% of all en route delays occurred in collapsed sectors which would indicate an issue with availability of staff.

In the Network Operation Report 2018, the Network Manager reports on a 'serious staff shortage' in Budapest ACC resulting from unexpected retirement of ATCOs and a lower success rate of trainees than expected.

The Network Operations Plan 2019 – 2024 predicts a huge increase in delays in Hungary for the years 2019 – 2022 compared to the previous forecast in NOP 2018-2022. Although traffic levels are expected to increase the Network Manager reports that capacity plans are approx. 10% lower than in the previous NOP edition. The Network Manager lists staff availability and loss of ATCOs for other ANSPs as being a main reason for lack of capacity over the next years.

Budapest ACC delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.03</b>	<b>0.03</b>	<b>0.03</b>	<b>0.03</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.88</b>	<b>0.88</b>	<b>0.88</b>			



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Having previously planned significant capacity increases, Budapest ACC has substantially downgraded its capacity plans from 2018.

### Planning and Effective Use of CDRs

Since H24 Free route airspace between 9500ft-FL660 has been implemented in Budapest FIR on February 5th 2015, this KPI is not applicable.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
24%	22%	34%	33%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

Procedure 3 data showed 103 hours used although officially none had been allocated.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## HUNGARY

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

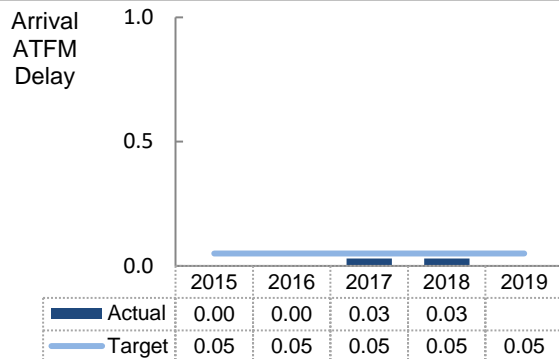
In Hungary, only Budapest/Ferihegy (LHBP) is subject to RP2 monitoring, where traffic levels have drastically increased during RP2 (+24.5% with respect to 2015).

In terms of arrival ATFM delays, values are slightly higher than those in the beginning of the reference period, and ATFM slot adherence has deteriorated by a point (2015: 94.3%; 2018: 93.3%)

The achieved performance concerning arrival ATFM delay meets the constant national target.

Hungary contributes adequately to the airport related ANS Capacity performance in FAB CE and Europe.

## 2. Arrival ATFM Delay



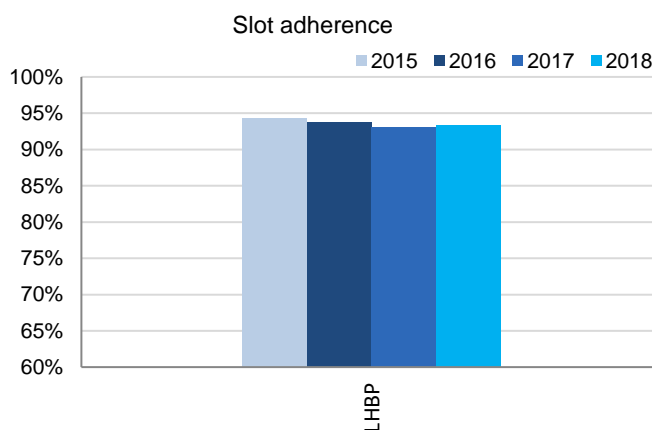
During 2018, arrival ATFM delays in Budapest have not changed much with respect to the previous year (2017: 0.03 min/arr, 2018: 0.03 min/arr) and performance still fully meets the target.

Like in 2017, 2018 shows a discreet arrival ATFM delay at Budapest and reportedly due to weather and to a lesser extent ATC staffing and capacity. The achieved performance at LHBP still suggests no major capacity constraints.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The FAB CE performance plan sets a national target on arrival ATFM delay for Hungary but no associated incentive scheme, so although the national target is met, no bonus applies.

## 4. ATFM Slot Adherence



The adherence to ATFM slots at Budapest remains above 90% and performance is stable during RP2.

## 5. ATC Pre-departure Delay

ATC pre-departure delay has decreased in 2018 (2018: 0.20 min/dep. vs 2017: 0.25 min/dep) and it is still commensurate with the level of air traffic.

## 6. Appendix

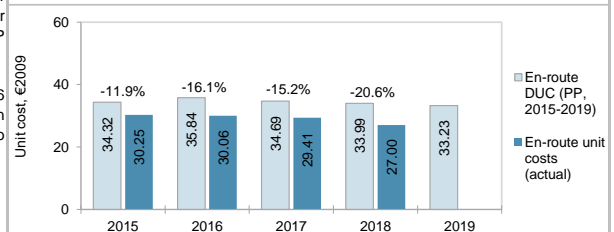
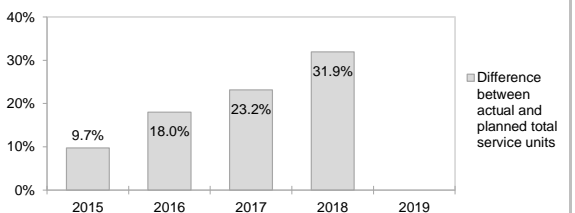
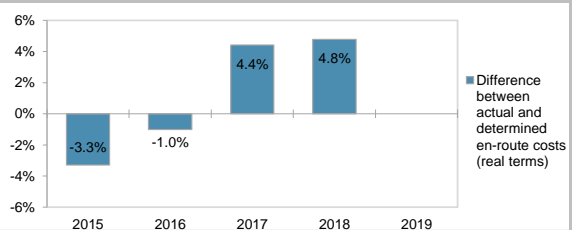
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Budapest/ Ferihegy	LHBP	0.00	0.00	0.03	0.03		94.3%	93.8%	93.1%	93.3%		0.13	0.11	0.25	0.20	

## HUNGARY: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

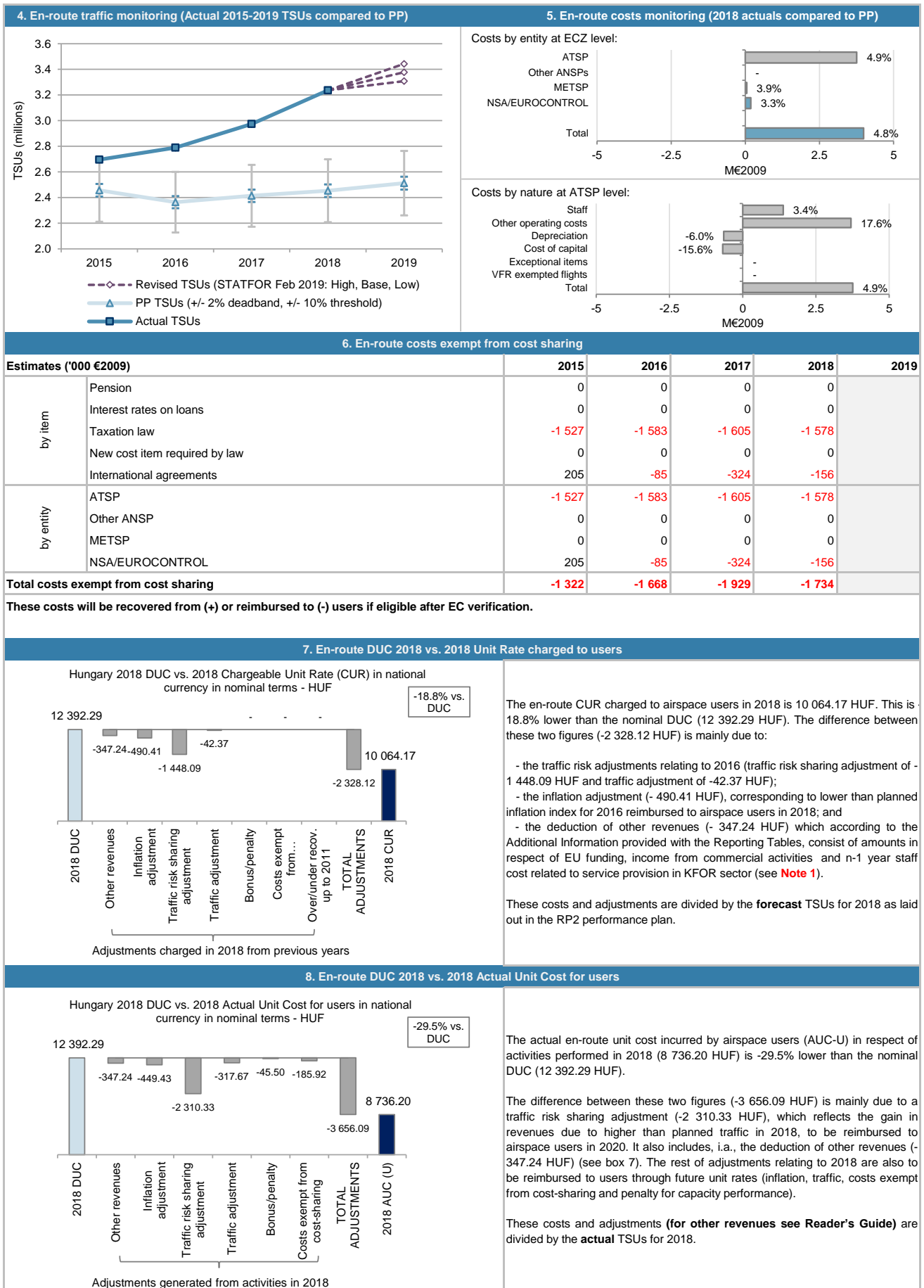
1. Contextual economic information: en-route air navigation services					
· Hungary ECZ represents 1.4% of the SES en-route ANS determined costs in 2018					
· ATSP: HungaroControl					
· FAB: FAB CE					
· National currency: HUF Exchange rate 2009: 1 EUR = 279.699 HUF					
2. En-route DUC monitoring at Charging Zone level					
Hungary: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal HUF)	28 133 097 383	29 114 984 951	29 632 945 277	30 406 204 408	31 345 254 629
Inflation %	1.8%	3.0%	3.0%	3.0%	3.0%
Inflation index (100 in 2009)	119.3	122.8	126.5	130.3	134.2
Real en-route costs (HUF2009)	23 587 547 923	23 699 795 100	23 418 852 735	23 330 056 076	23 350 067 982
Total en-route Service Units	2 457 201	2 364 165	2 413 812	2 453 639	2 512 526
<b>Real en-route unit cost per Service Unit (HUF2009)</b>	<b>9 599.36</b>	<b>10 024.60</b>	<b>9 702.02</b>	<b>9 508.35</b>	<b>9 293.46</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>34.32</b>	<b>35.84</b>	<b>34.69</b>	<b>33.99</b>	<b>33.23</b>
Hungary: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal HUF)	26 757 017 076	27 629 019 479	29 491 685 409	30 336 749 603	
Inflation %	0.1%	0.4%	2.4%	2.9%	
Inflation index (100 in 2009)	117.3	117.8	120.6	124.1	
Real en-route costs (HUF2009)	22 810 236 710	23 459 775 733	24 454 456 748	24 446 241 573	
Total en-route Service Units	2 695 944	2 790 211	2 973 323	3 236 517	
<b>Real en-route unit cost per Service Unit (HUF2009)</b>	<b>8 460.95</b>	<b>8 407.89</b>	<b>8 224.62</b>	<b>7 553.26</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>30.25</b>	<b>30.06</b>	<b>29.41</b>	<b>27.00</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal HUF)	-1 376 080 307	-1 485 965 472	-141 259 868	-69 454 806	
in %	-4.9%	-5.1%	-0.5%	-0.2%	
Inflation %	-1.7 p.p.	-2.6 p.p.	-0.6 p.p.	-0.1 p.p.	
Inflation index (100 in 2009)	-2.0 p.p.	-5.1 p.p.	-5.9 p.p.	-6.2 p.p.	
Real en-route costs (HUF2009)	-777 311 213	-240 019 367	1 035 604 013	1 116 185 497	
in %	-3.3%	-1.0%	4.4%	4.8%	
Total en-route Service Units	238 744	426 046	559 511	782 878	
in %	9.7%	18.0%	23.2%	31.9%	
<b>Real en-route unit cost per Service Unit (HUF2009)</b>	<b>-1 138.41</b>	<b>-1 616.71</b>	<b>-1 477.40</b>	<b>-1 955.09</b>	
in %	<b>-11.9%</b>	<b>-16.1%</b>	<b>-15.2%</b>	<b>-20.6%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>-4.07</b>	<b>-5.78</b>	<b>-5.28</b>	<b>-6.99</b>	
in %	<b>-11.9%</b>	<b>-16.1%</b>	<b>-15.2%</b>	<b>-20.6%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (27.00 €2009) is -20.6% lower than planned in the PP (33.99 €2009). This results from the combination of much higher than planned TSUs (+31.9%) and higher than planned en-route costs in real terms (+4.8%, or +4.0 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+31.9%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (HungaroControl) retaining an amount of +3.4 M€2009. The difference between actual and planned TSUs is mainly explained by the effects of the Ukrainian crisis, while the TSU forecast assumption retained by Hungary in the RP2 PP foresaw these effects of the Ukrainian crisis to last only until mid-2015.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Hungary are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -0.2% (-69.5 MHUF) lower than planned. However, since the actual inflation index is also lower than planned (-6.2 p.p.), actual en-route costs are +4.8% (+4.0 M€2009) above plans when expressed in real terms.					
The higher than planned en-route costs in real terms are largely driven by HungaroControl (+4.9%, or +3.8 M€2009). Actual costs are also higher than planned for the MET service provider (+3.9%, or +0.05 M€2009) and the NSA/EUROCONTROL (+3.3%, or +0.2 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -1.7 M€2009 comprising -1.6 M€2009 for unforeseen changes in national taxation law and -0.2 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					





**HUNGARY: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



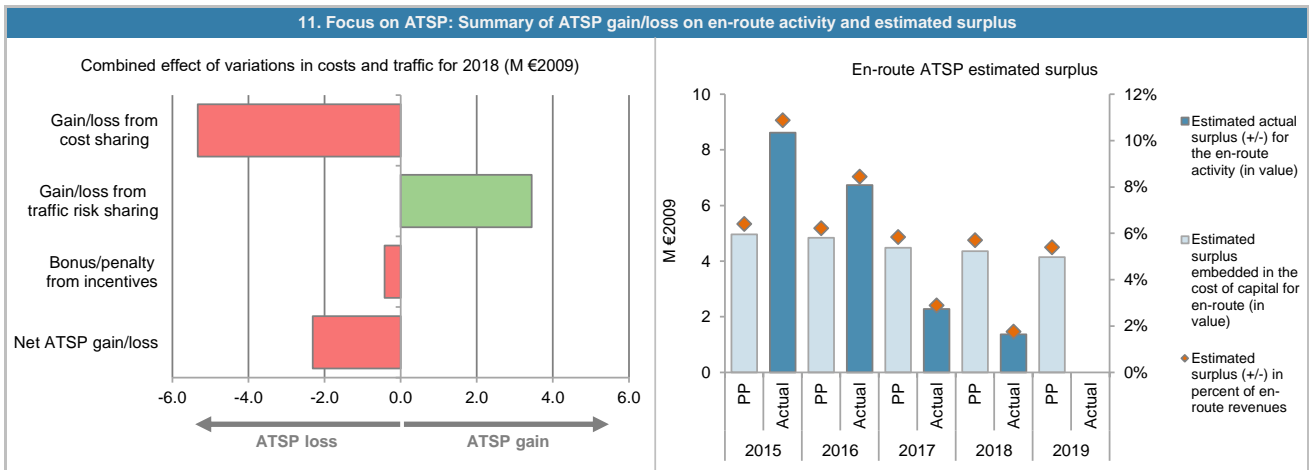
## HUNGARY: En-route ATSP (HungaroControl)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	77 413	77 777	76 773	76 484	
Actual costs for the ATSP	74 349	76 603	80 286	80 240	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	3 064	1 174	-3 513	-3 756	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-1 527	-1 583	-1 605	-1 578	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 537</b>	<b>-409</b>	<b>-5 118</b>	<b>-5 334</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	9.7%	18.0%	23.2%	31.9%	
Determined costs for the ATSP (PP) - based on actual inflation	76 996	79 189	78 606	78 318	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>3 322</b>	<b>3 484</b>	<b>3 459</b>	<b>3 446</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>87</b>	<b>-424</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 859</b>	<b>3 075</b>	<b>-1 572</b>	<b>-2 313</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	62 782	61 295	56 737	55 212	52 382
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	62 782	61 295	56 737	55 212	52 382
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	4 960	4 842	4 482	4 362	4 138
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	7.9%	7.9%	7.9%	7.9%	7.9%
Estimated surplus embedded in the cost of capital for en-route (in value)	4 960	4 842	4 482	4 362	4 138
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 960</b>	<b>4 842</b>	<b>4 482</b>	<b>4 362</b>	<b>4 138</b>
<b>Revenue/costs for the en-route activity</b>	<b>77 413</b>	<b>77 777</b>	<b>76 773</b>	<b>76 484</b>	<b>76 583</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.4%</b>	<b>6.2%</b>	<b>5.8%</b>	<b>5.7%</b>	<b>5.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.9%</b>	<b>7.9%</b>	<b>7.9%</b>	<b>7.9%</b>	<b>7.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	47 555	46 287	48 763	46 620	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	47 555	46 287	48 763	46 620	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	3 757	3 657	3 852	3 683	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	7.9%	7.9%	7.9%	7.9%	
Estimated surplus embedded in the cost of capital for en-route (in value)	3 757	3 657	3 852	3 683	
Net ATSP gain(+)/loss(-) on en-route activity	4 859	3 075	-1 572	-2 313	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>8 616</b>	<b>6 732</b>	<b>2 280</b>	<b>1 370</b>	
<b>Revenue/costs for the en-route activity</b>	<b>79 208</b>	<b>79 678</b>	<b>78 714</b>	<b>77 927</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>10.9%</b>	<b>8.4%</b>	<b>2.9%</b>	<b>1.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>18.1%</b>	<b>14.5%</b>	<b>4.7%</b>	<b>2.9%</b>	

**HUNGARY: En-route ATSP (HungaroControl)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 HungaroControl en-route costs vs. PP**

In 2018, HungaroControl actual en-route costs are +4.9% (+ 3.8 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- higher staff costs (+3.4%, or + 1.4 M€2009) overall. The cancellation of the planned early retirement contribution (to be reimbursed to airspace users as cost exempt from cost-sharing) represents a decrease of -1.6 M€2009 compared to plan. If this is excluded, actual staff costs are +7.3% (+3.0 M€2009) higher than planned due to "the agreed three years salary increase programme with the unions" and ATCO overtime "as the increased traffic caused significantly higher workload";
- much higher other operating costs (+17.6%, or + 3.7 M€2009), due to ATCO training costs "to increase capacity and to be able to handle much higher demand than planned"; also "search and rescue costs increased significantly";
- lower depreciation costs (-6.0%, or - 0.6 M€2009), mainly due to lower or postponed capex compared to plan and to different depreciation periods; and
- much lower cost of capital (-15.6%, or - 0.7 M€2009), mainly due to a "higher level of cash and cash equivalents (due to increased traffic) which reduced the level of asset base and hence cost of capital".

**HungaroControl net gain/loss on en-route activity in 2018**

As shown in box 9, HungaroControl generated a net loss of - 2.3 M€2009 on the en-route activity. This is a combination of three elements:

- a loss of - 5.3 M€2009 arising from the cost sharing mechanism;
- a gain of + 3.4 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of - 0.4 M€2009 (or - 147.26 MHUF in nominal terms), corresponding to a penalty as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.5% of HungaroControl en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The loss from cost sharing mentioned above (- 5.3 M€2009) includes amounts reported by HungaroControl for cost exempt from cost sharing (- 1.6 M€2009). Should these costs not be deemed eligible by the European Commission, HungaroControl would record a net loss of - 0.7 M€2009 for the en-route activity in 2018.

**HungaroControl overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net loss from the en-route activity mentioned above (- 2.3 M€2009) and the surplus embedded in the actual cost of capital (+ 3.7 M€2009) amounts to + 1.4 M€2009 (1.8% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 2.9%, which is significantly lower than the 7.9% planned in the PP.

## HUNGARY: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Hungary TCZ represents 1.6% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP: HungaroControl		Airports with fewer than 70,000 IFRs ATMs:		0	
National currency: HUF		Airports with between 70,000 and 225,000 IFRs ATMs:		1	
Number of airports in charging zone in 2018: 1, of which:		Airports with more than 225,000 IFRs ATMs:		0	
2. Terminal DUC monitoring at Charging Zone level					
Hungary: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal HUF)	5 614 637 198	5 866 682 812	6 133 511 687	6 382 139 652	6 284 449 073
Inflation %	1.8%	3.0%	3.0%	3.0%	3.0%
Inflation index (100 in 2009)	119.3	122.8	126.5	130.3	134.2
Real terminal costs (HUF2009)	4 707 463 319	4 775 519 575	4 847 301 056	4 896 884 661	4 681 484 161
Total terminal Service Units	51 589	54 323	56 713	58 925	61 635
<b>Real terminal unit cost per Service Unit (HUF2009)</b>	<b>91 250.07</b>	<b>87 910.05</b>	<b>85 470.72</b>	<b>83 103.96</b>	<b>75 954.54</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>326.24</b>	<b>314.30</b>	<b>305.58</b>	<b>297.12</b>	<b>271.56</b>
Hungary: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal HUF)	4 310 296 431	4 895 199 717	5 177 203 686	5 497 048 126	
Inflation %	0.1%	0.4%	2.4%	2.9%	
Inflation index (100 in 2009)	117.3	117.8	120.6	124.1	
Real terminal costs (HUF2009)	3 674 508 321	4 156 509 702	4 292 928 731	4 429 682 421	
Total terminal Service Units	55 315	59 113	63 974	73 261	
<b>Real terminal unit cost per Service Unit (HUF2009)</b>	<b>66 429.11</b>	<b>70 315.04</b>	<b>67 104.27</b>	<b>60 464.46</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>237.50</b>	<b>251.40</b>	<b>239.92</b>	<b>216.18</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal HUF)	-1 304 340 767	-971 483 095	-956 308 001	-885 091 526	
	in %				
	-23.2%	-16.6%	-15.6%	-13.9%	
Inflation %	-1.7 p.p.	-2.6 p.p.	-0.6 p.p.	-0.1 p.p.	
Inflation index (100 in 2009)	-2.0 p.p.	-5.1 p.p.	-5.9 p.p.	-6.2 p.p.	
Real terminal costs (HUF2009)	-1 032 954 998	-619 009 873	-554 372 325	-467 202 240	
	in %				
	-21.9%	-13.0%	-11.4%	-9.5%	
Total terminal Service Units	3 726	4 790	7 261	14 336	
	in %				
	7.2%	8.8%	12.8%	24.3%	
<b>Real terminal unit cost per Service Unit (HUF2009)</b>	<b>-24 820.96</b>	<b>-17 595.01</b>	<b>-18 366.45</b>	<b>-22 639.50</b>	
	in %				
	-27.2%	-20.0%	-21.5%	-27.2%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-88.74</b>	<b>-62.91</b>	<b>-65.67</b>	<b>-80.94</b>	
	in %				
	-27.2%	-20.0%	-21.5%	-27.2%	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Hungary Terminal Charging Zone (TCZ) comprising only Budapest Liszt Ferenc International airport (LHBP).					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (216.18 €2009) is -27.2% lower than planned in the PP (297.12 €2009). This results from the combination of significantly higher than planned TNSUs (+24.3%) and lower than planned terminal costs in real terms (-9.5%, or -1.7 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Hungary TCZ. In 2018, the actual TNSUs in Hungary TCZ are +24.3% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Hungary are expected to remain largely above the planned values for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -13.9% (-885.09 MHUF) lower than planned. However, since the actual inflation index is also lower than planned (-6.2 p.p.), actual terminal costs are -9.5% (-1.7 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by HungaroControl (-9.8%, or -1.7 M€2009), while the costs for the NSA (+9.8%, or +0.02 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.6 M€2009 corresponding to unforeseen changes in national taxation law. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

**HUNGARY: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



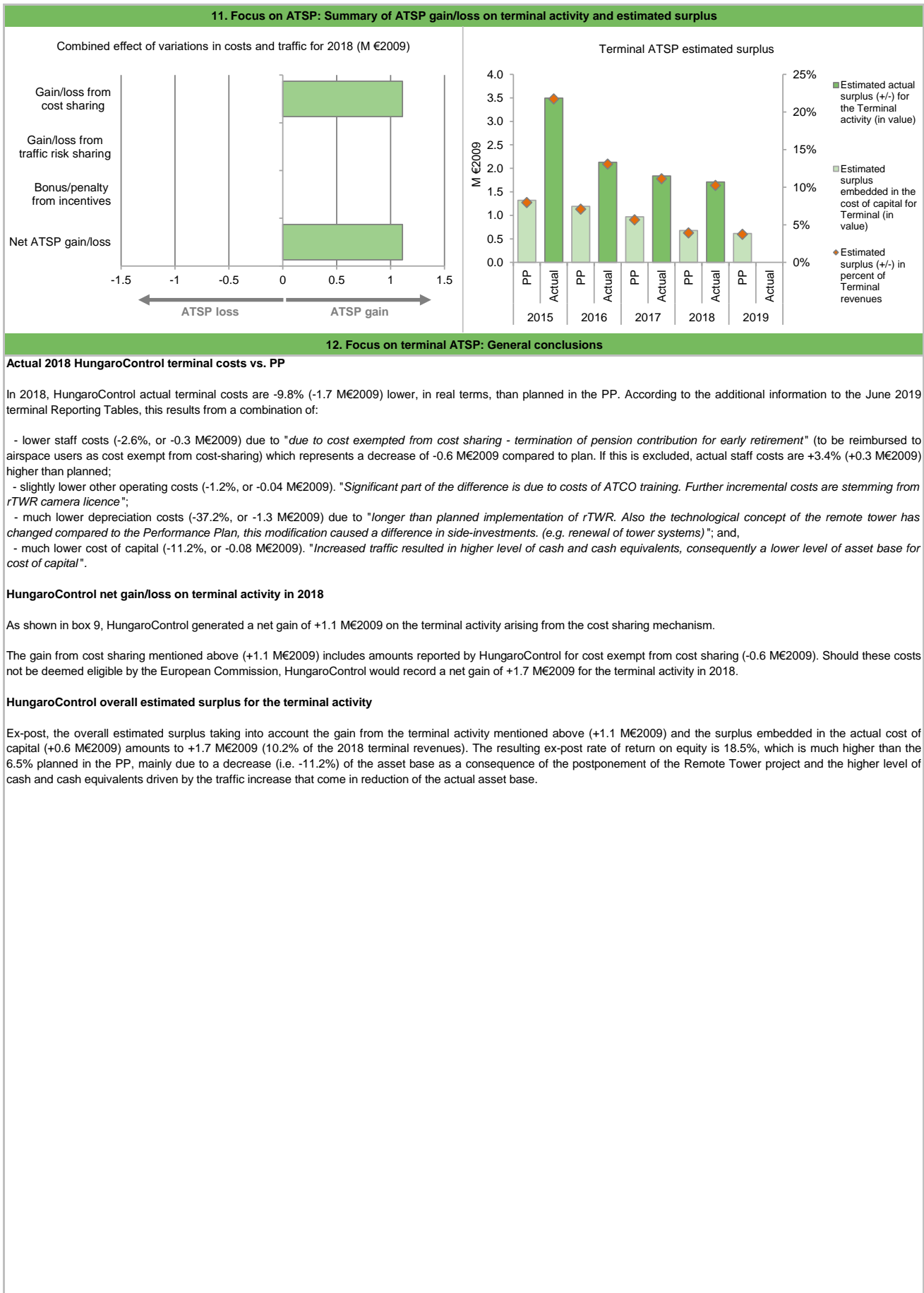
## HUNGARY: Terminal ATSP (HungaroControl)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	16 620	16 869	17 132	17 315	
Actual costs for the ATSP	12 932	14 655	15 140	15 626	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	3 688	2 214	1 992	1 689	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-543	-570	-572	-579	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>3 145</b>	<b>1 644</b>	<b>1 420</b>	<b>1 110</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>3 145</b>	<b>1 644</b>	<b>1 420</b>	<b>1 110</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	20 345	18 372	14 886	10 432	9 478
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	20 345	18 372	14 886	10 432	9 478
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	1 322	1 194	968	678	616
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.5%	6.5%	6.5%	6.5%	6.5%
Estimated surplus embedded in the cost of capital for terminal (in value)	1 322	1 194	968	678	616
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 322</b>	<b>1 194</b>	<b>968</b>	<b>678</b>	<b>616</b>
<b>Revenue/costs for the terminal activity</b>	<b>16 620</b>	<b>16 869</b>	<b>17 132</b>	<b>17 315</b>	<b>16 550</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>8.0%</b>	<b>7.1%</b>	<b>5.6%</b>	<b>3.9%</b>	<b>3.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	5 410	7 459	6 466	9 261	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	5 410	7 459	6 466	9 261	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	352	485	420	602	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.5%	6.5%	6.5%	6.5%	
Estimated surplus embedded in the cost of capital for terminal (in value)	352	485	420	602	
Net ATSP gain(+)/loss(-) on terminal activity	3 145	1 644	1 420	1 110	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>3 497</b>	<b>2 129</b>	<b>1 840</b>	<b>1 712</b>	
<b>Revenue/costs for the terminal activity</b>	<b>16 077</b>	<b>16 300</b>	<b>16 560</b>	<b>16 735</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>21.7%</b>	<b>13.1%</b>	<b>11.1%</b>	<b>10.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>N/A</b>	<b>28.5%</b>	<b>28.5%</b>	<b>18.5%</b>	

**HUNGARY: Terminal ATSP (HungaroControl)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## HUNGARY: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

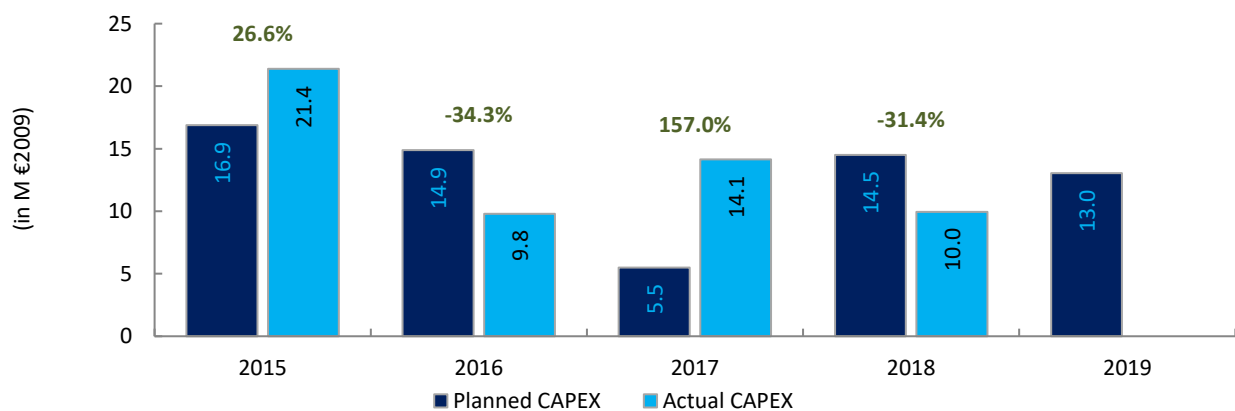
1. Monitoring of gate-to-gate ANS costs																																												
<b>Hungary: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	84 331 899	84 733 214	83 728 768	83 411 296	83 482 844																																							
Real terminal costs (EUR2009)	16 830 462	17 073 781	17 330 420	17 507 695	16 737 579																																							
Real gate-to-gate costs (EUR2009)	101 162 361	101 806 995	101 059 188	100 918 991	100 220 423																																							
En-route share (%)	83.4%	83.2%	82.9%	82.7%	83.3%																																							
<b>Hungary: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	81 552 800	83 875 079	87 431 334	87 401 963																																								
Real terminal costs (EUR2009)	13 137 367	14 860 653	15 348 388	15 837 319																																								
Real gate-to-gate costs (EUR2009)	94 690 167	98 735 732	102 779 722	103 239 282																																								
En-route share (%)	86.1%	84.9%	85.1%	84.7%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-6 472 194	-3 071 263	1 720 534	2 320 292																																								
in %	-6.4%	-3.0%	1.7%	2.3%																																								
En-route share in p.p.	2.8 p.p.	1.7 p.p.	2.2 p.p.	2.0 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +2.3% (+2.3 ME2009) higher than planned due to higher than planned en-route costs (+4.8%, or + 4.0 ME2009) while terminal costs are lower than planned (-9.5%, or -1.7 ME2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (84.7%) is higher than planned in the PP for 2018 (82.7%).</p> <p>For HungaroControl, the estimated gate-to-gate economic surplus in 2018 amounts to 3.1 ME2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 3.3% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>83.4%</td> <td>16.6%</td> </tr> <tr> <td>Actual</td> <td>86.1%</td> <td>13.9%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>83.2%</td> <td>16.8%</td> </tr> <tr> <td>Actual</td> <td>84.9%</td> <td>15.1%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>82.9%</td> <td>17.1%</td> </tr> <tr> <td>Actual</td> <td>85.1%</td> <td>14.9%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>82.7%</td> <td>17.3%</td> </tr> <tr> <td>Actual</td> <td>84.7%</td> <td>15.3%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>83.3%</td> <td>16.7%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	83.4%	16.6%	Actual	86.1%	13.9%	2016	Determined	83.2%	16.8%	Actual	84.9%	15.1%	2017	Determined	82.9%	17.1%	Actual	85.1%	14.9%	2018	Determined	82.7%	17.3%	Actual	84.7%	15.3%	2019	Determined	83.3%	16.7%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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<b>3. Technical notes on en-route and terminal information reported by Hungary</b>																																												
<b>Note 1: ATS provision in Kosovo (KFOR sector)</b>																																												
<p>HungaroControl was designated for the provision of air traffic services in the upper airspace over Kosovo (KFOR sector) for 5 years starting from 3 April 2014. The actual costs for 2018 for Hungary en-route charging zone include cost for these services (e.g. ATCO staff cost), which are recovered through the charges of Serbia-Montenegro-KFOR en-route charging zone (outside the SES area). In agreement with the European Commission, Hungary committed to deduct the income received for the services provided to the KFOR sector as 'other revenues' in the Hungarian cost base to avoid double charging.</p>																																												



## HUNGARY

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: HungaroControl						
FAB: FAB CE						
Currency: HUF						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	5 635.0	5 119.0	1 948.0	5 290.0	4 894.0	22 886.0
Main CAPEX (in nominal M)	2 842.0	3 616.0	885.0	4 427.0	4 131.0	15 901.0
Inflation %	1.8%	3.0%	3.0%	3.0%	3.0%	
Inflation index (100 in 2009)	119.3	122.8	126.5	130.3	134.2	
Exchange rate 2009	279.699	279.699	279.699	279.699	279.699	
<b>Total CAPEX (in M €2009)</b>	<b>16.9</b>	<b>14.9</b>	<b>5.5</b>	<b>14.5</b>	<b>13.0</b>	<b>64.8</b>
Main CAPEX (in M €2009)	8.5	10.5	2.5	12.1	11.0	44.7
% Main of Total CAPEX	50.4%	70.6%	45.4%	83.7%	84.4%	68.9%
Real gate-to-gate ANSP costs (in M €2009)	94.0	94.6	93.9	93.8	93.1	469.5
Total CAPEX as % of Real gate-to-gate ANSP costs	18.0%	15.7%	5.9%	15.5%	14.0%	13.8%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	7 013.7	3 225.7	4 770.7	3 456.8		
Main CAPEX (in nominal M)	4 572.8	1 117.7	2 640.7	1 449.0		
Inflation %	0.1%	0.4%	2.4%	2.9%		
Inflation index (100 in 2009)	117.3	117.8	120.6	124.1		
Exchange rate 2009	279.699	279.699	279.699	279.699		
<b>Total CAPEX (in M €2009)</b>	<b>21.4</b>	<b>9.8</b>	<b>14.1</b>	<b>10.0</b>		
Main CAPEX (in M €2009)	13.9	3.4	7.8	4.2		
% Main of Total CAPEX	65.2%	34.6%	55.4%	41.9%		
Real gate-to-gate ANSP costs (in M €2009)	87.3	91.3	95.4	95.9		
Total CAPEX as % of Real gate-to-gate ANSP costs	24.5%	10.7%	14.8%	10.4%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	1 378.7	-1 893.3	2 822.7	-1 833.2		
Total CAPEX (in M €2009)	4.5	-5.1	8.6	-4.6		
<b>Total CAPEX (in %, M €2009)</b>	<b>26.6%</b>	<b>-34.3%</b>	<b>157.0%</b>	<b>-31.4%</b>		





# Annual Monitoring Report 2018

## Local level view

### Slovakia



## SLOVAKIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	61	C	D	B	C	B
LPS SR	89	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			n/a	n/a		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			CAA/LPS			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			8	1		
Legal/Judiciary			5	2		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>15</b>	<b>3</b>		
LPS SR			Number of questions answered			
			YES	NO		
Policy and its implementation			10	3		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			8	0		
<b>TOTAL</b>			<b>20</b>	<b>4</b>		
Observations						
<p>One (Safety Assurance) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only one are below Level C.</p>						

**SLOVAKIA**

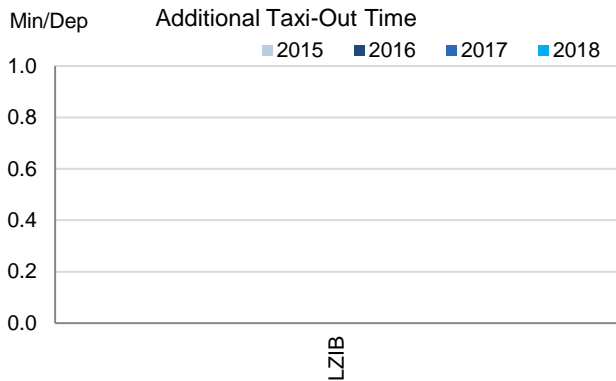
**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

Slovakia has only identified its main airport Bratislava as subject to RP2 monitoring. The provision of data in 2018 did not cover the required information to calculate taxi times, so the indicator cannot be monitored.

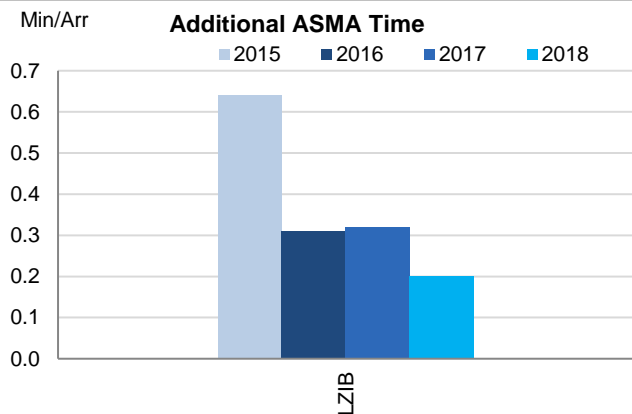
Traffic at Bratislava has significantly increased in the course of RP2 (+21% more flights in 2018 with respect to 2015). Despite this higher traffic levels, the additional times in the terminal area have drastically reduced in the reference period.

**2. Additional Taxi-Out Time**



Bratislava implemented the Airport Operator Data Flow, necessary for the proper monitoring of the additional taxi-out times, in July 2018. However, the annual value for an indicator is only computed when the dataset is considered to be complete (i.e.  $\geq 10$  valid months of data in the year). The annual monitoring of the additional taxi-out times will be possible at Bratislava as of 2019.

**3. Additional ASMA Time**



Despite the 8% increase in traffic in 2018 with respect to the previous year, the performance in terms of additional ASMA times has further improved, reaching a negligible 0.20 min/arr.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bratislava	LZIB	n/a	n/a	n/a	n/a		0.64	0.31	0.32	0.20	

**SLOVAKIA**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.10	0.10	0.10	0.11	0.10	
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.07	0.03	0.03	0.21		

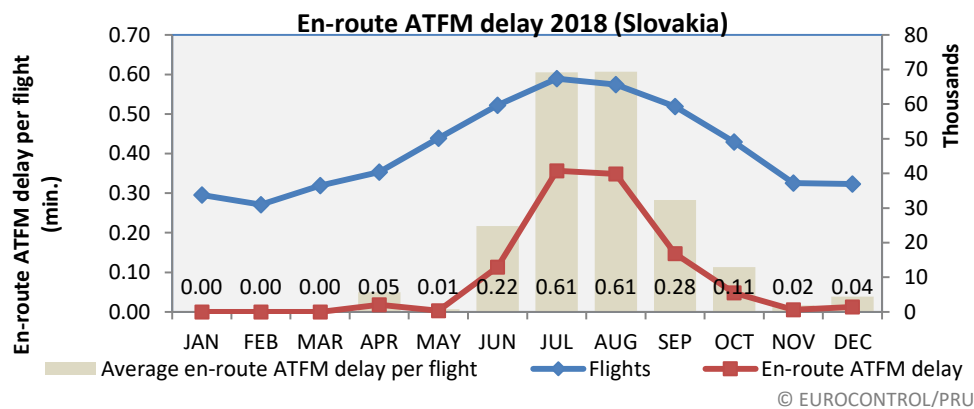
**National capacity incentive scheme**

FAB CE missed its target by more than +100% which results in a 'ponder' value of 100%. The ANSP, LPS SR, missed its target by more than +91% which results in a national element of 91%. The en-route ANS revenue of LPS SR in 2018 was €66,795,402 (excluding exempted flights). The applied formula is 100% x 91% x 0.5% x en-route revenue which gives the penalty: €303,615.

**Compliance issues relating to national capacity incentive scheme**

The FAB CE monitoring report states that there were no compliance issues despite the PRB highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Slovakia)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.16	0.06	0.10	0.00	0.00	0.00	0.14	0.07	0.03	0.03	0.21

EUROCONTROL 7 year forecast February 2014 – Slovakia										
	2014	2015	2016	2017	2018	2019				
	actual	actual	actual	actual	actual	actual				
High	415	445	472	497	522	549				
Base	408	436	468	498	515	567				
Low	402	420	427	435	443	452				

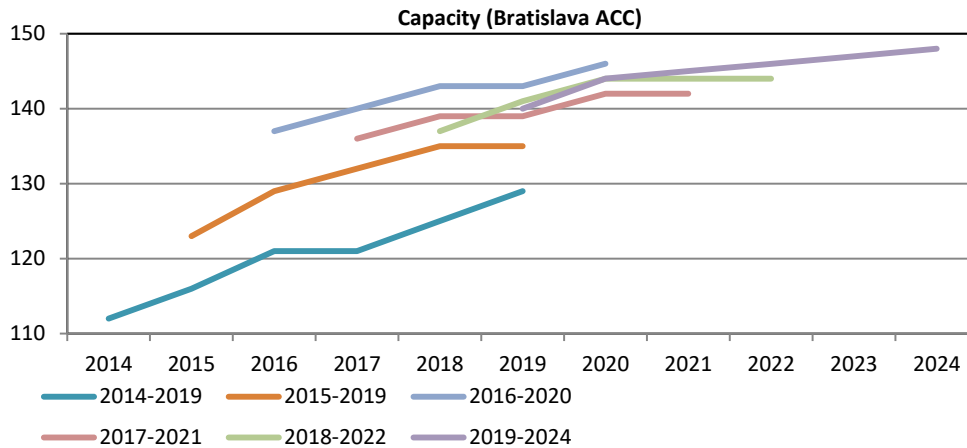
For the fifth year in a row, traffic levels were above the high traffic scenario that STATFOR forecasted back in 2014, when the FAB performance plans and associated capacity plans were being determined.

Traffic rose almost 10% on 2017 and average en route ATFM delays increased from 0.03 minutes per flight in 2017 to 0.21 minutes per flight in 2018.

53% of ATFM delays were attributed to ATC capacity; 35% attributed to adverse weather and 5% were attributed to ATC staffing.

In the Network Operations Plan 2019 – 2024, the Network Manager highlights the unforeseen increase in traffic and anticipates a lack of capacity for the period 2019 – 2024. The Network Manager suggests that the continuous recruitment of controllers, optimisation of sector configurations and opening times could be effective and feasible solutions to further capacity increase.

Bratislava ACC delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.07</b>	<b>0.08</b>	<b>0.14</b>	<b>0.20</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.71</b>	<b>0.76</b>	<b>0.92 – 1.54</b>			



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The graphic shows continual planning for additional capacity.

### Planning and Effective Use of CDRs

This data is not available at national level.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
52%	31%	48%	45%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	N/A	N/A	N/A	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	<1%	N/A	N/A	

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.



## SLOVAKIA

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

In Slovakia, ANS at Bratislava (LZIB) are subject to RP2 monitoring, where traffic levels have drastically increased during RP2 (+20.5% with respect to 2015).

Arrival ATFM delays are at zero like in the beginning of the reference period and adherence to ATFM slots remains within best in class.

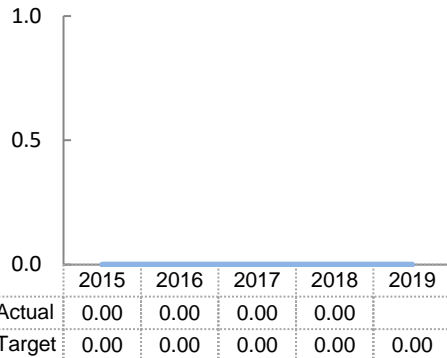
Slovakia has established a national target of 0 min/arr. which was met in all years in RP2 so far, showing no capacity constraints.

Slovakia contributes adequately to the airport related ANS Capacity performance in FAB CE and Europe.

The Airport Operator Data Flow, necessary for the calculation of ATC pre-departure delay was finally established for LZIB in the Summer of 2018. Unfortunately, as the data set for the entire year is not available, the monitoring was not possible for 2018.

## 2. Arrival ATFM Delay

Arrival ATFM Delay



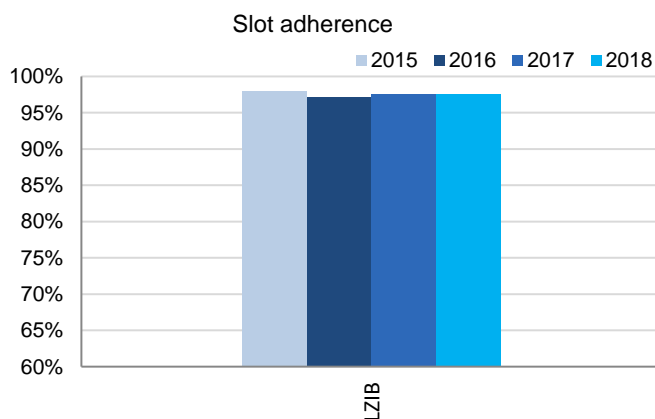
ANS at Bratislava (LZIB) did not accrue any arrival ATFM delay in the past 4 years, despite the traffic increase of 20.5% since the beginning of RP2. This performance is commensurate with the level of air traffic.

Due to the absence of any capacity constraints, the national target is established at 0 min/arr. for the whole reference period.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The FAB CE performance plan sets a national target on arrival ATFM delay for Slovakia but no associated incentive scheme, so although the national target is met, no bonus applies.

## 4. ATFM Slot Adherence



ATFM slot adherence at Bratislava (LZIB) remains well above the 95% threshold and the performance is very stable.

## 5. ATC Pre-departure Delay

The indicator ATC pre-departure delay depends on the Airport Operator Data Flow that was not implemented at Bratislava for the entire 2018, so the monitoring of this indicator is not yet possible.

## 6. Appendix

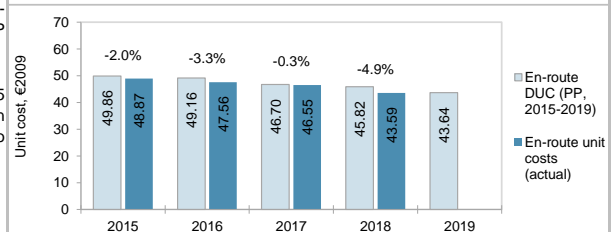
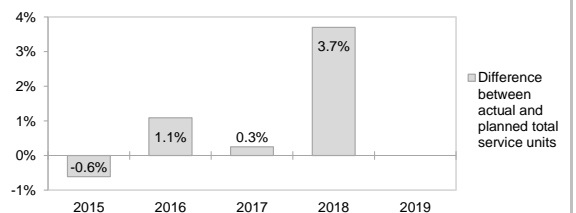
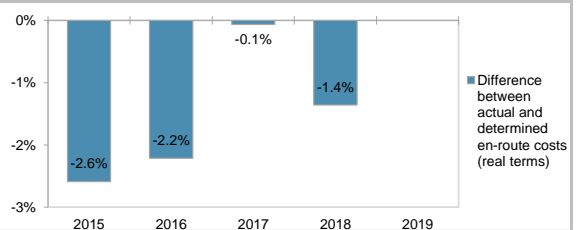
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bratislava	LZIB	0.00	0.00	0.00	0.00		98.0%	97.2%	97.6%	97.6%		n/a	n/a	n/a	n/a	

## SLOVAKIA: En-route charging zone

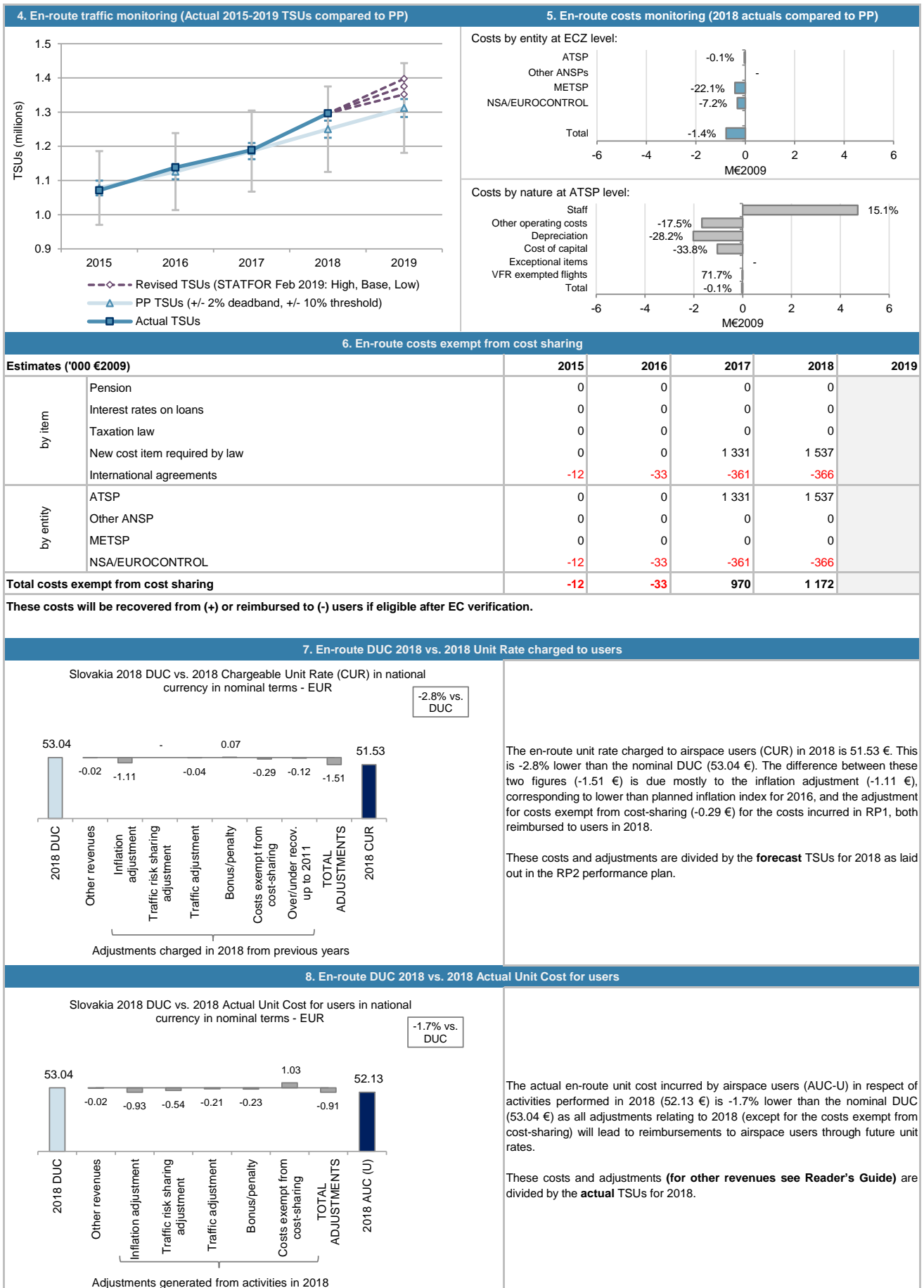
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Slovakia ECZ represents 0.9% of the SES en-route ANS determined costs in 2018					
· ATSP: LPS					
· FAB: FAB CE					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
Slovakia: Data from RP2 Performance Plan (EC Decision 2016/599 of 15 April 2016)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	59 272 906	61 912 217	62 981 088	66 300 093	67 598 994
Inflation %	0.0%	1.4%	1.7%	1.8%	2.0%
Inflation index (100 in 2009)	110.3	111.8	113.7	115.7	118.1
Real en-route costs (EUR2009)	53 754 368	55 355 807	55 381 628	57 279 434	57 253 112
Total en-route Service Units	1 078 000	1 126 000	1 186 000	1 250 000	1 312 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>49.86</b>	<b>49.16</b>	<b>46.70</b>	<b>45.82</b>	<b>43.64</b>
Slovakia: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	57 543 515	59 191 004	61 367 348	64 214 826	
Inflation %	-0.3%	-0.5%	1.4%	2.5%	
Inflation index (100 in 2009)	109.9	109.3	110.9	113.7	
Real en-route costs (EUR2009)	52 361 339	54 131 116	55 346 566	56 502 122	
Total en-route Service Units	1 071 382	1 138 250	1 189 020	1 296 243	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>48.87</b>	<b>47.56</b>	<b>46.55</b>	<b>43.59</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-1 729 391	-2 721 213	-1 613 740	-2 085 267	
in %	-2.9%	-4.4%	-2.6%	-3.1%	
Inflation %					
in p.p.	-0.3 p.p.	-1.9 p.p.	-0.3 p.p.	0.7 p.p.	
Inflation index (100 in 2009)					
in p.p.	-0.4 p.p.	-2.5 p.p.	-2.8 p.p.	-2.1 p.p.	
Real en-route costs (EUR2009)					
in value	-1 393 029	-1 224 691	-35 063	-777 312	
in %	-2.6%	-2.2%	-0.1%	-1.4%	
Total en-route Service Units					
in value	-6 618	12 250	3 020	46 243	
in %	-0.6%	1.1%	0.3%	3.7%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-0.99</b>	<b>-1.61</b>	<b>-0.15</b>	<b>-2.23</b>	
in %	<b>-2.0%</b>	<b>-3.3%</b>	<b>-0.3%</b>	<b>-4.9%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (43.59 €2009) is -4.9% lower than planned in the PP (45.82 €2009). This results from the combination of higher than planned TSUs (+3.7%) and slightly lower than planned en-route costs in real terms (-1.4%, or -0.8 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+3.7%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (LPS) retaining an amount of +1.3 M€2009.					
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Slovakia are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -3.1% (-2.1 M€) lower than planned. However, since the actual inflation index is also lower than planned (-2.1 p.p.), actual en-route costs are -1.4% (-0.8 M€2009) below plans when expressed in real terms.					
The slightly lower than planned en-route costs in real terms are driven by lower actual costs across all the reporting entities: LPS -0.1%, or -0.04 M€2009, MET service provider -22.1%, or -0.4 M€2009 and NSA/EUROCONTROL -7.2%, or -0.3 M€2009. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +1.2 M€2009 comprising +1.5 M€2009 for a new cost item required by law and -0.4 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**SLOVAKIA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



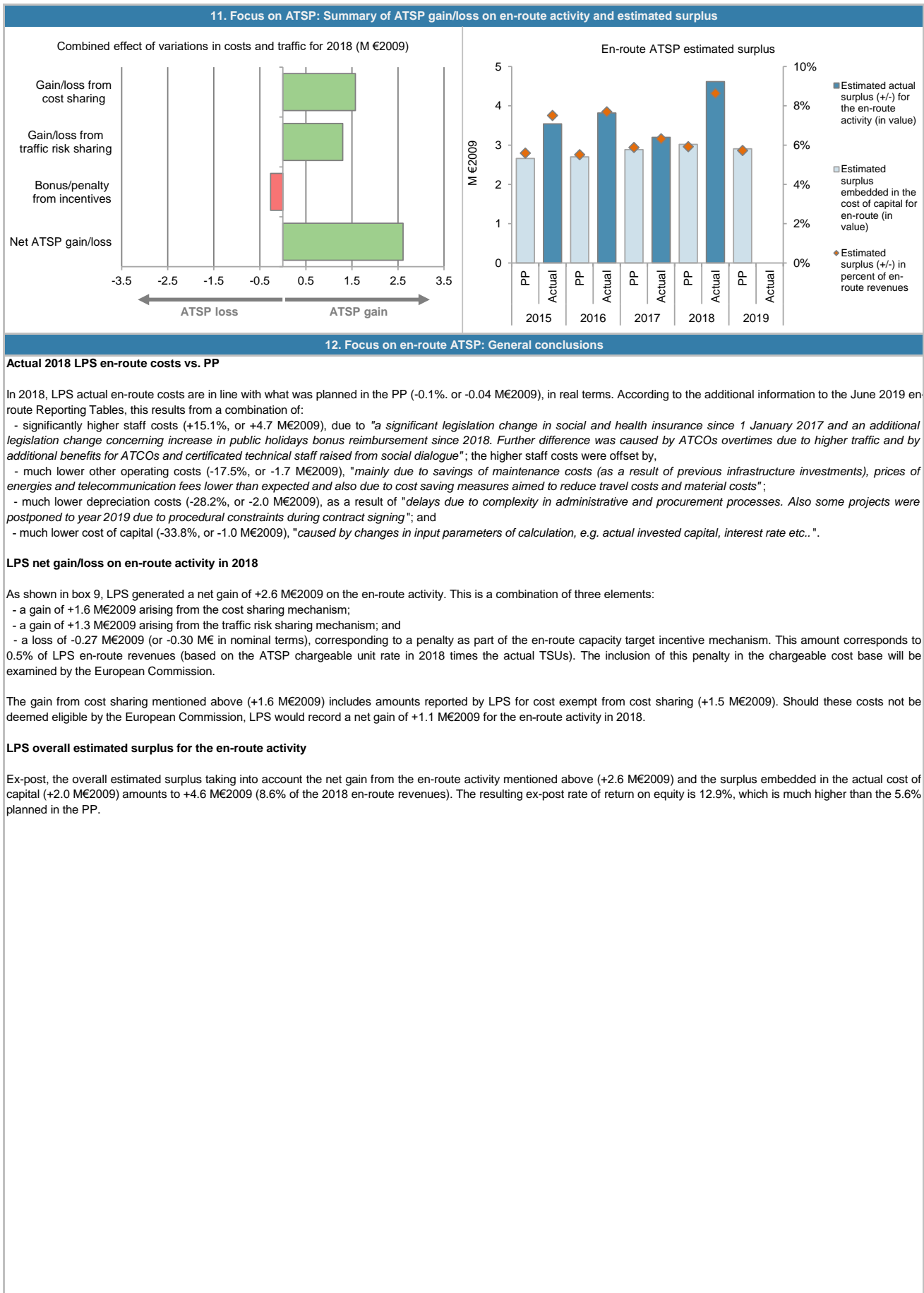
## SLOVAKIA: En-route ATSP (LPS)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
<b>Cost sharing ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Determined costs for the ATSP (PP) - based on planned inflation	47 459	48 948	49 073	50 888	
Actual costs for the ATSP	46 046	48 194	49 680	50 850	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 414	754	-607	39	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	1 331	1 537	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 414</b>	<b>754</b>	<b>724</b>	<b>1 576</b>	
<b>Traffic risk sharing ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Difference in total service units (actual vs PP) %	-0.6%	1.1%	0.3%	3.7%	
Determined costs for the ATSP (PP) - based on actual inflation	47 619	50 066	50 331	51 828	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-292</b>	<b>545</b>	<b>128</b>	<b>1 301</b>	
<b>Incentives ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>83</b>	<b>43</b>	<b>-267</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>1 121</b>	<b>1 382</b>	<b>895</b>	<b>2 610</b>	
<b>10. Focus on ATSP: En-route ATSP estimated surplus *</b>					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
<b>ATSP estimated surplus ('000 €2009) from RP2 Performance Plan</b>	<b>2015P</b>	<b>2016P</b>	<b>2017P</b>	<b>2018P</b>	<b>2019P</b>
Total asset base	50 437	49 897	52 003	55 853	56 081
Estimated proportion of financing through equity (in %)	85.1%	88.7%	92.3%	96.2%	99.0%
Estimated proportion of financing through equity (in value)	42 915	44 259	48 022	53 718	55 545
Estimated proportion of financing through debt (in %)	14.9%	11.3%	7.7%	3.8%	1.0%
Estimated proportion of financing through debt (in value)	7 522	5 638	3 981	2 134	536
Cost of capital pre-tax (in value)	2 831	2 832	2 982	3 069	2 921
Average interest on debt (in %)	2.3%	2.4%	2.4%	2.5%	2.5%
Interest on debt (in value)	173	132	96	52	13
Determined RoE pre-tax rate (in %)	6.2%	6.1%	6.0%	5.6%	5.2%
Estimated surplus embedded in the cost of capital for en-route (in value)	2 658	2 699	2 886	3 016	2 908
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>2 658</b>	<b>2 699</b>	<b>2 886</b>	<b>3 016</b>	<b>2 908</b>
<b>Revenue/costs for the en-route activity</b>	<b>47 459</b>	<b>48 948</b>	<b>49 073</b>	<b>50 888</b>	<b>50 755</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>5.6%</b>	<b>5.5%</b>	<b>5.9%</b>	<b>5.9%</b>	<b>5.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.2%</b>	<b>6.1%</b>	<b>6.0%</b>	<b>5.6%</b>	<b>5.2%</b>
<b>ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables</b>	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>
Total asset base	44 959	46 638	41 280	37 198	
Estimated proportion of financing through equity (in %)	86.9%	85.5%	92.8%	96.1%	
Estimated proportion of financing through equity (in value)	39 087	39 891	38 319	35 743	
Estimated proportion of financing through debt (in %)	13.1%	14.5%	7.2%	3.9%	
Estimated proportion of financing through debt (in value)	5 872	6 747	2 961	1 455	
Cost of capital pre-tax (in value)	2 521	2 551	2 355	2 032	
Average interest on debt (in %)	1.7%	1.8%	1.8%	1.8%	
Interest on debt (in value)	100	118	52	25	
Determined RoE pre-tax rate (in %)	6.2%	6.1%	6.0%	5.6%	
Estimated surplus embedded in the cost of capital for en-route (in value)	2 421	2 433	2 303	2 007	
Net ATSP gain(+)/loss(-) on en-route activity	1 121	1 382	895	2 610	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 543</b>	<b>3 815</b>	<b>3 198</b>	<b>4 617</b>	
<b>Revenue/costs for the en-route activity</b>	<b>47 167</b>	<b>49 576</b>	<b>50 575</b>	<b>53 459</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>7.5%</b>	<b>7.7%</b>	<b>6.3%</b>	<b>8.6%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>9.1%</b>	<b>9.6%</b>	<b>8.3%</b>	<b>12.9%</b>	

**SLOVAKIA: En-route ATSP (LPS)**

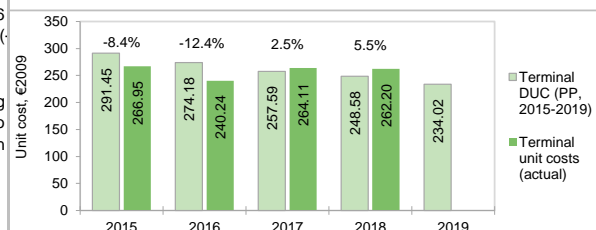
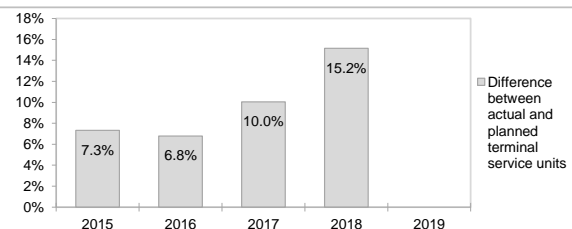
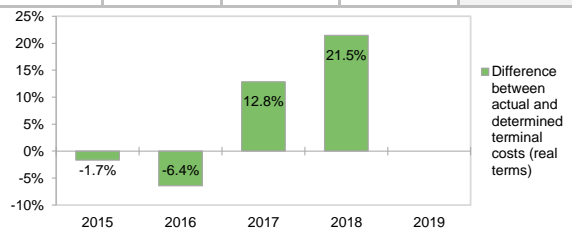
**Monitoring of en-route COST-EFFICIENCY for 2018**



## SLOVAKIA: Terminal charging zone

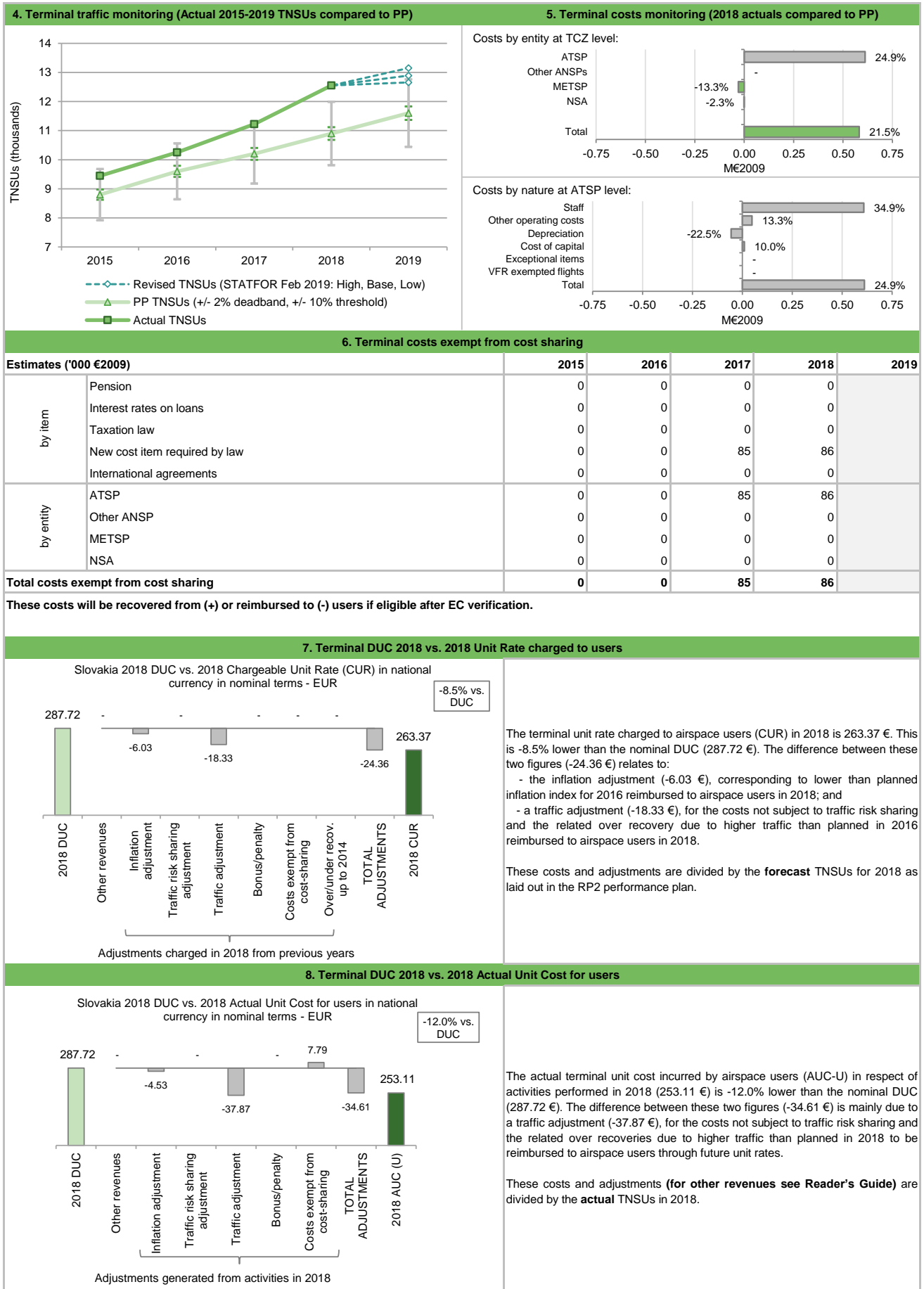
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Slovakia TCZ represents 0.3% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		No	
ATSP:	LPS	Airports with fewer than 70,000 IFRs ATMs:		1	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		0	
Number of airports in charging zone in 2018:	1,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Slovakia: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	2 828 016	2 943 863	2 988 005	3 136 195	3 205 198
Inflation %	0.0%	1.4%	1.7%	1.8%	2.0%
Inflation index (100 in 2009)	110.3	111.8	113.7	115.7	118.1
Real terminal costs (EUR2009)	2 564 717	2 632 112	2 627 465	2 709 491	2 714 649
Total terminal Service Units	8 800	9 600	10 200	10 900	11 600
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>291.45</b>	<b>274.18</b>	<b>257.59</b>	<b>248.58</b>	<b>234.02</b>
Slovakia: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	2 771 137	2 692 990	3 287 126	3 740 319	
Inflation %	-0.3%	-0.5%	1.4%	2.5%	
Inflation index (100 in 2009)	109.9	109.3	110.9	113.7	
Real terminal costs (EUR2009)	2 521 578	2 462 782	2 964 624	3 291 077	
Total terminal Service Units	9 446	10 251	11 225	12 552	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>266.95</b>	<b>240.24</b>	<b>264.11</b>	<b>262.20</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-56 879	-250 873	299 121	604 124	
	in %	-2.0%	-8.5%	10.0%	19.3%
Inflation %	-0.3 p.p.	-1.9 p.p.	-0.3 p.p.	0.7 p.p.	
Inflation index (100 in 2009)	-0.4 p.p.	-2.5 p.p.	-2.8 p.p.	-2.1 p.p.	
Real terminal costs (EUR2009)	-43 139	-169 330	337 159	581 587	
	in %	-1.7%	-6.4%	12.8%	21.5%
Total terminal Service Units	646	651	1 025	1 652	
	in %	7.3%	6.8%	10.0%	15.2%
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-24.50</b>	<b>-33.94</b>	<b>6.51</b>	<b>13.62</b>	
	in %	<b>-8.4%</b>	<b>-12.4%</b>	<b>2.5%</b>	<b>5.5%</b>
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Slovakia Terminal Charging Zone (TCZ) comprising only Bratislava/M.R. Stefanik.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (262.20 €2009) is +5.5% higher than planned in the PP (248.58 €2009). This results from much higher than planned terminal costs in real terms (+21.5%, or +0.6 M€2009), which were only partially offset by the significantly higher than planned TNSUs (+15.2%).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Slovakia TCZ. In 2018, the actual TNSUs in Slovakia TCZ are +15.2% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Slovakia are expected to remain largely above the planned values for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +19.3% (+0.6 M€) higher than planned. However, since the actual inflation is lower than planned (-2.1 p.p.), actual terminal costs are +21.5% (+0.6 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by LPS (+24.9%, or +0.6 M€2009), while the costs for the MET service provider (-13.3%, or -0.03 M€2009) and the NSA (-2.3%) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +0.09 M€2009 corresponding to a new cost item required by law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**SLOVAKIA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## SLOVAKIA: Terminal ATSP (LPS)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	2 299	2 368	2 388	2 458	
Actual costs for the ATSP	2 254	2 207	2 746	3 069	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	44	162	-358	-612	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	85	86	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>44</b>	<b>162</b>	<b>-272</b>	<b>-526</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>44</b>	<b>162</b>	<b>-272</b>	<b>-526</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 783	1 719	1 791	1 924	1 932
Estimated proportion of financing through equity (in %)	85.1%	88.7%	92.4%	96.2%	99.0%
Estimated proportion of financing through equity (in value)	1 517	1 525	1 654	1 851	1 914
Estimated proportion of financing through debt (in %)	14.9%	11.3%	7.6%	3.8%	1.0%
Estimated proportion of financing through debt (in value)	266	194	137	74	18
Cost of capital pre-tax (in value)	100	98	103	106	101
Average interest on debt (in %)	2.3%	2.4%	2.4%	2.5%	2.5%
Interest on debt (in value)	6	5	3	2	0
Determined RoE pre-tax rate (in %)	6.2%	6.1%	6.0%	5.6%	5.2%
Estimated surplus embedded in the cost of capital for terminal (in value)	94	93	99	104	100
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>94</b>	<b>93</b>	<b>99</b>	<b>104</b>	<b>100</b>
<b>Revenue/costs for the terminal activity</b>	<b>2 299</b>	<b>2 368</b>	<b>2 388</b>	<b>2 458</b>	<b>2 457</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>4.1%</b>	<b>3.9%</b>	<b>4.2%</b>	<b>4.2%</b>	<b>4.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.2%</b>	<b>6.1%</b>	<b>6.0%</b>	<b>5.6%</b>	<b>5.2%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	1 796	1 858	1 777	2 128	
Estimated proportion of financing through equity (in %)	86.9%	90.2%	92.8%	96.1%	
Estimated proportion of financing through equity (in value)	1 561	1 675	1 650	2 045	
Estimated proportion of financing through debt (in %)	13.1%	9.8%	7.2%	3.9%	
Estimated proportion of financing through debt (in value)	235	182	128	83	
Cost of capital pre-tax (in value)	101	105	101	116	
Average interest on debt (in %)	1.7%	1.8%	1.8%	1.8%	
Interest on debt (in value)	4	3	2	1	
Determined RoE pre-tax rate (in %)	6.2%	6.1%	6.0%	5.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	97	102	99	115	
Net ATSP gain(+)/loss(-) on terminal activity	44	162	-272	-526	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>141</b>	<b>264</b>	<b>-173</b>	<b>-411</b>	
<b>Revenue/costs for the terminal activity</b>	<b>2 299</b>	<b>2 368</b>	<b>2 473</b>	<b>2 544</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>6.1%</b>	<b>11.1%</b>	<b>-7.0%</b>	<b>-16.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>9.0%</b>	<b>15.8%</b>	<b>-10.5%</b>	<b>-20.1%</b>	



**SLOVAKIA: Terminal ATSP (LPS)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## SLOVAKIA: Gate-to-gate

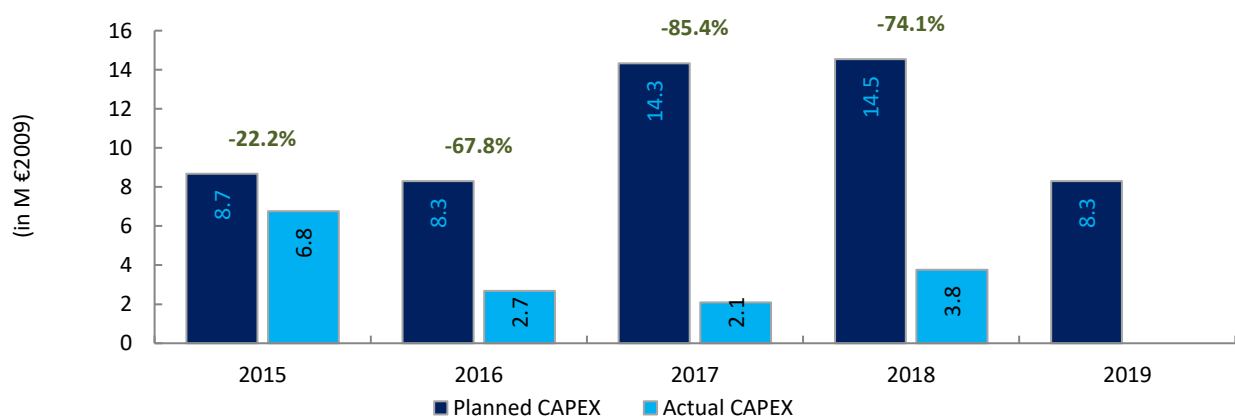
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Slovakia: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	53 754 368	55 355 807	55 381 628	57 279 434	57 253 112																																							
Real terminal costs (EUR2009)	2 564 717	2 632 112	2 627 465	2 709 491	2 714 649																																							
Real gate-to-gate costs (EUR2009)	56 319 084	57 987 919	58 009 093	59 988 925	59 967 761																																							
En-route share (%)	95.4%	95.5%	95.5%	95.5%	95.5%																																							
<b>Slovakia: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	52 361 339	54 131 116	55 346 566	56 502 122																																								
Real terminal costs (EUR2009)	2 521 578	2 462 782	2 964 624	3 291 077																																								
Real gate-to-gate costs (EUR2009)	54 882 916	56 593 899	58 311 190	59 793 199																																								
En-route share (%)	95.4%	95.6%	94.9%	94.5%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-1 436 168	-1 394 021	302 097	-195 725																																								
in %	-2.6%	-2.4%	0.5%	-0.3%																																								
En-route share																																												
in p.p.	-0.0 p.p.	0.2 p.p.	-0.6 p.p.	-1.0 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -0.3% (-0.2 M€2009) lower than planned due to lower than planned en-route costs (-1.4%, or -0.8 M€2009) while terminal costs are higher than planned (+21.5%, or +0.6 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (94.5%) is slightly lower than planned in the PP for 2018 (95.5%).</p> <p>For LPS, the estimated gate-to-gate economic surplus in 2018 amounts to 4.2 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 7.5% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>95.4%</td> <td>4.6%</td> </tr> <tr> <td>Actual</td> <td>95.4%</td> <td>4.6%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>95.5%</td> <td>4.5%</td> </tr> <tr> <td>Actual</td> <td>95.6%</td> <td>4.4%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>95.5%</td> <td>4.5%</td> </tr> <tr> <td>Actual</td> <td>94.9%</td> <td>5.1%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>95.5%</td> <td>4.5%</td> </tr> <tr> <td>Actual</td> <td>94.5%</td> <td>5.5%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>95.5%</td> <td>4.5%</td> </tr> <tr> <td>Actual</td> <td>95.5%</td> <td>4.5%</td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	95.4%	4.6%	Actual	95.4%	4.6%	2016	Determined	95.5%	4.5%	Actual	95.6%	4.4%	2017	Determined	95.5%	4.5%	Actual	94.9%	5.1%	2018	Determined	95.5%	4.5%	Actual	94.5%	5.5%	2019	Determined	95.5%	4.5%	Actual	95.5%	4.5%
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	95.4%	4.6%																																									
	Actual	95.4%	4.6%																																									
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2019	Determined	95.5%	4.5%																																									
	Actual	95.5%	4.5%																																									
<b>3. Technical notes on en-route and terminal information reported by Slovakia</b>																																												

## SLOVAKIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: LPS SR						
FAB: FAB CE						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	9.6	9.3	16.3	16.8	9.8	61.8
Main CAPEX (in nominal M)	4.0	6.2	14.2	14.9	7.6	46.9
Inflation %	0.0%	1.4%	1.7%	1.8%	2.0%	
Inflation index (100 in 2009)	110.3	111.8	113.7	115.7	118.1	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>8.7</b>	<b>8.3</b>	<b>14.3</b>	<b>14.5</b>	<b>8.3</b>	<b>54.2</b>
Main CAPEX (in M €2009)	3.6	5.6	12.5	12.9	6.4	41.0
% Main of Total CAPEX	41.9%	66.9%	86.9%	88.7%	77.3%	75.6%
Real gate-to-gate ANSP costs (in M €2009)	49.8	51.3	51.5	53.3	53.2	259.1
Total CAPEX as % of Real gate-to-gate ANSP costs	17.4%	16.2%	27.9%	27.3%	15.6%	20.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	7.4	2.9	2.3	4.3		
Main CAPEX (in nominal M)	2.6	1.5	0.4	3.5		
Inflation %	-0.3%	-0.5%	1.4%	2.5%		
Inflation index (100 in 2009)	109.9	109.3	110.9	113.7		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>6.8</b>	<b>2.7</b>	<b>2.1</b>	<b>3.8</b>		
Main CAPEX (in M €2009)	2.4	1.3	0.4	3.1		
% Main of Total CAPEX	35.3%	50.1%	18.3%	82.3%		
Real gate-to-gate ANSP costs (in M €2009)	48.3	50.4	52.4	53.9		
Total CAPEX as % of Real gate-to-gate ANSP costs	14.0%	5.3%	4.0%	7.0%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-2.2	-6.4	-14.0	-12.6		
Total CAPEX (in M €2009)	-1.9	-5.6	-12.2	-10.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-22.2%</b>	<b>-67.8%</b>	<b>-85.4%</b>	<b>-74.1%</b>		





# Annual Monitoring Report 2018

## Local level view

### Slovenia



## SLOVENIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	75	C	D	D	D	D
Slovenia Control	77	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			n/a	n/a		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			CAA/Slovenja Control			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			9	0		
Legal/Judiciary			6	1		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>17</b>	<b>1</b>		
Slovenia Control			Number of questions answered			
			YES	NO		
Policy and its implementation			13	0		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

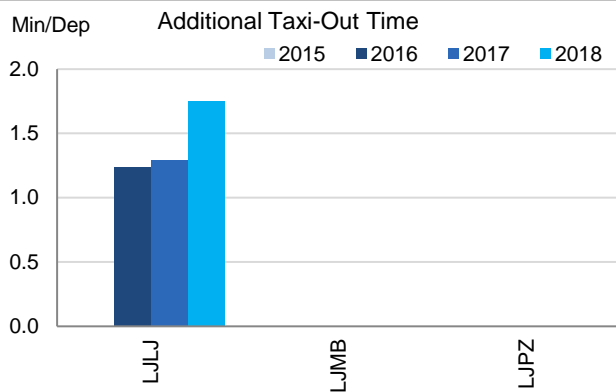
## SLOVENIA

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

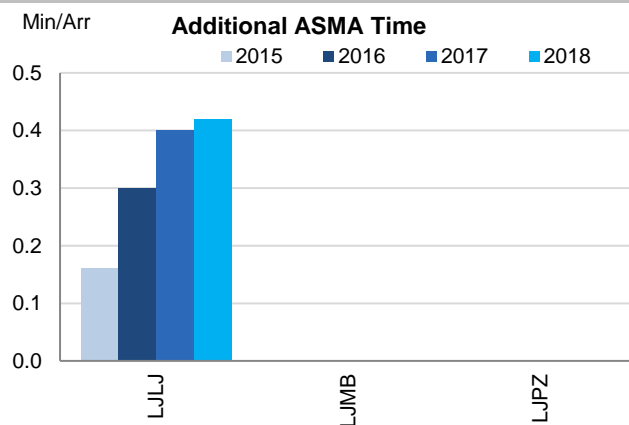
Slovenia identified three airports as subject to RP2 monitoring. However, the airport data flow is only established for Ljubljana, where remaining data issues were solved allowing for a full monitoring including taxi-out times as of 2016. Slovenian airports should establish the airport operator data flow to allow for a correct monitoring of the airport indicators. The performance at Ljubljana is slightly worsening during RP2, with clearly longer additional times than at the beginning of the reference period despite a normal traffic increase (+14% with respect to 2015).

## 2. Additional Taxi-Out Time



There has been a significant increase in the additional taxi-out times at Ljubljana (LJLJ: 2017: 1.29 min/dep.; 2018: 1.75 min/dep.). The worse performance is observed in the month of February, when additional taxi-out times reached 4 min/dep. and to a lesser extent March and December.

## 3. Additional ASMA Time



Additional ASMA times at Ljubljana have not changed much with respect to last year and are still very low (0.42 min/arr.) and commensurate with the level of traffic. Only February registered an average additional ASMA time above 1 min/arr.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Ljubljana	LJLJ	n/a	1.24	1.29	1.75		0.16	0.30	0.40	0.42	
Maribor	LJMB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Portorož	LJPZ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	



## SLOVENIA

## Monitoring of CAPACITY for 2018

## En route Capacity incentive scheme

	2015	2016	2017	2018	2019	Observations
National Capacity target	0.21	0.21	0.22	0.23	0.22	
Deadband +/-	0.03	0.03	0.03	0.03	0.03	
Actual performance	0.00	0.01	0.00	0.01		

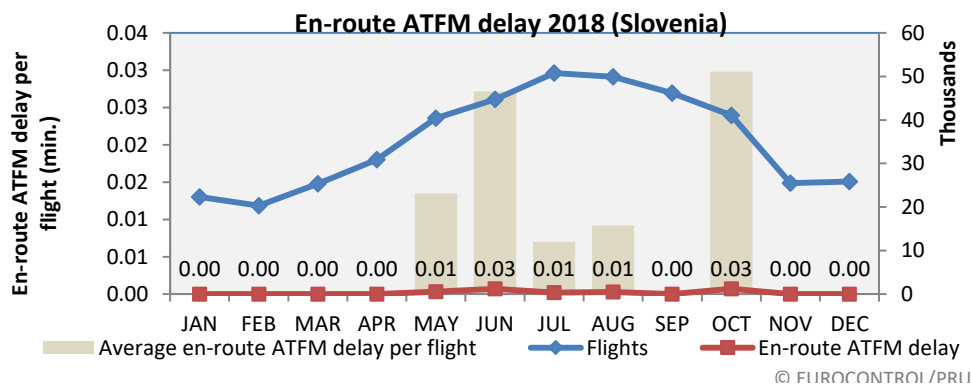
## National capacity incentive scheme

There is no bonus nor penalty as Slovenia exceeded its national target but FAB CE did not meet its target.

## Compliance issues relating to national capacity incentive scheme

The FAB CE monitoring report states that there were no compliance issues despite the PRB highlighting that the aggregation of ANSP contributions for the FAB were inconsistent with the FAB targets.

## Observations regarding national capacity incentive scheme



## En-route ATFM delay per flight (Slovenia)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01

## EUROCONTROL 7 year forecast February 2014 – Slovenia

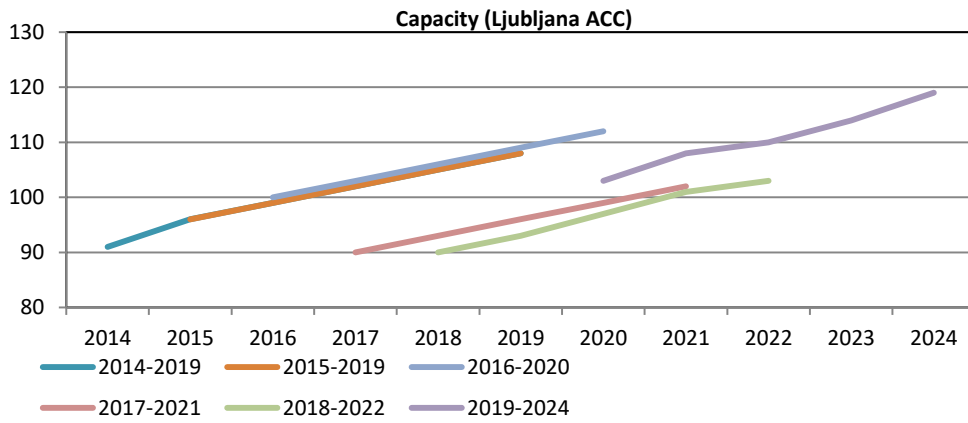
	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	actual
High	345	363	381	397	414	432
Base	339	348	347	353	386	423
Low	334	343	347	352	357	363

Slovenia continues to provide excellent en route capacity performance in 2018, as it has done since the beginning of RP1.

Traffic levels in Slovenia rose by more than 9% on 2017, to a level above the high traffic scenario that STATFOR forecasted back in 2014, when the FAB performance plans and associated capacity plans were being determined.

The Network Manager, in the latest NOP 2019 – 2024, states that Slovenia will have sufficient capacity to cope with the traffic demand for the remainder of RP2 and for RP3.

Ljubljana ACC delay forecast							
		2019	2020	2021	2022	2023	2024
NOP 2018 -	2022	0.03	0.03	0.03	0.03	N/A	N/A
NOP 2019 -	2024	0.04	0.04	0.04			



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**Planning and Effective Use of CDRs**

There are no CDRs in Slovenian airspace.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
52%	31%	48%	79%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## SLOVENIA

## Monitoring of Airports Contribution to CAPACITY for 2018

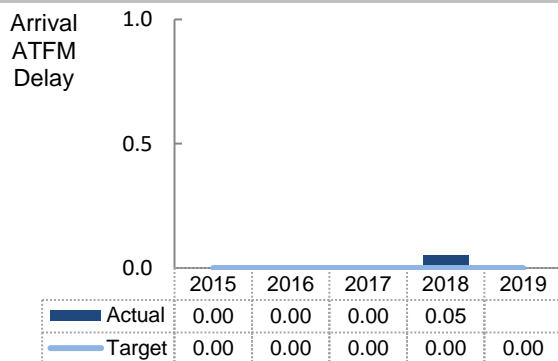
## 1. Overview

ANS at 3 airports are subject to RP2 monitoring in Slovenia. Traffic levels at these airports have significantly increased during RP2 (+14.3% with respect to 2015).

In terms of arrival ATFM delays, values have moderately increased in the reference period while ATFM slot adherence has improved by a point (2015: 94.5%; 2018: 95.5%).

The terminal capacity target (0.00 min/arr for every year in RP2) is missed for the first time.

## 2. Arrival ATFM Delay



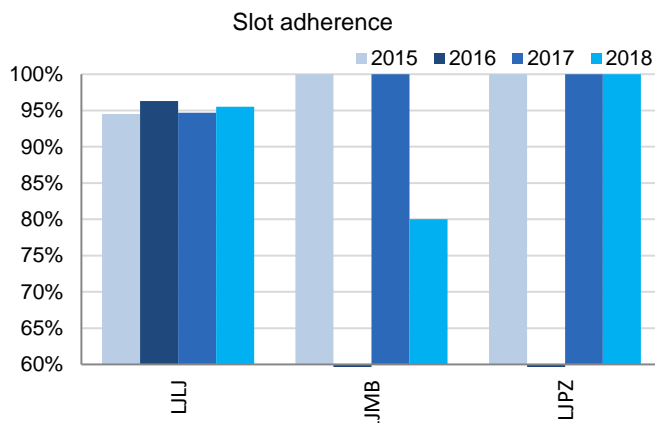
The national aggregated value for arrival ATFM delay in Slovenia has increased from zero in previous years to a negligible 0.05 min/arr. in 2018. This performance is driven by Ljubljana (the other two airports show no delays) where delays associated to airspace management and ATC capacity, took place in the summer months.

The performance is consistent with the traffic observed and demonstrates that although there are no capacity constraints at LJLJ, situation is deteriorating along with the increase in traffic.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The FAB CE performance plan sets a national target on arrival ATFM delay for Slovenia but no associated incentive scheme, so although the national target is not met, no penalty applies.

## 4. ATFM Slot Adherence



Slot adherence in Slovenia continues to range within the best-in-class group across Europe around 95%.

Performance at Maribor (LJMB) dropped significantly to 80% but this was in fact due to only 3 departures that missed the ATFM slot in the entire year (the share of regulated departures at LIMB and LIPZ in 2017 is negligible).

## 5. ATC Pre-departure Delay

Ljubljana (LJLJ) accrued negligible pre-departure delay in all RP2 so far. This level of performance is commensurate with the level of traffic observed.

To allow for the monitoring of ATC pre-departure delay at Maribor (LJMB) and Portoroz (LJPZ), Slovenia may consider the establishment of the airport operator data flow at these airports.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Ljubljana	LJLJ	0.00	0.00	0.00	0.06		94.5%	96.3%	94.7%	95.5%		0.03	0.02	0.02	0.03	
Maribor	LJMB	0.00	0.00	0.00	0.00		100.0%	n/a	100.0%	80.0%		n/a	n/a	n/a	n/a	
Portoroz	LJPZ	0.00	0.00	0.00	0.00		100.0%	n/a	100.0%	100.0%		n/a	n/a	n/a	n/a	

## SLOVENIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Slovenia ECZ represents 0.5% of the SES en-route ANS determined costs in 2018					
· ATSP:	Slovenia Control				
· FAB:	FAB CE				
· National currency:	EUR				
2. En-route DUC monitoring at Charging Zone level					
Slovenia: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	32 094 283	33 168 798	33 870 218	34 392 801	35 029 005
Inflation %	1.6%	2.1%	1.9%	2.0%	2.0%
Inflation index (100 in 2009)	111.9	114.3	116.5	118.8	121.2
Real en-route costs (EUR2009)	28 675 840	29 018 678	29 079 819	28 949 500	28 906 876
Total en-route Service Units	481 500	499 637	514 217	529 770	546 470
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>59.56</b>	<b>58.08</b>	<b>56.55</b>	<b>54.65</b>	<b>52.90</b>
Slovenia: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	31 147 499	32 468 008	31 829 020	32 950 279	
Inflation %	-0.8%	-0.2%	1.6%	1.9%	
Inflation index (100 in 2009)	108.4	108.2	110.0	112.0	
Real en-route costs (EUR2009)	28 723 475	30 001 219	28 947 617	29 408 607	
Total en-route Service Units	466 264	501 752	524 771	571 894	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>61.60</b>	<b>59.79</b>	<b>55.16</b>	<b>51.42</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)	-946 784	-700 790	-2 041 199	-1 442 522	
in value					
in %	-3.0%	-2.1%	-6.0%	-4.2%	
Inflation %	-2.4 p.p.	-2.3 p.p.	-0.3 p.p.	-0.1 p.p.	
in p.p.					
Inflation index (100 in 2009)	-3.5 p.p.	-6.1 p.p.	-6.5 p.p.	-6.8 p.p.	
in p.p.					
Real en-route costs (EUR2009)	47 635	982 541	-132 203	459 107	
in value					
in %	0.2%	3.4%	-0.5%	1.6%	
Total en-route Service Units	-15 236	2 115	10 554	42 124	
in value					
in %	-3.2%	0.4%	2.1%	8.0%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>2.05</b>	<b>1.71</b>	<b>-1.39</b>	<b>-3.22</b>	
in value					
in %	<b>3.4%</b>	<b>3.0%</b>	<b>-2.5%</b>	<b>-5.9%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (51.42 €2009) is -5.9% lower than planned in the PP (54.65 €2009). This results from the combination of higher than planned TSUs (+8.0%) and slightly higher than planned en-route costs in real terms (+1.6%, or +0.5 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+8.0%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Slovenia Control) retaining an amount of +1.0 M€2009.					
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Slovenia are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -4.2% (-1.4 M€) lower than planned. However, since the actual inflation index is also much lower than planned (-6.8 p.p.), actual en-route costs are +1.6% (+0.5 M€2009) above plans when expressed in real terms. The slightly higher than planned en-route costs in real terms are driven by Slovenia Control (+2.3%, or +0.6 M€2009) and the MET service provider (+4.0%, or +0.05 M€2009), while the costs for the NSAEUROCONTROL (-7.2%, or -0.2 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.1 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

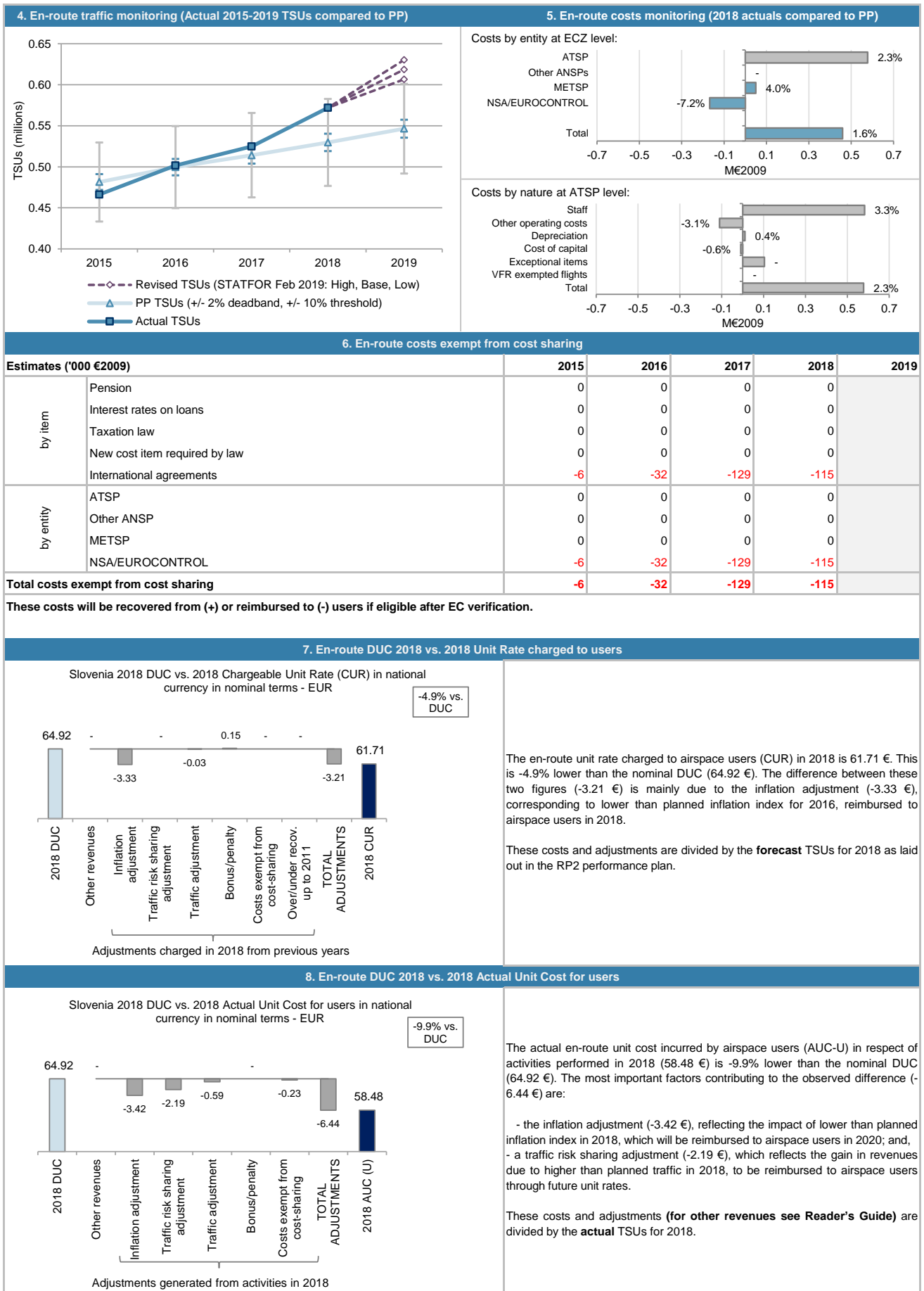
Year	Difference (%)
2015	0.2%
2016	3.4%
2017	-0.5%
2018	1.6%

Year	Difference (%)
2015	-3.2%
2016	0.4%
2017	2.1%
2018	8.0%

Year	En-route DUC (PP)	En-route unit costs (actual)
2015	61.60	59.56
2016	59.79	58.08
2017	55.16	56.55
2018	51.42	54.65
2019		52.90

**SLOVENIA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



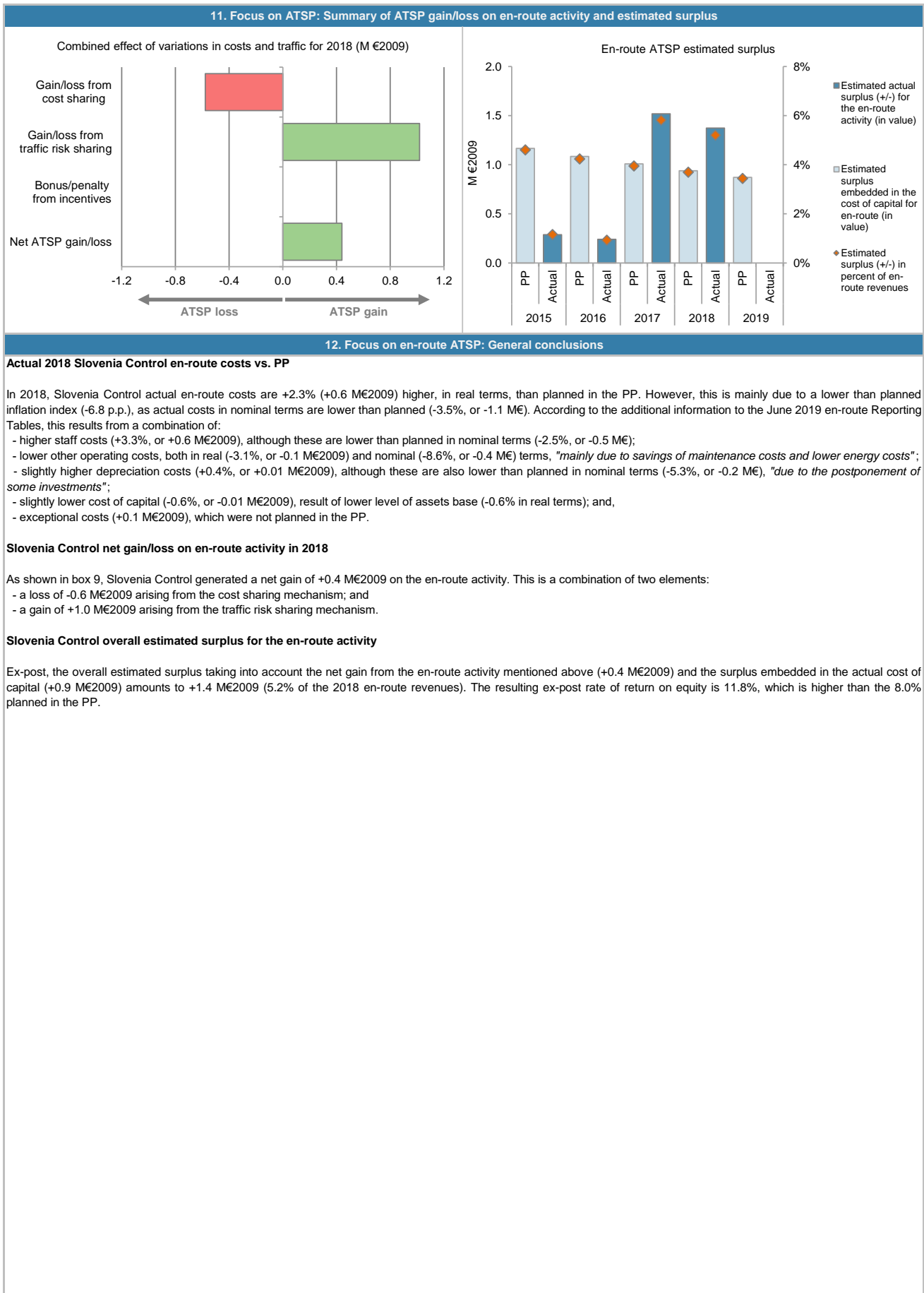
## SLOVENIA: En-route ATSP (Slovenia Control)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	25 314	25 555	25 499	25 361	
Actual costs for the ATSP	25 527	26 509	25 519	25 939	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-212	-954	-20	-578	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-212</b>	<b>-954</b>	<b>-20</b>	<b>-578</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-3.2%	0.4%	2.1%	8.0%	
Determined costs for the ATSP (PP) - based on actual inflation	26 127	26 990	27 011	26 892	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-614</b>	<b>114</b>	<b>544</b>	<b>1 018</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>37</b>	<b>72</b>	<b>38</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-790</b>	<b>-768</b>	<b>563</b>	<b>440</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	28 581	26 582	24 732	23 011	21 379
Estimated proportion of financing through equity (in %)	51.0%	51.0%	51.0%	51.0%	51.0%
Estimated proportion of financing through equity (in value)	14 575	13 556	12 612	11 734	10 902
Estimated proportion of financing through debt (in %)	49.0%	49.0%	49.0%	49.0%	49.0%
Estimated proportion of financing through debt (in value)	14 006	13 027	12 120	11 276	10 477
Cost of capital pre-tax (in value)	1 723	1 603	1 491	1 388	1 289
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	4.0%
Interest on debt (in value)	557	518	482	449	417
Determined RoE pre-tax rate (in %)	8.0%	8.0%	8.0%	8.0%	8.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 166	1 084	1 009	939	872
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 166</b>	<b>1 084</b>	<b>1 009</b>	<b>939</b>	<b>872</b>
<b>Revenue/costs for the en-route activity</b>	<b>25 314</b>	<b>25 555</b>	<b>25 499</b>	<b>25 361</b>	<b>25 299</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>4.6%</b>	<b>4.2%</b>	<b>4.0%</b>	<b>3.7%</b>	<b>3.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	26 399	24 715	23 429	22 863	
Estimated proportion of financing through equity (in %)	51.0%	51.0%	51.0%	51.0%	
Estimated proportion of financing through equity (in value)	13 462	12 604	11 948	11 659	
Estimated proportion of financing through debt (in %)	49.0%	49.0%	49.0%	49.0%	
Estimated proportion of financing through debt (in value)	12 937	12 112	11 482	11 204	
Cost of capital pre-tax (in value)	1 592	1 490	1 413	1 379	
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	
Interest on debt (in value)	515	482	457	446	
Determined RoE pre-tax rate (in %)	8.0%	8.0%	8.0%	8.0%	
Estimated surplus embedded in the cost of capital for en-route (in value)	1 077	1 008	956	933	
Net ATSP gain(+)/loss(-) on en-route activity	-790	-768	563	440	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>287</b>	<b>240</b>	<b>1 519</b>	<b>1 373</b>	
<b>Revenue/costs for the en-route activity</b>	<b>24 737</b>	<b>25 741</b>	<b>26 082</b>	<b>26 379</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>1.2%</b>	<b>0.9%</b>	<b>5.8%</b>	<b>5.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>2.1%</b>	<b>1.9%</b>	<b>12.7%</b>	<b>11.8%</b>	

**SLOVENIA: En-route ATSP (Slovenia Control)**

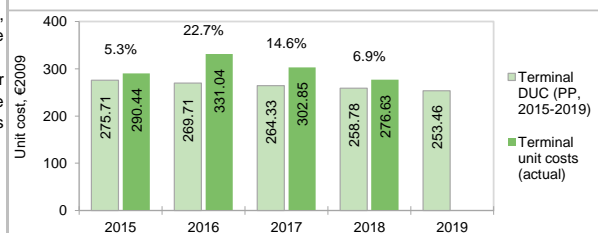
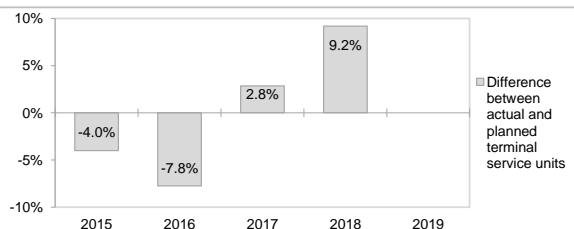
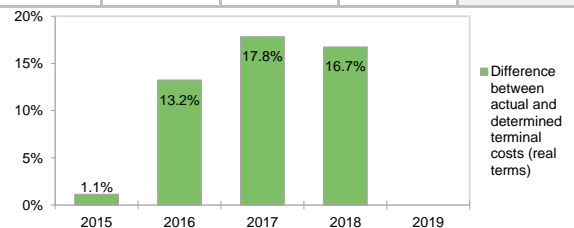
**Monitoring of en-route COST-EFFICIENCY for 2018**



## SLOVENIA: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Slovenia TCZ represents 0.3% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No		
· ATSP:	Slovenia Control	· Airports with fewer than 70,000 IFRs ATMs:		3		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	3,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Slovenia: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	3 866 727	3 885 016	3 909 038	3 930 727	3 942 720	
Inflation %	1.6%	2.1%	1.9%	2.0%	2.0%	
Inflation index (100 in 2009)	111.9	114.3	116.5	118.8	121.2	
Real terminal costs (EUR2009)	3 454 872	3 398 918	3 356 167	3 308 617	3 253 638	
Total terminal Service Units	12 531	12 602	12 697	12 786	12 837	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>275.71</b>	<b>269.71</b>	<b>264.33</b>	<b>258.78</b>	<b>253.46</b>	
Slovenia: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	3 789 131	4 164 883	4 348 325	4 327 466		
Inflation %	-0.8%	-0.2%	1.6%	1.9%		
Inflation index (100 in 2009)	108.4	108.2	110.0	112.0		
Real terminal costs (EUR2009)	3 494 246	3 848 452	3 954 682	3 862 326		
Total terminal Service Units	12 031	11 625	13 058	13 962		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>290.44</b>	<b>331.04</b>	<b>302.85</b>	<b>276.63</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-77 596	279 868	439 287	396 738	
	in %	-2.0%	7.2%	11.2%	10.1%	
Inflation %	in p.p.	-2.4 p.p.	-2.3 p.p.	-0.3 p.p.	-0.1 p.p.	
Inflation index (100 in 2009)	in p.p.	-3.5 p.p.	-6.1 p.p.	-6.5 p.p.	-6.8 p.p.	
Real terminal costs (EUR2009)	in value	39 374	449 535	598 515	553 710	
	in %	1.1%	13.2%	17.8%	16.7%	
Total terminal Service Units	in value	-500	-977	361	1 176	
	in %	-4.0%	-7.8%	2.8%	9.2%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>14.73</b>	<b>61.33</b>	<b>38.52</b>	<b>17.85</b>	
	<b>in %</b>	<b>5.3%</b>	<b>22.7%</b>	<b>14.6%</b>	<b>6.9%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Slovenia Terminal Charging Zone (TCZ) comprising 3 airports: Ljubljana/Brnik (LJLJ), Maribor/Orehova Vas (LJMB) and Portoroz/Secovlje (LJPZ).						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (276.63 €2009) is +6.9% higher than planned in the PP (258.78 €2009). This results from significantly higher than planned terminal costs in real terms (+16.7%, or +0.6 M€2009), while TNSUs are also above the plan (+9.2%). No specific corrective measures are reported in the FAB CE Monitoring Report for 2018. However, it is indicated that "actual costs in nominal terms were 9.8% higher than determined costs and with lower inflation (1.90% compared to 2.00%) the result were higher costs in real terms (+16.4%). Traffic was +9.2% higher compared to the plan, resulting in higher DUC than planned."						
<b>Terminal service units</b>						
The traffic risk sharing mechanism does not apply in Slovenia TCZ. In 2018, the actual TNSUs in Slovenia TCZ are +9.2% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Slovenia are expected to remain largely above the planned values for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +10.1% (+0.4 M€) higher than planned. However, since the actual inflation is significantly lower than planned (-6.8 p.p.), actual terminal costs are +16.7% (+0.6 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by Slovenia Control (+17.5%, or +0.5 M€2009) and the MET service provider (+20.6%, or +0.1 M€2009), while the costs for the NSA (-26.8%, or -0.02 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.						
There are no costs exempt from cost-sharing reported for the Slovenian TCZ.						





**SLOVENIA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## SLOVENIA: Terminal ATSP (Slovenia Control)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	2 931	2 891	2 851	2 812	
Actual costs for the ATSP	3 008	3 343	3 423	3 303	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-77	-452	-571	-491	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-77</b>	<b>-452</b>	<b>-571</b>	<b>-491</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-77</b>	<b>-452</b>	<b>-571</b>	<b>-491</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 045	952	855	704	538
Estimated proportion of financing through equity (in %)	51.0%	51.0%	51.0%	51.0%	51.0%
Estimated proportion of financing through equity (in value)	533	485	436	359	274
Estimated proportion of financing through debt (in %)	49.0%	49.0%	49.0%	49.0%	49.0%
Estimated proportion of financing through debt (in value)	512	466	419	345	264
Cost of capital pre-tax (in value)	63	57	52	42	32
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	4.0%
Interest on debt (in value)	20	19	17	14	10
Determined RoE pre-tax rate (in %)	8.0%	8.0%	8.0%	8.0%	8.0%
Estimated surplus embedded in the cost of capital for terminal (in value)	43	39	35	29	22
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>43</b>	<b>39</b>	<b>35</b>	<b>29</b>	<b>22</b>
<b>Revenue/costs for the terminal activity</b>	<b>2 931</b>	<b>2 891</b>	<b>2 851</b>	<b>2 812</b>	<b>2 763</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.5%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.0%</b>	<b>0.8%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>	<b>8.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	1 387	1 205	1 104	1 128	
Estimated proportion of financing through equity (in %)	51.0%	51.0%	51.0%	51.0%	
Estimated proportion of financing through equity (in value)	707	614	563	575	
Estimated proportion of financing through debt (in %)	49.0%	49.0%	49.0%	49.0%	
Estimated proportion of financing through debt (in value)	680	590	541	553	
Cost of capital pre-tax (in value)	84	73	67	68	
Average interest on debt (in %)	4.0%	4.0%	4.0%	4.0%	
Interest on debt (in value)	27	23	22	22	
Determined RoE pre-tax rate (in %)	8.0%	8.0%	8.0%	8.0%	
Estimated surplus embedded in the cost of capital for terminal (in value)	57	49	45	46	
Net ATSP gain(+)/loss(-) on terminal activity	-77	-452	-571	-491	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-20</b>	<b>-403</b>	<b>-526</b>	<b>-445</b>	
<b>Revenue/costs for the terminal activity</b>	<b>2 931</b>	<b>2 891</b>	<b>2 851</b>	<b>2 812</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-0.7%</b>	<b>-13.9%</b>	<b>-18.5%</b>	<b>-15.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>-2.8%</b>	<b>-65.6%</b>	<b>-93.4%</b>	<b>-77.3%</b>	

**SLOVENIA: Terminal ATSP (Slovenia Control)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



**SLOVENIA: Gate-to-gate**

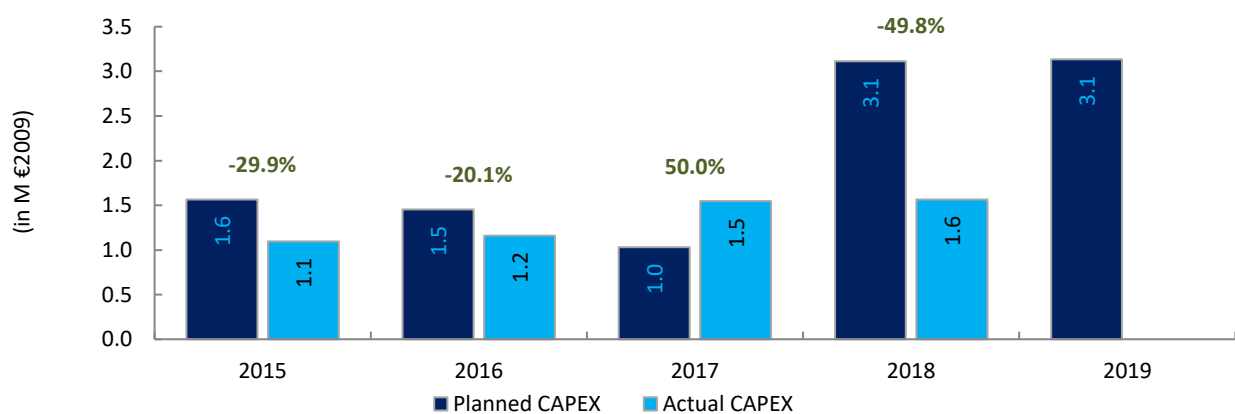
**Monitoring of gate-to-gate COST-EFFICIENCY for 2018**

1. Monitoring of gate-to-gate ANS costs																																												
<b>Slovenia: Data from RP2 Performance Plan</b>																																												
	<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																																							
Real en-route costs (EUR2009)	28 675 840	29 018 678	29 079 819	28 949 500	28 906 876																																							
Real terminal costs (EUR2009)	3 454 872	3 398 918	3 356 167	3 308 617	3 253 638																																							
Real gate-to-gate costs (EUR2009)	32 130 712	32 417 596	32 435 986	32 258 117	32 160 514																																							
En-route share (%)	89.2%	89.5%	89.7%	89.7%	89.9%																																							
<b>Slovenia: Actual data from Reporting Tables</b>																																												
	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																																							
Real en-route costs (EUR2009)	28 723 475	30 001 219	28 947 617	29 408 607																																								
Real terminal costs (EUR2009)	3 494 246	3 848 452	3 954 682	3 862 326																																								
Real gate-to-gate costs (EUR2009)	32 217 721	33 849 671	32 902 298	33 270 934																																								
En-route share (%)	89.2%	88.6%	88.0%	88.4%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																																							
Real gate-to-gate costs (EUR2009)	87 009	1 432 076	466 312	1 012 817																																								
	in value																																											
	0.3%	4.4%	1.4%	3.1%																																								
	in %																																											
En-route share	-0.1 p.p.	-0.9 p.p.	-1.7 p.p.	-1.4 p.p.																																								
	in p.p.																																											
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +3.1% (+1.0 M€2009) higher than planned due to higher than planned terminal costs (+16.7%, or +0.6 M€2009) and en-route costs (+1.6%, or +0.5 M€2009). It is noted that in nominal terms the actual gate-to-gate costs are lower than planned (-2.7%, or -1.0 M€), however, due to a much lower than planned inflation index (-6.8 p.p.), these costs appear higher than planned when expressed in real terms.</p> <p>The actual share of en-route in gate-to-gate ANS costs (88.4%) is slightly lower than planned in the PP for 2018 (89.7%).</p> <p>For Slovenia Control, the estimated gate-to-gate economic surplus in 2018 amounts to 0.9 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 3.2% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>89.2%</td> <td>10.8%</td> </tr> <tr> <td>Actual</td> <td>89.2%</td> <td>10.8%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>89.5%</td> <td>10.5%</td> </tr> <tr> <td>Actual</td> <td>88.6%</td> <td>11.4%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>89.7%</td> <td>10.3%</td> </tr> <tr> <td>Actual</td> <td>88.0%</td> <td>12.0%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>89.7%</td> <td>10.3%</td> </tr> <tr> <td>Actual</td> <td>88.4%</td> <td>11.6%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>89.9%</td> <td>10.1%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	89.2%	10.8%	Actual	89.2%	10.8%	2016	Determined	89.5%	10.5%	Actual	88.6%	11.4%	2017	Determined	89.7%	10.3%	Actual	88.0%	12.0%	2018	Determined	89.7%	10.3%	Actual	88.4%	11.6%	2019	Determined	89.9%	10.1%	Actual		
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2019	Determined	89.9%	10.1%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Slovenia</b>																																												

## SLOVENIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Slovenia Control						
FAB: FAB CE						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	1.8	1.7	1.2	3.7	3.8	12.1
Main CAPEX (in nominal M)	1.5	1.3	1.0	3.0	3.0	9.7
Inflation %	1.6%	2.1%	1.9%	2.0%	2.0%	
Inflation index (100 in 2009)	111.9	114.3	116.5	118.8	121.2	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>1.6</b>	<b>1.5</b>	<b>1.0</b>	<b>3.1</b>	<b>3.1</b>	<b>10.3</b>
Main CAPEX (in M €2009)	1.3	1.1	0.9	2.5	2.5	8.2
% Main of Total CAPEX	82.9%	75.3%	83.3%	81.1%	78.9%	80.1%
Real gate-to-gate ANSP costs (in M €2009)	28.2	28.4	28.4	28.2	28.1	141.3
Total CAPEX as % of Real gate-to-gate ANSP costs	5.5%	5.1%	3.6%	11.1%	11.2%	7.3%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	1.2	1.3	1.7	1.8		
Main CAPEX (in nominal M)	0.6	0.5	1.0	0.7		
Inflation %	-0.8%	-0.2%	1.6%	1.9%		
Inflation index (100 in 2009)	108.4	108.2	110.0	112.0		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>1.1</b>	<b>1.2</b>	<b>1.5</b>	<b>1.6</b>		
Main CAPEX (in M €2009)	0.6	0.5	0.9	0.6		
% Main of Total CAPEX	50.6%	38.9%	60.0%	40.7%		
Real gate-to-gate ANSP costs (in M €2009)	28.5	29.9	28.9	29.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.8%	3.9%	5.3%	5.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-0.6	-0.4	0.5	-1.9		
Total CAPEX (in M €2009)	-0.5	-0.3	0.5	-1.6		
<b>Total CAPEX (in %, M €2009)</b>	<b>-29.9%</b>	<b>-20.1%</b>	<b>50.0%</b>	<b>-49.8%</b>		





# Annual Monitoring Report 2018

Local level view  
FABEC





## FABEC

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	A	A	A	
	ANSPs	For Safety Culture MO	C	C	C	D	
	ANSPs	For all other MOs	B	C	C	C	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	97%	100%	94%	
	Runway Incursions (RIs)		96%	72%	100%	52%	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	99%	100%	92%	
	Runway Incursions (RIs)		97%	88%	100%	67%	
	ATM Specific occurrences (ATM-S)		86%	84%	90%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

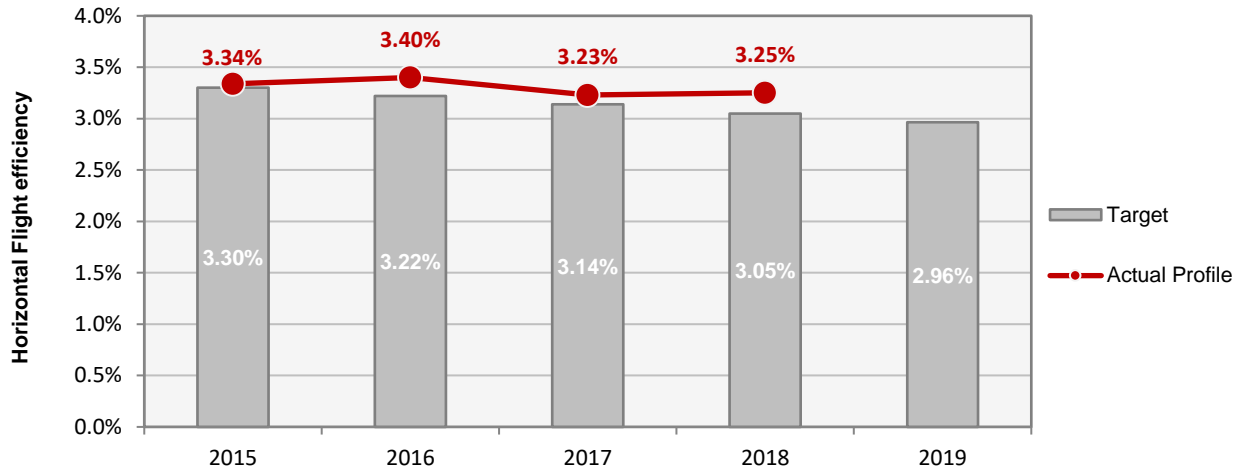
#### Observations

The lowest level in all EoSM Component/area of the States is Level "A" in the Safety Culture component which is below the 2019 EoSM target level. Note that this component is not verified by EASA. Safety Promotion is already at the 2019 EoSM target level.

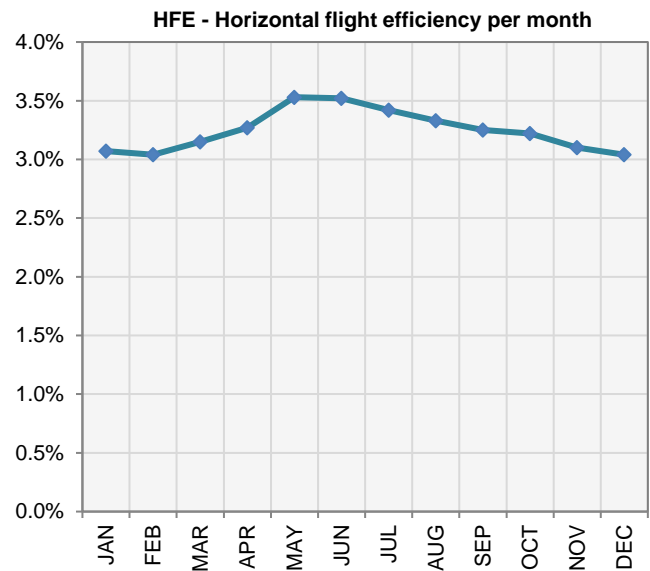
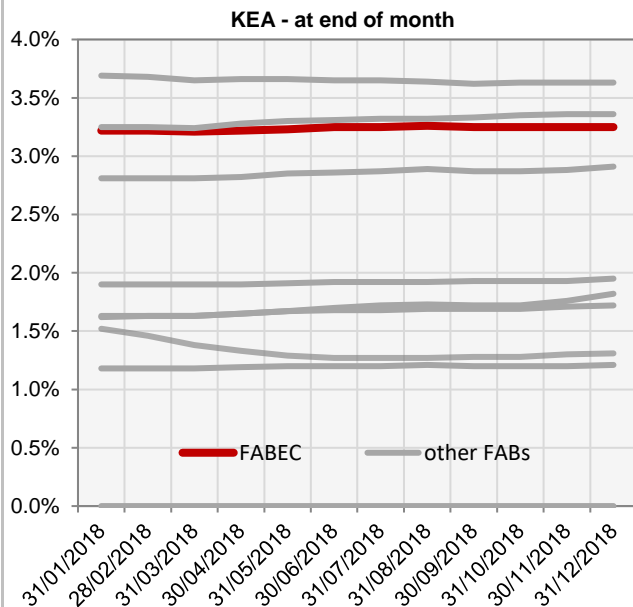
FABEC

Monitoring of ENVIRONMENT for 2018

KEA					
	2015	2016	2017	2018	2019
FAB Target	3.30%	3.22%	3.14%	3.05%	2.96%
Actual performance	3.34%	3.40%	3.23%	3.25%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KEA (at end of month)	3.22%	3.22%	3.21%	3.22%	3.23%	3.25%	3.25%	3.26%	3.25%	3.25%	3.25%	3.25%
HFE	3.07%	3.04%	3.15%	3.27%	3.53%	3.52%	3.42%	3.33%	3.25%	3.22%	3.10%	3.04%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**FABEC****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

After discussions at FABEC Financial and Performance Committee, the following corrective measures, proposed by ANSPs and endorsed by FABEC States are planned to be implemented to mitigate the performance gaps experienced in 2018.

At FABEC level:

- Focus on 10 most important City Pairs in SOLDES meetings on the biggest inefficiencies and biggest difference between KEA and KEP to improve flight efficiency;
- Concentrate on interfaces to other FABs with the biggest inefficiencies (e.g. Interface UK/ Ireland, South-West FAB, Baltic FAB) and elaborate efficient connections;
- Engagement in the eNM activities, which will help reduce network wide delays, but will have a negative impact on the HFE;
- Monitor Airline-behaviour choosing individual routings due to low fuel prices in order to optimize total cost of flight regardless of shortest routes offers;
- Organise Stakeholder RAD-Workshops to simplify restriction definitions and reduce number of restriction.

Simulations prepared by the NM as an input to the FABEC Performance Roadmap have shown that between the AIRAC cycle 1713 and 1813 an efficiency of 0.07pp MILON and 0.08pp MILOFF have been introduced within the FABEC airspace.

Detailed corrective measures have been reported also at At ANSP level.

**Observations****NM Evaluation:**

There are no major projects that will lead to the achievement of the network RP2 target.

**NM proposed measures:**

To implement all projects as planned.

To expand cross border FRA operations with adjacent FABs - ACCs (e.g. Denmark / Sweden FAB, UK Ireland FAB).

To further Improve interfaces with SW FAB, UK Ireland FAB and Blue Med FAB.

To accelerate FRA projects in France.



## FABEC

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.43	0.42	0.42	0.42	0.43	The total presented includes the results of NM post operations adjustment process and is affected by 4ACC initiative and by ATC strikes in France
FAB Target	0.48	0.49	0.42	0.42	0.43	
Actual performance	0.69	1.07	1.15	2.14		

## FABEC assessment of capacity performance

As described in the FABEC ANSP individual achievements graph presented below, the global FABEC underperformance for en-route capacity has been driven in 2018 by the individual underperformance of DFS, DSN, MUAC, skeyes and skyguide against their individual 2018 All causes and CRSTMP expected contributions to FABEC target values.

Skeys has generated limited en-route delays, but more than in 2017, mainly due to weather and, regarding CRSTMP causes due to under staffing and some capacity shortage.

DSNA has generated en-route delays due to industrial action (in Marseille ACC), weather (in Marseille, Reims and Paris ACC), and regarding CRSTMP causes, due to capacity shortage in Marseille, Brest and Reims ACC. 55% of CRSTMP delays are still capacity shortage and staffing delays (94% of CRSTMP delays). In 2018, nearly half DSNA delays have been generated by Marseille ACC. An agreement has been found to implement a new rostering in Marseille for summer 2018 (causing industrial action during spring), but sector opening schedules is still not fully optimized consistently with traffic peak hours and week-end according to flexible rostering experimentations foreseen by DGAC 2016-2019 current social agreement, as it has been the case for Reims, Bordeaux and Brest ACC. Local retirement cycle won't be fully compensated by ongoing DSNA recruitment and assignment plan before summer 2021. Brest ACC faced an approximate 20% traffic growth since 2015 (+3,10% in 2018), which explains remaining delays in 2018 in spite of ERATO new ATM system implementation end 2015, more flexible rostering local implementation end 2016 and initial Data-Link Services implementation in 2016 (full implementation beginning 2019). Regarding Reims, a 4,30% traffic increase in 2018, preparation work for implementation of a new ATM system (4Flight) and traffic distribution with higher demand on shortest routes and lack of predictability of demand in some sectors have been identified.

MUAC has generated en-route delays due to weather and, regarding CRSTMP causes, mainly due to capacity shortage and staffing issues because of the structural saturation of many sectors facing excessive demand and no more possibilities to off-load traffic in the current airspace context. Training capacities are pushed at their maximum but cannot keep up with demand.

DFS has generated en-route delays, mainly due the structural capacity shortage linked with the unforeseen traffic increase since 2016 intensified further in 2018 through additional unexpected staff shortages. The workload experienced by ATCOs in 2017 led to the cancellation of the overtime agreement with the staff representatives' council leading to less available manpower in 2018. In addition, the significant effort spent on training new ATCOs led to a further reduction of the available staff on board. Furthermore, meteorological conditions led to an increase of Weather ATFM Delay by 71.7% in summer 2018 compared 2017.

Skyguide has generated limited en-route delays in 2018 mainly due to bad weather conditions and regarding CRSTMP causes, capacity shortages due to the traffic increase (+4,90% in 2018).



### Monitoring process for capacity performance

The monitoring for en-route Capacity performance is carried out under the auspices of the FABEC Financial and Performance Committee (FPC), counterpart of the European Commission at the States side, consulting and reporting to FABEC Council as appropriate.

On a monthly basis and through the AFG/PMG (ANSP FABEC Group / Performance Monitoring Group) the ANSPs collectively submit a report to the FPC, based on PRU available data, consolidated and analysed, on their joint progress in achieving the FABEC target set and reference or indicative values and on the results and analysis of the En route capacity achievement.

In case the FABEC target set and/or the annual/reference values are threatened not to be met AFG/PMG is asked to propose to FPC possible corrective measures which the ANSPs determine fit to react to the weaker performance at FAB, national and/or ACC level, in order to remedy the situation.

The FPC analyzes the reports, assesses the actions considered by the ANSPs together with the necessity of appropriate measures to be taken by the States or the NSAs and makes an advice to the proposals, made by the AFG/PMG, to the FABEC Council for such appropriate measures, after consultation with the AFG/PMG. The potential corrective measures take into account the seriousness of the risk of not meeting the targets set and/or the annual/reference values.

The FPC is also responsible for the management of the Capacity KPA financial incentive schemes.

This monitoring process is described in the FABEC FPC States Performance Process description, regularly updated.

### Application of Corrective Measures for Capacity

FABEC did not specifically report on any corrective measures that were applied to address the capacity shortfall but provided a combined section which reports on both actions taken to improve capacity and further planned actions still to be implemented. It is noted that even the planned corrective actions will not deliver the required en route capacity performance for FABEC in 2019.

### Capacity Planning

After discussions at FABEC Finances and Performance Committee, the following corrective measures, proposed by ANSP and endorsed by FABEC States are planned to be implemented to mitigate the performance gaps experienced in 2018 and explained above.

At Network Manager level:

Following the high traffic growth and the operational performance during the Summer 2018, as well as the operational performance outlook for the Summer 2019, FABEC will be working closely with the Network Manager in implementing the NM actions for 2019.

This initiative addresses one of the most complex area in Europe that experienced a high traffic growth over the past years and that cannot be handled anymore in a partial approach. The solutions required for this area had to be looked into a more cross-border and network approach to ensure an appropriate capacity evolution and coordinated operational measures to enable a better use of the existing capacity.

Between end of April and beginning of November the NM will undertake about 250 strategic airspace organisation and network measures that will be translated into approximately 150 RAD restrictions. It is expected that approximately 1000 flights a day will be re-routed, allowing for the best use of available airspace capacity.

At FABEC level:

Considering the high levels of weather-induced delay in 2016-2018 compared to the previous years, FABEC decided to launch a study on long-term weather impact on ATM.

In order to better understand the reasons for traffic volatility, and therefore to try to better adapt capacity to traffic demand, FABEC launched a task force to detail all the aspects linked with traffic volatility. The outcomes of this have been presented at the traffic volatility workshop in Warsaw in May 2018 and are now being adopted across FABEC.

#### At ANSPs level:

**Skeyes:** Within the framework of the e-NM measures, specific RAD restrictions have been created in order to reduce the overall traffic complexity by strategically reducing the number of conflicting traffic streams. The ATCO recruitment is still ongoing but the capacity gap is not expected to be closed prior 2021. The development of the complexity assessment tool is still ongoing (live trial during summer 2020, expected to be operational in 2021) and Civ-Mil co-location will take place end 2019, with first benefits expected 2020.

**DFS:** With the aim of reducing delays, an extensive capacity initiative has been set up including more than 90 measures in the areas of capacity, staffing, network and framework conditions. At short notice, the most important measure is the eNM/S19 initiative, which will offload the airspace of Karlsruhe UAC by nearly 700 flights per day. Several measures will help increasing the available number of ATCO hours on board at short notice. ATCO activities on other duties (e.g. projects) will be reduced to a minimum. As a short to medium term measure, DFS recruits ready entries and increases the amount of ATCO trainees to a maximum. However, effects will only be gradually materialised over the next years.

**DSNA:** capacity increases are expected mainly from the flexible rostering and implementation of new ATM system 4 Flight

In Bordeaux, capacity increase (+3%) is mainly due to the implementation of enhanced version of legacy ATM system (stripless, ERATO) and flexible rostering. Average en-route delay per flight decreased from 0.63 minutes per flight in Summer 2017 to 0.37 minutes per flight during the same period in 2018, whereas 37% of the delays were due to Weather, 20% to Industrial action. Improved airspace management (FUA, TSA 34), cooperative traffic management (improved ATFCM procedures, CDM processes, collaborative ATFCM measures – MAC), ESSO project including new Madrid-Bordeaux interface, change of DFL between upper and lower airspace or the 5th layer in R&L sectors are the main capacity initiatives. Flexible rostering was in place in 2018 and renewed for 2019. 20 sectors were opened, two sectors more than in the opening scheme committed in the NOP.

In Brest ACC, traffic increase was not as high as in 2017 but still positive +1,8% and capacity remains stable but not sufficient to close the capacity gap. This was achieved through a rostering trial (renewed for 2019 and regarded as the key capacity driver), the improved airspace management (FUA), the cooperative traffic management ((improved ATFCM procedures, CDM processes, collaborative ATFCM measures – MAC).

In Marseille ACC, the average en-route delay increased to 3.72 minutes per flight in Summer 2018 whereas it was 1.61 minute per flight in Summer 2017. However, nearly half of delays were due to ATC Industrial Action (26% ) and Weather (17%). 47% of the delays were due to ATC Staffing, 8% due to ATC capacity, and 1% due to Airspace management and 1% due to Equipment. Capacity decreased by around 5% in spite of various initiatives contributing to capacity increase, such as the improved airspace management (FUA), the airspace management procedures for D54 during summer season, the cooperative traffic management (improved ATFCM measures, CDM processes, collaborative ATFCM measures – MAC), the reorganisation of lower airspace and delegation of ATS to APP units below FL145, the reorganisation of lower airspace and delegation of ATS to APP units below FL145, the IAM project (interface LFML), the IAG project (Interface Geneva), SMART ski, the enhanced Mode S.

Moreover, maximum configuration of 28 sector controlling positions was reached but flexible rostering was not in place yet during summer 2018 (even though a more efficient rostering was tried). New seasonal roster agreement has been signed end of summer 2018. Main capacity initiatives will be staffing and the implementation of new En Route ATM System 4Flight. Training is expected to take place from sept 2020 to January 2022 (interruption during summer 2021, and 2022) for LFMM; no impact is expected during summer 2019 due to 4-Flight.

In Paris ACC, an increase of +2% in capacity was observed even though the average en-route delay increased from 0.17 minutes per flight in Summer 2017 to 0.35 minutes per flight over the same period in 2018 (77% of which were due to Weather). FRA above FL245 was postponed to 2020 but some initiatives such as Xstream, Improved airspace management / FUA, ATFCM procedures, STAM, CDM Processes and procedures and MAC (Collaborative ATFCM Measures) contributed to this increase.

In Reims ACC, high traffic increase and congestion of some sectors will have an impact on delay (40% of the delays were due to ATC Capacity in 2018). Even though capacity decreased by 5% in 2018, capacity increase is expected to be achieved through a maintained flexible rostering, improved airspace management (FUA), cooperative traffic management (improved ATFCM measures, CDM processes, collaborative ATFCM measures – MAC), the YB sector (for dynamic sectorisation), enhanced Mode S.

MUAC: To cope with the staffing situation, MUAC is taking several measures, including training of new staff, cross training of ATCOs, negotiating with the social partners for mitigating measures and (further) scrutinizing of involvement of operational staff in developments. Furthermore, a study is undergoing to reduce the number of sectors open during the night. In the latest input to the NOP (Jan'18), MUAC quoted an annual capacity increase of 3% (against a projected traffic increase of 15-20% up to 2022). MUAC initiatives to further increase capacity are the addition of a 3rd layer in the DECO sector group (March 2018) and UK interface improvements (part of AD4 project). The potential benefit of several airspace studies for the HANNOVER and BRUSSELS sector groups is being evaluated. If found feasible and beneficial to the network, the actual implementation should take place as from 2019.

Furthermore, MUAC took an active part in developing measures at network level aimed at safeguarding or increasing throughput while decreasing delay. MUAC sees further opportunities in this area in improved and harmonized ASM. Also the exclusion of short-duration high-workload flights is under investigation.

### Assessment of capacity performance

EUROCONTROL 7 year forecast February 2014 – FABEC										
	2014		2015		2016		2017		2018	2019
		actual		actual		actual		actual		actual
<b>High</b>	5572		5735		5952		6124		6308	6486
<b>Base</b>	5509	<b>5571</b>	5626	<b>5667</b>	5758	<b>5848</b>	5860	<b>6048</b>	5970	<b>6238</b>
<b>Low</b>	5440		5498		5525		5550		5587	5633

For the fourth consecutive year in RP3, FABEC failed to achieve their en route capacity target.

The Network Manager worked with four ANSPs (DFS, DSNA, MUAC and NATS (UK)) to prepare for the summer 2018, in anticipation of a significant capacity shortfall, in Karlsruhe UAC and, to a lesser extent Maastricht UAC. This became known as the 4ACC initiative and focussed on re-routing traffic away from congested areas and on-loading adjacent ACCs. The Network Management Board agreed to protect ACCs affected by extra traffic from the 4ACC initiative by re-assigning delays to the ANSPs causing the initial capacity problem. In total, FABEC was re-assigned 243,733 minutes of delay to Karlsruhe UAC (93.1%) and MUAC (6.9%) due to the 4ACC initiative.

An additional 63k minutes of delay was re-assigned to FABEC (DSNA) through the NM post operations adjustment process because of industrial action in France.

The total en route ATFM delay per flight for all causes increased from 1.15 minutes in 2017 to 2.14 minutes in 2018. Traffic increased in the FABEC area by 3% on 2017 levels whilst delays increased by 86%. It is noted that the traffic levels for FABEC remain lower than the high traffic scenario forecasted by STATFOR in 2014 when the FAB performance plans and associated capacity plans were being determined. It is further noted that the 4ACC initiative imposed re-routing scenarios on aircraft intending to fly via FABEC airspace, which would have capped traffic growth to some extent.

The latest version of the Network Operations Plan NOP 2019-2024 predicts massive delays for traffic operating within FABEC airspace for each year from 2019 to 2024 inclusive. The Network Manager warns that even with increased application of the 4ACC initiative which forces traffic out of FABEC into other FABs, the delays in 2019 and 2020 will be above three minutes per flight in FABEC.

The Network Manager refers to the FABEC airspace re-structuring project as a possible solution to improve capacity in FABEC. However, it is worth noting that FABEC decided to abandon several airspace re-structuring projects back in 2016 because they were no longer 'feasible'.

The Network Manager reports that 8 of the ACCs in FABEC have decreased capacity plans from those that were published in NOP 2018-2022: 5 of those with significant decreases of up to 20-30%.

FABEC delay forecast							
	2019	2020	2021	2022	2023	2024	
<b>NOP 2018 - 2022</b>	<b>1.09</b>	<b>1.12</b>	<b>0.85</b>	<b>0.74</b>	N/A	N/A	
<b>NOP 2019 - 2024</b>	<b>6.17</b>	<b>6.13</b>	<b>2.91 – 5.88</b>				
<b>Cost of delay (2018 traffic)</b>	<b>€3.85 billion</b>	<b>€3.82 billion</b>	<b>€1.82 billion - €3.67 billion</b>				



### En route Capacity Incentive Scheme

FABEC applied a common en route incentive scheme described in section 4.1 of the FABEC RP2 performance plan dated July 2015. The incentive scheme uses the FAB targets and then applies a ratio of 78% of the FAB targets for the delay causes CRSTMP only, to give a FAB CRSTMP target. A dead-band of +/- 10% of the CRSTMP target is applied to decide if the FAB level was achieved; national / ANSP incentives are determined according to how each ANSP has contributed to the FAB target.

For the actual FABEC en-route Capacity delay data a review to proof non-CRSTMP regulations was conducted by FABEC NSAs via a data validation process within FABEC Finance and Performance Committee (FPC). Therefore, a number of non-CRSTMP regulations were subject to an analysis under the direction of the FPC (see description of the verification process in the FABEC Performance Plan). The relevant number of regulations to be verified consisted of 2,5% of the non-CRSTMP regulations causing the highest delay as well as non-CRSTMP regulations of 5 sample days. These sample days were discussed in the 54th FPC meeting and agreed as follow-up to the meeting on 15th November 2018. The relevant data, consisting of 152 regulations, was received 15th March 2019. data provided included e.g. regulation reasons, start and end date, regulation descriptions and in-depth analysis as regards weather. The verification process was then conducted by FPC members in the months of April and beginning of May. In case of inconsistencies the ANSPs or CM PMG were informed to solve these issues whereby in case of no sufficient and comprehensible justifications, the opinion of the FPC was crucial. The process was finalised in May 2019

### Result of FAB Capacity Incentive Scheme

The 2018 FABEC underachievement triggers the activation of the financial common FABEC incentive scheme, generating a malus for 4 FABEC ANSPs (DFS, DSNA, EUROCONTROL (MUAC) and skeyes). In conjunction with this incentive mechanism, an internal validation process was established in order to approve non-CRSTMP regulations.

The individual CRSTMP and All-causes achievements for 2018 are listed in a graphic above.

The detailed application and calculation of malus are described further in the national sections that follow.

### Update on Military dimension of the plan

FABEC reported no new information on how civil military coordination and cooperation is providing additional capacity from previous annual reports.

### Observations on Military dimension of the plan

The PRB notes that ATFM delays attributed to airspace management have significantly increased in airspace controlled by the DFS from the previous year.

### Application of FUA

FABEC report the following new information on how the FUA concept is applied by the national / FAB authorities to provide the optimum benefit for both civil and military airspace users:

A dedicated working group, the Joint States-ANSPs Flexible Use of Airspace Task Force (JFUATF) has been created to tackle specifically the FABEC FUA related issues.

The implementation of FUA concept within FABEC members is still heterogeneous, in terms of dedicated organization or efficiency ; Some States have already implemented A-FUA concepts as e.g. Military Variable Profile Areas, Variable geometric Areas and a more dynamic use of them.

At mid-term, a dedicated structure, the FABEC "Airspace Status Overview (FASO) Tool" Working group is in charge to enhance coordination between national AMCs by improving the real time data exchange capacity of the FASO Tool, currently limited to a graphic overview of AUPs/UUPs at FABEC Level.

At short-term, for 2019, a particular focus is made on AMC Personal Training and Qualification harmonization, as well as the setting up of an inter-AMC Workshop to improve cooperation between FABEC AMCs.

In the end this implementation will offer a better performance to the network notably by:

- an improved military use of airspace to their just needs offering the possibility to shorten trajectories;
- a better predictability of military activities at national as well as at FABEC Level allowing the network to take into account as soon as possible the military requirements and mitigate the induced constraints.

To assess FUA performance, it's necessary to have both data on actual use of ARES/SUA, but also on the efficient use (planning and actual use of CDRs) of the Airspace released by the military (CURA) at pre-tactical level, which is not, at this stage, possible.

### Observations of the Application of FUA

The PRB welcomes the additional information on civil military cooperation even though it only appears to focus on ensuring that the needs of the military airspace users are met. The PRB notes the reference to a new category of airspace "airspace released by the military (CURA) at pre-tactical level" which appears to be inconsistent with the FUA Regulation (2150/2005) Article 3(c) which links exclusive or specific airspace reservations to actual use and mandates its release as soon as the activity ceases.

**FABEC**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

FABEC represents the largest FAB in terms of geographic region/number of member states and the respective air navigation services at airports subject to RP2. Local variability of performance is heavily masked on the aggregated FAB level. FABEC, next to SW FAB and UK-Ireland FAB, influences the European performance significantly.

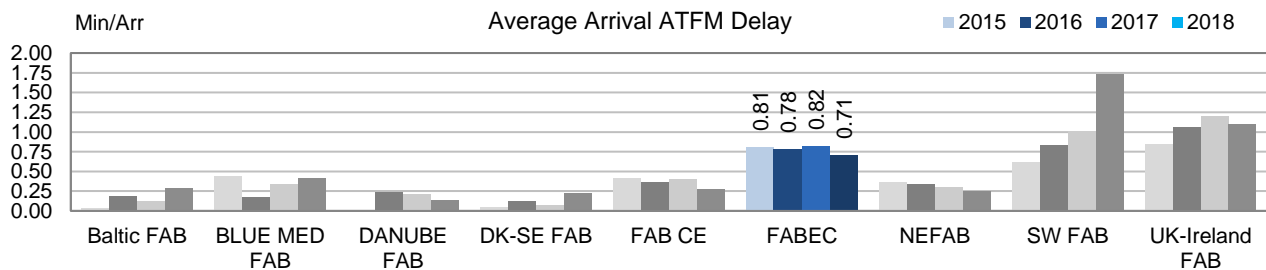
On a FAB level, the achieved performance in terms of arrival ATFM delay (0.71 min/arr) is better than the European average (RP2 airports) of 0.78 min/arr. in 2018. Last year, airports in FABEC represented 38% of these delays in the SES area and 42% of the traffic.

Across FABEC, there is a variety of methods of establishing the national target on arrival ATFM delay and the associated incentive scheme.

Given the number of airports, there is a wide spread of the compliance to ATFM slots. Several French airports, including Marseille (LFML), do not reach the 80% minimum threshold of compliance.

The implementation of the Airport Operator Data Flow is not completed for all airports within FABEC. This impedes a consistent monitoring of ATC pre-departure delay.

**2. Arrival ATFM Delay**



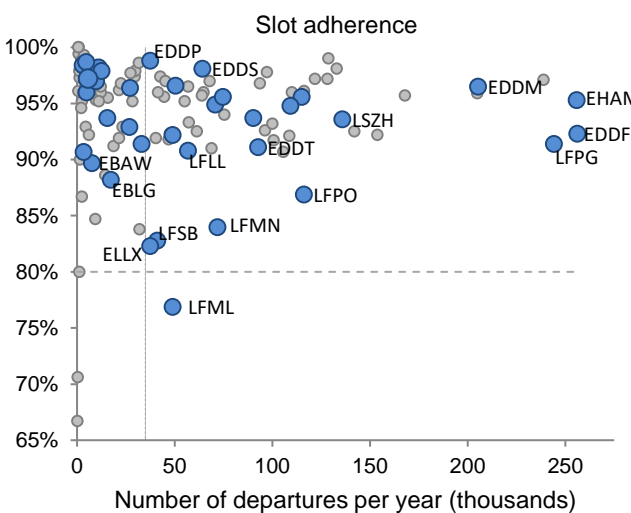
Arrival ATFM delays at FABEC level have decreased in 2018 reaching the lowest value in RP2 (FABEC: 2015: 0.81 min/arr., 2016: 0.78 min/arr., 2017: 0.82 min/arr., 2018: 0.71 min/arr.) which ranges just below the European average of 0.78 min/arr. Traffic levels have increased in 2017 by 2% at FABEC airports with respect to 2017.

Due to the size / number of airports, FABEC performance - next to SW FAB and UK-Ireland FAB - drives the European average and has the highest impact: terminal ATFM delays generated by airports in FABEC during RP2 (2015-2017) account for approx. 47% of the minutes of arrival ATFM delay in all airports under monitoring.

**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

Across FABEC, there are different methods of establishing the national target on arrival ATFM delay and the associated incentive scheme. For the incentive scheme, most states in FABEC focus on CRSTMP targets, or on only some airports, and some do not have an incentive scheme for terminal capacity.

**4. ATFM Slot Adherence**



Within FABEC slot adherence varies widely amongst the airports. Most of the airports within FABEC show a compliance above 90%, and about half of those above 95%.

Nevertheless there are some other airports, especially some smaller French airports, that have a compliance well below the minimum required 80% (for the full set of data please refer to the detailed tables per state).

In general the compliance with ATFM slots in the airports within FABEC has improved in 2018.

**5. ATC Pre-departure Delay**

Across FABEC, the implementation of the Airport Operator Data Flow varies and as such impedes a consistent monitoring of pre-departure delay for all FAB member states. In addition, the quality of the reporting does not always allow for the calculation of the indicator, as too many minutes of delay are left unreported or unexplained.

FABEC is invited to encourage the implementation of the data flow and the proper reporting of delays.

# Annual Monitoring Report 2018

## Local level view

### Belgium



## BELGIUM

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	68	B	D	C	C	A
Belgocontrol	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
				RAT application (%)		
				ATM Ground	ATM Overall	
Separation Minima Infringements (SMIs)				100%	100%	
Runway Incursions (RIs)				100%	100%	
ATM Specific Occurrences (ATM-S)					100%	
Source of RAT data:				BCAA		
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level				Number of questions answered		
				YES	NO	
Policy and its implementation				9	0	
Legal/Judiciary				7	0	
Occurrence reporting and Investigation				2	0	
<b>TOTAL</b>				<b>18</b>	<b>0</b>	
Belgocontrol				Number of questions answered		
				YES	NO	
Policy and its implementation				#N/A	#N/A	
Legal/Judiciary				#N/A	#N/A	
Occurrence reporting and Investigation				#N/A	#N/A	
<b>TOTAL</b>				<b>#N/A</b>	<b>#N/A</b>	
Observations						
<p>One (Safety Policy and Objectives) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only two are below Level C.</p>						

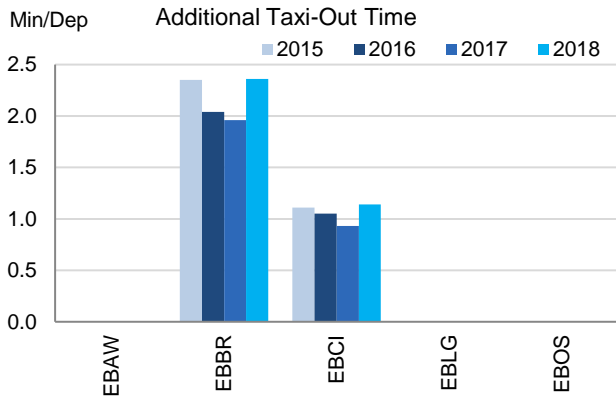
**BELGIUM**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

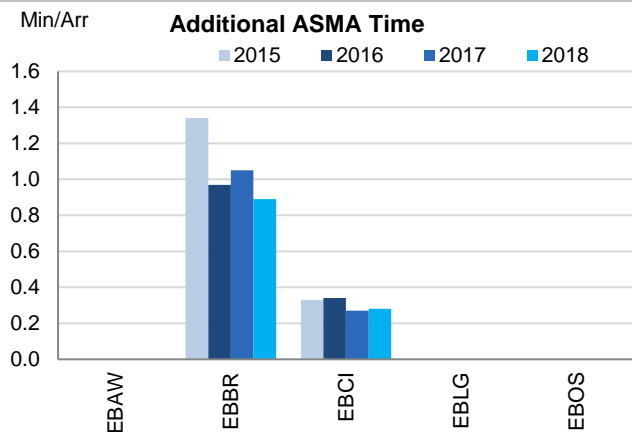
Belgium identifies 5 airports as subject to RP2 monitoring. The Airport Operator Data Flow is fully established at two airports (i.e. EBBR and EBCI). Therefore the evaluation of the environmental performance is limited to them. There is no sign of APDF implementation at the rest of airports. Traffic in 2018 has decreased by 1% at Brussels (EBBR) and increased by 11% at Charleroi (EBCI) with respect to 2017. Performance at both airports regarding the environmental indicators is amongst best-in-class, and way below the SES averages.

**2. Additional Taxi-Out Time**



Additional taxi-out times at Belgian airports have increased in 2018 (EBBR: 2017: 1.96 min/dep.; 2018: 2.36 min/dep.; EBCI: 2017: 0.93 min/dep.; 2018:1.14 min/dep). This increase is sustained across the year regardless of the traffic.

**3. Additional ASMA Time**



Additional ASMA times at Brussels have decreased in 2018 (-15%) and remain at similar levels for Charleroi, where they were very low. Worst ASMA times are observed during the winter months at both airports.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Antwerp	EBAW	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Brussels	EBBR	2.35	2.04	1.96	2.36		1.34	0.97	1.05	0.89	
Charleroi	EBCI	1.11	1.05	0.93	1.14		0.33	0.34	0.27	0.28	
Liège	EBLG	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Ostend-Bruges	EBOS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

**BELGIUM**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	N/A	N/A	N/A	N/A	N/A	Because there are two ANSPs in Belgium, skeyes and EUROCONTROL (MUAC), Belgium did not set a national target. Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay and includes NM post operations adjustment.
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.50	0.72	0.59	0.88		

**National capacity incentive scheme**

The incentive scheme is applied for delay causes listed in Art. 15 (g) of Regulation 391/2013; data used for calculation was AUA data provided by PRU.

[The PRU is unable to validate the attributed cause of delay, which is determined by the ANSP requesting the ATFM regulation.]

The Capacity delay target at FAB level was set at an average of 0,33 min/flight for CRSTMP ATFM delays.

skeyes broken down target was set at 0,07 min/ flight.

EUROCONTROL (MUAC) broken down target was set at 0.15 min/ flight

2018 achievement (As reported by FABEC)

- FABEC: 1.42 min/ flight for CRSTMP delays

- skeyes: 0.11 min/ flight for CRSTMP delays

- EUROCONTROL (MUAC): 0.50 min/ flight for CRSTMP delays

Bonus / Malus

The percentage of malus for skeyes was -0.5% of total ANSP's revenue in 2018, which equates to €537,966.09

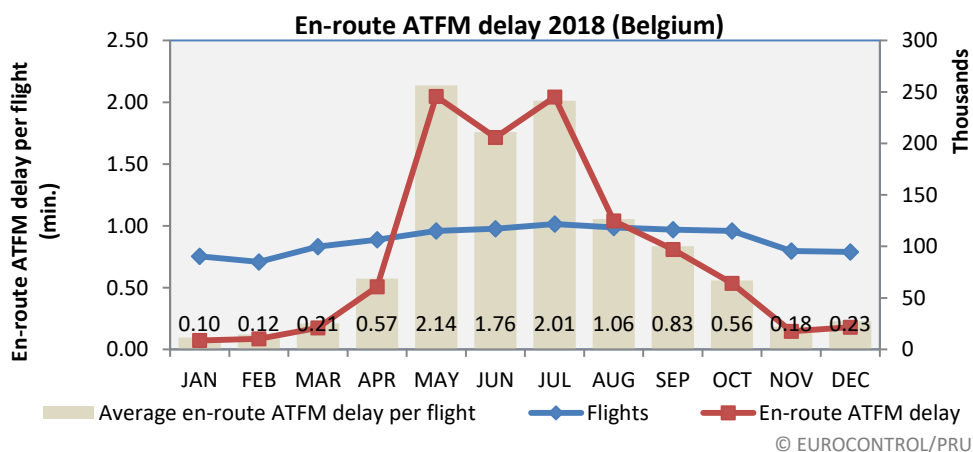
The percentage of malus for EUROCONTROL (MUAC) was -0.5% of total ANSP revenue in 2018, which equates to €834,386.36

NOTE: The penalty for EUROCONTROL (MUAC) is applicable because of the performance over the four MUAC States (Belgium, Luxembourg, Germany and the Netherlands). The breakdown of the MUAC penalty per State is: Belgium €261,336.48; Luxembourg €8,082.70; Germany €396,559.64 and the Netherlands €168,407.54.

**Compliance issues relating to national capacity incentive scheme**

The PRB noted several compliance issues regarding the proposed FABEC en route incentive scheme submitted in the FABEC performance plan dated July 2015. The compliance issues were: the individual ANSP contributions are not consistent with the required capacity performance and that the proposed target, using CRSTMP codes only, is not consistent with the required capacity performance. FABEC addressed both issues in the Revised FABEC performance plan (version 3.0) submitted in January 2017.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Belgium)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.17	0.24	0.20	0.04	0.03	0.08	0.02	0.50	0.72	0.59	0.88

EUROCONTROL 7 year forecast February 2014 – Belgium / Luxembourg											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	1150		1189		1235		1273		1315		1356
<b>Base</b>	1136	<b>1133</b>	1167	<b>1165</b>	1195	<b>1188</b>	1219	<b>1240</b>	1245	<b>1275</b>	1274
<b>Low</b>	1122		1139		1145		1152		1163		1175

Although traffic grew by almost 3% in Belgium, it remained below the high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined. The 3% increase in traffic resulted in a 49% increase in en route ATFM delays (including almost 17k minutes of delay re-assigned by the Network Manager, through the post-operations adjustment process, to the Brussels sectors of MUAC from the 4ACC initiative.)

89% of the en route delays in Belgium originated from MUAC; 11% from Brussels ACC. 35% of the total en route delays in Belgium were attributed to ATC capacity; 32% to adverse weather and 22% to ATC staffing.

Brussels ACC attributed 42% of delays to adverse weather, 33% to ATC staffing, 13% to ATC equipment and 11% due to ATC capacity. Equipment related delays included 20k minutes for upgrade of CANAC ATM system. 7k for FDPS failure on 19/07 and 2.5k for radio frequency issues on 28/05.

Maastricht UAC (all sector groups) attributed 23% of delays to ATC capacity, 33% to ATC staffing, 39% for adverse weather and 3% to airspace management. Both the Network Manager and the airspace users commented about the saturation of airspace in the Brussels sectors of MUAC and staffing issues being important delay reasons.

There is a significant increase in forecasted delays for MUAC for the years 2019 – 2022 when compared to the Network Operations Plan 2018 – 2022.

Brussels ACC (skeyes) also shows an increase in forecasted delays over the same period, although not as significant as for MUAC.

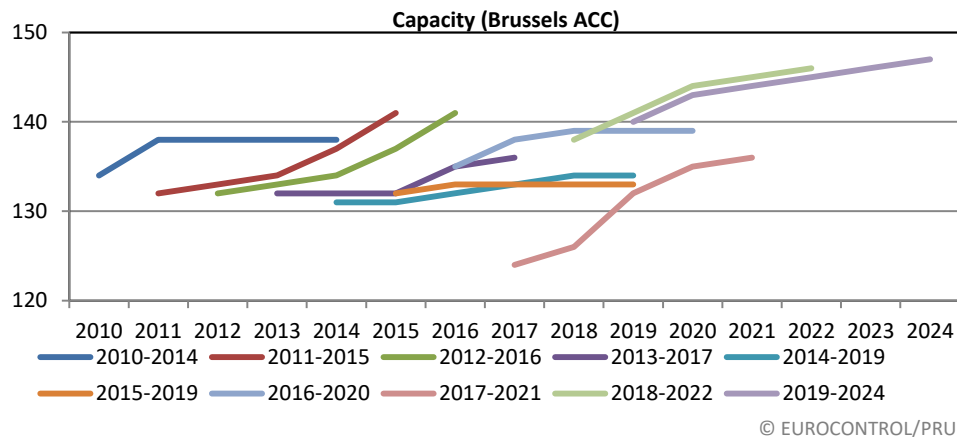
skeyes delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>		<b>0.09</b>	<b>0.08</b>	<b>0.10</b>	<b>0.12</b>	N/A	N/A
<b>NOP 2019 - 2024</b>		<b>0.42</b>	<b>0.12</b>	<b>0.14 – 0.17</b>			

EUROCONTROL (MUAC) delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>		<b>0.89</b>	<b>0.79</b>	<b>0.47</b>	<b>0.40</b>	N/A	N/A
<b>NOP 2019 - 2024</b>		<b>1.62</b>	<b>1.36</b>	<b>1.28 – 1.56</b>			

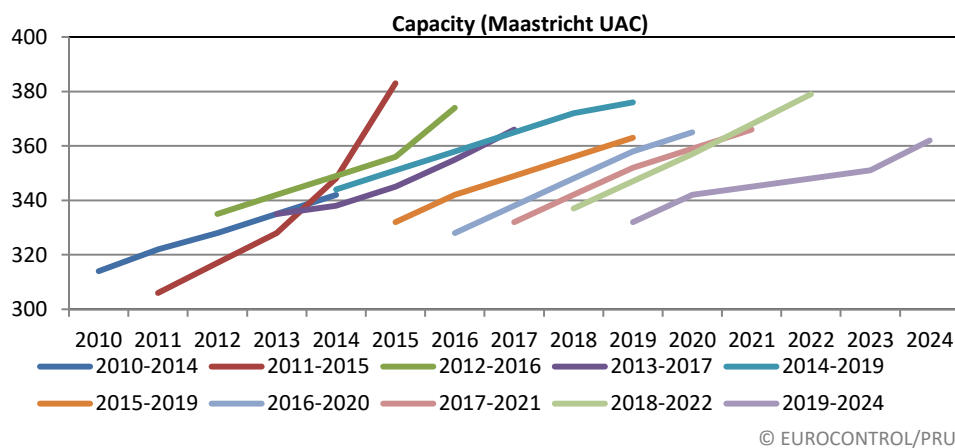
Brussels ACC plans to reduce the sector hours available, during weekdays and on Sundays, in comparison to the plan from the previous year.

Even though MUAC plans to provide 3 additional sector hours during weekdays and 2 additional during weekends days in the Brussels sectors, the Network Manager reports that MUAC has reduced its capacity plans by 4 – 8 % from the previous edition of the NOP. The Network Manager identifies increased staffing and restructuring of MUAC airspace as possible measures to provide much needed capacity.





In general, Brussels ACC has been postponing capacity plans for much of the period shown. Staffing issues in 2016 caused significant delays in Brussels ACC, which shows up in the capacity modelling as a significant reduction in planned 2017 capacity when in actual fact, no capacity reduction took place. 2018 saw an increase in capacity planning but this is already postponed in the latest plans for 2018.



The graphic shows a continual postponement and downgrade of capacity plans over the period for MUAC. By 2024, MUAC promises less capacity than it did for 2014 in the capacity plans from 2011.

### Planning and Effective Use of CDRs

Belgium did not provide any data.

### Observations on Planning and Effective Use of CDRs

It is noted that Belgium like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
66%	70%	71%	N/A	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
20%	10%	8%	N/A	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	N/A	78%	N/A	

Belgium did not provide any data on effective booking procedures for 2018.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**BELGIUM**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

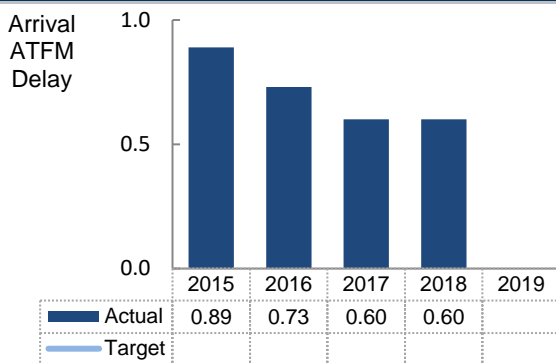
In Belgium, ANS at a total of 5 airports are subject to RP2 monitoring. Traffic levels at these airports have only slightly increased during RP2 (+1.0% with respect to 2015).

In terms of arrival ATFM delays, values are significantly lower than those in the beginning of the reference period (-33% in 2018 with respect to 2015) and at the same time ATFM slot adherence has improved (2015:92.6%; 2018:94.5%).

Local targets have been established for a subset of the airports (Brussels and Liège) as a method for establishing a national target on all airports was not available.

The Airport Operator Data Flow, required for the monitoring of the ATC pre-departure delay, is not yet established for Antwerp (EBAW), Liege (EBLG), and Ostend-Bruges (EBOS).

**2. Arrival ATFM Delay**



After the reduction in arrival ATFM delay observed in Belgium in 2016 and 2017, during 2018 these delays have not changed (2017: 0.60 min/arr, 2018: 0.60 min/arr)

The main driver for the national average is Brussels (EBBR; 2018: 0.85 min/arr) followed by Charleroi (EBCI) and Liège (EBLG).

Most of the delays are attributed to weather reasons, but the worst month was November when half of the delays were attributed to non-ATC event at Brussels.

Belgium monitors, for target and incentive purposes, CRSTMP values. This national average for all airports improved from 0.10 min/arr. in 2017 to 0.06 min/arr. in 2018.

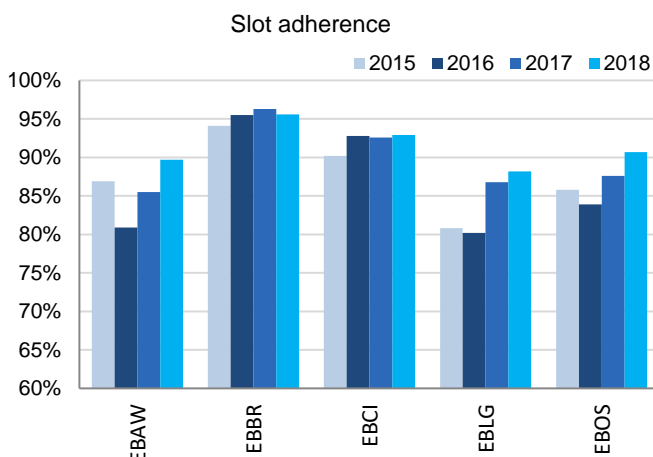
**3. Arrival ATFM Delay – National Target and Incentive Scheme**

Belgium has not established a national target on arrival ATFM delay covering all causes. The national target is currently set on CRSTMP causes with breakdown for two airports EBBR and EBLG.

At Brussels (EBBR), the actual performance for CRSTMP was 0.08 min/arr. in 2018, which meets the target of 0.11 min/arr. set by the Belgian State. Nevertheless as the achieved value lies within the deadband of +/-50%, no bonus is applied for EBBR.

At Liège (EBLG), the actual performance for CRSTMP was 0.00 min/arr. in 2018, which meets the target of 0.06 min/arr. set by the Belgian State. Therefore for EBLG the highest bonus was achieved (0.25% of the revenue at EBLG in 2018).

**4. ATFM Slot Adherence**



ATFM slot adherence at Brussels and Charleroi (2018; EBBR:95.6%; EBCI: 92.9%) is very good and drive the national performance (2018: 95.5%).

The performance improved once again and for the third year in a row at Liège (EBLG), Ostend-Bruges (EBOS) and Antwerp (EBAW), where compliance is now close to 90%.

## 5. ATC Pre-departure Delay

The monitoring of pre-departure delay is dependent on the establishment of the Airport Operator Data Flow. For the time being, this flow is only established for Brussels (EBBR) and Charleroi (EBCI).

ATC pre-departure delay at Brussels (EBBR) and Charleroi (EBCI) has deteriorated in 2018 showing an increase in the capacity constraints at the airport.

## 6. Appendix

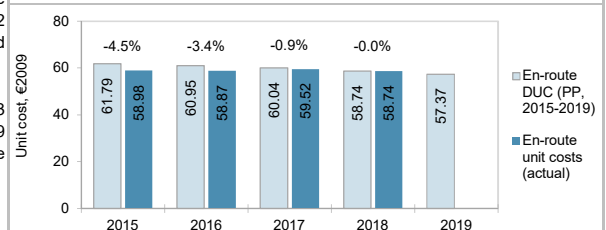
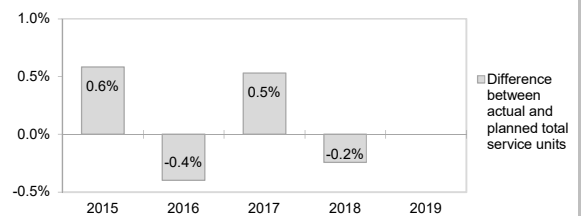
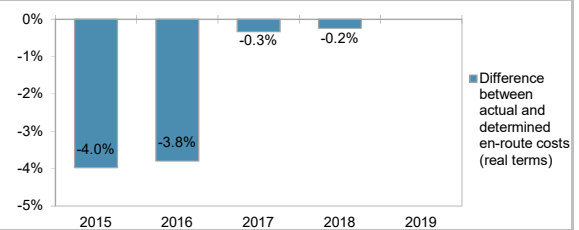
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Antwerp	EBAW	0.00	0.00	0.00	0.02		86.9%	80.9%	85.5%	89.7%		n/a	n/a	n/a	n/a	
Brussels	EBBR	1.26	0.93	0.81	0.85		94.1%	95.5%	96.3%	95.6%		0.66	0.43	0.63	0.82	
Charleroi	EBCI	0.00	0.47	0.11	0.08		90.2%	92.8%	92.6%	92.9%		0.07	0.16	0.11	0.17	
Liège	EBLG	0.14	0.33	0.15	0.10		80.8%	80.2%	86.8%	88.2%		n/a	n/a	n/a	n/a	
Ostend-Bruges	EBOS	0.00	0.00	0.12	0.01		85.8%	83.9%	87.6%	90.7%		n/a	n/a	n/a	n/a	

## BELGIUM &amp; LUXEMBOURG: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Belgium & Luxembourg ECZ represents 2.5% of the SES en-route ANS determined costs in 2018					
· ATSP:	Skeyes				
· FAB:	FABEC				
· National currency:	EUR				
2. En-route DUC monitoring at Charging Zone level					
Belgium & Luxembourg: Data from RP2 PP (EC Decision 2017/553 of 22 March 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	168 277 718	172 792 013	177 260 922	180 556 020	183 521 461
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%
Inflation index (100 in 2009)	111.6	112.9	114.4	116.0	117.6
Real en-route costs (EUR2009)	150 757 603	152 984 440	154 897 964	155 652 698	156 055 562
Total en-route Service Units	2 440 000	2 510 000	2 580 000	2 650 000	2 720 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>61.79</b>	<b>60.95</b>	<b>60.04</b>	<b>58.74</b>	<b>57.37</b>
Belgium & Luxembourg: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	160 753 284	166 388 324	178 362 008	183 524 743	
Inflation %	0.6%	1.8%	2.2%	2.3%	
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2	
Real en-route costs (EUR2009)	144 755 264	147 180 265	154 375 434	155 272 601	
Total en-route Service Units	2 454 178	2 499 996	2 593 652	2 643 568	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>58.98</b>	<b>58.87</b>	<b>59.52</b>	<b>58.74</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-7 524 434	-6 403 689	1 101 086	2 968 722	
in %	-4.5%	-3.7%	0.6%	1.6%	
Inflation %					
in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
Inflation index (100 in 2009)					
in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real en-route costs (EUR2009)					
in value	-6 002 339	-5 804 175	-522 529	-380 097	
in %	-4.0%	-3.8%	-0.3%	-0.2%	
Total en-route Service Units					
in value	14 178	-10 004	13 652	-6 432	
in %	0.6%	-0.4%	0.5%	-0.2%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-2.80</b>	<b>-2.08</b>	<b>-0.52</b>	<b>-0.00</b>	
in %	<b>-4.5%</b>	<b>-3.4%</b>	<b>-0.9%</b>	<b>-0.0%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (58.74 €2009) is the same as planned in the PP (58.74 €2009). This results from the combination of both TSUs and en-route costs in real terms staying slightly below as planned (-0.2% and -0.2% respectively).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (-0.2%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting loss of en-route revenues (-0.2 M€2009) is therefore fully borne by the main ATSP (Skeyes). According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Belgium & Luxembourg are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are +1.6% (+3.0 M€) higher than planned. However, since the actual inflation index is also higher than planned (+2.2 p.p.), actual en-route costs are -0.2% (-0.4 M€2009) below plans when expressed in real terms. The slightly lower than planned en-route costs in real terms are driven by the NSA/EUROCONTROL (-11.7%, or -1.5 M€2009), while the costs for Skeyes (+0.2%, or +0.2 M€2009) and the other ANSPs (+1.9%, or +0.9 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 2.					
Costs exempt from cost-sharing are reported for a total amount of +1.6 M€2009 comprising +0.3 M€2009 for pension, -1.2 M€2009 for the variation in EUROCONTROL costs and +2.5 M€2009 for other international agreements. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**BELGIUM & LUXEMBOURG: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**

#### 4. En-route traffic monitoring (Actual 2015-2019 TSUs compared to PP)

#### 5. En-route costs monitoring (2018 actuals compared to PP)

Costs by entity at ECZ level:

ATSP	0.2%
Other ANSPs	1.9%
METSP	-
NSA/EUROCONTROL	-11.7%
Total	-0.2%

Costs by nature at ATSP level:

Staff	-4.0%
Other operating costs	58.1%
Depreciation	-28.1%
Cost of capital	-3.1%
Exceptional items	-
VFR exempted flights	-
Total	0.2%

#### 6. En-route costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	282	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	-129	1 398	1 622	1 342	
by entity	ATSP	0	0	0	282	
	Other ANSP	0	2 157	2 643	2 514	
	METSP	0	0	0	0	
	NSA/EUROCONTROL	-129	-759	-1 021	-1 171	
<b>Total costs exempt from cost sharing</b>		<b>-129</b>	<b>1 398</b>	<b>1 622</b>	<b>1 624</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. En-route DUC 2018 vs. 2018 Unit Rate charged to users

Belgium & Luxembourg 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR

The en-route unit rate charged to airspace users (CUR) in 2018 is 67.66 €. This is -0.7% lower than the nominal DUC (68.13 €). The difference between these two figures (-0.48 €) is due to:

- the deduction of other revenues (-0.27 €) relating to a government subsidy received by ANA Luxembourg to finance certain costs (i.e. depreciation costs, cost of capital, and the costs related to the electrical engineering department (ELE)) and a change in the cost allocation of the EUROCONTROL costs;
- the inflation adjustment (+0.06 €), corresponding to higher than planned inflation index for 2016, to be charged to airspace users in 2018;
- a traffic adjustment (+0.02 €), for the costs not subject to traffic risk sharing and the related under recovery due to lower traffic than planned in 2016 to be charged to airspace users in 2018; and
- a penalty in respect of the capacity target incentive mechanism related to 2016 performance (-0.29 €).

These costs and adjustments are divided by the **forecast** TSUs for 2018 as laid out in the RP2 performance plan.

#### 8. En-route DUC 2018 vs. 2018 Actual Unit Cost for users

Belgium & Luxembourg 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR

The actual en-route unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (69.60 €) is 2.2% higher than the nominal DUC (68.13 €). The difference between these two figures (1.47 €) is due to:

- the deduction of other revenues (-0.27 €) relating to a government subsidy received by ANA Luxembourg to finance certain costs (i.e. depreciation costs, cost of capital, and the costs related to the electrical engineering department (ELE)) and a change in the cost allocation of the EUROCONTROL cost;
- the inflation adjustment (+1.29 €), reflecting the impact of higher than planned inflation index in 2018, which will be charged to airspace users in 2020;
- a traffic adjustment (+0.02 €), for the costs not subject to traffic risk sharing and the related under recoveries due to lower traffic than planned in 2018 to be charged in the next years;
- a penalty in respect of the capacity target incentive mechanism related to 2018 performance (-0.31 €), which reflects the impact of FABEC FAB en-route capacity target incentive scheme applied to Skeyes and MUAC in 2018, see also **Note 1** at the end of this Report; and
- the adjustment for costs exempt from cost-sharing (+0.73 €) for the costs incurred in 2018 and charged to airspace users in future reference period(s), if deemed eligible by the European Commission.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TSUs for 2018.

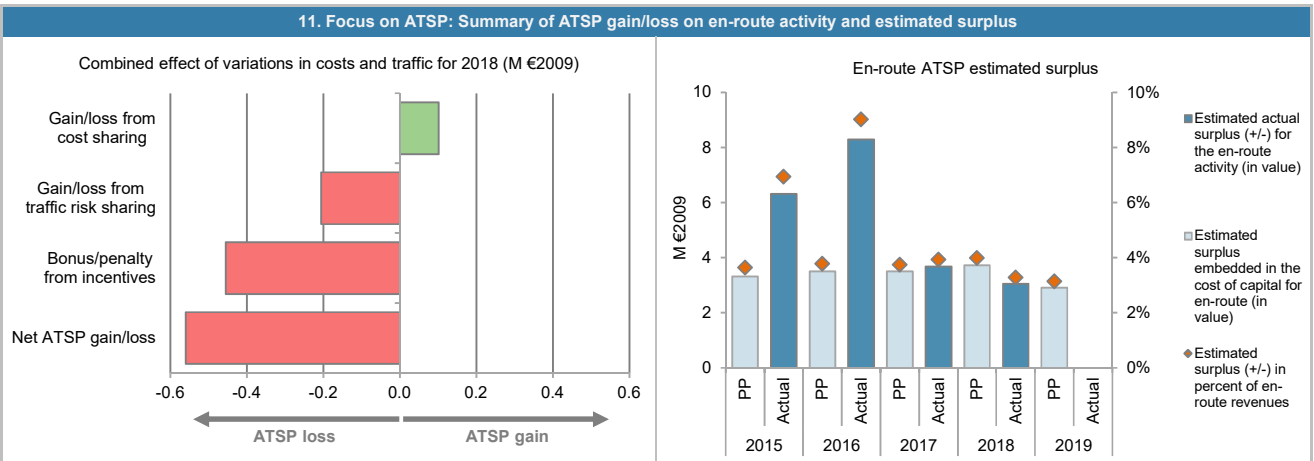
## BELGIUM: En-route ATSP (Skeyes)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	91 079	92 659	93 716	93 306	
Actual costs for the ATSP	88 088	87 035	93 457	93 487	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	2 992	5 624	259	-181	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	282	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>2 992</b>	<b>5 624</b>	<b>259</b>	<b>101</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	0.6%	-0.4%	0.5%	-0.2%	
Determined costs for the ATSP (PP) - based on actual inflation	84 792	85 734	85 937	84 673	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>493</b>	<b>-342</b>	<b>455</b>	<b>-206</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>-456</b>	<b>-448</b>	<b>-461</b>	<b>-455</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000€2009)</b>	<b>3 028</b>	<b>4 834</b>	<b>253</b>	<b>-560</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	78 793	77 836	72 977	72 740	73 449
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	78 793	77 836	72 977	72 740	73 449
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	3 310	3 496	3 502	3 719	2 908
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	4.2%	4.5%	4.8%	5.1%	4.0%
Estimated surplus embedded in the cost of capital for en-route (in value)	3 310	3 496	3 502	3 719	2 908
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 310</b>	<b>3 496</b>	<b>3 502</b>	<b>3 719</b>	<b>2 908</b>
<b>Revenue/costs for the en-route activity</b>	<b>91 079</b>	<b>92 659</b>	<b>93 716</b>	<b>93 306</b>	<b>92 857</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.6%</b>	<b>3.8%</b>	<b>3.7%</b>	<b>4.0%</b>	<b>3.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>4.2%</b>	<b>4.5%</b>	<b>4.8%</b>	<b>5.1%</b>	<b>4.0%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	78 273	76 819	71 415	70 510	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	78 273	76 819	71 415	70 510	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	3 288	3 450	3 427	3 605	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	4.2%	4.5%	4.8%	5.1%	
Estimated surplus embedded in the cost of capital for en-route (in value)	3 288	3 450	3 427	3 605	
Net ATSP gain(+)/loss(-) on en-route activity	3 028	4 834	253	-560	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>6 317</b>	<b>8 284</b>	<b>3 680</b>	<b>3 045</b>	
<b>Revenue/costs for the en-route activity</b>	<b>91 116</b>	<b>91 869</b>	<b>93 710</b>	<b>92 927</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.9%</b>	<b>9.0%</b>	<b>3.9%</b>	<b>3.3%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>8.1%</b>	<b>10.8%</b>	<b>5.2%</b>	<b>4.3%</b>	

**BELGIUM: En-route ATSP (Skeyes)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 Skeyes en-route costs vs. PP**

In 2018, Skeyes actual en-route costs are +0.2% (+0.2 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-4.0%, or -2.9 M€2009), mainly driven by delays in the recruitment process, in particular for 2015 and 2016 but almost fully catch up in the last 2 years;
- much higher other operating costs (+58.1%, or +5.5 M€2009), primarily explained by "increases in costs for temporary reinforcement of staff, for project management and transformation";
- much lower depreciation costs (-28.1%, or -2.3 M€2009, resulting from delays in the investment programme during the first years of RP2. However, additional effort is being made to catch up with the under-investments in the previous years. In fact, based on the information provided in the FABEC FAB Monitoring Report 2018, the actual capex for 2018, in nominal terms, is much higher (+27.4%) than planned in PP; and,
- lower cost of capital (-3.1%, or -0.1 M€2009); which, since Skeyes is entirely financed through equity, is driven by lower than planned en-route asset base in real terms (-3.1%, or -2.2 M€2009).

**Skeyes net gain/loss on en-route activity in 2018**

As shown in box 9, Skeyes generated a net loss of -0.6 M€2009 on the en-route activity. This is a combination of three elements:

- a gain of +0.1 M€2009 arising from the cost sharing mechanism;
- a loss of -0.2 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of -0.5 M€2009 (or -0.54 M€ in nominal terms), corresponding to a penalty as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.5% of Skeyes en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The gain from cost sharing mentioned above (+0.1 M€2009) includes amounts reported by Skeyes for cost exempt from cost sharing (+0.3 M€2009). Should these costs not be deemed eligible by the European Commission, Skeyes would record a net loss of -0.8 M€2009 for the en-route activity in 2018.

**Skeyes overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net loss from the en-route activity mentioned above (-0.6 M€2009) and the surplus embedded in the actual cost of capital (+3.6 M€2009) amounts to +3.0 M€2009 (3.3% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 4.3%, which is slightly lower than the 5.1% planned in the PP.

## BELGIUM ANTWERPEN: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

## 1. Contextual economic information: terminal air navigation services

· Belgium Antwerpen TCZ represents 0.5% of the SES terminal ANS determined costs in 2018	· Is this TCZ applying traffic risk sharing?	No
· ATSP: Skeyes	· Airports with fewer than 70,000 IFRs ATMs:	1
· National currency: EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:	0
· Number of airports in charging zone in 2018: 1, of which:	· Airports with more than 225,000 IFRs ATMs:	0

## 2. Terminal DUC monitoring at Charging Zone level

Belgium Antwerpen: Data from RP2 Performance Plan	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	5 402 889	5 506 774	5 653 055	5 832 191	6 229 428
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%
Inflation index (100 in 2009)	111.62	112.95	114.44	116.00	117.60
Real terminal costs (EUR2009)	4 840 371	4 875 519	4 939 875	5 027 781	5 297 129
Total terminal Service Units	3 646	3 947	3 976	4 021	4 068
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>1 327.71</b>	<b>1 235.18</b>	<b>1 242.50</b>	<b>1 250.51</b>	<b>1 302.00</b>

Belgium Antwerpen: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	4 696 338	5 252 264	5 779 744	6 641 558	
Inflation %	0.6%	1.8%	2.2%	2.3%	
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2	
Real terminal costs (EUR2009)	4 228 962	4 645 937	5 002 469	5 619 144	
Total terminal Service Units	4 426	4 371	3 841	4 246	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>955.43</b>	<b>1 062.99</b>	<b>1 302.49</b>	<b>1 323.55</b>	

Difference between Actuals and Planned		2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value	-706 552	-254 510	126 689	809 367	
	in %	-13.1%	-4.6%	2.2%	13.9%	
Inflation %	in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
	in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real terminal costs (EUR2009)	in value	-611 409	-229 582	62 595	591 363	
	in %	-12.6%	-4.7%	1.3%	11.8%	
Total terminal Service Units	in value	781	423	-135	225	
	in %	21.4%	10.7%	-3.4%	5.6%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-372.28</b>	<b>-172.19</b>	<b>59.99</b>	<b>73.03</b>	
	<b>in %</b>	<b>-28.0%</b>	<b>-13.9%</b>	<b>4.8%</b>	<b>5.8%</b>	

## 3. Focus on terminal at State/Charging Zone level

This analysis focuses on Belgium Antwerpen Terminal Charging Zone (TCZ) comprising Antwerpen airport (EBAW). In this TCZ the financing of terminal ANS activities in 2018 is fully subsidised by the State or regional authorities, no unit rate is charged to the airspace users. See also **Note 2** at the end of this Report.

## Terminal unit cost

In 2018, the actual terminal unit cost in real terms (1 323.55 €2009) is +5.8% higher than planned in the PP (1 250.51 €2009). This results from the combination of higher than planned TNSUs (+5.6%) and much higher than planned terminal costs in real terms (+11.8%, or +0.6 ME2009).

## Terminal service units

The traffic risk sharing mechanism does not apply in Belgium Antwerpen TCZ. In 2018, the actual TNSUs in Belgium Antwerpen TCZ are +5.6% higher than planned in the PP.

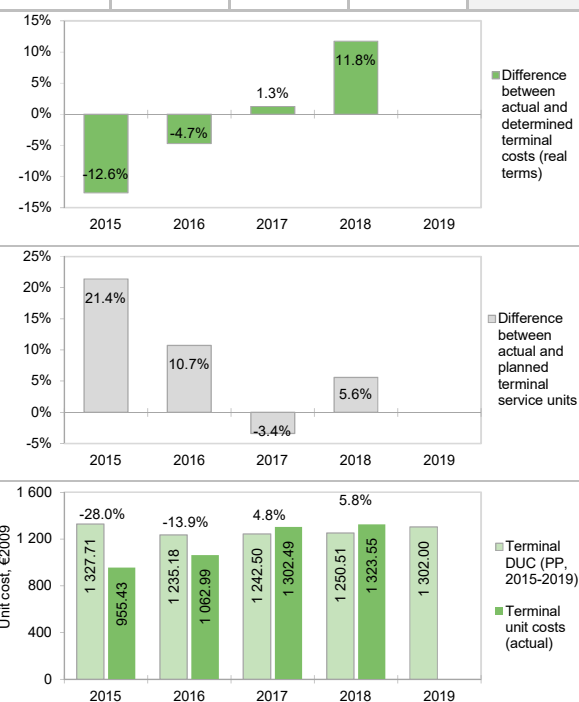
According to STATFOR February 2019 base scenario, the TNSUs for Belgium Antwerpen are expected to be largely below the planned values for the remainder of RP2 (2019). However, it is noted, that STATFOR forecast only includes IFR flights while, as indicated in the additional information to June 2019 terminal Reporting Tables, from 2014 onwards Belgium includes TNSUs from both IFR and VFR flights in the calculation and reporting.

## Terminal costs

In nominal terms, actual terminal costs are +13.9% (+0.8 M€) higher than planned. However, since the actual inflation index is also higher than planned (+2.2 p.p.), actual terminal costs are +11.8% (+0.6 ME2009) above plans when expressed in real terms.

The higher than planned terminal costs in real terms are driven by Skeyes (+11.8%, or +0.6 ME2009) and the NSA (+8.9%, or +0.01 ME2009). A detailed analysis at ATSP level is provided in box 9.

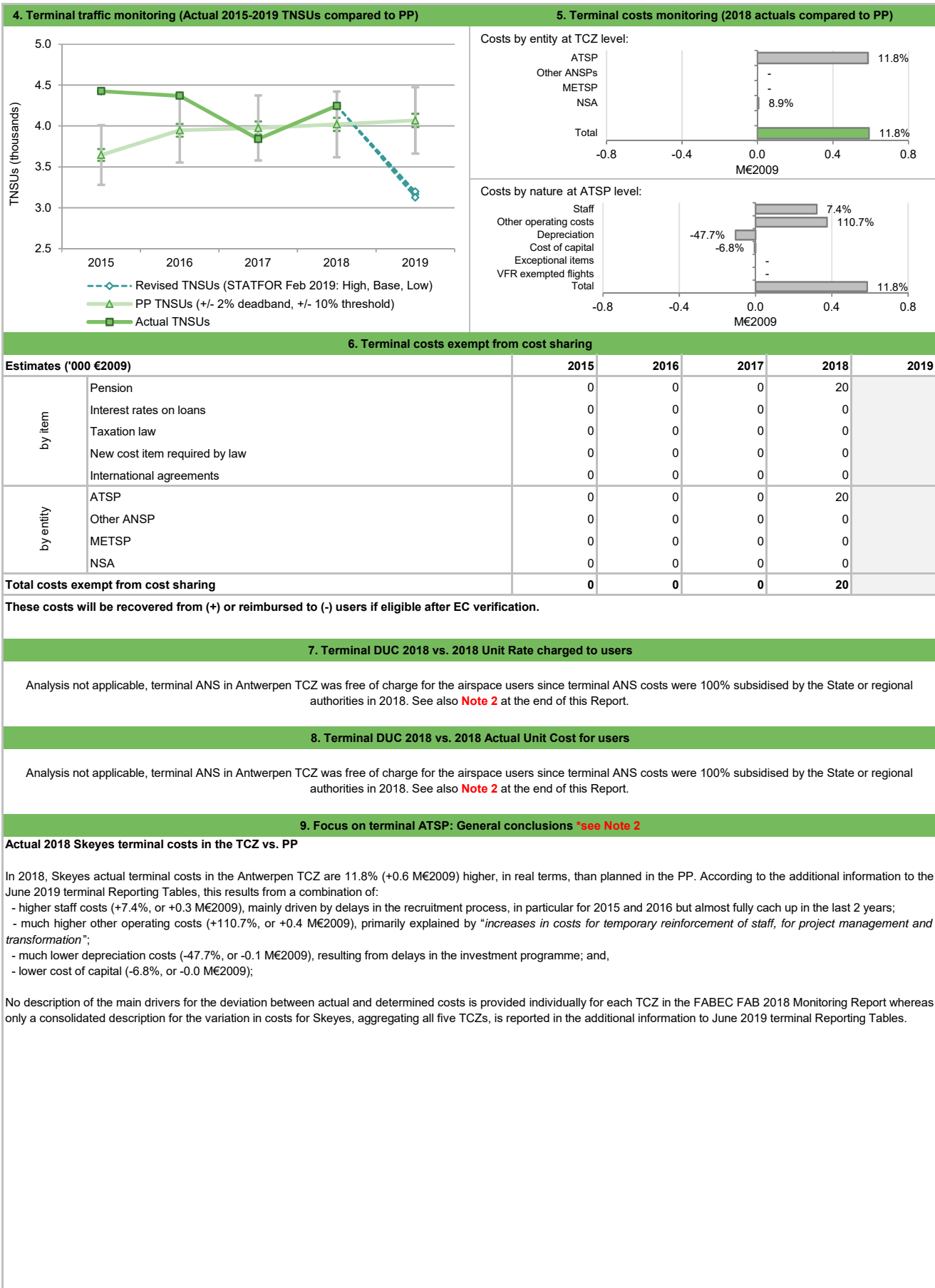
Costs exempt from cost-sharing are reported for a total amount of +0.02 ME2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.





## BELGIUM ANTWERPEN: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018



## BELGIUM BRUSSELS: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

## 1. Contextual economic information: terminal air navigation services

· Belgium Brussels TCZ represents 2.9% of the SES terminal ANS determined costs in 2018	· Is this TCZ applying traffic risk sharing?	No
· ATSP: Skeyes	· Airports with fewer than 70,000 IFRs ATMs:	0
· National currency: EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:	1
· Number of airports in charging zone in 2018: 1, of which:	· Airports with more than 225,000 IFRs ATMs:	0

## 2. Terminal DUC monitoring at Charging Zone level

Belgium Brussels: Data from RP2 Performance Plan	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	34 001 220	35 029 505	35 994 691	36 596 159	36 991 971
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%
Inflation index (100 in 2009)	111.62	112.95	114.44	116.00	117.60
Real terminal costs (EUR2009)	30 461 207	31 013 987	31 453 658	31 548 606	31 455 737
Total terminal Service Units	137 140	139 355	141 121	143 691	146 408
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>222.12</b>	<b>222.55</b>	<b>222.88</b>	<b>219.56</b>	<b>214.85</b>

Belgium Brussels: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	32 935 259	33 777 305	34 475 149	36 426 584	
Inflation %	0.60%	1.8%	2.2%	2.3%	
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2	
Real terminal costs (EUR2009)	29 657 572	29 878 014	29 838 843	30 819 007	
Total terminal Service Units	156 085	147 297	159 108	162 555	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>190.01</b>	<b>202.84</b>	<b>187.54</b>	<b>189.59</b>	

Difference between Actuals and Planned	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)					
in value	-1 065 961	-1 252 200	-1 519 542	-169 575	
in %	-3.1%	-3.6%	-4.2%	-0.5%	
Inflation %					
in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
Inflation index (100 in 2009)					
in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real terminal costs (EUR2009)					
in value	-803 635	-1 135 973	-1 614 814	-729 599	
in %	-2.6%	-3.7%	-5.1%	-2.3%	
Total terminal Service Units					
in value	18 945	7 942	17 988	18 864	
in %	13.8%	5.7%	12.7%	13.1%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>					
in value	<b>-32.11</b>	<b>-19.71</b>	<b>-35.35</b>	<b>-29.97</b>	
in %	<b>-14.5%</b>	<b>-8.9%</b>	<b>-15.9%</b>	<b>-13.6%</b>	

## 3. Focus on terminal at State/Charging Zone level

This analysis focuses on Belgium Brussels Terminal Charging Zone (TCZ) which comprises Brussels airport (EBBR). In this TCZ the costs for terminal ANS activities in 2018 were partly (25%) subsidised by the State or regional authorities. See also **Note 2** at the end of this Report.

## Terminal unit cost

In 2018, the actual terminal unit cost in real terms (189.59 €2009) is -13.6% lower than planned in the PP (219.56 €2009). This results from the combination of much higher than planned TNSUs (+13.1%) and slightly lower than planned terminal costs in real terms (-2.3%, or -0.7 M€2009).

## Terminal service units

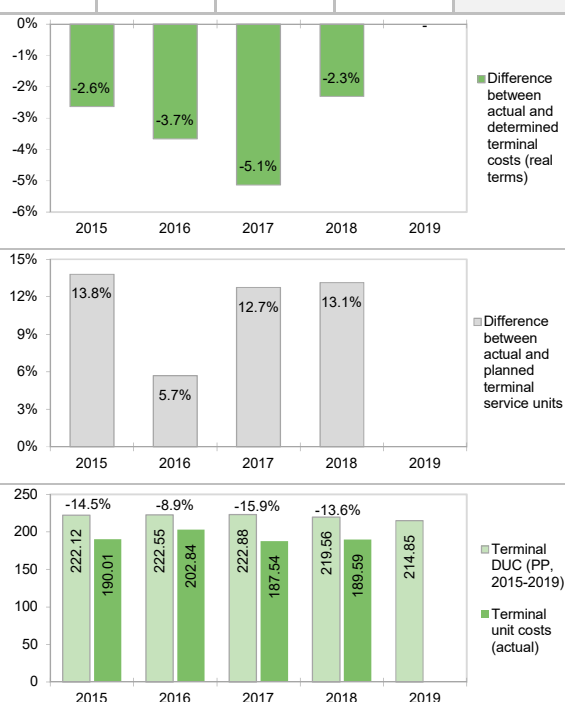
The traffic risk sharing mechanism does not apply in Belgium Brussels TCZ. In 2018, the actual TNSUs in Belgium Brussels TCZ are +13.1% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Belgium Brussels are expected to remain largely above the planned values for the remainder of RP2 (2019). However, it is noted, that STATFOR forecast only includes IFR flights while, as indicated in the additional information to June 2019 terminal Reporting Tables, from 2014 onwards Belgium includes TNSUs from both IFR and VFR flights in the calculation and reporting.

## Terminal costs

In nominal terms, actual terminal costs are -0.5% (-0.17 M€) lower than planned. However, since the actual inflation is higher than planned (+2.2 p.p.), actual terminal costs are -2.3% (-0.7 M€2009) below plans when expressed in real terms.

The slightly lower than planned terminal costs in real terms are driven by Skeyes (-2.2%, or -0.7 M€2009) and the NSA (-9.6%, or -0.04 M€2009). A detailed analysis at ATSP level is provided in box 12.

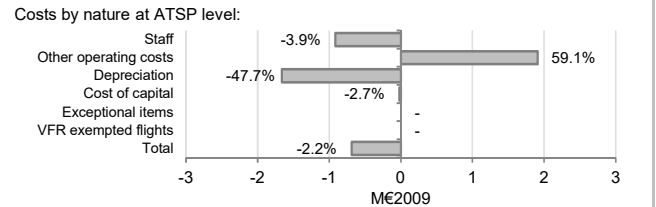
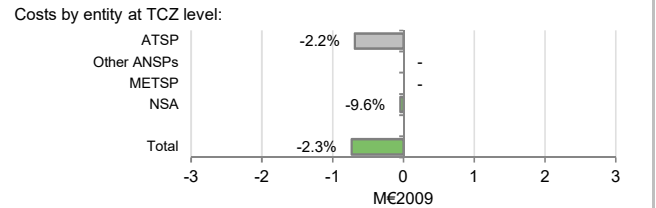
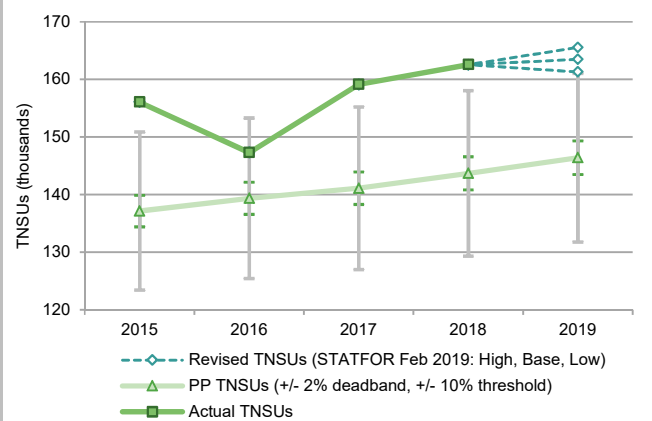
Costs exempt from cost-sharing are reported for a total amount of +0.1 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.



**BELGIUM BRUSSELS: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP) 5. Terminal costs monitoring (2018 actuals compared to PP)**



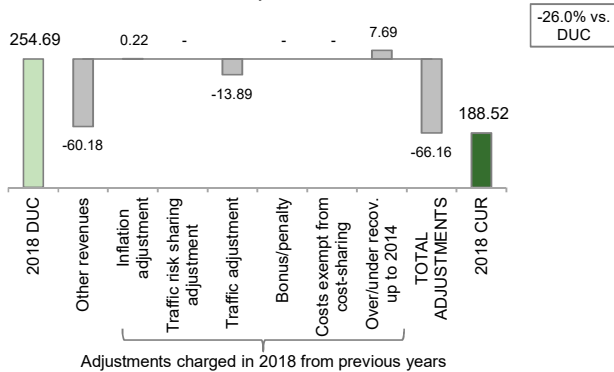
**6. Terminal costs exempt from cost sharing**

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	96	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	96	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>96</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

**7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users**

Belgium Brussels 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR



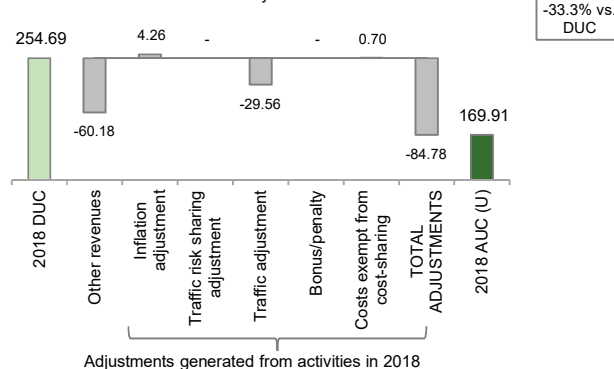
The terminal unit rate charged to airspace users (CUR) in 2018 is 188.52 €. This is -26.0% lower than the nominal DUC (254.69 €). The difference between these two figures (-66.16 €) mainly reflects the adjustment for other revenues (-60.18 €), which, according to the additional information provided in the June 2019 terminal Reporting Tables, reflects the fact that 25% of the terminal costs in Brussels TCZ are subsidised by the State or regional authorities. Additionally, the traffic adjustment (-13.89 €) reflects the impact of higher than planned TNSUs in 2016.

As specified in the additional information to June 2019 terminal Reporting Tables, a modulation of terminal charges is applied in Belgium Brussels TCZ.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the performance plan.

**8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users**

Belgium Brussels 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR



The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (169.91 €) is -33.3% lower than the nominal DUC (254.69 €). The factors contributing to the observed difference (-84.78 €) are: adjustment for other revenues (-60.18 €, see box 7 above for more details), the traffic adjustment (-29.56 €) and the inflation adjustment (+4.26 €). The traffic adjustment reflects the additional gain of revenues due to higher than planned TNSUs in 2018, which will be carried over and reimbursed to airspace users and to the State in 2020, while the inflation adjustment corresponds to the impact of higher than planned inflation index for the year 2018, and the forthcoming recovery in the next years.

As specified in the additional information to June 2019 terminal Reporting Tables, a modulation of terminal charges is applied in Belgium Brussels TCZ.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

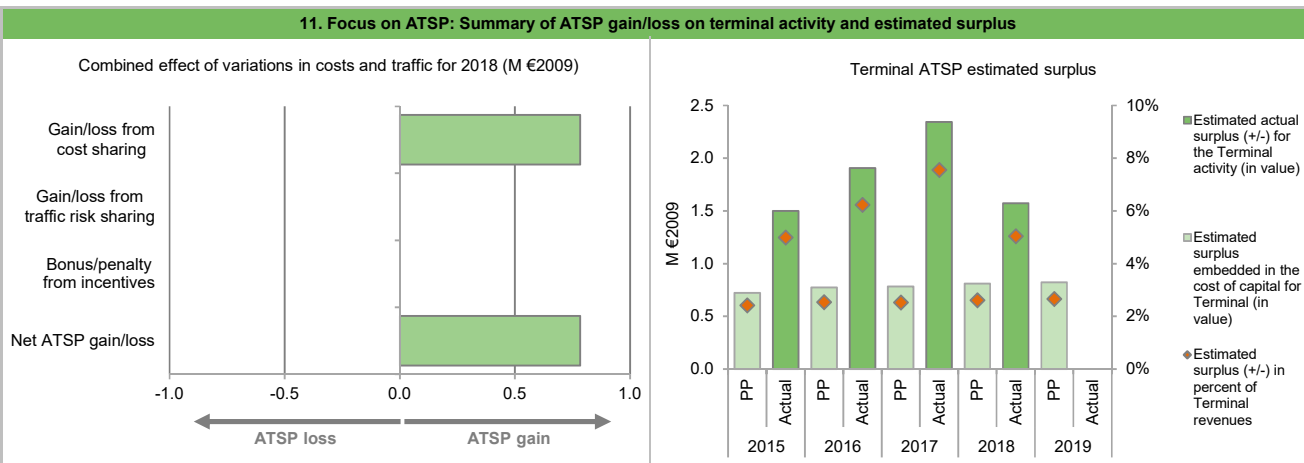
## Terminal ATSP (Skeyes) Belgium Brussels

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	30 031	30 581	31 019	31 109	
Actual costs for the ATSP	29 253	29 442	29 445	30 421	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	778	1 140	1 574	688	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	96	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>778</b>	<b>1 140</b>	<b>1 574</b>	<b>784</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000€2009)</b>	<b>778</b>	<b>1 140</b>	<b>1 574</b>	<b>784</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	27 816	27 594	26 078	26 092	26 508
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	27 816	27 594	26 078	26 092	26 508
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	723	773	782	809	822
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	2.6%	2.8%	3.0%	3.1%	3.1%
Estimated surplus embedded in the cost of capital for terminal (in value)	723	773	782	809	822
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>723</b>	<b>773</b>	<b>782</b>	<b>809</b>	<b>822</b>
<b>Revenue/costs for the terminal activity</b>	<b>30 031</b>	<b>30 581</b>	<b>31 019</b>	<b>31 109</b>	<b>31 014</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.4%</b>	<b>2.5%</b>	<b>2.5%</b>	<b>2.6%</b>	<b>2.6%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>2.6%</b>	<b>2.8%</b>	<b>3.0%</b>	<b>3.1%</b>	<b>3.1%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	27 734	27 340	25 613	25 396	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	27 734	27 340	25 613	25 396	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	721	766	768	787	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	2.6%	2.8%	3.0%	3.1%	
Estimated surplus embedded in the cost of capital for terminal (in value)	721	766	768	787	
Net ATSP gain(+)/loss(-) on terminal activity	778	1 140	1 574	784	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 499</b>	<b>1 905</b>	<b>2 342</b>	<b>1 571</b>	
<b>Revenue/costs for the terminal activity</b>	<b>30 031</b>	<b>30 581</b>	<b>31 019</b>	<b>31 205</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.0%</b>	<b>6.2%</b>	<b>7.6%</b>	<b>5.0%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>5.4%</b>	<b>7.0%</b>	<b>9.1%</b>	<b>6.2%</b>	

Terminal ATSP (Skeyes) Belgium Brussels

Monitoring of terminal COST-EFFICIENCY for 2018



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 Skeyes terminal costs in the TCZ vs. PP**

Skeyes actual terminal costs in the TCZ are -2.2% (-0.7 M€2009) lower, in real terms, than planned in the PP. According to the additional information to June 2019 terminal Reporting Tables, this results from the combination of:

- lower staff costs (-3.9%, or -0.9 M€2009), mainly driven by delays in the recruitment process, in particular for 2015 and 2016 but almost fully catch up in the last 2 years;
- much higher other operating costs (+59.1%, or +1.9 M€2009), primarily explained by "increases in costs for temporary reinforcement of staff, for project management and transformation";
- lower depreciation costs (-47.7%, or -1.7 M€2009), resulting from delays in the investment programme; and,
- slightly lower cost of capital (-2.7%, or -0.02 M€2009), which, since Skeyes is entirely financed through equity, is driven by lower than planned asset base in real terms (-1.9%, or -0.5 M€2009).

**Skeyes 2018 net gain/loss on terminal activity in the TCZ**

As shown in box 9, Skeyes generated a net gain of +0.8 M€2009 in 2018 from the terminal activity in the Brussels TCZ as a result of the cost sharing mechanism.

The gain from cost sharing mentioned above (+0.8 M€2009) includes amounts reported by Skeyes for cost exempt from cost sharing (+0.1 M€2009). Should these costs not be deemed eligible by the European Commission, Skeyes would record a net gain of +0.7 M€2009 for the terminal activity in 2018.

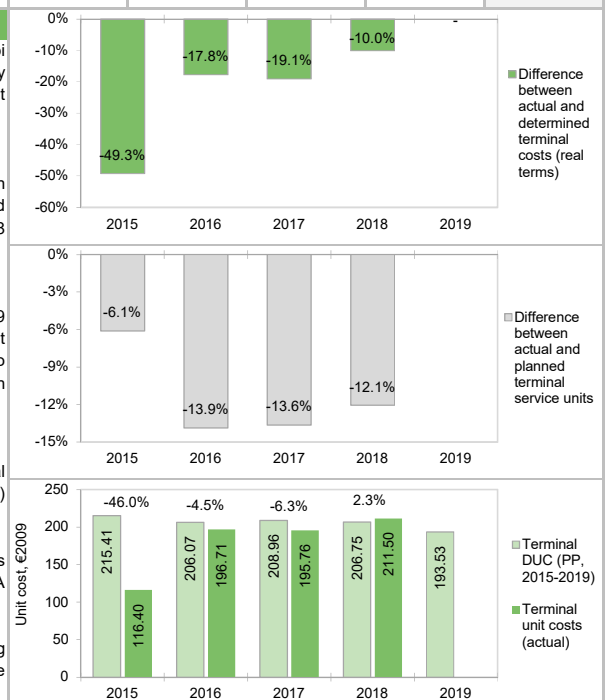
**Skeyes 2018 overall estimated surplus for the terminal activity in the TCZ**

Ex-post, the overall estimated surplus taking into account the net gain from the terminal activity in the TCZ mentioned above (+0.8 M€2009) and the surplus embedded in the cost of capital (+0.8 M€2009) amounts to +1.6 M€2009 (5.0% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is 6.2%, which is significantly higher than the 3.1% planned in the PP.

## BELGIUM CHARLEROI: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

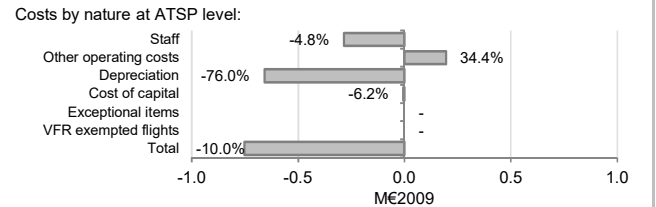
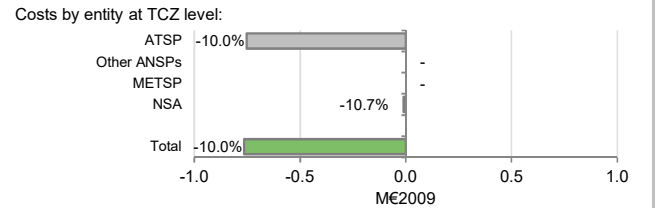
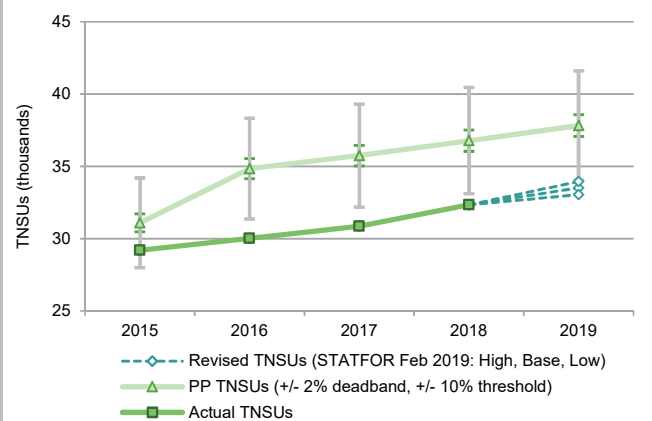
1. Contextual economic information: terminal air navigation services						
· Belgium Charleroi TCZ represents 0.7% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No		
· ATSP:	Skeyes	· Airports with fewer than 70,000 IFRs ATMs:		1		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	1,	· Airports with more than 225,000 IFRs ATMs:		0		
2. Terminal DUC monitoring at Charging Zone level						
Belgium Charleroi: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	7 475 595	8 108 922	8 546 450	8 819 991	8 607 741	
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%	
Inflation index (100 in 2009)	111.6	112.9	114.4	116.0	117.6	
Real terminal costs (EUR2009)	6 697 279	7 179 377	7 468 243	7 603 488	7 319 503	
Total terminal Service Units	31 090	34 839	35 739	36 776	37 820	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>215.41</b>	<b>206.07</b>	<b>208.96</b>	<b>206.75</b>	<b>193.53</b>	
Belgium Charleroi: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	3 773 554	6 672 780	6 980 477	8 084 220		
Inflation %	0.6%	1.8%	2.2%	2.3%		
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2		
Real terminal costs (EUR2009)	3 398 013	5 902 467	6 041 725	6 839 720		
Total terminal Service Units	29 192	30 005	30 863	32 340		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>116.40</b>	<b>196.71</b>	<b>195.76</b>	<b>211.50</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-3 702 041	-1 436 142	-1 565 973	-735 771	
	in %	-49.5%	-17.7%	-18.3%	-8.3%	
Inflation %	in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
	in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real terminal costs (EUR2009)	in value	-3 299 266	-1 276 910	-1 426 518	-763 767	
	in %	-49.3%	-17.8%	-19.1%	-10.0%	
Total terminal Service Units	in value	-1 898	-4 834	-4 876	-4 437	
	in %	-6.1%	-13.9%	-13.6%	-12.1%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-99.01</b>	<b>-9.36</b>	<b>-13.20</b>	<b>4.75</b>	
	<b>in %</b>	<b>-46.0%</b>	<b>-4.5%</b>	<b>-6.3%</b>	<b>2.3%</b>	
3. Focus on terminal at State/Charging Zone level						
<p>This analysis focuses on Belgium Charleroi Terminal Charging Zone (TCZ) comprising Charleroi airport (EBCI). In this TCZ the financing of terminal ANS activities in 2018 is fully subsidised by the State or regional authorities, no unit rate is charged to the airspace users. See also <a href="#">Note 2</a> at the end of this Report.</p>						
<p><b>Terminal unit cost</b> In 2018, the actual terminal unit cost in real terms (211.5 €2009) is +2.3% higher than planned in the PP (206.75 €2009). This difference results from the combination of lower than planned TNSUs (-12.1%) and significantly lower than planned terminal costs in real terms (-10.0%, or -0.8 M€2009).</p>						
<p><b>Terminal service units</b> The actual TNSUs are -12.1% lower than planned. The number of TNSUs planned for the 2019 is well above the STATFOR February 2019 <u>base</u> TNSU base scenario. However, it is noted, that STATFOR forecast only includes IFR flights while, as indicated in the additional information to June 2019 terminal Reporting Tables, from 2014 onwards Belgium includes TNSUs from both IFR and VFR flights in the calculation and reporting.</p>						
<p><b>Terminal costs</b> In nominal terms, actual terminal costs are -8.3% (-0.7 M€) lower than planned. Since the actual inflation index is above the plan (+2.2 p.p.), actual terminal costs are -10.0% (-0.8 M€2009) below plans when expressed in real terms.</p>						
<p>The lower than planned terminal costs in real terms are driven by lower than planned costs across all entities: Skeyes (-10.0%, or -0.8 M€2009) and the NSA (-10.7%, or -0.01 M€2009). A detailed analysis at ATSP level is provided in box 9.</p>						
<p>Costs exempt from cost-sharing are reported for a total amount of +0.02 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>						



**BELGIUM CHARLEROI: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP) 5. Terminal costs monitoring (2018 actuals compared to PP)**



**6. Terminal costs exempt from cost sharing**

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	24	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	24	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>24</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

**7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users**

Analysis not applicable, terminal ANS in Charleroi TCZ was free of charge for the airspace users since terminal ANS costs were 100% subsidised by the State or regional authorities in 2018. See also **Note 2** at the end of this Report.

**8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users**

Analysis not applicable, terminal ANS in Charleroi TCZ was free of charge for the airspace users since terminal ANS costs were 100% subsidised by the State or regional authorities in 2018. See also **Note 2** at the end of this Report.

**9. Focus on terminal ATSP: General conclusions \*see Note 2**

**Actual 2018 Skeyes terminal costs in the TCZ vs. PP**

Skeyes actual terminal costs in Charleroi TCZ are -10.0% (-0.8 M€2009) lower, in real terms, than planned in the PP. According to the additional information to June 2019 terminal Reporting Tables, this results from the combination of:

- lower staff costs (-4.8%, or -0.3 M€2009), mainly driven by delays in the recruitment process, in particular for 2015 and 2016 but almost fully catch up in the last 2 years;
- much higher other operating costs (+34.4%, or +0.2 M€2009), primarily explained by "increases in costs for temporary reinforcement of staff, for project management and transformation";
- much lower depreciation costs (-76.0%, or -0.7 M€2009), resulting from delays in the investment programme; and,
- lower cost of capital (-6.2%, or -0.01 M€2009);

No description of the main drivers for the deviation between actual and determined costs is provided individually for each TCZ in the FABEC FAB 2018 Monitoring Report whereas only a consolidated description for the variation in costs for Skeyes, aggregating all five TCZs, is reported in the additional information to June 2019 terminal Reporting Tables.

## BELGIUM LIEGE: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Belgium Liege TCZ represents 0.6% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No	
· ATSP: Skeyes		· Airports with fewer than 70,000 IFRs ATMs:		1	
· National currency: EUR		· Airports with between 70,000 and 225,000 IFRs ATMs:		0	
· Number of airports in charging zone in 2018: 1,		· Airports with more than 225,000 IFRs ATMs:		0	
of which:					
2. Terminal DUC monitoring at Charging Zone level					
Belgium Liege: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	7 177 907	7 486 635	7 872 765	8 073 493	7 955 035
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%
Inflation index (100 in 2009)	111.6	112.9	114.4	116.0	117.6
Real terminal costs (EUR2009)	6 430 584	6 628 424	6 879 549	6 959 950	6 764 481
Total terminal Service Units	26 760	25 496	26 508	27 602	28 662
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>240.31</b>	<b>259.98</b>	<b>259.53</b>	<b>252.16</b>	<b>236.00</b>
Belgium Liege: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	6 824 573	7 156 500	8 429 664	8 731 735	
Inflation %	0.6%	1.8%	2.2%	2.3%	
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2	
Real terminal costs (EUR2009)	6 145 398	6 330 345	7 296 022	7 387 555	
Total terminal Service Units	28 322	29 517	31 590	36 408	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>216.99</b>	<b>214.46</b>	<b>230.96</b>	<b>202.91</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)					
in value	-353 334	-330 135	556 899	658 242	
in %	-4.9%	-4.4%	7.1%	8.2%	
Inflation %					
in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
Inflation index (100 in 2009)					
in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real terminal costs (EUR2009)					
in value	-285 186	-298 078	416 472	427 605	
in %	-4.4%	-4.5%	6.1%	6.1%	
Total terminal Service Units					
in value	1 562	4 022	5 083	8 807	
in %	5.8%	15.8%	19.2%	31.9%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>					
in value	<b>-23.32</b>	<b>-45.52</b>	<b>-28.57</b>	<b>-49.25</b>	
in %	<b>-9.7%</b>	<b>-17.5%</b>	<b>-11.0%</b>	<b>-19.5%</b>	
3. Focus on terminal at State/Charging Zone level					
<p>This analysis focuses on Belgium Liège Terminal Charging Zone (TCZ) comprising Liège airport (EBLG). In this TCZ the financing of terminal ANS activities in 2018 is fully subsidised by the State or regional authorities, no unit rate is charged to the airspace users. See also <a href="#">Note 2</a> at the end of this Report.</p>					
<p><b>Terminal unit cost</b></p> <p>In 2018, the actual terminal unit cost in real terms (202.91 €2009) is -19.5% lower than planned in the PP (252.16 €2009). This difference results from the combination of higher than planned TNSUs (+31.9%) and higher than planned terminal costs in real terms (+6.1%, or +0.4 M€2009).</p>					
<p><b>Terminal service units</b></p> <p>The actual TNSUs are +31.9% higher than planned. The number of TNSUs planned for the 2019 is well below that the STATFOR February 2019 <u>base</u> TNSU base scenario. It is noted, that STATFOR forecast only includes IFR flights while, as indicated in the additional information to June 2019 terminal Reporting Tables, from 2014 onwards Belgium includes TNSUs from both IFR and VFR flights in the calculation and reporting.</p>					
<p><b>Terminal costs</b></p> <p>In nominal terms, actual terminal costs are +8.2% (+0.7 M€) higher than planned. Since the actual inflation index is above the plan (+2.2 p.p.), actual terminal costs are +6.1% (0.4 M€2009) above plans when expressed in real terms.</p>					
<p>The higher than planned terminal costs in real terms are driven by higher than planned costs across all entities: Skeyes (+6.1%, or +0.4M€2009) and the NSA (+10.9%, or +0.01 M€2009). A detailed analysis at ATSP level is provided in box 9.</p>					
<p>Costs exempt from cost-sharing are reported for a total amount of +0.03 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>					

Year	Difference (%)
2015	-4.4%
2016	-4.5%
2017	6.1%
2018	6.1%
2019	-

Year	Difference (%)
2015	5.8%
2016	15.8%
2017	19.2%
2018	31.9%
2019	-

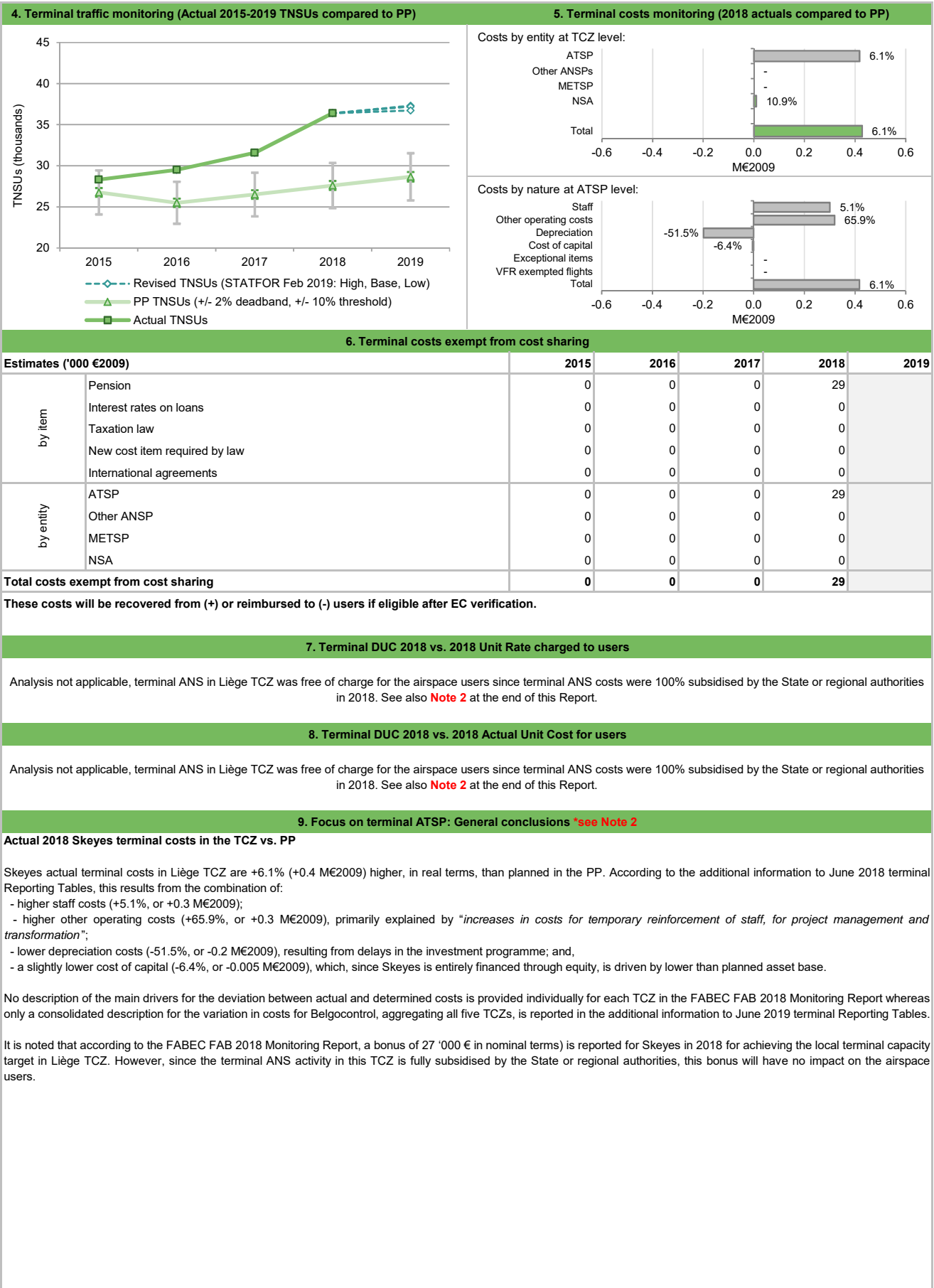
Year	Terminal DUC (PP, €2009)	Terminal unit costs (actual, €2009)	Difference (%)
2015	240.31	216.99	-9.7%
2016	259.98	214.46	-17.5%
2017	259.53	230.96	-11.0%
2018	252.16	202.91	-19.5%
2019	236.00	-	-

Unit cost, €2009



**BELGIUM LIEGE: Terminal charging zone**

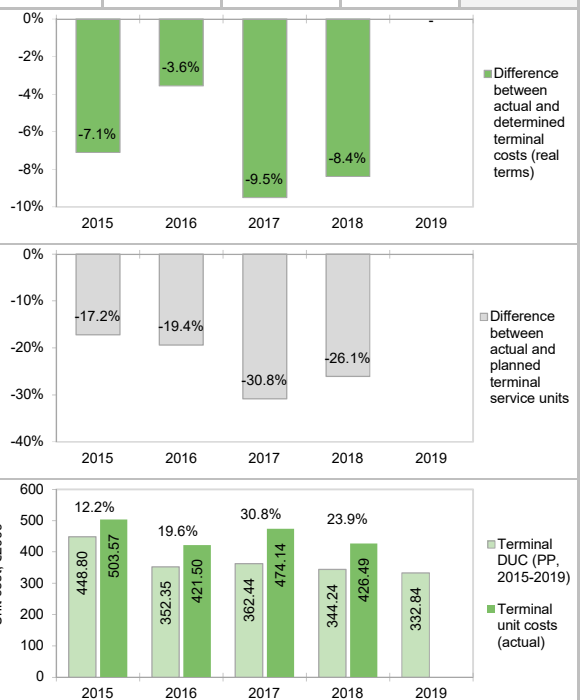
**Monitoring of terminal COST-EFFICIENCY for 2018**



## BELGIUM OOSTENDE-BRUGGE: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

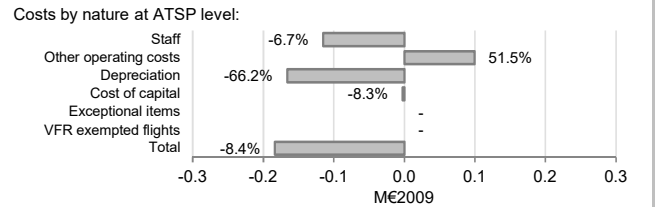
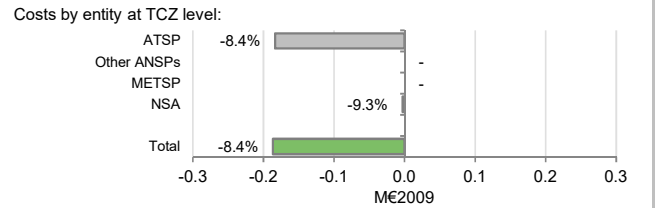
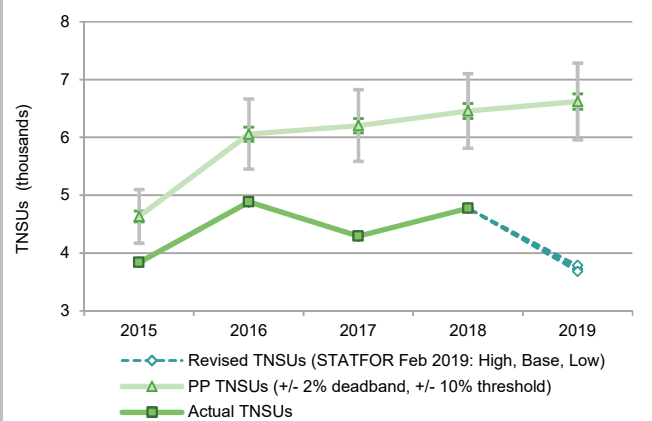
1. Contextual economic information: terminal air navigation services						
· Belgium Oostende-Brugge TCZ represents 0.2% of the SES terminal ANS determined costs in			· Is this TCZ applying traffic risk sharing?		No	
· ATSP:	Skeyes	} Airports with fewer than 70,000 IFRs ATMs: 1 Airports with between 70,000 and 225,000 IFRs ATMs: 0 Airports with more than 225,000 IFRs ATMs: 0				
· National currency:	EUR					
· Number of airports in charging zone in 2018:	1,		of which:			
2. Terminal DUC monitoring at Charging Zone level						
Belgium Oostende-Brugge: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	2 321 852	2 410 573	2 573 002	2 579 116	2 591 757	
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%	
Inflation index (100 in 2009)	111.6	112.9	114.4	116.0	117.6	
Real terminal costs (EUR2009)	2 080 114	2 134 243	2 248 396	2 223 390	2 203 873	
Total terminal Service Units	4 635	6 057	6 204	6 459	6 621	
<b>Real terminal unit costs per Service Unit (EUR2009)</b>	<b>448.80</b>	<b>352.35</b>	<b>362.44</b>	<b>344.24</b>	<b>332.84</b>	
Belgium Oostende-Brugge: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	2 146 088	2 326 728	2 351 008	2 407 610		
Inflation %	0.6%	1.8%	2.2%	2.3%		
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2		
Real terminal costs (EUR2009)	1 932 511	2 058 128	2 034 839	2 036 978		
Total terminal Service Units	3 838	4 883	4 292	4 776		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>503.57</b>	<b>421.50</b>	<b>474.14</b>	<b>426.49</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-175 764	-83 845	-221 994	-171 507	
	in %	-7.6%	-3.5%	-8.6%	-6.6%	
Inflation %	in p.p.	-0.5 p.p.	0.6 p.p.	0.9 p.p.	0.9 p.p.	
	in p.p.	-0.6 p.p.	0.1 p.p.	1.1 p.p.	2.2 p.p.	
Real terminal costs (EUR2009)	in value	-147 603	-76 115	-213 558	-186 412	
	in %	-7.1%	-3.6%	-9.5%	-8.4%	
Total terminal Service Units	in value	-797	-1 174	-1 912	-1 683	
	in %	-17.2%	-19.4%	-30.8%	-26.1%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>54.77</b>	<b>69.15</b>	<b>111.71</b>	<b>82.24</b>	
	<b>in %</b>	<b>12.2%</b>	<b>19.6%</b>	<b>30.8%</b>	<b>23.9%</b>	
3. Focus on terminal at State/Charging Zone level						
<p>This analysis focuses on Belgium Oostende-Brugge Terminal Charging Zone (TCZ) comprising Oostende-Brugge airport (EBOS). In this TCZ the financing of terminal ANS activities in 2018 is fully subsidised by the State or regional authorities, no unit rate is charged to the airspace users. See also <a href="#">Note 2</a> at the end of this Report.</p>						
<p><b>Terminal unit cost</b></p> <p>In 2018, the actual terminal unit cost in real terms (426.49 €2009) is +23.9% higher than planned in the PP (344.24 €2009). This difference results from the combination of lower than planned TNSUs (-26.1%) and lower than planned terminal costs in real terms (-8.4%, or -0.2 M€2009).</p>						
<p><b>Terminal service units</b></p> <p>The actual TNSUs are -26.1% lower than planned. The number of TNSUs planned for the 2019 is well above the STATFOR February 2019 <u>base</u> TNSU base scenario. It is noted, that STATFOR forecast only includes IFR flights while, as indicated in the additional information to June 2019 terminal Reporting Tables, from 2014 onwards Belgium includes TNSUs from both IFR and VFR flights in the calculation and reporting.</p>						
<p><b>Terminal costs</b></p> <p>In nominal terms, actual terminal costs are -6.6% (-0.17 M€) lower than planned. Since the actual inflation index is above the plan (+2.2 p.p.), actual terminal costs are -8.4% (0.19 M€2009) below plans when expressed in real terms.</p>						
<p>The lower than planned terminal costs in real terms are driven by lower than planned costs across all entities: Skeyes (-8.4%, or -0.18 M€2009) and the NSA (-9.3%, or -0.003 M€2009). A detailed analysis at ATSP level is provided in box 9.</p>						
<p>Costs exempt from cost-sharing are reported for a total amount of +0.01 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>						



**BELGIUM OOSTENDE-BRUGGE: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP) 5. Terminal costs monitoring (2018 actuals compared to PP)**



**6. Terminal costs exempt from cost sharing**

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	7	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	7	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

**7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users**

Analysis not applicable, terminal ANS in Oostende-Brugge TCZ was free of charge for the airspace users since terminal ANS costs were 100% subsidised by the State or regional authorities in 2018. See also **Note 2** at the end of this Report.

**8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users**

Analysis not applicable, terminal ANS in Oostende-Brugge TCZ was free of charge for the airspace users since terminal ANS costs were 100% subsidised by the State or regional authorities in 2018. See also **Note 2** at the end of this Report.

**9. Focus on terminal ATSP: General conclusions \*see Note 2**

**Actual 2018 Skeyes terminal costs in the TCZ vs. PP**

Skeyes actual terminal costs in Oostende-Brugge TCZ are -8.4% (-0.18 M€2009) lower, in real terms, than planned in the PP. According to the additional information to June 2019 terminal Reporting Tables, this results from the combination of:

- lower staff costs (-6.7%, or -0.1 M€2009), mainly driven by delays in the recruitment process, in particular for 2015 and 2016 but almost fully catch up in the last 2 years;
- higher other operating costs (+51.5%, or +0.1 M€2009), primarily explained by "increases in costs for temporary reinforcement of staff, for project management and transformation";
- lower depreciation costs (-66.2%, or -0.2 M€2009), resulting from delays in the investment programme; and,
- a slightly lower cost of capital (-8.3%, or -0.002 M€2009), which, since Skeyes is entirely financed through equity, is driven by lower than planned asset base in real terms.

No description of the main drivers for the deviation between actual and determined costs is provided individually for each TCZ in the FABEC FAB 2018 Monitoring Report whereas only a consolidated description for the variation in costs for Skeyes, aggregating all five TCZs, is reported in the additional information to June 2019 terminal Reporting Tables.

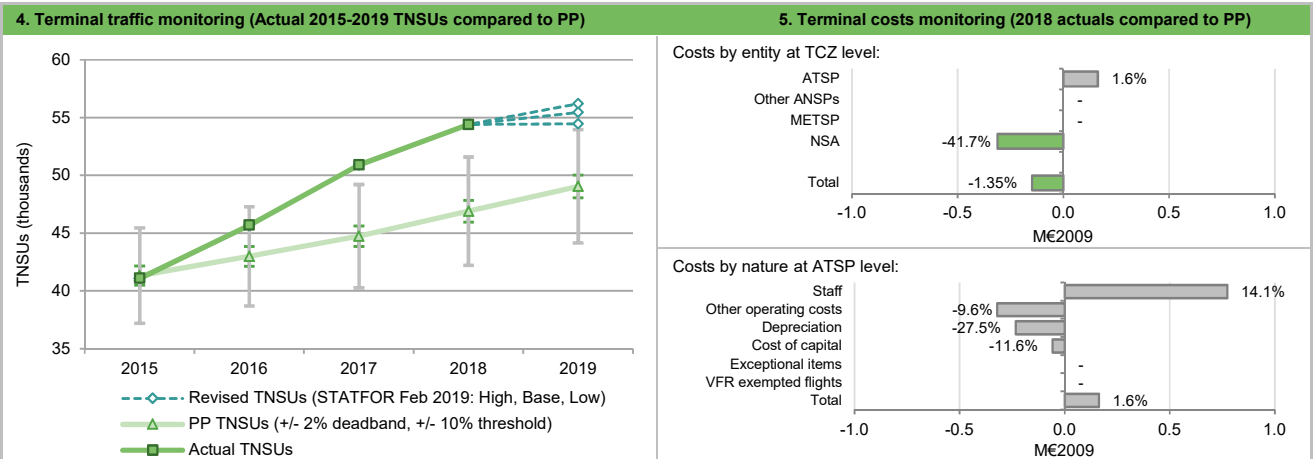
**LUXEMBOURG: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**

1. Contextual economic information: terminal air navigation services						
· Luxembourg TCZ represents 1.0% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No		
· ATSP:	ANA LUX	· Airports with fewer than 70,000 IFRs ATMs:		1		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	1,	· Airports with more than 225,000 IFRs ATMs:		0		
2. Terminal DUC monitoring at Charging Zone level						
Luxembourg: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	11 377 701	12 361 275	12 794 627	13 192 688	13 524 467	
Inflation %	1.8%	1.8%	1.8%	1.9%	1.9%	
Inflation index (100 in 2009)	114.4	116.4	118.6	120.9	123.2	
Real terminal costs (EUR2009)	9 944 465	10 615 918	10 789 343	10 915 761	10 979 796	
Total terminal Service Units	41 322	42 989	44 732	46 898	49 046	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>240.66</b>	<b>246.94</b>	<b>241.20</b>	<b>232.76</b>	<b>223.87</b>	
Luxembourg: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	11 782 917	12 028 446	12 389 842	12 610 563		
Inflation %	0.1%	0.0%	2.1%	2.0%		
Inflation index (100 in 2009)	112.5	112.5	114.8	117.1		
Real terminal costs (EUR2009)	10 478 064	10 696 404	10 791 163	10 768 044		
Total terminal Service Units	41 083	45 676	50 904	54 398		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>255.04</b>	<b>234.18</b>	<b>211.99</b>	<b>197.95</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	405 215	-332 828	-404 785	-582 125	
	in %	3.6%	-2.7%	-3.2%	-4.4%	
Inflation %	in p.p.	-1.7 p.p.	-1.8 p.p.	0.3 p.p.	0.1 p.p.	
Inflation index (100 in 2009)	in p.p.	-2.0 p.p.	-4.0 p.p.	-3.8 p.p.	-3.7 p.p.	
Real terminal costs (EUR2009)	in value	533 600	80 486	1 820	-147 718	
	in %	5.4%	0.8%	0.02%	-1.4%	
Total terminal Service Units	in value	-239	2 687	6 172	7 500	
	in %	-0.6%	6.3%	13.8%	16.0%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>14.39</b>	<b>-12.77</b>	<b>-29.21</b>	<b>-34.81</b>	
	<b>in %</b>	<b>6.0%</b>	<b>-5.2%</b>	<b>-12.1%</b>	<b>-15.0%</b>	
3. Focus on terminal at State/Charging Zone level						
<p>This analysis focuses on Luxembourg Terminal Charging Zone (TCZ) comprising Luxembourg airport (ELLX). In this TCZ the costs for terminal ANS activities in 2018 were partly subsidised by the State or regional authorities.</p> <p><b>Terminal unit cost</b>                      In 2018, the actual terminal unit cost in real terms (197.95 €2009) is -15.0% lower than planned in the PP (232.76 €2009). This difference results mainly from significantly higher than planned TNSUs (+16.0%), and terminal costs slightly lower than the plan in real terms (-1.4%, or -0.15 M€2009).</p> <p><b>Terminal service units</b>                      Traffic risk sharing does not apply in Luxembourg TCZ. The additional revenues collected as a result of the difference between actual and planned TNSUs (+16%) will be carried-over and reimbursed to the airspace users in 2020. It is noted that the TNSUs included in the RP2 PP are expected to remain well below STATFOR February 2019 <u>base</u> TNSU growth scenario for the rest of RP2 (2019).</p> <p><b>Terminal costs</b>                      In nominal terms, actual terminal costs are -4.4% (-0.6 M€) lower than planned. However, since the actual inflation index is also lower than planned (-3.7 p.p.), actual en-route costs are just -1.4%, or +0.15 M€2009 (real terms).</p> <p>The stable terminal costs in real terms result from a combination of higher costs for ANA Luxembourg (+1.6%, or +0.2 M€2009) and lower than planned NSA costs (-41.7%, or -0.3 M€2009). A detailed analysis at ATSP level is provided in box 12.</p> <p>No costs exempt from cost sharing are reported for Luxembourg TCZ.</p>						

LUXEMBOURG: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

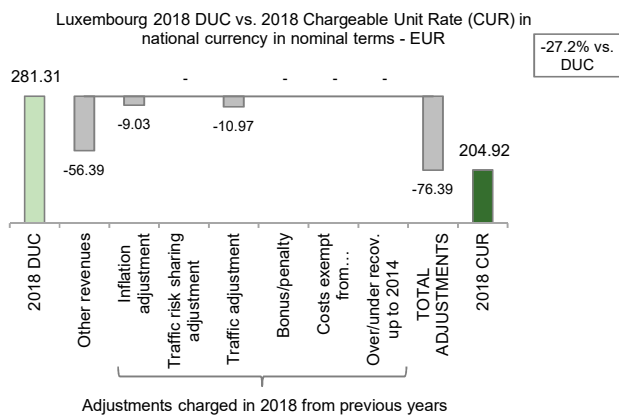


#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	0	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 unit rate charged to users

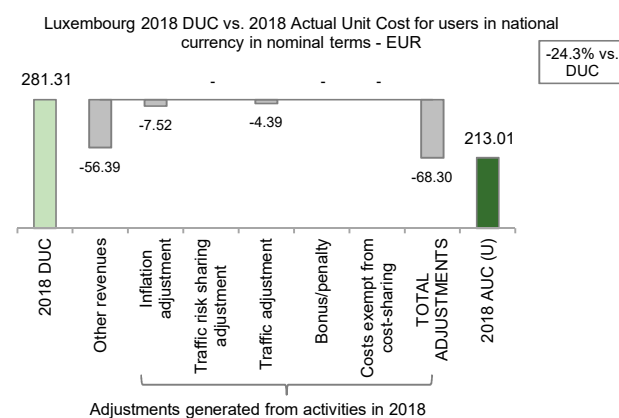


The terminal unit rate charged to airspace users (CUR) in 2018 is 204.92 €. This is -27.2% lower than the nominal DUC (281.31 €). The main difference between these two figures (-76.39 €) relates to other revenues, which, according to the additional information provided in the June 2019 terminal Reporting Tables, reflects the subsidy granted by the State for terminal ANS activity in 2018.

As specified in the additional information to June 2019 terminal Reporting Tables, a modulation of terminal charges across user categories is applied in Luxembourg TCZ. See also **Note 3** at the end of this Report.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users



The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (213.01 €) is -24.3% lower than the nominal DUC (281.31 €). The most important factors contributing to the observed difference (-68.30 €) are: the deduction of other revenues (-56.39 €, see box 7 above for more details), inflation adjustment (-7.52 €) and the traffic adjustment (-4.39 €). It is noted, that the traffic adjustment reported in the chart refers to the difference between modulation effect (+0.3 M€, resulting from the application of modulation of charges in TCZ) and the traffic effect (-1.8 M€ in total), resulting from the additional gain of revenues due to higher than planned TNSUs in 2018. See also **Note 3** at the end of this Report.

Furthermore, it is noted that no traffic adjustment is calculated for the NSA costs, since these costs are fully subsidised by the State and not charged to the airspace users.

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

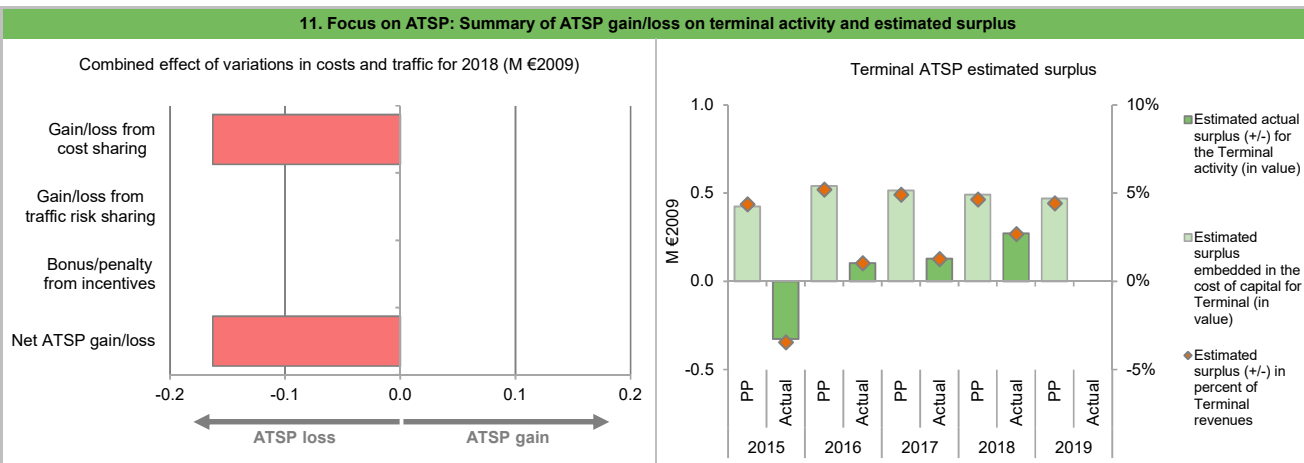
## LUXEMBOURG: Terminal ATSP (ANA LUX)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	9 499	10 070	10 142	10 171	
Actual costs for the ATSP	10 164	10 354	10 374	10 334	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-665	-284	-231	-163	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-665</b>	<b>-284</b>	<b>-231</b>	<b>-163</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000€2009)</b>	<b>-665</b>	<b>-284</b>	<b>-231</b>	<b>-163</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the Profit & Loss accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	15 283	19 433	18 522	17 686	16 881
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	15 283	19 433	18 522	17 686	16 881
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	425	540	515	492	469
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	2.8%	2.8%	2.8%	2.8%	2.8%
Estimated surplus embedded in the cost of capital for terminal (in value)	425	540	515	492	469
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>425</b>	<b>540</b>	<b>515</b>	<b>492</b>	<b>469</b>
<b>Revenue/costs for the terminal activity</b>	<b>9 737</b>	<b>10 381</b>	<b>10 510</b>	<b>10 597</b>	<b>10 618</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>4.4%</b>	<b>5.2%</b>	<b>4.9%</b>	<b>4.6%</b>	<b>4.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.8%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	12 126	13 956	12 923	15 635	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	12 126	13 956	12 923	15 635	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	337	388	359	435	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	2.8%	2.8%	2.8%	2.8%	
Estimated surplus embedded in the cost of capital for terminal (in value)	337	388	359	435	
Net ATSP gain(+)/loss(-) on terminal activity	-665	-284	-231	-163	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-327</b>	<b>104</b>	<b>128</b>	<b>272</b>	
<b>Revenue/costs for the terminal activity</b>	<b>9 499</b>	<b>10 070</b>	<b>10 142</b>	<b>10 171</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-3.4%</b>	<b>1.0%</b>	<b>1.3%</b>	<b>2.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>-2.7%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>1.7%</b>	

**LUXEMBOURG: Terminal ATSP (ANA LUX)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 ANA Luxembourg terminal costs in the TCZ vs. PP**

ANA Luxembourg actual terminal costs in the TCZ are +1.6% (+0.2 M€2009) higher, in real terms, than planned in the PP. However, this is mainly due to a lower than planned inflation index (-3.7 p.p.), as actual terminal costs are lower than planned when expressed in nominal terms (-1.5%, or -0.2 M€). According to the additional information to June 2019 terminal Reporting Tables, this results from the combination of:

- higher staff costs (+14.1%, or +0.8 M€2009) mainly due to i) "increase of staff in operational services", and ii) "automatic career advancement of civil servants";
- lower other operating costs (-9.6%, or -0.3 M€2009);
- lower depreciation costs (-27.5%, or -0.2 M€2009); and,
- a lower cost of capital (-11.6%, or -0.1 M€2009), which, since ANA Luxembourg is entirely financed through equity, is driven by lower than planned asset base in real terms (-11.6%, or -2.0 M€2009).

**ANA Luxembourg 2018 net gain/loss on terminal activity in the TCZ**

As shown in box 9, ANA Luxembourg incurred a net loss of -0.16 M€2009 in 2018 from the terminal activity in the Luxembourg TCZ as a result of the cost sharing mechanism (costs higher than planned in real terms).

**ANA Luxembourg 2018 overall estimated surplus for the terminal activity in TCZ**

Ex-post, the overall estimated surplus taking into account the net loss from the terminal activity in the TCZ mentioned above (-0.16 M€2009) and the surplus embedded in the cost of capital (+0.43 M€2009) amounts to +0.27 M€2009 (2.7% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is 1.7%, which is lower than the 2.8% planned in the PP.

## BELGIUM &amp; LUXEMBOURG: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

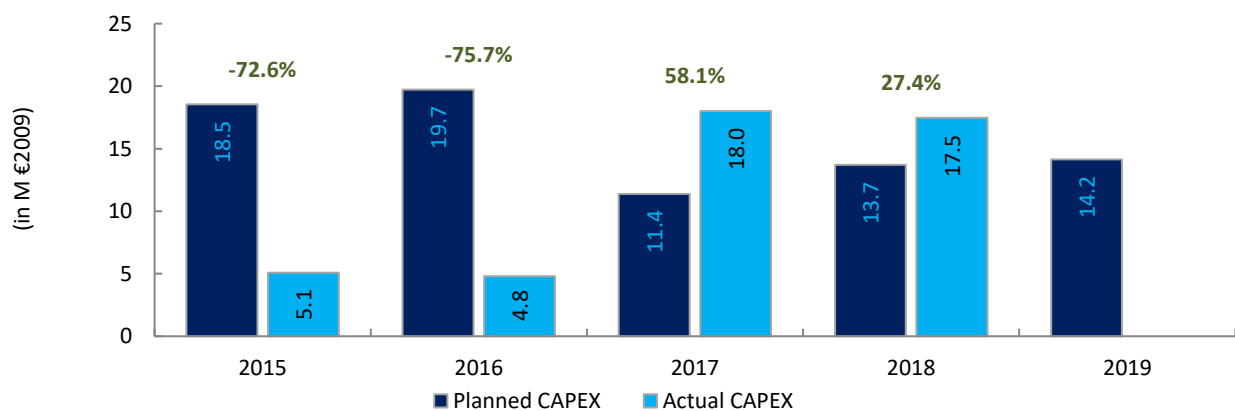
1. Monitoring of gate-to-gate ANS costs																																												
<b>Belgium &amp; Luxembourg: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	150 757 603	152 984 440	154 897 964	155 652 698	156 055 562																																							
Real terminal costs (EUR2009)	60 454 020	62 447 468	63 779 064	64 278 977	64 020 519																																							
Real gate-to-gate costs (EUR2009)	211 211 623	215 431 908	218 677 028	219 931 675	220 076 081																																							
En-route share (%)	71.4%	71.0%	70.8%	70.8%	70.9%																																							
<b>Belgium &amp; Luxembourg: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	144 755 264	147 180 265	154 375 434	155 272 601																																								
Real terminal costs (EUR2009)	55 840 520	59 511 295	61 005 061	63 470 448																																								
Real gate-to-gate costs (EUR2009)	200 595 784	206 691 560	215 380 495	218 743 049																																								
En-route share (%)	72.2%	71.2%	71.7%	71.0%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-10 615 839	-8 740 348	-3 296 533	-1 188 626																																								
in %	-5.0%	-4.1%	-1.5%	-0.5%																																								
En-route share																																												
in p.p.	0.8 p.p.	0.2 p.p.	0.8 p.p.	0.2%																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -0.5% (-1.2 M€2009) lower than planned due to lower costs for both en-route (-0.2%, or -0.4 M€2009) and terminal (-4.3%, or -2.8 M€2009) ANS.</p> <p>The actual share of en-route in gate-to-gate ANS costs (71.0%) is very similar than the foreseen in the PP for 2018 (70.8%).</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>71.4%</td> <td>28.6%</td> </tr> <tr> <td>Actual</td> <td>72.2%</td> <td>27.8%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>71.0%</td> <td>29.0%</td> </tr> <tr> <td>Actual</td> <td>71.2%</td> <td>28.8%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>70.8%</td> <td>29.2%</td> </tr> <tr> <td>Actual</td> <td>71.7%</td> <td>28.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>70.8%</td> <td>29.2%</td> </tr> <tr> <td>Actual</td> <td>71.0%</td> <td>29.0%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>70.9%</td> <td>29.1%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	71.4%	28.6%	Actual	72.2%	27.8%	2016	Determined	71.0%	29.0%	Actual	71.2%	28.8%	2017	Determined	70.8%	29.2%	Actual	71.7%	28.3%	2018	Determined	70.8%	29.2%	Actual	71.0%	29.0%	2019	Determined	70.9%	29.1%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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2019	Determined	70.9%	29.1%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Belgium &amp; Luxembourg</b>																																												
<p><b>Note 1:</b> A penalty of -807 '000€ for not achieving the local en-route capacity target is reported for Belgium-Luxembourg charging zone in the 2018 FABEC FAB monitoring report and in the submission of June 2019 en-route Reporting Tables. This amount are split like this:</p> <p>a) 799 '000€ at charge of skeyes, i.e.:</p> <ul style="list-style-type: none"> <li>* 538 '000€ penalty due to the non achievement of the target by skeyes</li> <li>* 261 '000€ penalty due to the non achievement of the target by MUAC</li> </ul> <p>b) 8 '000€ at charge of Luxembourg due to the non achievement of the target by MUAC</p>																																												
<p><b>Note 2:</b> According to the information provided in the additional information to the June 2019 terminal Reporting Tables "Based on the Royal Decrees of 19 December 2014, 26 December 2015, 25 December 2016, 7 December 2017 and of 7 December 2018, the regional airports (100%) and a part of EBBR (25%) are financed through other revenues from the State or regional authorities".</p> <p>As the terminal ANS activities are therefore fully financed through "income from other sources" in four of the five Belgium TCZs (with the exception of Brussels TCZ), the analysis of the terminal economic surplus for these TCZs is void. Nevertheless, the analysis at Belgium TCZ level still looks at the deviation between the terminal actual unit cost and the terminal DUC target reported for 2018 in the RP2 PP.</p>																																												
<p><b>Note 3:</b> It is noted, that in the June 2019 submission of terminal Reporting Tables, the traffic adjustment reported by Luxembourg refers to the difference between modulation effect (resulting from the application of modulation of charges in TCZ) and the traffic effect, resulting from variation in traffic. According to additional information to June 2019 terminal Reporting Tables, this was implemented since, for 2018, "the official reporting tables do not foresee any mechanism to report over- or under-coverage due to a modulation of the UR, as it is the case for the traffic effect".</p>																																												



## BELGIUM

## Monitoring of CAPEX for 2018

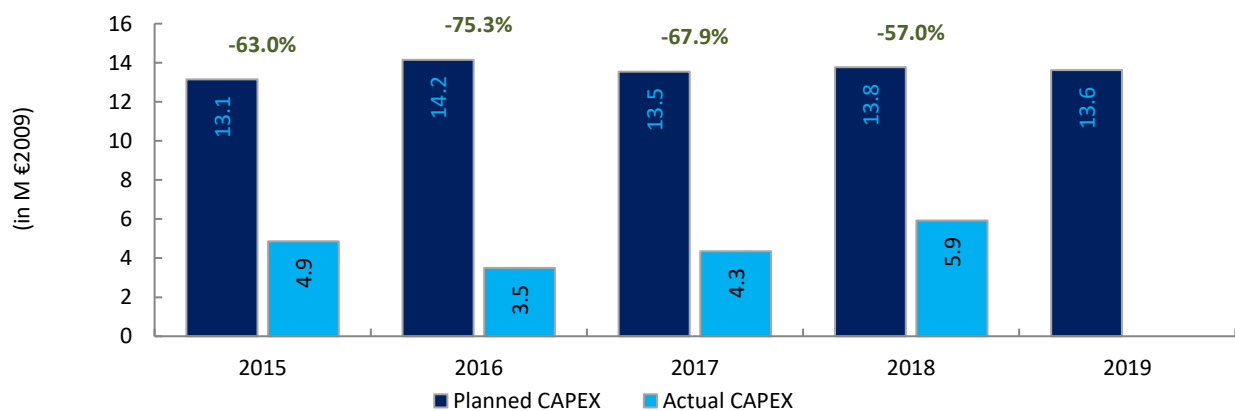
Contextual Information						
ANSP: skeyes						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	20.7	22.3	13.0	15.9	16.6	88.5
Main CAPEX (in nominal M)	16.0	19.3	10.0	11.5	10.2	67.0
Inflation %	1.1%	1.2%	1.3%	1.4%	1.4%	
Inflation index (100 in 2009)	111.6	112.9	114.4	116.0	117.6	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>18.5</b>	<b>19.7</b>	<b>11.4</b>	<b>13.7</b>	<b>14.2</b>	<b>77.5</b>
Main CAPEX (in M €2009)	14.4	17.1	8.7	9.9	8.7	58.7
% Main of Total CAPEX	77.5%	86.7%	76.6%	72.1%	61.2%	75.8%
Real gate-to-gate ANSP costs (in M €2009)	140.9	143.8	146.0	145.9	145.2	721.7
Total CAPEX as % of Real gate-to-gate ANSP costs	13.2%	13.7%	7.8%	9.4%	9.8%	10.7%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.6	5.4	20.8	20.6		
Main CAPEX (in nominal M)	3.3	2.2	16.8	15.3		
Inflation %	0.6%	1.8%	2.2%	2.3%		
Inflation index (100 in 2009)	111.1	113.1	115.5	118.2		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>5.1</b>	<b>4.8</b>	<b>18.0</b>	<b>17.5</b>		
Main CAPEX (in M €2009)	3.0	2.0	14.5	12.9		
% Main of Total CAPEX	58.4%	41.3%	80.7%	74.0%		
Real gate-to-gate ANSP costs (in M €2009)	132.8	135.2	143.0	145.5		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.8%	3.6%	12.6%	12.0%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-15.1	-16.8	7.8	4.7		
Total CAPEX (in M €2009)	-13.5	-14.9	6.6	3.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-72.6%</b>	<b>-75.7%</b>	<b>58.1%</b>	<b>27.4%</b>		



## MUAC

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: MUAC						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	14.5	15.8	15.4	15.9	15.9	77.6
Main CAPEX (in nominal M)	12.7	14.7	14.7	15.2	15.3	72.5
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%	
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>13.1</b>	<b>14.2</b>	<b>13.5</b>	<b>13.8</b>	<b>13.6</b>	<b>68.2</b>
Main CAPEX (in M €2009)	11.5	13.1	12.9	13.2	13.1	63.7
% Main of Total CAPEX	87.3%	92.7%	95.5%	95.7%	95.8%	93.4%
Real gate-to-gate ANSP costs (in M €2009)	133.8	133.5	135.9	138.1	139.8	681.2
Total CAPEX as % of Real gate-to-gate ANSP costs	9.8%	10.6%	10.0%	10.0%	9.7%	10.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.3	3.8	4.8	6.7		
Main CAPEX (in nominal M)	5.1	3.5	4.2	6.7		
Inflation %	0.2%	0.1%	1.3%	1.6%		
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>4.9</b>	<b>3.5</b>	<b>4.3</b>	<b>5.9</b>		
Main CAPEX (in M €2009)	4.6	3.2	3.7	5.9		
% Main of Total CAPEX	94.9%	92.3%	86.3%	99.6%		
Real gate-to-gate ANSP costs (in M €2009)	123.6	131.9	135.7	139.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.9%	2.7%	3.2%	4.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-9.2	-12.0	-10.5	-9.2		
Total CAPEX (in M €2009)	-8.3	-10.7	-9.2	-7.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-63.0%</b>	<b>-75.3%</b>	<b>-67.9%</b>	<b>-57.0%</b>		



# Annual Monitoring Report 2018

## Local level view

### France



## FRANCE

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	72	C	D	C	C	B
DSNA	91	C	E	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
		RAT application (%)				
		ATM Ground	ATM Overall			
Separation Minima Infringements (SMIs)		95%	95%			
Runway Incursions (RIs)		70%	74%			
ATM Specific Occurrences (ATM-S)			100%			
Source of RAT data:		DSAC				
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level		Number of questions answered				
		YES	NO			
Policy and its implementation		7	2			
Legal/Judiciary		4	3			
Occurrence reporting and Investigation		2	0			
<b>TOTAL</b>		<b>13</b>	<b>5</b>			
DSNA		Number of questions answered				
		YES	NO			
Policy and its implementation		11	2			
Legal/Judiciary		3	0			
Occurrence reporting and Investigation		8	0			
<b>TOTAL</b>		<b>22</b>	<b>2</b>			
Observations						
Only one question out of 36 in the EoSM Component/area of the State does not meet the 2019 EoSM target level (in Safety Culture)						

**FRANCE**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

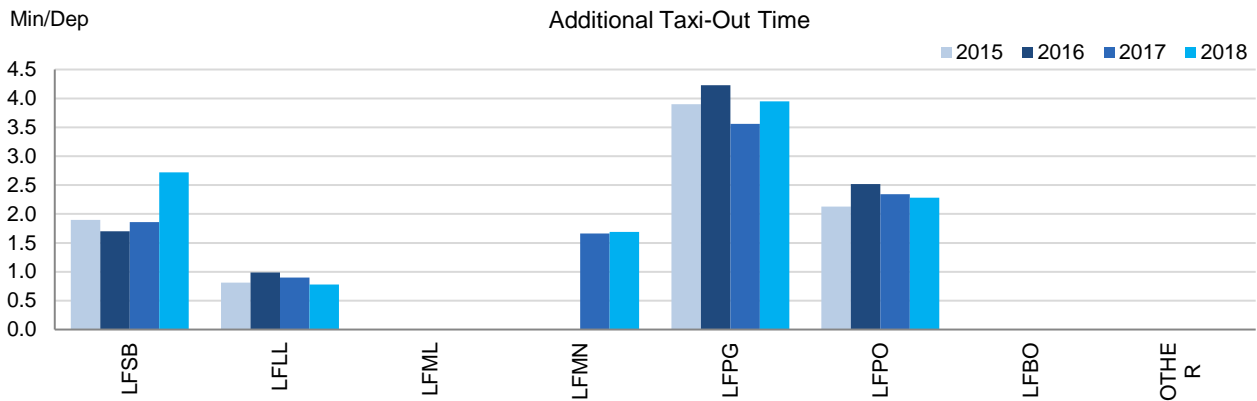
**1. Overview**

For France, the scope of the RP2 monitoring comprises a total of 60 airports. However, 53 of these 60 airports are grouped into a basket ("OTHER") for monitoring and target setting purposes.

In 2018 the Airport Operator Data Flow is only fully established for 5 of the 7 airports independently monitored and for none of the airports within the basket. Accordingly, the monitoring of the environmental performance is limited. Marseille and Toulouse have implemented the data reporting in the course of 2019.

The traffic at the ensemble of these 60 airports has not significantly changed since the beginning of RP2 (+4% with respect to 2015) and the performance concerning the environmental indicators accordingly has not changed much in general terms.

**2. Additional Taxi-Out Time**

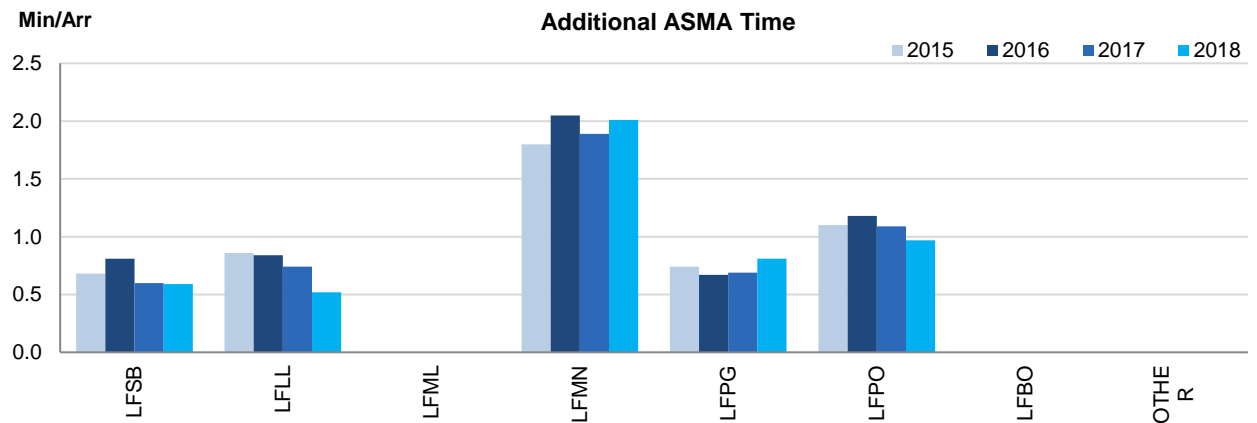


The additional taxi-out times at 4 of the 5 airports where these times can be analysed, range below the SES average (3.57 min/dep.)

Bâle-Mulhouse (LFSB) observes the highest increase in the additional taxi-out times (+46% with respect to 2017), with high impact of the seasonality.

Charles de Gaulle (LFPG) shows longer additional taxi-out times, mainly during the summer, compared to 2017, which might be related to the closure of RWY 08R/26L due to works. As it happened in January 2017, in February 2018 the de-icing procedures raised the additional taxi out times to almost 7 minutes.

**3. Additional ASMA Time**



Additional times in the terminal area at French airports are in general very good and well below the RP2 average (1.75 min/arr.)

Nice (LFMN) is however the exception, with additional ASMA times reaching 2.01 min/arr. after a slight increase in 2018. This increase was more significant in the first months of the year (up to 2.70 min/arr. in March)

Performance at Charles de Gaulle has also worsen slightly in 2018, mainly during the second half of the year. Nevertheless LFPG (490 000 movements per year) shows once again the best performance in Europe regarding ASMA (0.81 min/arr.) for any airport above 200000 movements.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bâle-Mulhouse	LFSB	1.90	1.70	1.86	2.72		0.68	0.81	0.60	0.59	
Lyon-Saint-Exupéry	LFLM	0.81	0.99	0.90	0.78		0.86	0.84	0.74	0.52	
Marseille-Provence	LFML	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Nice-Côte d'Azur	LFMN	n/a	n/a	1.66	1.69		1.80	2.05	1.89	2.01	
Paris-Charles-de-Gaulle	LFPG	3.90	4.23	3.56	3.95		0.74	0.67	0.69	0.81	
Paris-Orly	LFPO	2.13	2.52	2.34	2.28		1.10	1.18	1.09	0.97	
Toulouse-Blagnac	LFBO	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Agen-La Garenne	LFBA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Ajaccio-Napoléon-Bonaparte	LFKJ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Albert-Bray	LFAQ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Angers-Marcé	LFJR	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Annecy-Meythet	LFLP	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Avignon-Caumont	LFMV	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Bastia-Poretta	LFKB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Beauvais-Tillé	LFOB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Bergerac-Roumanière	LFBE	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Béziers-Vias	LFMU	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Biarritz-Bayonne-Anglet	LFBZ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Bordeaux-Mérignac	LFBD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Brest-Bretagne	LFRB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Brive-Souillac	LFSL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Caen-Carpiquet	LFRK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Calvi-Sainte-Catherine	LFKC	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Cannes-Mandelieu	LFMD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Carcassonne-Salvaza	LFMK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Châlons-Vatry	LFOK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Chambéry-Aix-les-Bains	LFLB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Châteauroux-Déols	LFLX	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Clermont-Ferrand-Auvergne	LFLC	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Deauville-Normandie	LFRG	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Dinard-Pleurtuit-Saint-Malo	LFRD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Dôle-Tavaux	LFGJ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Figari-Sud Corse	LFKF	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Grenoble-Isère	LFLS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Hyères-Le Palyvestre	LFTH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Istres-Le Tubé	LFMI	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
La Rochelle-Ile de Ré	LFBH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lannion	LFRO	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Le Havre-Octeville	LFOH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lille-Lesquin	LFQQ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Limoges-Bellegarde	LFBL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lorient-Lann Bihoué	LFRH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lyon-Bron	LFLY	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Metz-Nancy-Lorraine	LFJL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Montpellier-Méditerranée	LFMT	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Nantes-Atlantique	LFRS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

Nîmes-Garons	LFTW	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Paris-Le Bourget	LFPB	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Pau-Pyrénées	LFBP	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Perpignan-Rivesaltes	LFMP	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Poitiers-Biard	LFBI	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Quimper-Pluguffan	LFRQ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Rennes-Saint-Jacques	LFRN	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Rodez-Marcillac	LFMR	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Saint-Etienne-Bouthéon	LFMH	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Saint-Nazaire-Montoir	LFRZ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Strasbourg-Entzheim	LFST	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Tarbes-Lourdes Pyrénées	LFBT	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Tours-Val de Loire	LFOT	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Toussus-le-Noble	LFPN	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	



**FRANCE**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.37	0.40	0.40	0.39	0.32	Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay and includes NM post operations adjustment.
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.84	1.18	0.97	1.80		

**National capacity incentive scheme**

Incentive scheme targets:  
 The capacity delay target at FAB level was set at an average of 0.33 min/flight for CRSTMP causes ATFM delays.  
 DSNAs broken down target was set at 0.21 min/flight.

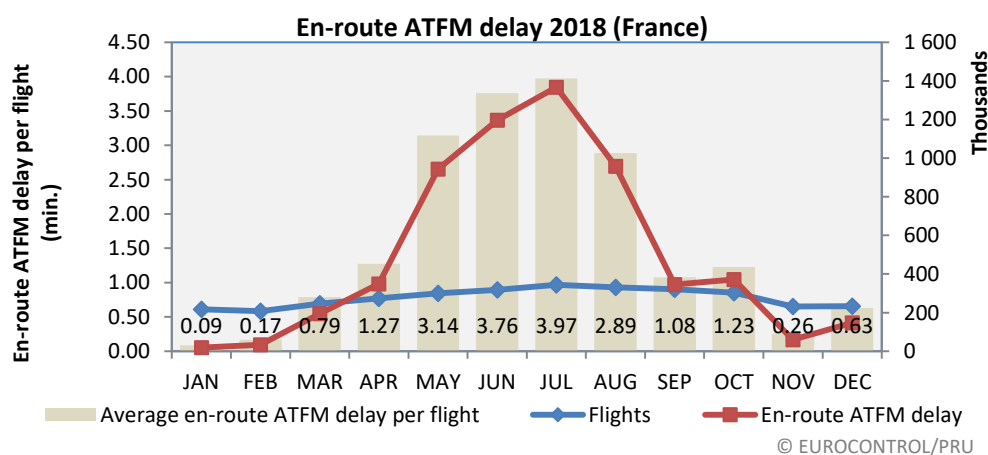
2018 achievement (As reported by FABEC)  
 - FABEC: 1.42 min/flight for CRSTMP ATFM delays  
 - DSNAs: 1.08 min/flight for CRSTMP ATFM delays

BONUS / MALUS  
 DSNAs, as an ANSP contributing to the under-performance, achieved a malus of -0.42% of the total ANSP's revenue in 2018, which equates to a penalty of €5,082,817.84

**Compliance issues relating to national capacity incentive scheme**

The PRB noted several compliance issues regarding the proposed FABEC en route incentive scheme submitted in the FABEC performance plan dated July 2015. The compliance issues were: the individual ANSP contributions are not consistent with the required capacity performance and that the proposed target, using CRSTMP codes only, is not consistent with the required capacity performance. FABEC addressed both issues in the Revised FABEC performance plan (version 3.0) submitted in January 2017.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (France)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.47	0.18	2.53	0.45	0.54	0.53	0.66	0.84	1.18	0.97	1.80

EUROCONTROL 7 year forecast February 2014 – France											
	2014		2015		2016		2017		2018		2019
	actual		actual		actual		actual		actual		
High	2978		3065		3181		3270		3367		3463
Base	2944	<b>2947</b>	3005	<b>2992</b>	3076	<b>3124</b>	3127	<b>3241</b>	3187	<b>3328</b>	3254
Low	2905		2935		2947		2957		2976		3002

Traffic levels in France in 2018 rose by almost 3% on 2017 levels. Traffic levels remain below the high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans and associated capacity plans were being determined.

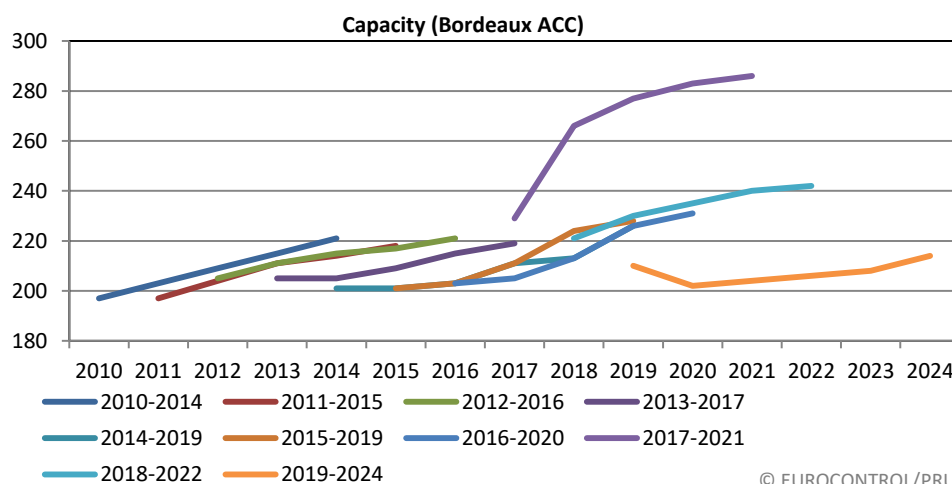
En route AFTM delay rose by 86% to 1.8 minutes per flight from 0.97 minutes in 2017.

In the NM annual report, the airspace users were critical of the capacity situation in France, particularly regarding strikes, which, they reported, generated in excess of 1 million minutes of delay and caused the cancellation of approximately 6000 flights. The airspace users commented that staffing issues in Marseille caused similar delays to that observed during strike days. The airspace users noted that Brest ACC and Reims ACC delivered less than expected performance, in part due to volatility caused by Marseille, but also due to a lack of staffing and sector availability. Bordeaux ACC was identified as producing 'pleasing' capacity performance which was better than forecasted.

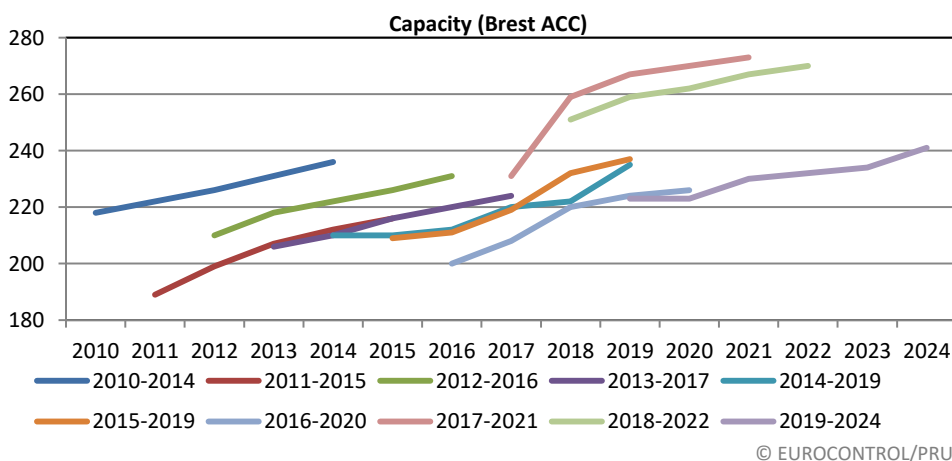
The latest Network Operations Plan, 2019-2024, reports that four of the five ACCs in France are expected to generate delays at higher levels than the network capacity requirements for the remainder of RP2 and for the entirety of RP3: Bordeaux ACC, Brest ACC, Marseille ACC and Reims ACC. All four of these ACCs have significantly decreased their capacity plans from those presented in NOP 2018-2022: Bordeaux ACC (11-17% lower); Brest ACC (17% lower); Marseille ACC (28% lower); Reims ACC (16-19% lower).

Paris ACC is expected to have performance close to its reference value.

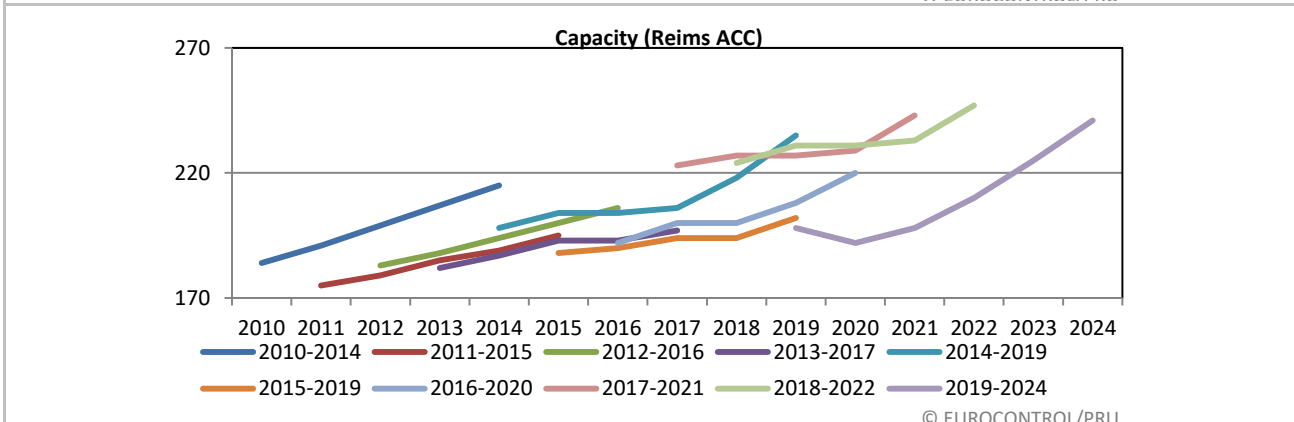
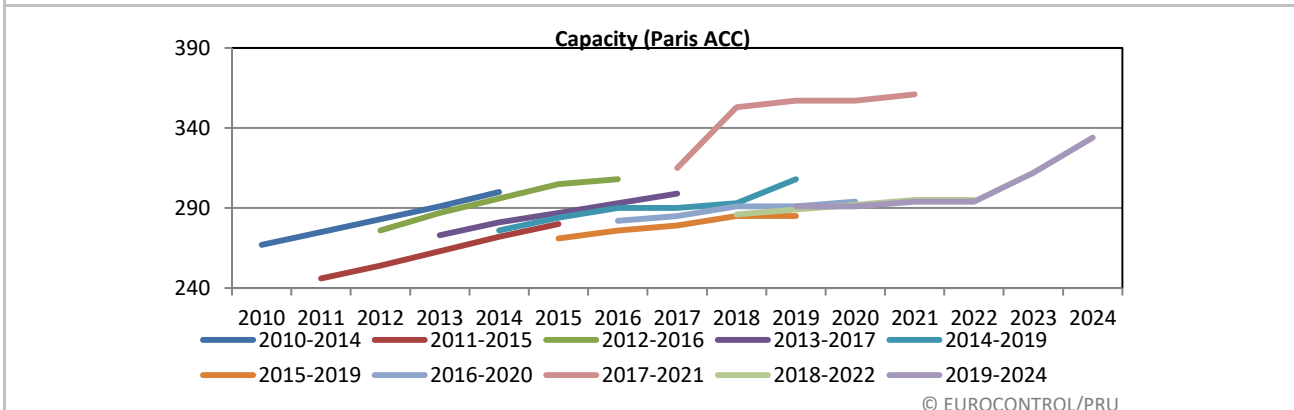
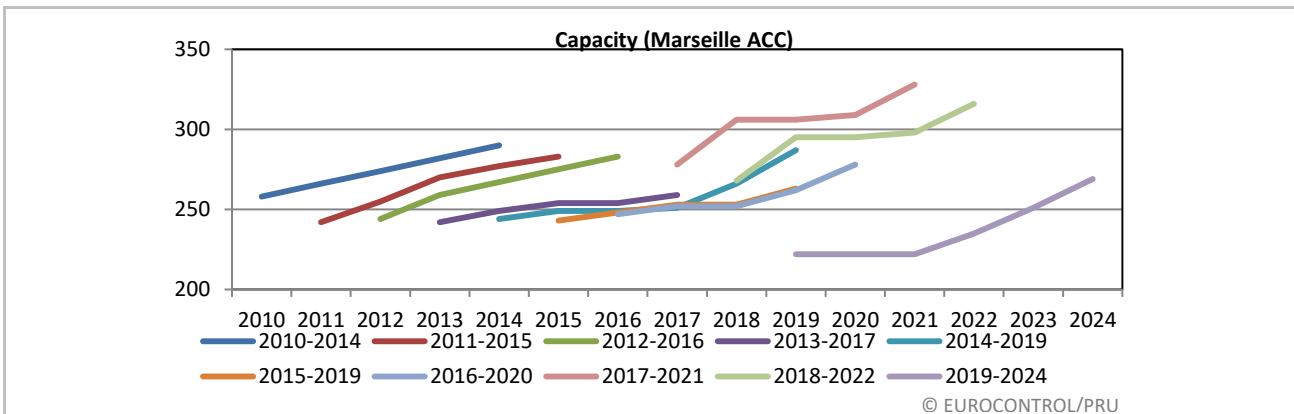
DSNA delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.35	0.48	0.47	0.35	N/A	N/A
NOP 2019 - 2024	5.26	5.91	3.56 – 6.48			



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**Planning and Effective Use of CDRs**

France did not provide any data.

**Observations on Planning and Effective Use of CDRs**

It is noted that France like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
59%	63%	67%	63%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
6%	9%	12%	13%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	N/A	88%	82%	

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**FRANCE**

**Monitoring of Airports Contribution to CAPACITY for 2018**

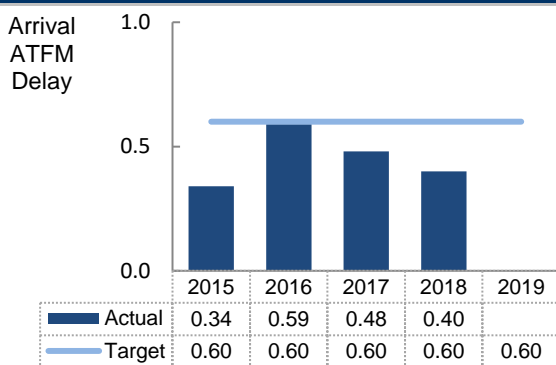
**1. Overview**

For France, ANS at a total of 60 airports fall under the scope of RP2 monitoring. For practical reasons, the monitoring focuses on 7 major airports in terms of IFR movements and aggregates the 53 other airports into a residual group. Traffic levels at these airports have slightly increased during RP2 (+4.2% with respect to 2015) and arrival ATFM delays are moderately higher than those in the beginning of the reference period (+18% in 2018 with respect to 2015). ATFM slot adherence has improved (2015:85.8%; 2018:86.9%).

France has established a constant national target for arrival ATFM delay during RP2. Arrival ATFM delays in 2018 (all causes, national level) have decreased again and the target (0.60 min/arr) is met.

The observed performance in terms of ATFM slot adherence at the 7 major airports has seen some improvements with respect to 2017 but it still ranges at the lower margin in comparison with other European airports. The monitoring of pre-departure delay is still not possible at most of the French airports.

**2. Arrival ATFM Delay**



During 2018, arrival ATFM delays in France have moderately decreased with respect to the previous year (2017: 0.48 min/arr, 2018: 0.40 min/arr). This improvement is driven mainly by the reduction of delays at Charles de Gaulle (LFPG: 2017: 0.34 min/arr.; 2018: 0.28 min/arr.), while Paris Orly (LFPO: 2018: 1.38 min/arr.) is one of the top10 contributors to arrival ATFM delays in Europe.

According to reported reasons for the ATFM delays in France, the main cause is weather (45%) followed by aerodrome capacity (25%, mainly at Paris Orly) and ATC capacity and disruptions (9% each).

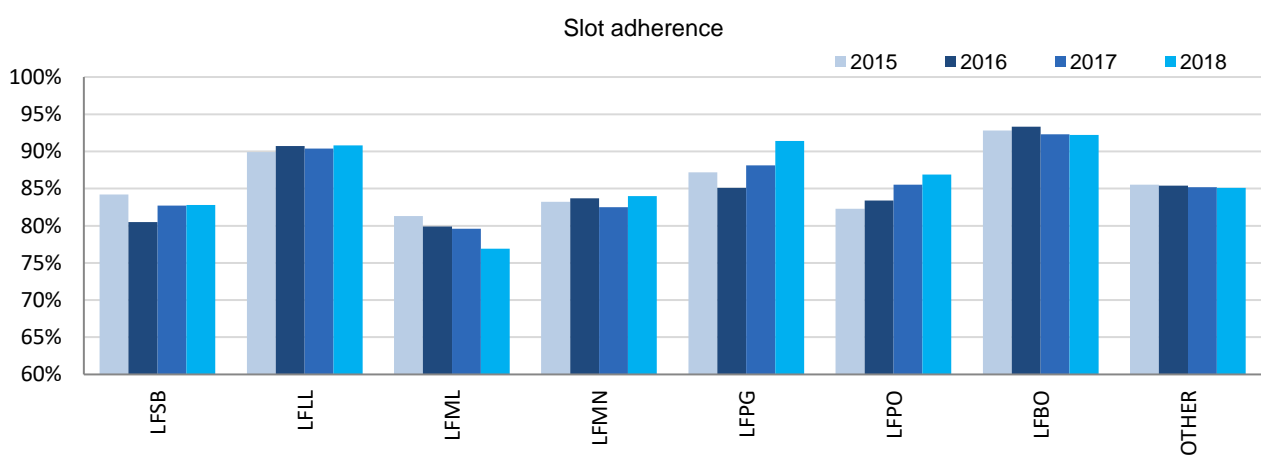
French airports below 30 000 arrivals per year show a wide range of delays, where a couple of airports (Figari-Sud Corse (LKF) and Cannes Mandelieu (LFMD)) have an average delay around 2 min/arr. However the situation for these airports has improved in general with respect to 2017.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

France established a constant national target on arrival ATFM delay for RP2 (all causes: 0.60 min/arr. and CRSTMP: 0.15 min/arr.) as presented in the FABEC performance plan.

Arrival ATFM delays associated with CRSTMP causes achievement (0.10 min/arr) meets the target (0.15 min/arr.), but falls within the deadband of both incentive schemes as defined in the FABEC performance plan (CZ1 and CZ2) therefore no bonus applies for DSN for 2018.

**4. ATFM Slot Adherence**



ATFM slot adherence shows a general improvement, where for the first time Charles de Gaulle (A-CDM implemented) shows a compliance above 90%.

The general performance in terms of slot adherence ranges around or above the legal compliance boundary of 80%, except for Marseille (LFML) that does not reach the minimum required.

However, it appears that the calculated values might have been based in wrong information sent to NMOC, as identified by DSNA and explained by FABEC in their monitoring report: *Except in the two main Paris airports, the signal for activating the flight plan in the current FDPS system of DSNA (CAUTRA) is also used as the first system activation message (FSA) signal sent to the NMOC. However, this takes place at a time after off-block time (OBT), but well before the actual take-off, while it is interpreted by NMOC as Take-Off Time (TOT). Hence, NMOC detects a large percentage of regulated flights as taking off in advance of the tolerance window, although the actual take-off time is later and actually generally within the STW.*

*This appears in particular for Marseille airport. This is now acknowledged by DSNA as a clear deviation on many airports where the taxiing time is significant. This default has however been corrected in Paris-Charles-de-Gaulle and Paris-Orly through a specific local system that allows sending the NMOC a correct take-off time (TOT). DSNA is currently preparing a device to correct the time sent to the NMOC on the other main airports. Since on smaller airports, the taxiing time is short, the deviation has little impact. It is aimed that the new device sending the correct information will be in place at all controlled airports by the end of 2019.*

The improvement observed at LFPG is also related to this correct TOT sent to NMOC.

## 5. ATC Pre-departure Delay

The monitoring of ATC pre-departure delay is only possible at 2 of the 60 French airports covered by the performance plan: Bâle-Mulhouse (LFSB) and Nice-Côte d'Azur (LFMN).

The lack of data due to the non-establishment of the required data flow by the airports, together with an insufficient reporting of the observed delays in some cases like Charles de Gaulle (LFPG) and Paris Orly (LFPO) (where more than 40% of the delays are left unexplained) make the monitoring of the indicator not possible.

ATC pre-departure delays observed at LFMN (0.34 min/dep.) and LFSB (0.09 min/dep.), are commensurate with the level of traffic.

Toulouse and Marseille recently joined the Airport Operator Data Flow that allows the monitoring of required indicators in the Performance Scheme. France shall encourage the timely implementation of the Airport Operator Data Flow and a proper reporting of the pre-departure delays through this data flow.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bâle-Mulhouse	LFSB	0.14	0.32	0.06	0.22		84.2%	80.5%	82.7%	82.8%		n/a	n/a	n/a	0.09	
Lyon-Saint-Exupéry	LFLL	0.03	0.03	0.10	0.09		89.9%	90.7%	90.4%	90.8%		0.12	n/a	n/a	n/a	
Marseille-Provence	LFML	0.12	0.54	0.13	0.16		81.3%	79.9%	79.6%	76.9%		n/a	n/a	n/a	n/a	
Nice-Côte d'Azur	LFMN	0.23	0.20	0.20	0.27		83.2%	83.7%	82.5%	84.0%		n/a	n/a	0.36	0.34	
Paris-Charles-de-Gaulle	LFPG	0.35	0.53	0.34	0.28		87.2%	85.1%	88.1%	91.4%		0.40	0.37	n/a	n/a	
Paris-Orly	LFPO	0.96	1.90	1.40	1.38		82.3%	83.4%	85.5%	86.9%		n/a	0.65	0.71	n/a	
Toulouse-Blagnac	LFBO	0.26	0.41	0.21	0.24		92.8%	93.3%	92.3%	92.2%		n/a	n/a	n/a	n/a	
Agen-La Garenne	LFBA	0.00	0.00	0.00	0.00		83.0%	82.1%	83.1%	83.2%		n/a	n/a	n/a	n/a	
Ajaccio-Napoléon-Bonaparte	LFKJ	0.01	0.09	0.04	0.00		88.6%	83.3%	84.8%	83.9%		n/a	n/a	n/a	n/a	
Albert-Bray	LFAQ	0.39	0.03	0.00	0.00		44.0%	54.7%	55.2%	70.5%		n/a	n/a	n/a	n/a	
Angers-Marcé	LFJR	0.04	0.05	0.01	0.00		85.5%	88.3%	85.7%	89.2%		n/a	n/a	n/a	n/a	
Annecy-Meythet	LFLP	0.15	0.00	0.00	0.07		84.2%	90.0%	89.5%	82.3%		n/a	n/a	n/a	n/a	
Avignon-Caumont	LFMV	0.04	0.31	0.13	0.08		81.5%	77.7%	74.6%	74.0%		n/a	n/a	n/a	n/a	
Bastia-Poretta	LFKB	0.00	0.02	0.01	0.01		84.5%	81.6%	81.9%	83.9%		n/a	n/a	n/a	n/a	
Beauvais-Tillé	LFOB	0.29	1.65	0.06	0.09		55.3%	49.5%	44.5%	47.3%		n/a	n/a	n/a	n/a	
Bergerac-Roumanière	LFBE	0.00	0.00	0.03	0.00		79.1%	79.4%	83.9%	81.5%		n/a	n/a	n/a	n/a	

Béziers-Vias	LFMU	0.00	0.00	0.00	0.00		97.0%	89.6%	92.6%	95.1%		n/a	n/a	n/a	n/a
Biarritz-Bayonne-Anglet	LFBZ	0.00	0.00	0.16	0.35		88.5%	87.8%	82.9%	81.8%		n/a	n/a	n/a	n/a
Bordeaux-Mérignac	LFBF	0.12	0.23	0.35	0.15		87.7%	89.1%	87.0%	88.0%		n/a	n/a	n/a	n/a
Brest-Bretagne	LFRB	0.01	0.02	0.02	0.09		90.3%	91.4%	91.7%	91.6%		n/a	n/a	n/a	n/a
Brive-Souillac	LFSL	0.00	0.00	0.00	0.00		94.3%	96.2%	95.2%	93.7%		n/a	n/a	n/a	n/a
Caen-Carpiquet	LFRK	0.00	0.00	0.00	0.07		84.9%	86.3%	90.8%	88.2%		n/a	n/a	n/a	n/a
Calvi-Sainte-Catherine	LFKC	0.22	0.23	0.58	0.48		90.5%	94.0%	88.5%	91.6%		n/a	n/a	n/a	n/a
Cannes-Mandelieu	LFMD	1.15	1.96	1.76	2.22		94.9%	95.1%	94.4%	93.8%		n/a	n/a	n/a	n/a
Carcassonne-Salvaza	LFMK	0.00	0.00	0.00	0.04		77.2%	80.9%	83.4%	86.2%		n/a	n/a	n/a	n/a
Châlons-Vatry	LFOK	0.09	0.00	0.00	0.00		n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a
Chambéry-Aix-les-Bains	LFLB	1.62	1.31	0.71	1.08		89.1%	91.0%	82.8%	87.3%		n/a	n/a	n/a	n/a
Châteauroux-Déols	LFLX	0.00	0.00	0.00	0.00		84.8%	86.7%	94.2%	95.0%		n/a	n/a	n/a	n/a
Clermont-Ferrand-Auvergne	LFLC	0.01	0.00	0.00	0.00		79.5%	83.2%	85.3%	82.4%		n/a	n/a	n/a	n/a
Deauville-Normandie	LFRG	0.02	0.00	0.00	0.01		85.6%	86.9%	82.8%	89.4%		n/a	n/a	n/a	n/a
Dinard-Pleurtuit-Saint-Malo	LFRD	0.00	0.00	0.00	0.00		71.2%	75.8%	81.9%	80.7%		n/a	n/a	n/a	n/a
Dôle-Tavaux	LFGJ	0.00	0.00	0.00	0.00		57.0%	42.2%	54.4%	51.1%		n/a	n/a	n/a	n/a
Figari-Sud Corse	LFKF	1.58	1.37	5.26	1.83		84.6%	81.0%	80.9%	79.3%		n/a	n/a	n/a	n/a
Grenoble-Isère	LFLS	1.70	2.77	1.33	0.75		95.1%	91.5%	92.7%	93.4%		n/a	n/a	n/a	n/a
Hyères-Le Palyvestre	LFTH	0.00	0.01	0.05	0.09		84.3%	85.1%	81.5%	83.3%		n/a	n/a	n/a	n/a
Istres-Le Tubé	LFMI	0.00	0.00	0.00	0.00		75.0%	70.8%	73.0%	74.4%		n/a	n/a	n/a	n/a
La Rochelle-Ile de Ré	LFBH	0.10	0.00	0.01	0.00		89.2%	86.9%	90.5%	93.4%		n/a	n/a	n/a	n/a
Lannion	LFRO	0.00	0.00	0.00	0.13		92.9%	93.7%	96.5%	95.6%		n/a	n/a	n/a	n/a
Le Havre-Octeville	LFOH	0.00	0.00	0.00	0.00		82.4%	80.4%	92.3%	88.1%		n/a	n/a	n/a	n/a
Lille-Lesquin	LFQQ	0.34	0.22	0.11	0.04		89.3%	84.3%	86.1%	88.1%		n/a	n/a	n/a	n/a
Limoges-Bellegarde	LFBF	0.03	0.11	0.04	0.15		91.7%	92.4%	93.8%	93.9%		n/a	n/a	n/a	n/a
Lorient-Lann Bihoué	LFRH	0.00	0.00	0.02	0.01		86.7%	84.4%	89.6%	88.8%		n/a	n/a	n/a	n/a
Lyon-Bron	LFLY	0.00	0.01	0.01	0.01		92.9%	92.1%	95.9%	90.2%		n/a	n/a	n/a	n/a
Metz-Nancy-Lorraine	LFJL	0.00	0.00	0.01	0.00		75.4%	77.5%	77.8%	81.9%		n/a	n/a	n/a	n/a
Montpellier-Méditerranée	LFMT	0.02	0.01	0.00	0.01		92.0%	89.8%	91.1%	91.0%		n/a	n/a	n/a	n/a
Nantes-Atlantique	LFRS	0.16	0.33	0.18	0.33		88.6%	88.6%	91.5%	90.6%		n/a	n/a	n/a	n/a
Nîmes-Garons	LFTW	0.00	0.00	0.00	0.00		91.4%	87.9%	90.7%	89.1%		n/a	n/a	n/a	n/a
Paris-Le Bourget	LFPB	0.35	1.00	2.99	0.93		91.0%	90.0%	91.7%	92.7%		n/a	n/a	n/a	n/a
Pau-Pyrénées	LFBP	0.01	0.00	0.00	0.12		89.7%	88.2%	82.5%	84.8%		n/a	n/a	n/a	n/a
Perpignan-Rivesaltes	LFMP	0.57	0.00	0.02	0.00		96.8%	93.7%	95.9%	94.5%		n/a	n/a	n/a	n/a
Poitiers-Biard	LFBI	0.01	0.00	0.00	0.00		90.4%	87.1%	83.7%	87.1%		n/a	n/a	n/a	n/a
Quimper-Pluguffan	LFRQ	0.00	0.00	0.06	0.05		89.9%	92.3%	93.3%	92.3%		n/a	n/a	n/a	n/a
Rennes-Saint-Jacques	LFRN	0.00	0.00	0.00	0.00		82.2%	83.6%	84.6%	83.5%		n/a	n/a	n/a	n/a
Rodez-Marcillac	LFMR	0.00	0.00	0.00	0.00		94.6%	95.8%	94.6%	77.4%		n/a	n/a	n/a	n/a
Saint-Etienne-Bouthéon	LFMH	0.00	0.00	0.03	0.00		91.3%	92.0%	90.8%	69.8%		n/a	n/a	n/a	n/a
Saint-Nazaire-Montoir	LFRZ	0.00	0.00	0.00	0.00		88.6%	90.2%	95.2%	90.4%		n/a	n/a	n/a	n/a
Strasbourg-Entzheim	LFST	0.01	0.00	0.02	0.06		78.9%	80.9%	82.3%	81.3%		n/a	n/a	n/a	n/a
Tarbes-Lourdes Pyrénées	LFBT	0.00	0.00	0.00	0.00		95.8%	94.0%	92.3%	93.0%		n/a	n/a	n/a	n/a
Tours-Val de Loire	LFOT	0.04	0.00	0.00	0.00		100.0%	71.4%	100.0%	0.0%		n/a	n/a	n/a	n/a
Toussus-le-Noble	LFPN	1.68	1.59	0.51	0.84		65.0%	67.1%	68.9%	62.2%		n/a	n/a	n/a	n/a

## FRANCE: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· France ECZ represents 19.6% of the SES en-route ANS determined costs in 2018					
· ATSP: DSNA					
· FAB: FABEC					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
France: Data from RP2 Performance Plan (EC Decision 2017/553 of 22 March 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	1 290 640 175	1 296 576 851	1 328 676 964	1 334 112 339	1 337 956 806
Inflation %	0.1%	0.8%	1.1%	1.1%	1.3%
Inflation index (100 in 2009)	108.2	109.1	110.3	111.5	113.0
Real en-route costs (EUR2009)	1 192 625 922	1 188 249 284	1 204 538 004	1 196 187 863	1 184 005 999
Total en-route Service Units	18 662 000	19 177 000	19 300 000	20 204 000	20 333 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>63.91</b>	<b>61.96</b>	<b>62.41</b>	<b>59.21</b>	<b>58.23</b>
France: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	1 232 156 471	1 249 336 773	1 279 604 941	1 328 736 656	
Inflation %	0.1%	0.3%	1.2%	2.1%	
Inflation index (100 in 2009)	108.2	108.5	109.8	112.1	
Real en-route costs (EUR2009)	1 138 811 120	1 151 121 405	1 165 490 383	1 185 348 242	
Total en-route Service Units	18 867 771	19 882 659	20 862 129	21 449 867	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>60.36</b>	<b>57.90</b>	<b>55.87</b>	<b>55.26</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-58 483 704	-47 240 078	-49 072 024	-5 375 683	
in %	-4.5%	-3.6%	-3.7%	-0.4%	
Inflation %					
in p.p.	-0.0 p.p.	-0.5 p.p.	0.1 p.p.	1.0 p.p.	
Inflation index (100 in 2009)					
in p.p.	-0.0 p.p.	-0.6 p.p.	-0.5 p.p.	0.6 p.p.	
Real en-route costs (EUR2009)					
in value	-53 814 802	-37 127 879	-39 047 621	-10 839 621	
in %	-4.5%	-3.1%	-3.2%	-0.9%	
Total en-route Service Units					
in value	205 771	705 659	1 562 129	1 245 867	
in %	1.1%	3.7%	8.1%	6.2%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-3.55</b>	<b>-4.07</b>	<b>-6.54</b>	<b>-3.94</b>	
in %	<b>-5.6%</b>	<b>-6.6%</b>	<b>-10.5%</b>	<b>-6.7%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (55.26 €2009) is -6.7% lower than planned in the PP (59.21 €2009). This results from the combination of higher than planned TSUs (+6.2%) and slightly lower than planned en-route costs in real terms (-0.9%, or -10.8 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+6.2%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (DSNA) retaining an amount of +34.0 M€2009.					
According to STATFOR February 2019 base scenario, the en-route TSUs for France are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -0.4% (-5.4 M€) lower than planned. However, since the actual inflation index is higher than planned (+0.6 p.p.), actual en-route costs are -0.9% (-10.8 M€2009) below plans when expressed in real terms.					
The slightly lower than planned en-route costs in real terms are driven by lower actual costs across all the reporting entities: DSNA by -0.2%, or -2.1 M€2009, Météo France by -3.2%, or -2.0 M€2009 and NSA/EUROCONTROL by -8.3%, or -6.8 M€2009. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -17.9 M€2009 comprising -11.5 M€2009 for pensions, -0.9 M€2009 for interest rates on loans and -5.5 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

Year	Difference (%)
2015	-4.5%
2016	-3.1%
2017	-3.2%
2018	-0.9%

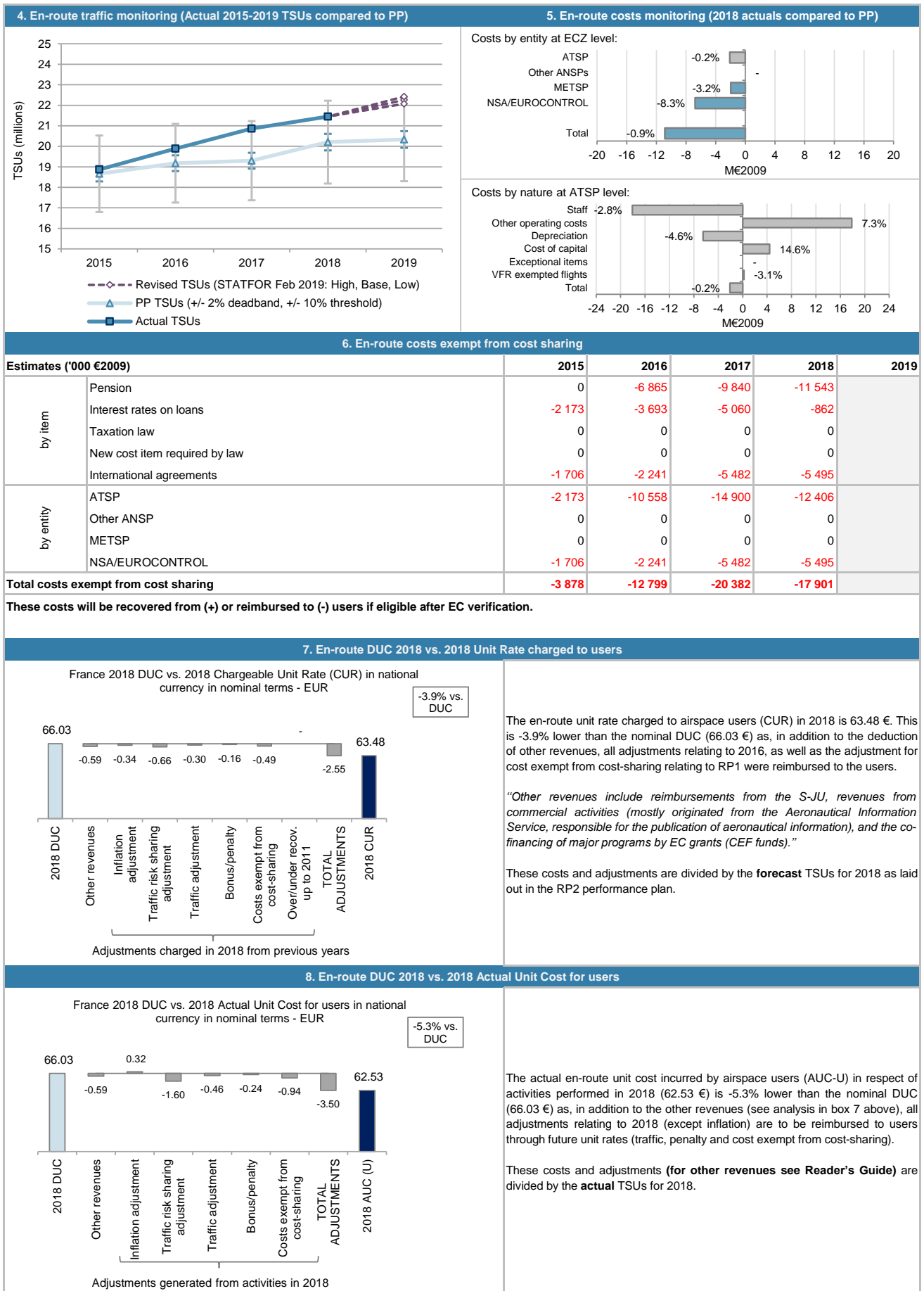
Year	Difference (%)
2015	1.1%
2016	3.7%
2017	8.1%
2018	6.2%

Year	En-route DUC (PP, 2015-2019)	En-route unit costs (actual)	Difference (%)
2015	63.91	60.36	-5.6%
2016	61.96	57.90	-6.6%
2017	62.41	55.87	-10.5%
2018	59.21	55.26	-6.7%
2019	58.23	55.26	-5.0%

Year	Difference (%)
2015	-4.5%
2016	-3.1%
2017	-3.2%
2018	-0.9%

FRANCE: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018





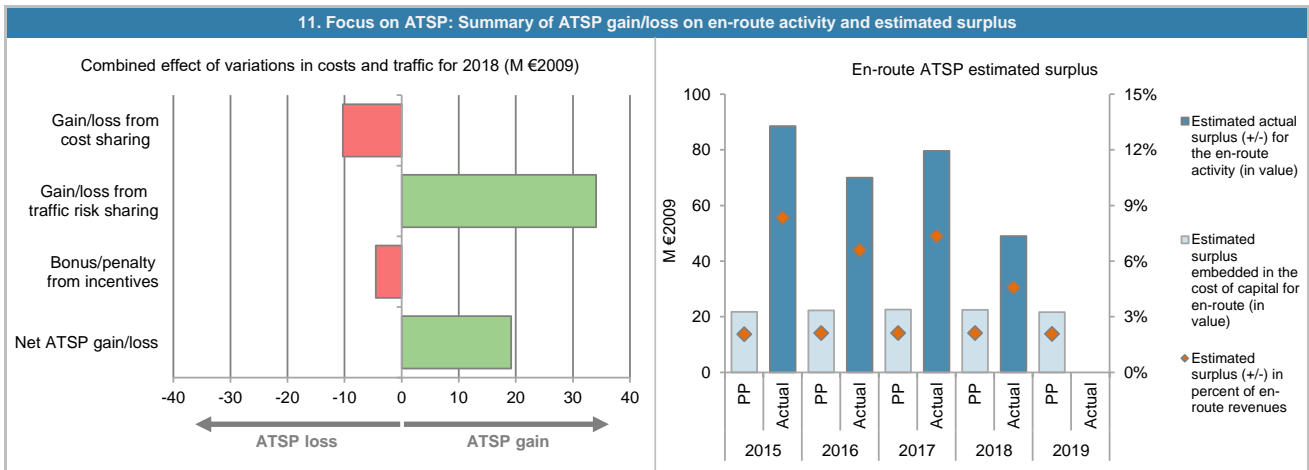
## FRANCE: En-route ATSP (DSNA)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	1 052 355	1 046 866	1 062 305	1 052 762	
Actual costs for the ATSP	1 000 045	1 013 021	1 029 695	1 050 669	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	52 310	33 845	32 610	2 093	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-2 173	-10 558	-14 900	-12 406	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>50 138</b>	<b>23 288</b>	<b>17 710</b>	<b>-10 313</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.1%	3.7%	8.1%	6.2%	
Determined costs for the ATSP (PP) - based on actual inflation	1 052 566	1 052 503	1 067 286	1 047 443	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>11 606</b>	<b>26 354</b>	<b>40 858</b>	<b>34 041</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>-2 247</b>	<b>-3 039</b>	<b>-4 493</b>	<b>-4 534</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>59 497</b>	<b>46 602</b>	<b>54 075</b>	<b>19 194</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	726 555	743 507	752 317	748 055	720 648
Estimated proportion of financing through equity (in %)	35.0%	35.0%	35.0%	35.0%	35.0%
Estimated proportion of financing through equity (in value)	254 294	260 228	263 311	261 819	252 227
Estimated proportion of financing through debt (in %)	65.0%	65.0%	65.0%	65.0%	65.0%
Estimated proportion of financing through debt (in value)	472 261	483 280	489 006	486 236	468 421
Cost of capital pre-tax (in value)	34 569	35 376	35 795	30 244	29 136
Average interest on debt (in %)	2.7%	2.7%	2.7%	1.6%	1.6%
Interest on debt (in value)	12 751	13 049	13 203	7 780	7 495
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	8.6%
Estimated surplus embedded in the cost of capital for en-route (in value)	21 818	22 328	22 592	22 464	21 641
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>21 818</b>	<b>22 328</b>	<b>22 592</b>	<b>22 464</b>	<b>21 641</b>
<b>Revenue/costs for the en-route activity</b>	<b>1 052 355</b>	<b>1 046 866</b>	<b>1 062 305</b>	<b>1 052 762</b>	<b>1 039 648</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>	<b>2.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	742 759	743 764	713 091	684 852	
Estimated proportion of financing through equity (in %)	45.6%	36.6%	41.8%	50.8%	
Estimated proportion of financing through equity (in value)	338 549	272 069	297 787	347 973	
Estimated proportion of financing through debt (in %)	54.4%	63.4%	58.2%	49.2%	
Estimated proportion of financing through debt (in value)	404 209	471 695	415 304	336 879	
Cost of capital pre-tax (in value)	38 102	32 494	32 486	34 646	
Average interest on debt (in %)	2.2%	1.9%	1.7%	1.4%	
Interest on debt (in value)	9 054	9 151	6 936	4 789	
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	
Estimated surplus embedded in the cost of capital for en-route (in value)	29 048	23 344	25 550	29 856	
Net ATSP gain(+)/loss(-) on en-route activity	59 497	46 602	54 075	19 194	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>88 544</b>	<b>69 946</b>	<b>79 625</b>	<b>49 050</b>	
<b>Revenue/costs for the en-route activity</b>	<b>1 059 541</b>	<b>1 059 623</b>	<b>1 083 769</b>	<b>1 069 864</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>8.4%</b>	<b>6.6%</b>	<b>7.3%</b>	<b>4.6%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>26.2%</b>	<b>25.7%</b>	<b>26.7%</b>	<b>14.1%</b>	

FRANCE: En-route ATSP (DSNA)

Monitoring of en-route COST-EFFICIENCY for 2018



12. Focus on en-route ATSP: General conclusions

Actual 2018 DSNA en-route costs vs. PP

In 2018, DSNA actual en-route costs are -0.2% (-2.1 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-2.8%, or -18.1 M€2009). "This shows the effects of the 2016-2019 social agreement which should apply more fully in 2019 and onwards." More precisely, DSNA is under an important structural transition phase aiming to significantly improve its operational and economic performance by 2020. In this context, a DGAC social agreement was signed on 19 July 2016 for the period 2016-2019;
- higher other operating costs (+7.3%, or +17.9 M€2009). "Other operating costs include internal current costs, external costs, and a part of the investment program called T3 Technic...The difference in the overall amount is due to the latter element." See explanation below as well;
- lower depreciation costs (-4.6%, or -6.5 M€2009). "This phenomenon comes mainly from a purely accounting effect, being a consequence of the French State's specific public accounting rules, which do not allow the depreciation of certain investment expenses (i.e. studies, assistance for project management, and expenses below the accounting threshold of € 10k, ...), and record them instead as Other operating costs (called T3 Technic) that aren't included in depreciation costs.";
- much higher cost of capital (+14.6%, or +4.4 M€2009). "The difference is the consequence of two elements : (1) a rise of the WACC and (2) a rise of the netbook value of fixed assets that is compensated by a drop of net current assets."

DSNA net gain/loss on en-route activity in 2018

As shown in box 9, DSNA generated a net gain of +19.2 M€2009 on the en-route activity. This is a combination of three elements:

- a loss of -10.3 M€2009 arising from the cost sharing mechanism;
- a gain of +34.0 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of -4.5 M€2009 (or -5.08 M€ in nominal terms), corresponding to a penalty as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.4% of DSNA en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The loss from cost sharing mentioned above (-10.3 M€2009) includes amounts reported by DSNA for cost exempt from cost sharing (-12.4 M€2009). Should these costs not be deemed eligible by the European Commission, DSNA would record a net gain of +31.6 M€2009 for the en-route activity in 2018.

DSNA overall estimated surplus for the en-route activity

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+19.2 M€2009) and the surplus embedded in the actual cost of capital (+29.9 M€2009) amounts to +49.1 M€2009 (4.6% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 14.1%, which is much higher than the 8.6% planned in the PP.

## FRANCE - ZONE 1: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· France - Zone 1 TCZ represents 8.9% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	DSNA	· Airports with fewer than 70,000 IFRs ATMs:		0		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	2,	of which:	· Airports with more than 225,000 IFRs ATMs:	2		
2. Terminal DUC monitoring at Charging Zone level						
France - Zone 1: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	129 832 690	131 132 361	107 596 304	106 935 078	107 772 756	
Inflation %	0.1%	0.8%	1.1%	1.1%	1.3%	
Inflation index (100 in 2009)	108.2	109.1	110.3	111.5	113.0	
Real terminal costs (EUR2009)	119 972 890	120 176 396	97 543 527	95 879 814	95 371 980	
Total terminal Service Units	569 399	589 032	590 998	602 202	615 237	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>210.70</b>	<b>204.02</b>	<b>165.05</b>	<b>159.22</b>	<b>155.02</b>	
France - Zone 1: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	128 678 295	128 659 607	102 093 616	106 535 099		
Inflation %	0.1%	0.3%	1.2%	2.1%		
Inflation index (100 in 2009)	108.2	108.5	109.8	112.1		
Real terminal costs (EUR2009)	118 929 922	118 545 160	92 988 956	95 038 541		
Total terminal Service Units	568 604	575 780	581 340	593 522		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>209.16</b>	<b>205.89</b>	<b>159.96</b>	<b>160.13</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-1 154 394	-2 472 754	-5 502 688	-399 979	
	in %	-0.9%	-1.9%	-5.1%	-0.4%	
Inflation %	in p.p.	-0.0 p.p.	-0.5 p.p.	0.1 p.p.	1.0 p.p.	
Inflation index (100 in 2009)	in p.p.	-0.0 p.p.	-0.6 p.p.	-0.5 p.p.	0.6 p.p.	
Real terminal costs (EUR2009)	in value	-1 042 967	-1 631 237	-4 554 571	-841 273	
	in %	-0.9%	-1.4%	-4.7%	-0.9%	
Total terminal Service Units	in value	-795	-13 252	-9 658	-8 680	
	in %	-0.1%	-2.2%	-1.6%	-1.4%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>-1.54</b>	<b>1.86</b>	<b>-5.09</b>	<b>0.91</b>	
	in %	<b>-0.7%</b>	<b>0.9%</b>	<b>-3.1%</b>	<b>0.6%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on France Terminal Charging Zone 1 comprising two airports, Paris-CDG and Paris-Orly. (see <a href="#">Note 1</a> )						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (160.13 €2009) is +0.6% higher than planned in the PP (159.22 €2009). This results from the combination of slightly lower than planned TNSUs (-1.4%) and slightly lower than planned terminal costs in real terms (-0.9%, or -0.8 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in France – Terminal Charging Zone 1. The difference between actual and planned TNSUs (-1.4%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues (-1.3 M€2009) is therefore fully borne by the ATSP (DSNA).						
According to STATFOR February 2019 base scenario, the TNSUs for France – Terminal Charging Zone 1 are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are -0.4% (-0.40 M€) lower than planned. However, since the actual inflation index is higher than planned (+0.6 p.p.), actual terminal costs are -0.9% (-0.8 M€2009) below plans when expressed in real terms.						
The slightly lower than planned terminal costs in real terms are driven by reductions across all the reporting entities: DSNA by -0.5%, or -0.4 M€2009, Météo France by -10.2%, or -0.3 M€2009 and NSA by -19.7%, or -0.1 M€2009. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -0.4 M€2009 corresponding to pensions. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						

Year	Difference (%)
2015	-0.9%
2016	-1.4%
2017	-4.7%
2018	-0.9%
2019	0.6%

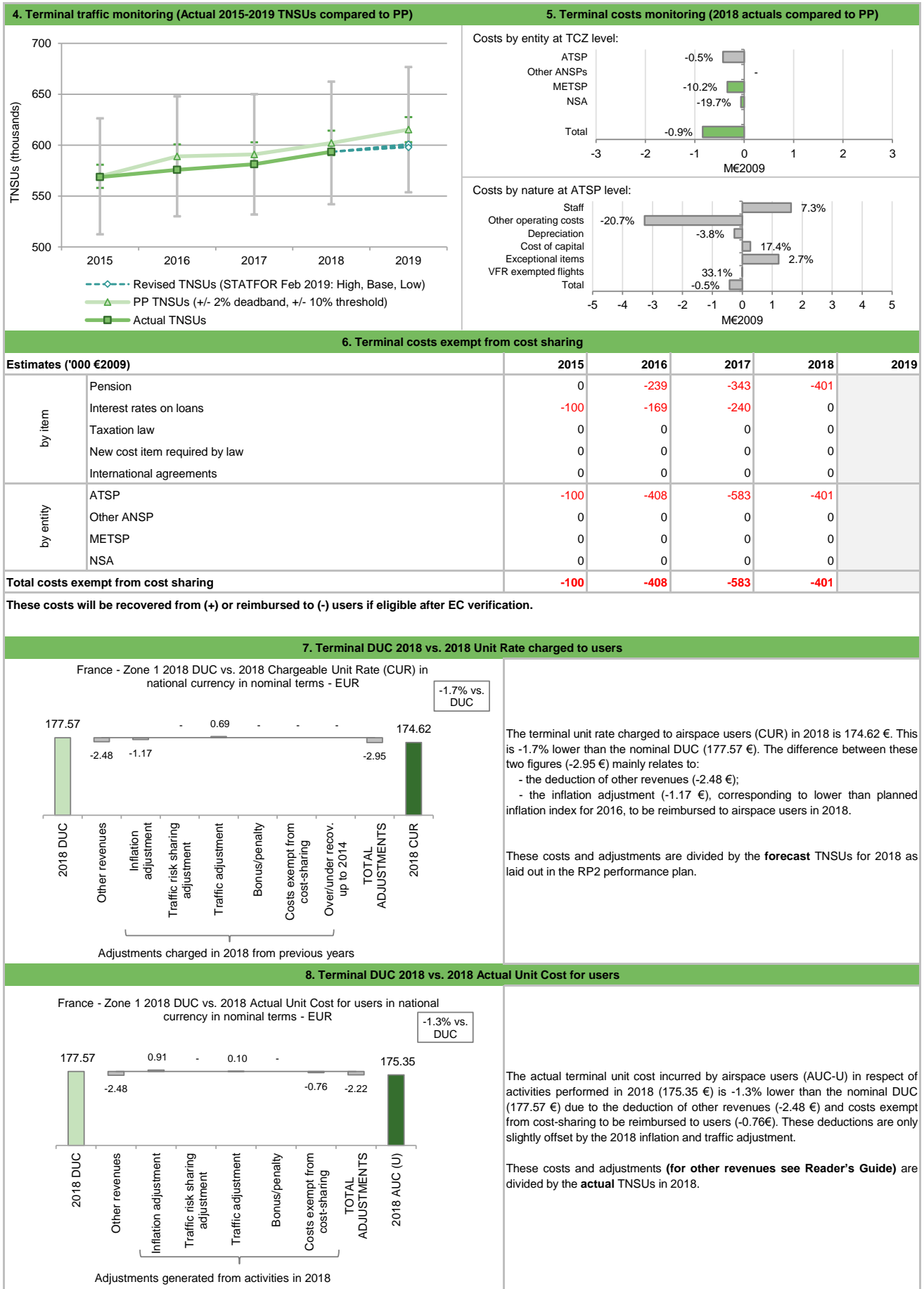
Year	Difference (%)
2015	-0.1%
2016	-2.2%
2017	-1.6%
2018	-1.4%
2019	0.9%

Year	Terminal DUC (PP)	Terminal unit costs (actual)
2015	210.70	209.16
2016	204.02	205.89
2017	165.05	159.96
2018	159.22	160.13
2019	155.02	155.02

Year	Difference (%)
2015	-0.7%
2016	0.9%
2017	-3.1%
2018	0.6%
2019	0.6%

FRANCE - ZONE 1: Terminal charging zone

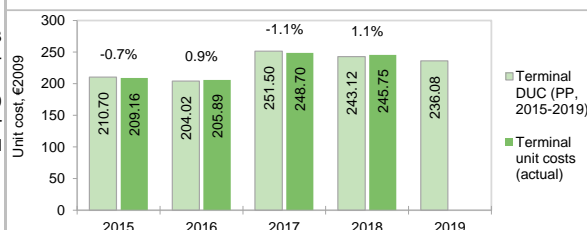
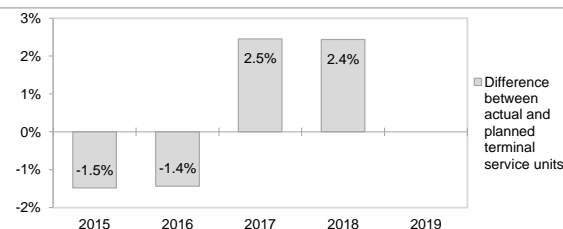
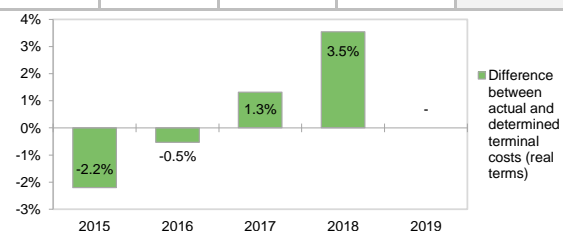
Monitoring of terminal COST-EFFICIENCY for 2018



## FRANCE - ZONE 2: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· France - Zone 2 TCZ represents 11.7% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes	
· ATSP:	DSNA	· Airports with fewer than 70,000 IFRs ATMs:		53	
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		5	
· Number of airports in charging zone in 2018:	58,	of which:		· Airports with more than 225,000 IFRs ATMs:	
				0	
2. Terminal DUC monitoring at Charging Zone level					
France - Zone 2: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	111 204 151	112 317 559	140 427 995	139 861 540	140 579 086
Inflation %	0.11%	0.8%	1.1%	1.1%	1.3%
Inflation index (100 in 2009)	108.2	109.1	110.3	111.5	113.0
Real terminal costs (EUR2009)	102 759 046	102 933 551	127 307 737	125 402 241	124 403 479
Total terminal Service Units	487 701	504 518	506 202	515 798	526 963
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>210.70</b>	<b>204.02</b>	<b>251.50</b>	<b>243.12</b>	<b>236.08</b>
France - Zone 2: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	108 735 563	111 118 121	141 611 268	145 555 636	
Inflation %	0.09%	0.3%	1.2%	2.1%	
Inflation index (100 in 2009)	108.2	108.5	109.8	112.1	
Real terminal costs (EUR2009)	100 498 006	102 382 681	128 982 443	129 848 241	
Total terminal Service Units	480 481	497 278	518 628	528 373	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>209.16</b>	<b>205.89</b>	<b>248.70</b>	<b>245.75</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-2 468 589	-1 199 437	1 183 273	5 694 096	
	in value				
	in %				
Inflation %	-0.2%	-1.1%	0.8%	4.1%	
	in p.p.				
Inflation index (100 in 2009)	-0.0 p.p.	-0.5 p.p.	0.1 p.p.	1.0 p.p.	
	in p.p.				
Real terminal costs (EUR2009)	-2 261 041	-550 870	1 674 706	4 446 000	
	in value				
	in %				
Total terminal Service Units	-7 220	-7 240	12 426	12 575	
	in value				
	in %				
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-1.54</b>	<b>1.86</b>	<b>-2.80</b>	<b>2.63</b>	
	in value				
	in %				
	<b>-0.7%</b>	<b>0.9%</b>	<b>-1.1%</b>	<b>1.1%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on France Terminal Charging Zone 2 comprising 58 airports. (see <a href="#">Note 1</a> )					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (245.75 €2009) is +1.1% higher than planned in the PP (243.12 €2009). This results from the combination of slightly higher than planned TNSUs (+2.4%) and higher than planned terminal costs in real terms (+3.5%, or +4.4 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in France – Terminal Charging Zone 2. The difference between actual and planned TNSUs (+2.4%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (DSNA) retaining an amount of +2.3 M€2009.					
According to STATFOR February 2019 base scenario, the TNSUs for France – Terminal Charging Zone 2 are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +4.1% (+5.7 M€) higher than planned. However, since the actual inflation is also higher than planned (+0.6 p.p.), actual terminal costs are +3.5% (+4.4 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by DSNA (+6.9%, or +7.3 M€2009), while the costs for Météo France (-15.9%, or -2.7 M€2009) and the NSA (-13.6%, or -0.2 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -2.1 M€2009 comprising -1.9 M€2009 for pensions and -0.2 M€2009 for interest rates on loans. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



FRANCE - ZONE 2: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

Costs by nature at ATSP level:

6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	-1 148	-1 645	-1 925	
	Interest rates on loans	-433	-730	-1 038	-188	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	-433	-1 878	-2 684	-2 113	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>-433</b>	<b>-1 878</b>	<b>-2 684</b>	<b>-2 113</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

France - Zone 2 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - EUR

The terminal unit rate charged to airspace users (CUR) in 2018 is 217.21 €. This is significantly lower (-19.9%) than the nominal DUC (271.16 €) mainly due to the deduction of other revenues. "Other revenues include reimbursements from the S-JU, revenues from commercial activities (mostly originated from the Aeronautical Information Service, responsible for the publication of aeronautical information), and the co-financing of major programs by EC grants (CEF funds)".

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

France - Zone 2 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - EUR

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (213.51 €) is -21.3% lower than the nominal DUC (271.16 €) mainly due to the deduction of other revenues (see analysis in Box 7 above).

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

## FRANCE: Terminal ATSP (DSNA)

## Monitoring of terminal COST-EFFICIENCY for 2018

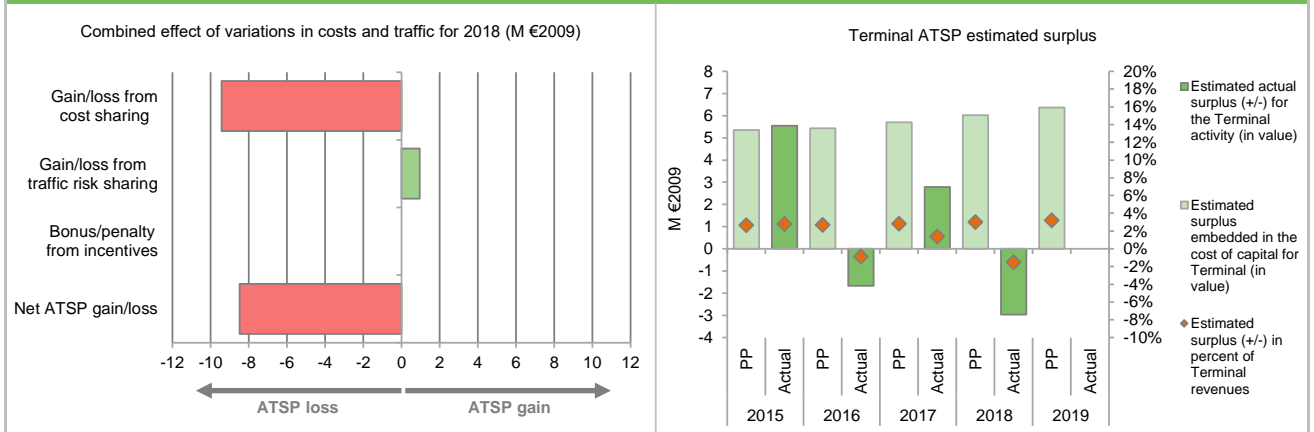
9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	200 752	201 091	202 845	199 173	
Actual costs for the ATSP	199 147	201 224	202 281	206 087	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 605	-132	564	-6 914	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-534	-2 286	-3 267	-2 515	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 072</b>	<b>-2 418</b>	<b>-2 703</b>	<b>-9 429</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.8%	-1.9%	0.3%	0.3%	
Determined costs for the ATSP (PP) - based on actual inflation	200 793	202 174	203 796	198 166	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-1 522</b>	<b>-3 789</b>	<b>799</b>	<b>948</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-451</b>	<b>-6 207</b>	<b>-1 904</b>	<b>-8 481</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	178 452	181 011	190 049	200 711	212 325
Estimated proportion of financing through equity (in %)	35.0%	35.0%	35.0%	35.0%	35.0%
Estimated proportion of financing through equity (in value)	62 458	63 354	66 517	70 249	74 314
Estimated proportion of financing through debt (in %)	65.0%	65.0%	65.0%	65.0%	65.0%
Estimated proportion of financing through debt (in value)	115 994	117 657	123 532	130 462	138 011
Cost of capital pre-tax (in value)	8 491	8 612	9 043	8 115	8 584
Average interest on debt (in %)	2.7%	2.7%	2.7%	1.6%	1.6%
Interest on debt (in value)	3 132	3 177	3 335	2 087	2 208
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	8.6%
Estimated surplus embedded in the cost of capital for terminal (in value)	5 359	5 436	5 707	6 027	6 376
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>5 359</b>	<b>5 436</b>	<b>5 707</b>	<b>6 027</b>	<b>6 376</b>
<b>Revenue/costs for the terminal activity</b>	<b>200 752</b>	<b>201 091</b>	<b>202 845</b>	<b>199 173</b>	<b>197 599</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.7%</b>	<b>2.7%</b>	<b>2.8%</b>	<b>3.0%</b>	<b>3.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	153 551	144 583	130 798	126 364	
Estimated proportion of financing through equity (in %)	45.6%	36.6%	41.8%	50.8%	
Estimated proportion of financing through equity (in value)	69 988	52 888	54 621	64 210	
Estimated proportion of financing through debt (in %)	54.4%	63.4%	58.2%	49.2%	
Estimated proportion of financing through debt (in value)	83 562	91 694	76 177	62 154	
Cost of capital pre-tax (in value)	7 877	6 317	5 959	6 393	
Average interest on debt (in %)	2.2%	1.9%	1.7%	1.4%	
Interest on debt (in value)	1 872	1 779	1 272	883	
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	6 005	4 538	4 687	5 509	
Net ATSP gain(+)/loss(-) on terminal activity	-451	-6 207	-1 904	-8 481	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>5 554</b>	<b>-1 669</b>	<b>2 783</b>	<b>-2 972</b>	
<b>Revenue/costs for the terminal activity</b>	<b>198 696</b>	<b>195 017</b>	<b>200 377</b>	<b>197 606</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.8%</b>	<b>-0.9%</b>	<b>1.4%</b>	<b>-1.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>7.9%</b>	<b>-3.2%</b>	<b>5.1%</b>	<b>-4.6%</b>	



FRANCE: Terminal ATSP (DSNA)

Monitoring of terminal COST-EFFICIENCY for 2018

11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



12. Focus on terminal ATSP: General conclusions

Actual 2018 DSNA terminal costs vs. PP

TERMINAL CHARGING ZONE 1

In 2018, DSNA actual terminal costs were slightly lower than planned (-0.5%, or -0.4 M€2009), in real terms. This results from the combination of:

- higher actual staff costs than planned (+7.3%, or 1.6 M€2009). "This shows the effects of the 2016-2019 social agreement which should apply more fully in 2019 and onwards.";
- significantly lower actual other operating costs than planned (-20.7%, or -3.3 M€2009). However, globally for TCZ 1 and TCZ 2 other operating costs were above the planned figures (+5.0%, or +2.3 M€2009);
- lower depreciation costs than foreseen in the plan (-3.8%, or -0.3 M€2009). "In addition to the decision to substitute 4-Flight by Sysat in CDG and Orly airports, the difference comes mainly from an accounting effect specific to the French State's public accounting rules". See also the relevant explanation in the en-route analysis (Box 12);
- fairly stable cost of capital (+17.4%, or +0.3 M€2009);
- higher than planned exceptional costs (+2.7%, or +1.2 M€2009); and,
- the deduction of slightly higher actual costs for exempted VFR flights.

TERMINAL CHARGING ZONE 2

In 2018, DSNA actual terminal costs were higher than planned (+6.9%, or +7.3 M€2009), in real terms. This results from the combination of:

- higher actual staff costs than planned (+10.4%, or 11.2 M€2009) mainly "This shows the effects of the 2016-2019 social agreement which should apply more fully in 2019 and onwards.";
- significantly higher actual other operating costs than planned (+18.1%, or +5.6 M€2009). Globally for TCZ 1 and TCZ 2 other operating costs were also above the planned figures (+5.0%, or +2.3 M€2009);
- lower depreciation costs than foreseen in the plan (-31.1%, or -6.6 M€2009), "...the difference comes mainly from an accounting effect specific to the French State's public accounting rules". See also the relevant explanation in the en-route analysis (Box 12);
- lower cost of capital (-30.1%, or -2.0 M€2009), reflecting a lower actual asset base than planned and a lower interest on debt;
- higher than planned revenue recorded as (negative) exceptional costs (+2.7%), resulting in actual costs in this category being -1.2 M€2009 lower than planned; and,
- the deduction of lower actual costs for exempted VFR flights.

DSNA net gain/loss on terminal activity in 2018

As shown in box 9, DSNA generated a net loss of -8.5 M€2009 on the terminal activity in France TCZ 1 and TCZ 2. This is a combination of two elements:

- a loss of -9.4 M€2009 as a result of the cost-sharing mechanism reflecting a significant loss for TCZ 2 while ATSP costs for TCZ 1 remained relatively stable. See the table below.
- a gain of +0.9 M€2009 as a result of traffic risk-sharing mechanism, reflecting a gain of +2.3 M€2009 for TCZ 2 and a loss of -1.3 M€2009 for TCZ 1. See the table below.

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity

	TCZ 1	TCZ 2
<b>Cost sharing ('000 €2009)</b>		
<b>2018</b>		
Determined costs for the ATSP (PP) - based on planned inflation	92 161	107 011
Actual costs for the ATSP	91 731	114 356
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	431	-7 345
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-401	-2 113
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>29</b>	<b>-9 458</b>
<b>Traffic risk sharing ('000 €2009)</b>		
<b>2018</b>		
Difference in total service units (actual vs PP) %	-14%	2.4%
Determined costs for the ATSP (PP) - based on actual inflation	91 696	106 471
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-1 322</b>	<b>2 269</b>
<b>Incentives ('000 €2009)</b>		
<b>2018</b>		
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonuses)</b>	<b>0</b>	<b>0</b>
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-1 292</b>	<b>-7 189</b>

The loss from cost sharing mentioned above (-9.4 M€2009) includes amounts reported by DSNA for cost exempt from cost sharing (-2.5 M€2009). Should these costs not be deemed eligible by the European Commission, DSNA would record a net loss of -6.0 M€2009 for the terminal activity in 2018.

DSNA 2018 overall estimated surplus for the terminal activity.

Ex-post, the overall estimated surplus taking into account the net loss from the terminal activity in France TCZ globally mentioned above (-8.5 M€2009) and the surplus embedded in the actual cost of capital for both TCZ 1 and TCZ 2 (+5.5 M€2009) amounts to -3.0 M€2009 (1.5% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is -4.6%, which is much lower than the 8.6% planned in the PP.



## FRANCE: Gate-to-gate

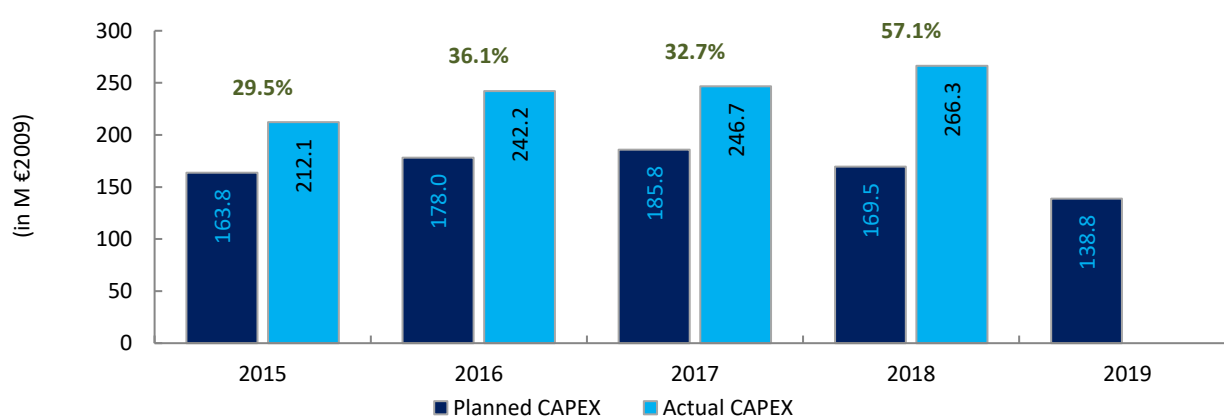
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>France: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	1 192 625 922	1 188 249 284	1 204 538 004	1 196 187 863	1 184 005 999																																							
Real terminal costs (EUR2009)	222 731 936	223 109 947	224 851 264	221 282 055	219 775 459																																							
Real gate-to-gate costs (EUR2009)	1 415 357 858	1 411 359 231	1 429 389 268	1 417 469 918	1 403 781 458																																							
En-route share (%)	84.3%	84.2%	84.3%	84.4%	84.3%																																							
<b>France: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	1 138 811 120	1 151 121 405	1 165 490 383	1 185 348 242																																								
Real terminal costs (EUR2009)	219 427 928	220 927 841	221 971 399	224 886 781																																								
Real gate-to-gate costs (EUR2009)	1 358 239 049	1 372 049 246	1 387 461 782	1 410 235 024																																								
En-route share (%)	83.8%	83.9%	84.0%	84.1%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-57 118 810	-39 309 985	-41 927 486	-7 234 894																																								
in %	-4.0%	-2.8%	-2.9%	-0.5%																																								
En-route share																																												
in p.p.	-0.4 p.p.	-0.3 p.p.	-0.3 p.p.	-0.3 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -0.5% (-7.2 M€2009) lower than planned due to lower than planned en-route costs (-0.9%, or -10.8 M€2009) while terminal costs are higher than planned (+1.6%, or +3.6 M€2009) (globally for both terminal charging zones).</p> <p>The actual share of en-route in gate-to-gate ANS costs (84.1%) is in line with that planned in the PP for 2018 (84.4%).</p> <p>For DSNA, the estimated gate-to-gate economic surplus in 2018 amounts to 46.1 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 3.6% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>84.3%</td> <td>15.7%</td> </tr> <tr> <td>Actual</td> <td>83.8%</td> <td>16.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>84.2%</td> <td>15.8%</td> </tr> <tr> <td>Actual</td> <td>83.9%</td> <td>16.1%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>84.3%</td> <td>15.7%</td> </tr> <tr> <td>Actual</td> <td>84.0%</td> <td>16.0%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>84.4%</td> <td>15.6%</td> </tr> <tr> <td>Actual</td> <td>84.1%</td> <td>15.9%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>84.3%</td> <td>15.7%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	84.3%	15.7%	Actual	83.8%	16.2%	2016	Determined	84.2%	15.8%	Actual	83.9%	16.1%	2017	Determined	84.3%	15.7%	Actual	84.0%	16.0%	2018	Determined	84.4%	15.6%	Actual	84.1%	15.9%	2019	Determined	84.3%	15.7%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	84.3%	15.7%																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by France</b>																																												
<b>Note 1: Change in the scope of French Terminal Charging Zone</b>																																												
From 2017 and onwards, two terminal charging zones are established in France:																																												
<ul style="list-style-type: none"> <li>• Zone 1 for Paris-CDG and Paris-Orly (CZ1); and,</li> <li>• Zone 2 for the other 58 aerodromes (CZ2).</li> </ul>																																												
Therefore, the monitoring analysis for 2017 and 2018 is presented separately for the two terminal charging zones, which is different from the Monitoring Reports 2015-2016 when France had a single terminal charging zone.																																												

## FRANCE

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: DSNA						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	177.3	194.3	205.0	189.1	156.9	922.5
Main CAPEX (in nominal M)	128.3	132.6	140.3	132.0	109.9	643.1
Inflation %	0.1%	0.8%	1.1%	1.1%	1.3%	
Inflation index (100 in 2009)	108.2	109.1	110.3	111.5	113.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>163.8</b>	<b>178.0</b>	<b>185.8</b>	<b>169.5</b>	<b>138.8</b>	<b>836.0</b>
Main CAPEX (in M €2009)	118.6	121.5	127.2	118.3	97.2	582.8
% Main of Total CAPEX	72.4%	68.2%	68.4%	69.8%	70.0%	69.7%
Real gate-to-gate ANSP costs (in M €2009)	1 253.1	1 248.0	1 265.1	1 251.9	1 237.2	6 255.4
Total CAPEX as % of Real gate-to-gate ANSP costs	13.1%	14.3%	14.7%	13.5%	11.2%	13.4%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	229.5	262.9	270.8	298.5		
Main CAPEX (in nominal M)	132.5	155.3	152.7	172.9		
Inflation %	0.1%	0.3%	1.2%	2.1%		
Inflation index (100 in 2009)	108.2	108.5	109.8	112.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>212.1</b>	<b>242.2</b>	<b>246.7</b>	<b>266.3</b>		
Main CAPEX (in M €2009)	122.5	143.1	139.1	154.2		
% Main of Total CAPEX	57.7%	59.1%	56.4%	57.9%		
Real gate-to-gate ANSP costs (in M €2009)	1 199.2	1 214.2	1 232.0	1 256.8		
Total CAPEX as % of Real gate-to-gate ANSP costs	17.7%	19.9%	20.0%	21.2%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	52.3	68.6	65.8	109.4		
Total CAPEX (in M €2009)	48.3	64.2	60.8	96.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>29.5%</b>	<b>36.1%</b>	<b>32.7%</b>	<b>57.1%</b>		



Note: The Actual data for Total CAPEX have been updated for all years (2015-2018), with an average yearly increase of 78M€ with respect to what it was initially reported in the NSA Monitoring reports of previous years. In the Additional Comments provided by France in the 2018 FABEC Monitoring Report it is mentioned that "To have an accurate vision of the investment costs, we have to consider the sum of investments costs as well as some operating costs which are directly associated to our investments, these costs are referred to as "T3 Tech". In order to take into account the T3 Tech costs, we have used the "Sub-total unplanned CAPEX(3)" line".

# Annual Monitoring Report 2018

Local level view  
Germany



## GERMANY

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	73	C	C	C	C	C
DFS	94	D	E	D	E	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			90%	100%		
Runway Incursions (RIs)			60%	86%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			BAF			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			4	5		
Legal/Judiciary			4	3		
Occurrence reporting and Investigation			1	1		
<b>TOTAL</b>			<b>9</b>	<b>9</b>		
DFS			Number of questions answered			
			YES	NO		
Policy and its implementation			13	0		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

**GERMANY**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

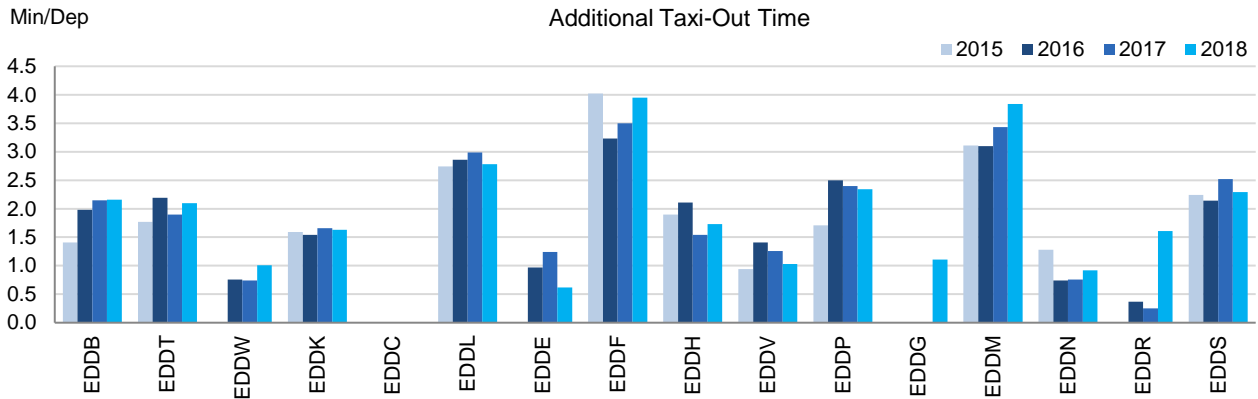
**1. Overview**

Germany identifies a total of 16 airports as subject to RP2 monitoring, from which 15 provided the required data for the proper monitoring of performance. The last remaining airport, Dresden (EDDC), completed the transition to the Airport Operator Data Flow at the end of 2018 and the monitoring of the environment indicators will be possible as of 2019.

In total, traffic at these German airports increased by 8% since 2015, but the evolution differs significantly from one airport to another, as for example Berlin Schoenefeld (EDDB) has drastically increased its movements by 35% since the beginning of the reference period, while Bremen (EDDW) has decreased by 9%.

The performance regarding the environmental indicators varies across the German airports and, with a few exceptions, is commensurate with the level of traffic.

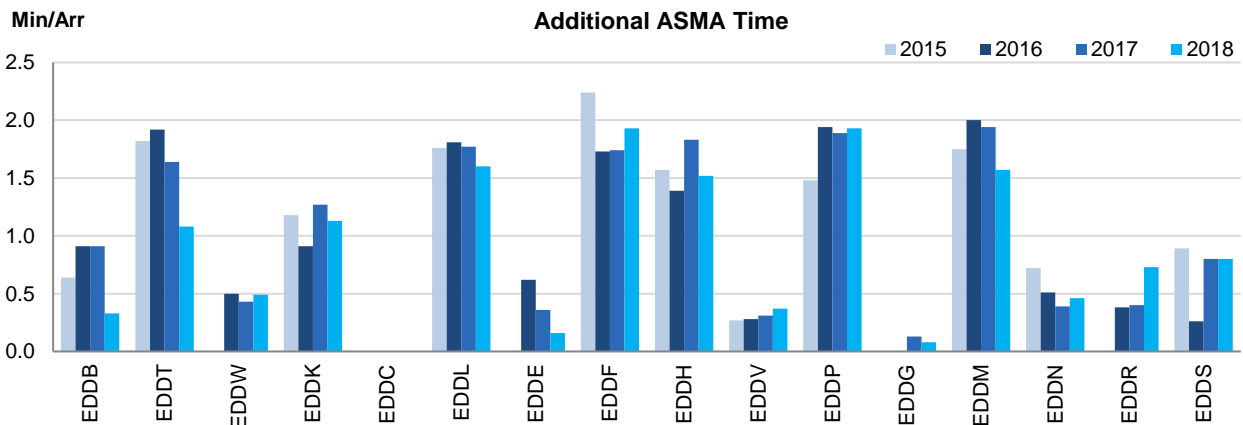
**2. Additional Taxi-Out Time**



Additional taxi-out times remain at similar levels as in 2017 for most German airports. The most important evolutions are observed at the two main German airports where performance deteriorated progressively in the last 3 years: Frankfurt (EDDF: 2016: 3.23 min/dep.; 2017: 3.50 min/dep.; 2018: 3.95 min/dep.) and Munich Frankfurt (EDDM: 2016: 3.10 min/dep.; 2017: 3.43 min/dep.; 2018: 3.84 min/dep.)

At the smaller airports, there is a drastic increase of the taxi times at Saarbruecken (EDDR: 2017: 0.25 min/dep.; 2018: 1.61 min/dep.)

**3. Additional ASMA Time**



Additional ASMA times at German airports except Frankfurt (EDDF; 2018: 1.93 min/arr.) and Leipzig (EDDP; 2018: 1.93 min/arr.) sit below the SES average of 1.75 min/arr.

There are a significant improvements at Munich (EDDM; 2017: 1.94 min/arr.; 2018: 1.57 min/arr.), Tegel (EDDT; 2017: 1.64 min/arr.; 2018: 1.08 min/arr.), Hamburg (EDDH; 2017: 1.83 min/arr.; 2018: 1.52 min/arr.) and Schoenefeld (EDDB; 2017: 0.91min/arr.; 2018: 0.93 min/arr.)

#### 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Berlin/ Schoenefeld	EDDB	1.41	1.98	2.15	2.16		0.64	0.91	0.91	0.33	
Berlin/ Tegel	EDDT	1.77	2.19	1.90	2.10		1.82	1.92	1.64	1.08	
Bremen	EDDW	n/a	0.76	0.74	1.01		n/a	0.50	0.43	0.49	
Cologne-Bonn	EDDK	1.59	1.54	1.66	1.63		1.18	0.91	1.27	1.13	
Dresden	EDDC	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Dusseldorf	EDDL	2.74	2.86	2.99	2.78		1.76	1.81	1.77	1.60	
Erfurt	EDDE	n/a	0.97	1.24	0.62		n/a	0.62	0.36	0.16	
Frankfurt	EDDF	4.02	3.23	3.50	3.95		2.24	1.73	1.74	1.93	
Hamburg	EDDH	1.90	2.11	1.54	1.73		1.57	1.39	1.83	1.52	
Hannover	EDDV	0.94	1.41	1.26	1.03		0.27	0.28	0.31	0.37	
Leipzig-Halle	EDDP	1.71	2.50	2.40	2.34		1.48	1.94	1.89	1.93	
Muenster-Osnabruock	EDDG	n/a	n/a	n/a	1.11		n/a	n/a	0.13	0.08	
Munich	EDDM	3.11	3.10	3.43	3.84		1.75	2.00	1.94	1.57	
Nuremberg	EDDN	1.28	0.74	0.76	0.92		0.72	0.51	0.39	0.46	
Saarbruecken	EDDR	n/a	0.37	0.25	1.61		n/a	0.38	0.40	0.73	
Stuttgart	EDDS	2.24	2.14	2.52	2.29		0.89	0.26	0.80	0.80	

**GERMANY**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	N/A	N/A	N/A	N/A	N/A	Because there are two ANSPs in Germany, DFS and EUROCONTROL (MUAC), Germany did not set a national target. Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay and includes NM post operations adjustment.
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.20	0.40	0.76	1.65		

**National capacity incentive scheme**

The incentive scheme is applied for delay causes listed in Art. 15 (g) of Regulation 391/2013; data used for calculation was AUA data provided by PRU.

[The PRU is unable to validate the attributed cause of delay, which is determined by the ANSP requesting the ATFM regulation.]

The Capacity delay target at FAB level was set at an average of 0,33 min/flight for CRSTMP ATFM delays.

DFS broken down target was set at 0,24 min/ flight.

EUROCONTROL (MUAC) broken down target was set at 0.15 min/ flight

2018 achievement (As reported by FABEC)

- FABEC: 1.42 min/ flight for CRSTMP delays

- DFS: 1.30 min/ flight for CRSTMP delays

- EUROCONTROL (MUAC): 0.50 min/ flight for CRSTMP delays

Bonus / Malus

The percentage of malus for DFS was -0.5% of total ANSP's revenue in 2018, which equates to €4,336,877.70

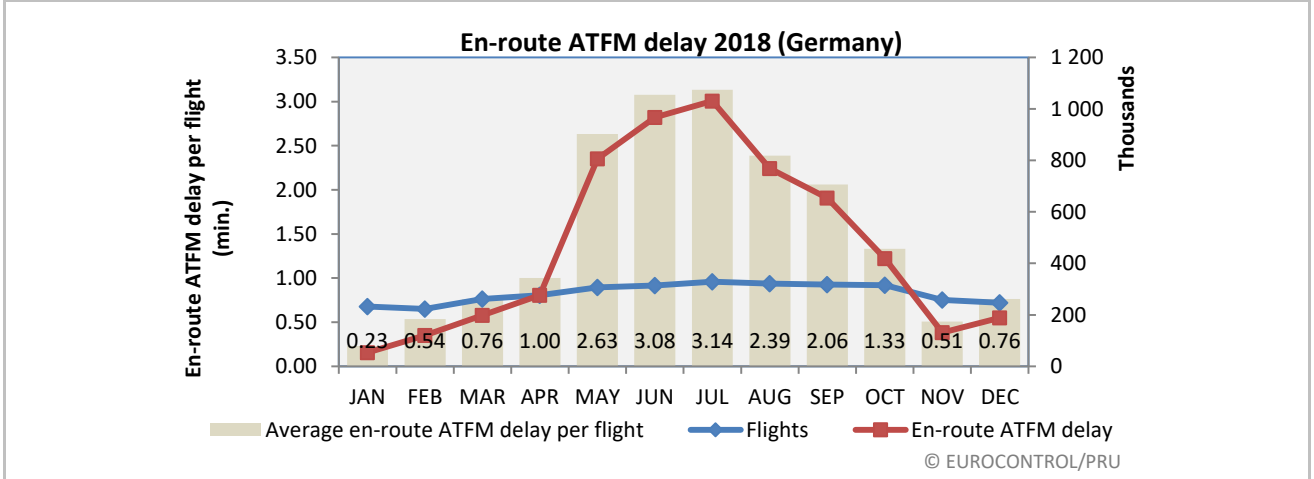
The percentage of malus for EUROCONTROL (MUAC) was -0.5% of total ANSP revenue in 2018, which equates to €834,386.36

NOTE: The penalty for EUROCONTROL (MUAC) is applicable because of the performance over the four MUAC States (Belgium, Luxembourg, Germany and the Netherlands). The breakdown of the MUAC penalty per State is: Belgium €261,336.48; Luxembourg €8,082.70; Germany €396,559.64 and the Netherlands €168,407.54.

**Compliance issues relating to national capacity incentive scheme**

The PRB noted several compliance issues regarding the proposed FABEC en route incentive scheme submitted in the FABEC performance plan dated July 2015. The compliance issues were: the individual ANSP contributions are not consistent with the required capacity performance and that the proposed target, using CRSTMP codes only, is not consistent with the required capacity performance. FABEC addressed both issues in the Revised FABEC performance plan (version 3.0) submitted in January 2017.

**Observations regarding national capacity performance**





En-route ATFM delay per flight (Germany)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.73	0.72	1.34	0.86	0.51	0.24	0.26	0.20	0.40	0.76	1.65

EUROCONTROL 7 year forecast February 2014 – Germany											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	3027		3121		3246		3348		3456		3561
<b>Base</b>	2989	3030	3056	3080	3131	3146	3192	3259	3254	3403	3323
<b>Low</b>	2950		2983		3002		3022		3045		3070

Traffic levels in Germany in 2018 rose 4.5% on 2017 levels. This traffic increase was despite significant re-routing scenarios implemented by the Network Manager and ANSPs to reduce demand in both Karlsruhe UAC and Maastricht UAC: the 4ACC initiative.

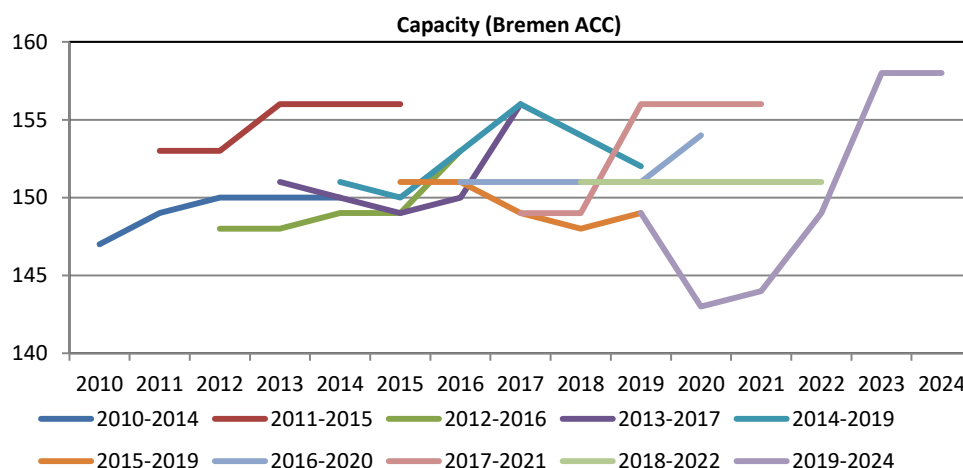
En route ATFM delays rose by 117% to 1.65 minutes per flight from 0.76 minute per flight in 2017. Traffic levels for Germany remain below the high traffic scenario forecasted by STATFOR back in 2014 when FAB performance plans and associated capacity plans were being determined.

The airspace users singled out the capacity situation in Maastricht UAC and particularly Karlsruhe UAC and expressed concern about the length of time until the staffing and capacity problems will be resolved.

The latest version of the Network Operations Plan, 2019 – 2024, raises concerns about all ACCs in Germany over the remainder of RP2 and for the entirety of RP3. The Network Manager highlighted that each of the ACCs has downgraded their existing capacity plans from the previous year’s NOP.

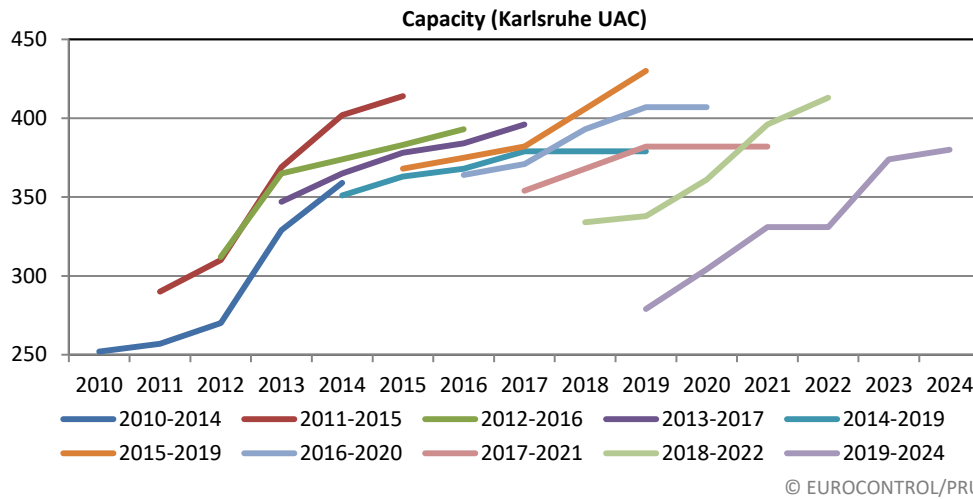
DFS delay forecast							
	2019	2020	2021	2022	2023	2024	
<b>NOP 2018 - 2022</b>	1.11	1.07	0.68	0.55	N/A	N/A	
<b>NOP 2019 - 2024</b>	5.65	5.11	1.21 – 4.07				

EUROCONTROL (MUAC) delay forecast							
	2019	2020	2021	2022	2023	2024	
<b>NOP 2018 - 2022</b>	0.89	0.79	0.47	0.40	N/A	N/A	
<b>NOP 2019 - 2024</b>	1.62	1.36	1.28 – 1.56				

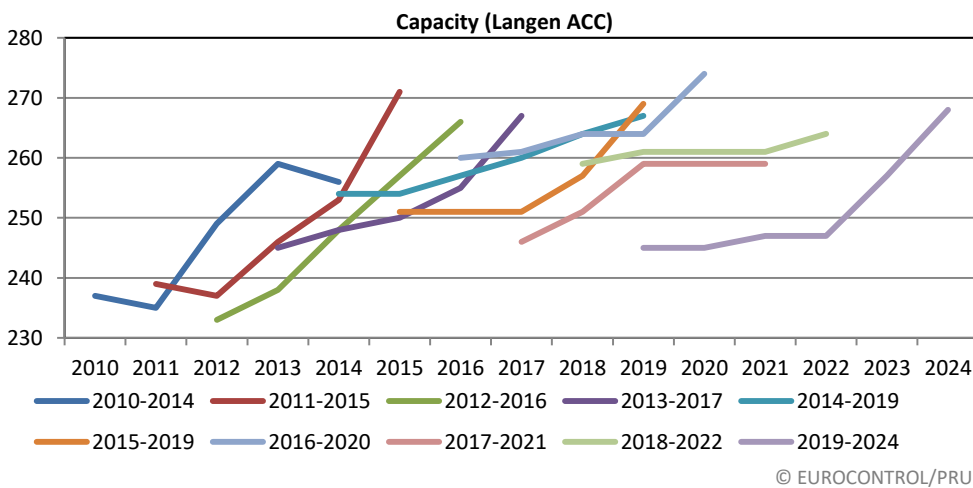


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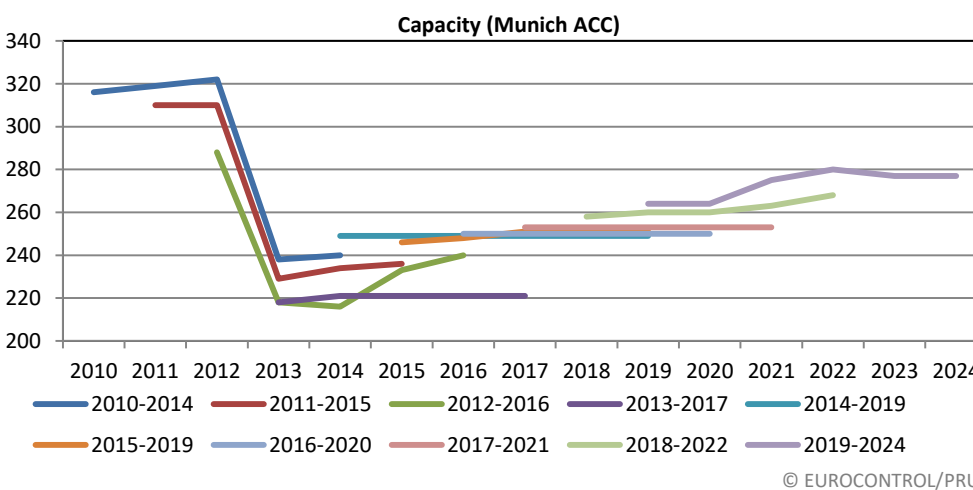
The graphic shows that planned capacity in 2022 will be less than already provided back in 2015, before finally rising to show an overall increase over the entire period..



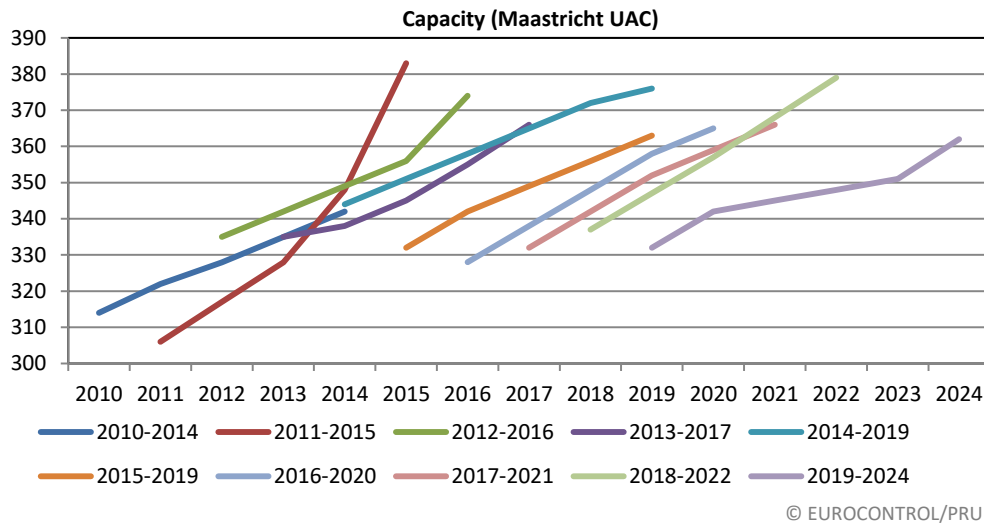
In December 2012, Karlsruhe UAC assumed responsibility for the upper airspace sectors from Munich ACC - which shows up as a significant increase in capacity for the year 2013. From 2013, the planned capacity increases are continually postponed and downgraded: to the extent that the planned level of capacity for 2024 is less than what was originally planned for 2015 in the capacity plans of 2011.



The graphic shows a continual postponement of capacity plans with a planned capacity level in 2024 that is less than was initially planned for 2015, in the capacity plans from 2011.



In December 2012, Karlsruhe UAC assumed responsibility for the upper airspace sectors from Munich ACC - which shows up as a significant decrease in capacity for Munich ACC in the year 2013. Otherwise the graphic shows a gradual increase in capacity plans.



The graphic shows a continual postponement and downgrade of capacity plans over the period for MUAC. By 2024, MUAC promises less capacity than it did for 2014 in the capacity plans from 2011.

**Planning and Effective Use of CDRs**

Germany did not provide any data.

**Observations on Planning and Effective Use of CDRs**

It is noted that Germany like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network

**Effective booking procedures**

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
40%	40%	42%	39%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
18%	19%	14%	15%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
47%	42%	41%	75%	

**Observations on Effective booking procedures**

Germany reports that the aggregated values for SUA bookings/usage are not relevant for FUA analysis and evaluation. The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**GERMANY**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

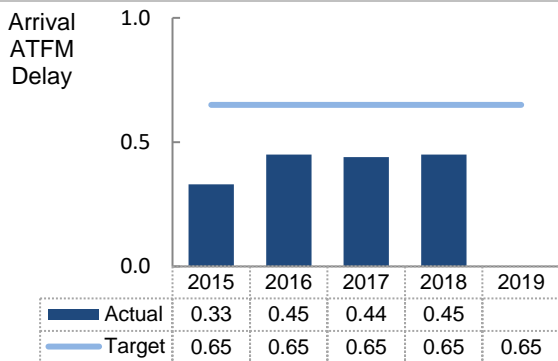
In Germany, ANS at 16 airports are subject to RP2 monitoring. Traffic levels at these airports have moderately increased during RP2 (+8.1% with respect to 2015) as well as the arrival ATFM delays (+36% in 2018 with respect to 2015), while ATFM slot adherence has improved (2015:93.3%; 2018:94.6%).

Germany has established a national target on arrival ATFM delay (all causes), that is met in all years in RP2 so far.

Average national adherence to ATFM slots remains above 90%, and showing best-in-class behaviour above 95% for 10 out of the 16 airports.

ATC pre-departure delay can only be monitored for 9 airports due to lack of data quality or availability. The observed performance at those 9 airports is good and delays are below similar airports in the rest of the network.

**2. Arrival ATFM Delay**



National average arrival ATFM delay (all causes) in Germany did not change much with respect to the previous year (2017: 0.44 min/arr, 2018: 0.45 min/arr) but there were significant changes for some airports at local level. Hamburg, Leipzig and Bremen showed an important increase in their delays (EDDH: 2017: 0.26 min/arr.; 2018: 0.55 min/arr.; EDDP: 2017: 0.12 min/arr.; 2018: 0.35 min/arr.; EDDW: 2017: 0.01 min/arr.; 2018: 0.41 min/arr.), while Dusseldorf and Tegel improved their performance (EDDL: 2017: 0.73 min/arr.; 2018: 0.45 min/arr.; EDDT: 2017: 0.39 min/arr. 2018: 0.18 min/arr.)

70% of the arrival ATFM delays at German airports are attributed to weather. Nevertheless, in Cologne-Bonn (EDDK), Dusseldorf (EDDL) and Hamburg (EDDH) the main reason is aerodrome capacity, and in Bremen the main reason is ATC Staffing (90%). Some staffing issues are also affecting Hamburg and Frankfurt. Dusseldorf also reports delays due to environmental issues.

The national average (all causes) in 2018 (0.45 min/arr.) fully meets the RP2 target (0.65 min/arr.)

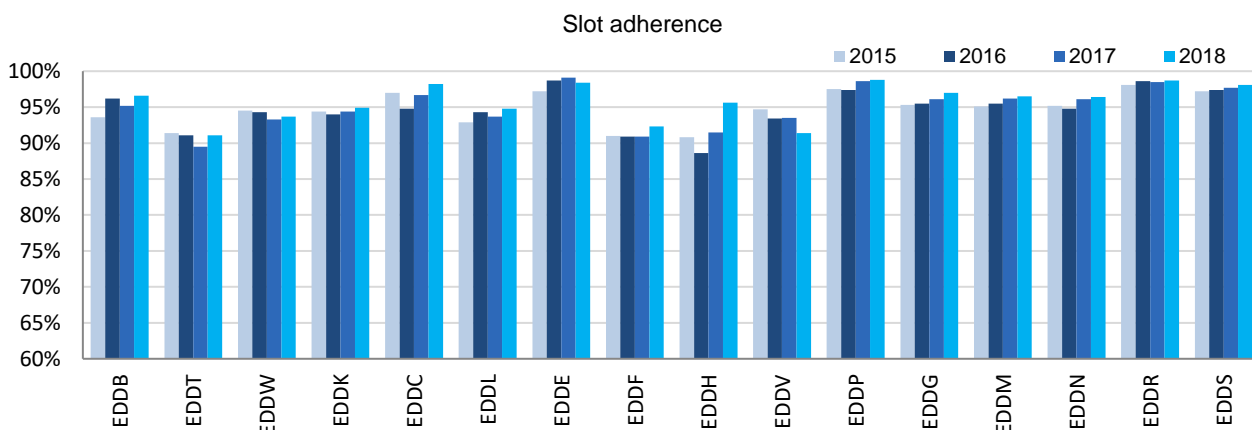
**3. Arrival ATFM Delay – National Target and Incentive Scheme**

Germany established a national target on arrival ATFM delay (all causes: 0.65 min/arr.; CRSTMP causes: 0.09 min/arr.) as presented in the FABEC performance plan.

The plan also presents an incentive scheme for the national target on CRSTMP causes. The actual performance exceeds the target, i.e. all causes: 0.45 min/arr. and associated to CRSTMP reasons: 0.01 min/arr. in 2018.

In accordance, the maximum bonus (0.5% of the revenues) is awarded to DFS.

**4. ATFM Slot Adherence**



The adherence to ATFM slots in Germany at national level has slightly improved in 2018 (2017: 93.5%; 2018: 94.6%) and remains at a high-level (above 90%) across all airports. At airport level, the most significant improvement is observed at Hamburg (EDDH) reaching the 95% compliance.

## 5. ATC Pre-departure Delay

ATC pre-departure delay at Dresden (EDDW) and Hannover (EDDV) sit above the delays at other airports with similar number of movements, while bigger German airports show better values compared to other airports in the network. The performance at Munich (EDDM) is noteworthy, with the second lowest pre-departure delay for airports above 100 000 movements per year, showing best-in-class performance together with Oslo, Stockholm and Copenhagen.

In early 2019 Dresden implemented the Airport Operator Data Flow and now all German airports provide the required data through this flow. However, many of them still show a very poor reporting of the pre-departure delays, where more than 40% of the delays are left unexplained, making the monitoring of the ATC pre-departure delay not possible. Accordingly, there is a limited level of valid reporting for 2018 (i.e. n/a label in the table in the appendix). Germany shall encourage a proper reporting of the pre-departure delays at all airports.

## 6. Appendix

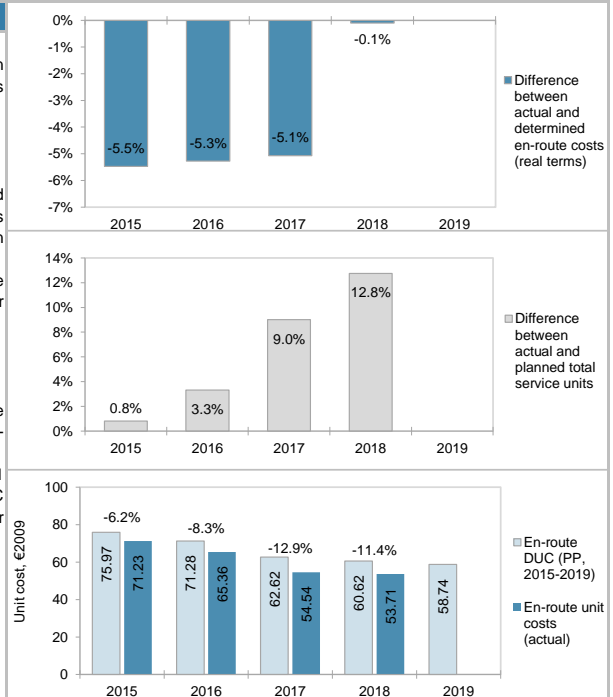
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Berlin/ Schoenefeld	EDDB	0.00	0.05	0.04	0.01		93.6%	96.2%	95.2%	96.6%		n/a	n/a	n/a	n/a	
Berlin/ Tegel	EDDT	0.20	0.53	0.39	0.18		91.4%	91.1%	89.5%	91.1%		n/a	n/a	n/a	n/a	
Bremen	EDDW	0.00	0.03	0.01	0.41		94.5%	94.3%	93.3%	93.7%		0.02	0.04	0.04	0.15	
Cologne-Bonn	EDDK	0.02	0.08	0.39	0.47		94.4%	94.0%	94.4%	94.9%		n/a	n/a	n/a	n/a	
Dresden	EDDC	0.00	0.01	0.00	0.00		97.0%	94.8%	96.7%	98.2%		n/a	n/a	n/a	n/a	
Dusseldorf	EDDL	0.34	0.54	0.73	0.45		92.9%	94.3%	93.7%	94.8%		n/a	n/a	n/a	n/a	
Erfurt	EDDE	0.00	0.00	0.00	0.01		97.2%	98.7%	99.1%	98.4%		n/a	n/a	0.00	0.00	
Frankfurt	EDDF	0.67	0.86	0.84	0.87		91.0%	90.9%	90.9%	92.3%		n/a	0.52	0.65	0.58	
Hamburg	EDDH	0.57	0.39	0.26	0.55		90.8%	88.6%	91.5%	95.6%		n/a	0.32	0.49	0.28	
Hannover	EDDV	0.00	0.00	0.00	0.03		94.7%	93.4%	93.5%	91.4%		0.09	0.14	0.13	0.34	
Leipzig-Halle	EDDP	0.00	0.18	0.12	0.35		97.5%	97.4%	98.6%	98.8%		0.20	0.14	0.08	0.09	
Muenster-Osnabruock	EDDG	0.00	0.00	0.00	0.00		95.3%	95.5%	96.1%	97.0%		n/a	n/a	n/a	n/a	
Munich	EDDM	0.33	0.49	0.35	0.44		95.1%	95.5%	96.2%	96.5%		n/a	0.04	0.07	0.08	
Nuremberg	EDDN	0.00	0.00	0.01	0.00		95.2%	94.8%	96.1%	96.4%		0.10	0.04	n/a	n/a	
Saarbruecken	EDDR	0.00	0.00	0.00	0.00		98.1%	98.6%	98.5%	98.7%		n/a	n/a	0.00	0.00	
Stuttgart	EDDS	0.09	0.08	0.13	0.14		97.2%	97.4%	97.7%	98.1%		n/a	n/a	0.11	0.21	

## GERMANY: En-route charging zone

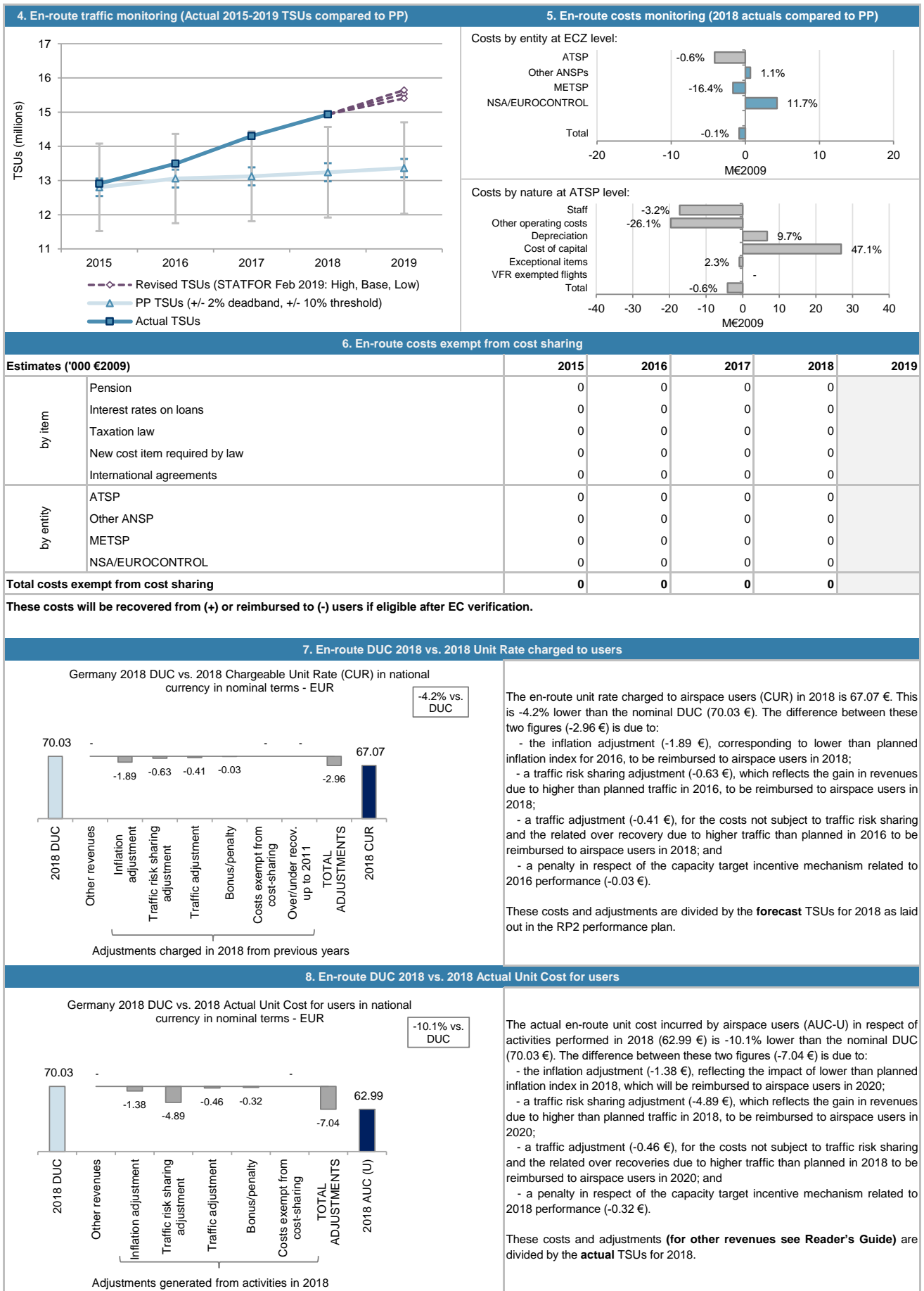
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Germany ECZ represents 13.1% of the SES en-route ANS determined costs in 2018					
· ATSP:	DFS				
· FAB:	FABEC				
· National currency:	EUR				
2. En-route DUC monitoring at Charging Zone level					
Germany: Data from RP2 Performance Plan (EC Decision 2017/553 of 22 March 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	1 069 142 223	1 039 587 943	933 436 977	927 369 907	922 283 254
Inflation %	1.4%	1.6%	1.7%	1.7%	1.7%
Inflation index (100 in 2009)	109.9	111.7	113.6	115.5	117.5
Real en-route costs (EUR2009)	972 517 385	930 742 228	821 735 846	802 748 084	784 999 985
Total en-route Service Units	12 801 000	13 057 000	13 122 000	13 242 000	13 365 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>75.97</b>	<b>71.28</b>	<b>62.62</b>	<b>60.62</b>	<b>58.74</b>
Germany: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	998 129 209	961 086 891	864 811 310	905 909 401	
Inflation %	0.1%	0.4%	1.7%	1.9%	
Inflation index (100 in 2009)	108.6	109.0	110.9	113.0	
Real en-route costs (EUR2009)	919 323 427	881 679 013	780 096 371	801 931 881	
Total en-route Service Units	12 906 339	13 489 534	14 303 636	14 931 581	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>71.23</b>	<b>65.36</b>	<b>54.54</b>	<b>53.71</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-71 013 015	-78 501 052	-68 625 667	-21 460 506	
in %	-6.6%	-7.6%	-7.4%	-2.3%	
Inflation %					
in p.p.	-1.3 p.p.	-1.2 p.p.	0.0 p.p.	0.2 p.p.	
Inflation index (100 in 2009)					
in p.p.	-1.4 p.p.	-2.7 p.p.	-2.7 p.p.	-2.6 p.p.	
Real en-route costs (EUR2009)					
in value	-53 193 958	-49 063 214	-41 639 475	-816 203	
in %	-5.5%	-5.3%	-5.1%	-0.1%	
Total en-route Service Units					
in value	105 339	432 534	1 181 636	1 689 581	
in %	0.8%	3.3%	9.0%	12.8%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-4.74</b>	<b>-5.92</b>	<b>-8.08</b>	<b>-6.91</b>	
in %	<b>-6.2%</b>	<b>-8.3%</b>	<b>-12.9%</b>	<b>-11.4%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (53.71 €2009) is -11.4% lower than planned in the PP (60.62 €2009). This results from the combination of much higher than planned TSUs (+12.8%) and en-route costs staying practically as planned in real terms (-0.1%).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+12.8%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (DFS) retaining an amount of +31.1 M€2009.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Germany are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -2.3% (-21.5 M€) lower than planned. However, since the actual inflation index is also lower than planned (-2.6 p.p.), actual en-route costs are -0.1% (-0.8 M€2009) below plans when expressed in real terms.					
The slightly lower than planned en-route costs in real terms are driven by DFS (-0.6%, or -4.1 M€2009) and the MET service provider (-16.4%, or -1.7 M€2009), while the costs for MUAC (+1.1%, or +0.7 M€2009) and the NSA/EUROCONTROL (+11.7%, or +4.3 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported.					



GERMANY: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



## GERMANY: En-route ATSP (DFS)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	812 550	755 932	709 432	690 931	
Actual costs for the ATSP	762 125	703 760	667 057	686 799	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	50 425	52 172	42 375	4 132	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>50 425</b>	<b>52 172</b>	<b>42 375</b>	<b>4 132</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	0.8%	3.3%	9.0%	12.8%	
Determined costs for the ATSP (PP) - based on actual inflation	822 753	774 573	726 927	706 580	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>6 770</b>	<b>18 542</b>	<b>29 815</b>	<b>31 090</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>-2 829</b>	<b>-3 839</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>57 195</b>	<b>70 714</b>	<b>69 361</b>	<b>31 382</b>	
Alternate DFS gain/loss for the en-route activity excluding the state contribution ('000 €2009) (see technical note 1 at the end of the report)					
Actual costs for the ATSP excluding the state contribution	763 954	749 896	711 181	728 831	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>55 366</b>	<b>24 577</b>	<b>25 237</b>	<b>-10 649</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	1 356 648	1 289 129	1 227 898	1 165 907	1 104 511
Estimated proportion of financing through equity (in %)	30.1%	32.7%	35.6%	38.6%	42.3%
Estimated proportion of financing through equity (in value)	408 169	421 762	436 722	450 328	467 152
Estimated proportion of financing through debt (in %)	69.9%	67.3%	64.4%	61.4%	57.7%
Estimated proportion of financing through debt (in value)	948 479	867 368	791 176	715 579	637 359
Cost of capital pre-tax (in value)	62 410	60 499	58 854	57 103	55 549
Average interest on debt (in %)	3.4%	3.4%	3.3%	3.3%	3.3%
Interest on debt (in value)	32 001	29 078	26 318	23 553	20 746
Determined RoE pre-tax rate (in %)	7.5%	7.5%	7.5%	7.5%	7.5%
Estimated surplus embedded in the cost of capital for en-route (in value)	30 409	31 421	32 536	33 549	34 803
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>30 409</b>	<b>31 421</b>	<b>32 536</b>	<b>33 549</b>	<b>34 803</b>
<b>Revenue/costs for the en-route activity</b>	<b>812 550</b>	<b>755 932</b>	<b>709 432</b>	<b>690 931</b>	<b>672 960</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.7%</b>	<b>4.2%</b>	<b>4.6%</b>	<b>4.9%</b>	<b>5.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	1 397 725	1 457 775	1 471 128	1 416 599	
Estimated proportion of financing through equity (in %)	34.1%	39.6%	46.4%	54.6%	
Estimated proportion of financing through equity (in value)	476 728	577 082	682 599	773 512	
Estimated proportion of financing through debt (in %)	65.9%	60.4%	53.6%	45.4%	
Estimated proportion of financing through debt (in value)	920 997	880 693	788 529	643 087	
Cost of capital pre-tax (in value)	62 663	67 784	63 633	83 993	
Average interest on debt (in %)	2.9%	2.8%	1.6%	4.1%	
Interest on debt (in value)	27 147	24 791	12 779	26 367	
Determined RoE pre-tax rate (in %)	7.5%	7.5%	7.5%	7.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	35 516	42 993	50 854	57 627	
Net ATSP gain(+)/loss(-) on en-route activity	57 195	70 714	69 361	31 382	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>92 712</b>	<b>113 706</b>	<b>120 215</b>	<b>89 009</b>	
<b>Revenue/costs for the en-route activity</b>	<b>819 320</b>	<b>774 473</b>	<b>736 418</b>	<b>718 182</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>11.3%</b>	<b>14.7%</b>	<b>16.3%</b>	<b>12.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>19.4%</b>	<b>19.7%</b>	<b>17.6%</b>	<b>11.5%</b>	
Alternate DFS overall estimated surplus for the en-route activity excluding the state contribution ('000 €2009) (see technical note 1 at the end of the report)					
Net ATSP gain(+)/loss(-) on en-route activity	55 366	24 577	25 237	-10 649	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>90 882</b>	<b>67 570</b>	<b>76 091</b>	<b>46 978</b>	
<b>Revenue/costs for the en-route activity</b>	<b>819 320</b>	<b>774 473</b>	<b>736 418</b>	<b>718 182</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>11.1%</b>	<b>8.7%</b>	<b>10.3%</b>	<b>6.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>19.1%</b>	<b>11.7%</b>	<b>11.1%</b>	<b>6.1%</b>	



## GERMANY: En-route ATSP (DFS)

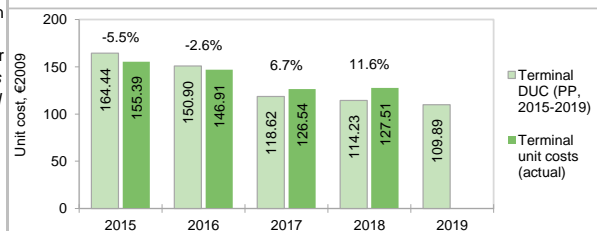
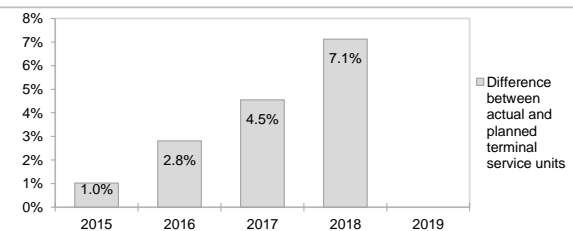
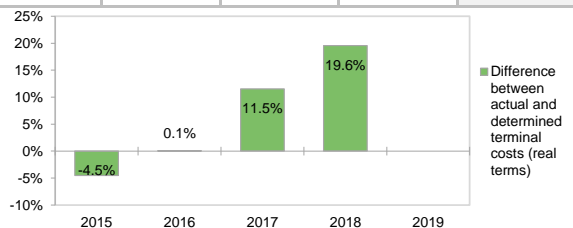
## Monitoring of en-route COST-EFFICIENCY for 2018



## GERMANY: Terminal charging zone

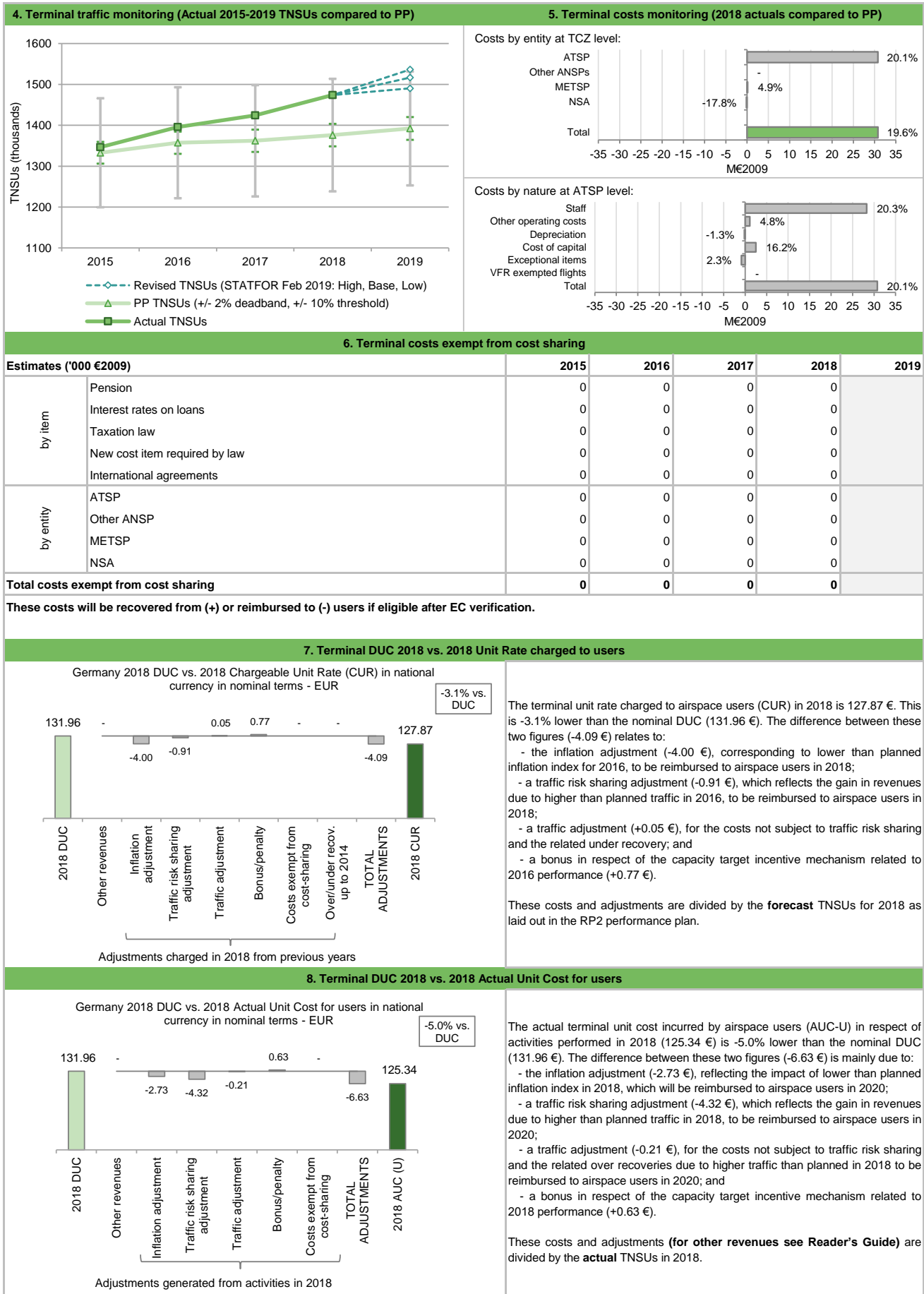
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Germany TCZ represents 14.6% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes	
ATSP:	DFS	Airports with fewer than 70,000 IFRs ATMs:		9	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		5	
Number of airports in charging zone in 2018:	16,	of which:		Airports with more than 225,000 IFRs ATMs: 2	
2. Terminal DUC monitoring at Charging Zone level					
Germany: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	240 938 212	228 762 834	183 533 387	181 581 437	179 750 173
Inflation %	1.4%	1.6%	1.7%	1.7%	1.7%
Inflation index (100 in 2009)	109.9	111.7	113.6	115.5	117.5
Real terminal costs (EUR2009)	219 163 171	204 811 176	161 570 590	157 180 161	152 994 086
Total terminal Service Units	1 332 800	1 357 300	1 362 100	1 376 000	1 392 200
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>164.44</b>	<b>150.90</b>	<b>118.62</b>	<b>114.23</b>	<b>109.89</b>
Germany: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	227 170 560	223 478 656	199 771 705	212 326 316	
Inflation %	0.1%	0.4%	1.7%	1.9%	
Inflation index (100 in 2009)	108.6	109.0	110.9	113.0	
Real terminal costs (EUR2009)	209 234 652	205 014 180	180 202 526	187 956 149	
Total terminal Service Units	1 346 490	1 395 519	1 424 060	1 474 074	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>155.39</b>	<b>146.91</b>	<b>126.54</b>	<b>127.51</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-13 767 652	-5 284 178	16 238 318	30 744 879	
	in %				
Inflation %	-5.7%	-2.3%	8.8%	16.9%	
	in p.p.				
Inflation index (100 in 2009)	-1.3 p.p.	-1.2 p.p.	0.0 p.p.	0.2 p.p.	
	in p.p.				
Real terminal costs (EUR2009)	-9 928 519	203 003	18 631 936	30 775 988	
	in %				
Total terminal Service Units	-4.5%	0.1%	11.5%	19.6%	
	in %				
Total terminal Service Units	13 690	38 219	61 960	98 074	
	in value				
	in %				
Real terminal unit cost per Service Unit (EUR2009)	-9.05	-3.99	7.92	13.28	
	in value				
	in %				
	-5.5%	-2.6%	6.7%	11.6%	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Germany Terminal Charging Zone (TCZ) comprising 16 airports.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (127.51 €2009) is +11.6% higher than planned in the PP (114.23 €2009). This results from the combination of higher than planned TNSUs (+7.1%) and much higher than planned terminal costs in real terms (+19.6%, or +30.8 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Germany TCZ. The difference between actual and planned TNSUs (+7.1%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (DFS) retaining an amount of +5.6 M€2009.					
According to STATFOR February 2019 base scenario, the TNSUs for Germany are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +16.9% (+30.7 M€) higher than planned. However, since the actual inflation index is lower than planned (-2.6 p.p.), actual terminal costs are +19.6% (+30.8 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by DFS (+20.1%, or +30.8 M€2009) and the MET service provider (+4.9%, or +0.1 M€2009), while the costs for the NSA (-17.8%, or -0.1 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Underlying reasons described in the NSA 2018 Monitoring report for higher cost than planned for DWD: "Marginal higher actual other operating cost resulting from too low planned support costs for met aviation as well as higher depreciation costs because of investments in technical equipment (mainly development of LLWAS) could not be offset by lower staff costs."					
There are no costs exempt from cost-sharing reported.					



**GERMANY: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## GERMANY: Terminal ATSP (DFS)

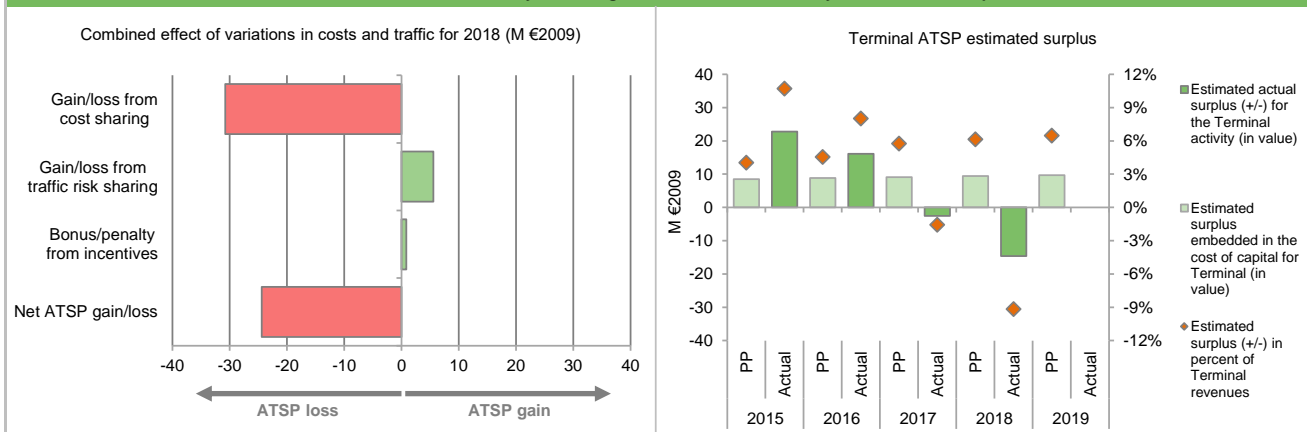
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	210 177	195 531	157 857	153 499	
Actual costs for the ATSP	199 370	195 153	176 258	184 281	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	10 806	379	-18 401	-30 781	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>10 806</b>	<b>379</b>	<b>-18 401</b>	<b>-30 781</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.0%	2.8%	4.5%	7.1%	
Determined costs for the ATSP (PP) - based on actual inflation	212 816	200 353	161 749	156 976	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>2 186</b>	<b>4 497</b>	<b>4 472</b>	<b>5 554</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>883</b>	<b>969</b>	<b>821</b>	<b>817</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>13 875</b>	<b>5 845</b>	<b>-13 109</b>	<b>-24 411</b>	
Alternate DFS gain/loss for the terminal activity excluding the state contribution ('000 €2009) (see technical note 1 at the end of the report)					
Actual costs for the ATSP excluding the state contribution	198 725	205 932	217 135	224 027	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>14 521</b>	<b>-4 935</b>	<b>-53 986</b>	<b>-64 157</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	362 420	346 978	325 651	309 335	293 544
Estimated proportion of financing through equity (in %)	31.4%	34.3%	37.6%	40.9%	44.2%
Estimated proportion of financing through equity (in value)	113 692	119 173	122 306	126 664	129 641
Estimated proportion of financing through debt (in %)	68.6%	65.7%	62.4%	59.1%	55.8%
Estimated proportion of financing through debt (in value)	248 728	227 805	203 345	182 671	163 903
Cost of capital pre-tax (in value)	16 865	16 516	15 868	15 456	14 985
Average interest on debt (in %)	3.4%	3.4%	3.3%	3.3%	3.2%
Interest on debt (in value)	8 395	7 637	6 757	6 020	5 327
Determined RoE pre-tax rate (in %)	7.5%	7.5%	7.5%	7.5%	7.5%
Estimated surplus embedded in the cost of capital for terminal (in value)	8 470	8 878	9 112	9 437	9 658
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>8 470</b>	<b>8 878</b>	<b>9 112</b>	<b>9 437</b>	<b>9 658</b>
<b>Revenue/costs for the terminal activity</b>	<b>210 177</b>	<b>195 531</b>	<b>157 857</b>	<b>153 499</b>	<b>149 272</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>4.0%</b>	<b>4.5%</b>	<b>5.8%</b>	<b>6.1%</b>	<b>6.5%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>	<b>7.5%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	365 861	383 014	379 780	330 856	
Estimated proportion of financing through equity (in %)	32.9%	36.0%	37.3%	39.6%	
Estimated proportion of financing through equity (in value)	120 316	138 064	141 549	131 165	
Estimated proportion of financing through debt (in %)	67.1%	64.0%	62.7%	60.4%	
Estimated proportion of financing through debt (in value)	245 546	244 949	238 230	199 690	
Cost of capital pre-tax (in value)	16 199	17 193	14 408	17 959	
Average interest on debt (in %)	2.9%	2.8%	1.6%	4.1%	
Interest on debt (in value)	7 235	6 907	3 863	8 187	
Determined RoE pre-tax rate (in %)	7.5%	7.5%	7.5%	7.5%	
Estimated surplus embedded in the cost of capital for terminal (in value)	8 964	10 286	10 545	9 772	
Net ATSP gain(+)/loss(-) on terminal activity	13 875	5 845	-13 109	-24 411	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>22 839</b>	<b>16 130</b>	<b>-2 563</b>	<b>-14 639</b>	
<b>Revenue/costs for the terminal activity</b>	<b>213 245</b>	<b>200 997</b>	<b>163 149</b>	<b>159 870</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>10.7%</b>	<b>8.0%</b>	<b>-1.6%</b>	<b>-9.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>19.0%</b>	<b>11.7%</b>	<b>-1.8%</b>	<b>-11.2%</b>	
Alternate DFS overall estimated surplus for the terminal activity excluding the state contribution ('000 €2009) (see technical note 1 at the end of the report)					
Net ATSP gain(+)/loss(-) on terminal activity	14 521	-4 935	-53 986	-64 157	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>23 484</b>	<b>5 351</b>	<b>-43 441</b>	<b>-54 385</b>	
<b>Revenue/costs for the terminal activity</b>	<b>213 245</b>	<b>200 997</b>	<b>163 149</b>	<b>159 870</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>11.0%</b>	<b>2.7%</b>	<b>-26.6%</b>	<b>-34.0%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>19.5%</b>	<b>3.9%</b>	<b>-30.7%</b>	<b>-41.5%</b>	

## GERMANY: Terminal ATSP (DFS)

## Monitoring of terminal COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



## 12. Focus on terminal ATSP: General conclusions

## Actual 2018 DFS terminal costs vs. PP

In 2018, DFS actual terminal costs are +20.1% (+30.8 M€2009) higher, in real terms, than planned in the PP:

- According to the NSA 2018 Monitoring report, the underlying reasons is "the need for maintenance for the Tower-related equipment is higher than planned. This was not reflected in the Performance Plan with this amount. This led to higher costs for terminal services. DFS set up several measures to standardize and harmonize the systems with the aim to reduce maintenance costs."

- According to the additional information to the June 2019 terminal Reporting Tables, the higher costs than planned results from a combination of:

- much higher staff costs (+20.3%, or +28.3 M€2009), "there is a decline in the number staff due to the DFS cost reduction programme of the last years. These effects are overcompensated by salary increases because of collective agreements and career development. Also, the number of air traffic controllers for terminal services exceeds the staff planned in the performance plan. Furthermore, there is an increase in overtime work due to a considerable traffic growth, which is recognised as accruals, as well as higher costs for recuperation cures for operative staff. The contribution to the Pension Protection Fund in 2018 amounted to 2.1% This is more than in 2017 (2%) and less than in the performance plan (5%);
- higher other operating costs (+4.8%, or +1.1 M€2009), "main effects are higher costs for maintenance and for staff recruitment, such as the selection process at DLR (Deutsches Zentrum für Luft- und Raumfahrt) and marketing measures to activate suitable applicants for the following years";
- slightly lower depreciation costs (-1.3%, or -0.2 M€2009), "is mainly caused by the project BaBola Düsseldorf"; and,
- much higher cost of capital (+16.2%, or +2.5 M€2009), "the main reason are that expenses from the financial assets of the investment entity were higher than the gains from the financial assets."

## DFS net gain/loss on terminal activity in 2018

As shown in box 9, DFS generated a net loss of -24.4 M€2009 on the terminal activity. This is a combination of three elements:

- a loss of -30.8 M€2009 arising from the cost sharing mechanism;
- a gain of +5.6 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.8 M€2009 (or +0.92 M€ in nominal terms), corresponding to a bonus as part of the terminal capacity target incentive mechanism. This amount corresponds to 0.5% of DFS terminal revenues (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission.

## DFS overall estimated surplus for the terminal activity.

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity mentioned above (-24.4 M€2009) and the surplus embedded in the actual cost of capital (+9.8 M€2009) amounts to -14.6 M€2009 (9.2% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is -11.2%, which is much lower than the 7.5% planned in the PP.

## Alternate DFS net gain/loss on en-route activity in 2018 excluding the state contribution (see technical note 1 at the end of the report)

When excluding the state contribution for 2018 (i.e. 44.9 M€ in nominal terms or 39.7 M€2009) DFS generated a net loss of -64.2 M€2009 on the terminal activity. This is a combination of three elements:

- a loss of -70.5 M€2009 arising from the cost sharing mechanism;
- a gain of +5.6 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.8 M€2009 (or +0.92 M€ in nominal terms), corresponding to a bonus as part of the terminal capacity target incentive mechanism. This amount corresponds to 0.5% of DFS terminal revenues (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission.

## Alternate DFS overall estimated surplus for the en-route activity excluding the state contribution (see technical note 1 at the end of the report)

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity mentioned above (-64.2 M€2009) and the surplus embedded in the actual cost of capital (+9.8 M€2009) amounts to -54.4 M€2009 (34.0% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is -41.5%, which is much lower than the 7.5% planned in the PP.

## GERMANY: Gate-to-gate

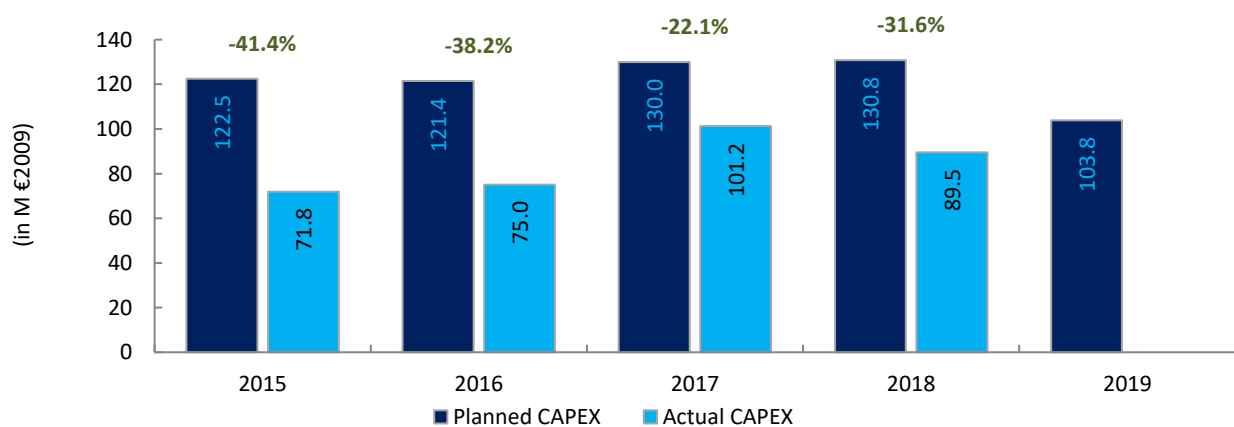
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Germany: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	972 517 385	930 742 228	821 735 846	802 748 084	784 999 985																																							
Real terminal costs (EUR2009)	219 163 171	204 811 176	161 570 590	157 180 161	152 994 086																																							
Real gate-to-gate costs (EUR2009)	1 191 680 556	1 135 553 404	983 306 436	959 928 244	937 994 071																																							
En-route share (%)	81.6%	82.0%	83.6%	83.6%	83.7%																																							
<b>Germany: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	919 323 427	881 679 013	780 096 371	801 931 881																																								
Real terminal costs (EUR2009)	209 234 652	205 014 180	180 202 526	187 956 149																																								
Real gate-to-gate costs (EUR2009)	1 128 558 079	1 086 693 193	960 298 897	989 888 030																																								
En-route share (%)	81.5%	81.1%	81.2%	81.0%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-63 122 477	-48 860 211	-23 007 539	29 959 785																																								
in %	-5.3%	-4.3%	-2.3%	3.1%																																								
En-route share																																												
in p.p.	-0.1 p.p.	-0.8 p.p.	-2.3 p.p.	-2.6 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +3.1% (+30.0 M€2009) higher than planned due to higher than planned terminal costs (+19.6%, or +30.8 M€2009) while en-route costs are lower than planned (-0.1%, or -0.8 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (81.0%) is lower than planned in the PP for 2018 (83.6%).</p> <p>For DFS, the estimated gate-to-gate economic surplus in 2018 amounts to 74.4 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 8.5% of gate-to-gate ANS revenues.</p> <p>Alternate DFS estimated gate-to-gate economic surplus in 2018 excluding the state contribution (see technical note 1 at the end of the report) amounts to -7.4 M€2009 corresponding to -0.8% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>81.6%</td> <td>18.4%</td> </tr> <tr> <td>Actual</td> <td>81.5%</td> <td>18.5%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>82.0%</td> <td>18.0%</td> </tr> <tr> <td>Actual</td> <td>81.1%</td> <td>18.9%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>83.6%</td> <td>16.4%</td> </tr> <tr> <td>Actual</td> <td>81.2%</td> <td>18.8%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>83.6%</td> <td>16.4%</td> </tr> <tr> <td>Actual</td> <td>81.0%</td> <td>19.0%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>83.7%</td> <td>16.3%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	81.6%	18.4%	Actual	81.5%	18.5%	2016	Determined	82.0%	18.0%	Actual	81.1%	18.9%	2017	Determined	83.6%	16.4%	Actual	81.2%	18.8%	2018	Determined	83.6%	16.4%	Actual	81.0%	19.0%	2019	Determined	83.7%	16.3%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	81.6%	18.4%																																									
	Actual	81.5%	18.5%																																									
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	Actual	81.0%	19.0%																																									
2019	Determined	83.7%	16.3%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Germany</b>																																												
<b>Note 1:</b>																																												
<p>As indicated in p. 26 and p.58 of DFS 2017 Annual Report, the German legislator approved a contribution of 50 M€ to the registered capital of DFS in 2015 as well as 112.5 M€ in each of the following four years (a total of 500 M€). On 25 November 2016, German authorities, approved an additional capital contribution of 101.9 M€ for 2017. With these actions, the Federal Republic of Germany is strengthening the equity position of DFS with an overall contribution of 601.9 M€. As reflected in the DFS cash flow statement (p.65 of DFS 2017 Annual Report) the amounts are paid by the state (the shareholder) to DFS, increasing correspondingly, by a direct accounting entry, the equity under the subscribed capital (see p.114 of DFS 2017 Annual Report). Therefore, these amounts are not reflected in the DFS Income Statement, neither as revenues nor negative costs.</p> <p>The table below summarises the payment plan.</p>																																												
<table border="1"> <thead> <tr> <th>in M€</th> <th>2015</th> <th>2016</th> <th>2017</th> <th>2018</th> <th>2019</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Contribution from the Shareholder</td> <td>50</td> <td>112.5</td> <td>112.5</td> <td>112.5</td> <td>112.5</td> <td>500</td> </tr> <tr> <td>Additional capital contribution</td> <td>-</td> <td>-</td> <td>101.9</td> <td></td> <td></td> <td>101.9</td> </tr> </tbody> </table>						in M€	2015	2016	2017	2018	2019	Total	Contribution from the Shareholder	50	112.5	112.5	112.5	112.5	500	Additional capital contribution	-	-	101.9			101.9																		
in M€	2015	2016	2017	2018	2019	Total																																						
Contribution from the Shareholder	50	112.5	112.5	112.5	112.5	500																																						
Additional capital contribution	-	-	101.9			101.9																																						
<p>In the RP2 Reporting Tables the above amounts are recorded as negative exceptional costs for charging purposes in the Route and Terminal Charging documents on an annual basis. Therefore, this reporting reduces the determined costs charged to the users and the corresponding DFS ANS revenues. However, the negative exceptional item is also included as part of actual costs reported in the Reporting Tables (R.T.). This artificially reduces the DFS actual costs reported in the R.T. Therefore, this generates a difference between the DFS accounting profit and the Monitoring economic surplus results from the fact that the DFS Income Statement includes the effect of the state contribution on the ANS revenues (since the determined costs charged to users are lowered by this factor), while the positive cash flow or payment by the state is not included in the Income Statement as an additional revenue or reduction of the costs (only reflected directly as an entry in the equity). The Monitoring surplus calculation, is based only on the data included in the Reporting Tables. Therefore, the state contribution is considered as reported in the Reporting Tables, in both, the Determined costs and the Actual costs.</p> <p>In order not to incur this difference, DFS proposes an additional surplus calculation approach, which would exclude for each year the state contribution from the actual costs reported so far as a negative exceptional item in the Reporting Tables. By doing so, the actual costs automatically increase and reflects the actual costs recorded in the books, and the gain to be retained by the ATSP in respect of cost sharing (DC-AC) decrease in the same amount as the state contribution reported for each year.</p>																																												

## GERMANY

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: DFS						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	134.7	135.6	147.6	151.1	122.0	691.1
Main CAPEX (in nominal M)	109.6	112.1	108.8	85.5	61.6	477.5
Inflation %	1.4%	1.6%	1.7%	1.7%	1.7%	
Inflation index (100 in 2009)	109.9	111.7	113.6	115.5	117.5	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>122.5</b>	<b>121.4</b>	<b>130.0</b>	<b>130.8</b>	<b>103.8</b>	<b>608.6</b>
Main CAPEX (in M €2009)	99.7	100.3	95.8	74.0	52.4	422.2
% Main of Total CAPEX	81.3%	82.6%	73.7%	56.6%	50.5%	69.4%
Real gate-to-gate ANSP costs (in M €2009)	1 022.7	951.5	867.3	844.4	822.2	4 508.1
Total CAPEX as % of Real gate-to-gate ANSP costs	12.0%	12.8%	15.0%	15.5%	12.6%	13.5%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	78.0	81.8	112.2	101.1		
Main CAPEX (in nominal M)	56.1	59.3	89.3	62.9		
Inflation %	0.1%	0.4%	1.7%	1.9%		
Inflation index (100 in 2009)	108.6	109.0	110.9	113.0		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>71.8</b>	<b>75.0</b>	<b>101.2</b>	<b>89.5</b>		
Main CAPEX (in M €2009)	51.7	54.4	80.6	55.7		
% Main of Total CAPEX	71.9%	72.5%	79.6%	62.2%		
Real gate-to-gate ANSP costs (in M €2009)	961.5	898.9	843.3	871.1		
Total CAPEX as % of Real gate-to-gate ANSP costs	7.5%	8.3%	12.0%	10.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-56.7	-53.9	-35.4	-50.0		
Total CAPEX (in M €2009)	-50.7	-46.4	-28.7	-41.3		
<b>Total CAPEX (in %, M €2009)</b>	<b>-41.4%</b>	<b>-38.2%</b>	<b>-22.1%</b>	<b>-31.6%</b>		

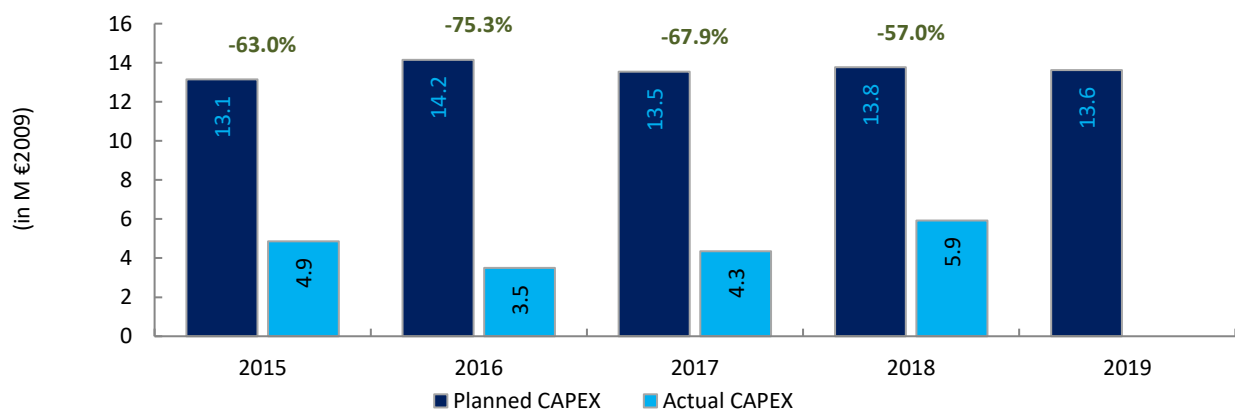




## MUAC

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: MUAC						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	14.5	15.8	15.4	15.9	15.9	77.6
Main CAPEX (in nominal M)	12.7	14.7	14.7	15.2	15.3	72.5
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%	
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>13.1</b>	<b>14.2</b>	<b>13.5</b>	<b>13.8</b>	<b>13.6</b>	<b>68.2</b>
Main CAPEX (in M €2009)	11.5	13.1	12.9	13.2	13.1	63.7
% Main of Total CAPEX	87.3%	92.7%	95.5%	95.7%	95.8%	93.4%
Real gate-to-gate ANSP costs (in M €2009)	133.8	133.5	135.9	138.1	139.8	681.2
Total CAPEX as % of Real gate-to-gate ANSP costs	9.8%	10.6%	10.0%	10.0%	9.7%	10.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.3	3.8	4.8	6.7		
Main CAPEX (in nominal M)	5.1	3.5	4.2	6.7		
Inflation %	0.2%	0.1%	1.3%	1.6%		
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>4.9</b>	<b>3.5</b>	<b>4.3</b>	<b>5.9</b>		
Main CAPEX (in M €2009)	4.6	3.2	3.7	5.9		
% Main of Total CAPEX	94.9%	92.3%	86.3%	99.6%		
Real gate-to-gate ANSP costs (in M €2009)	123.6	131.9	135.7	139.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.9%	2.7%	3.2%	4.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-9.2	-12.0	-10.5	-9.2		
Total CAPEX (in M €2009)	-8.3	-10.7	-9.2	-7.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-63.0%</b>	<b>-75.3%</b>	<b>-67.9%</b>	<b>-57.0%</b>		





# Annual Monitoring Report 2018

Local level view  
Luxembourg



## LUXEMBOURG

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	63	C	B	C	C	B
ANA LUX	81	C	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
				RAT application (%)		
				ATM Ground	ATM Overall	
Separation Minima Infringements (SMIs)				no data	no data	
Runway Incursions (RIs)				no data	no data	
ATM Specific Occurrences (ATM-S)					n/a	
<b>Source of RAT data:</b>				DAC		
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level				Number of questions answered		
				YES	NO	
Policy and its implementation				8	1	
Legal/Judiciary				4	3	
Occurrence reporting and Investigation				2	0	
<b>TOTAL</b>				<b>14</b>	<b>4</b>	
ANA LUX				Number of questions answered		
				YES	NO	
Policy and its implementation				12	1	
Legal/Judiciary				2	1	
Occurrence reporting and Investigation				6	2	
<b>TOTAL</b>				<b>20</b>	<b>4</b>	
Observations						
<p>One (Safety Risk Management) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only one is below Level C.</p>						

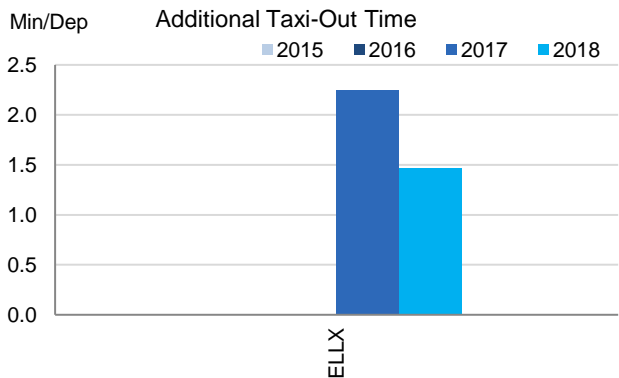
**LUXEMBOURG**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

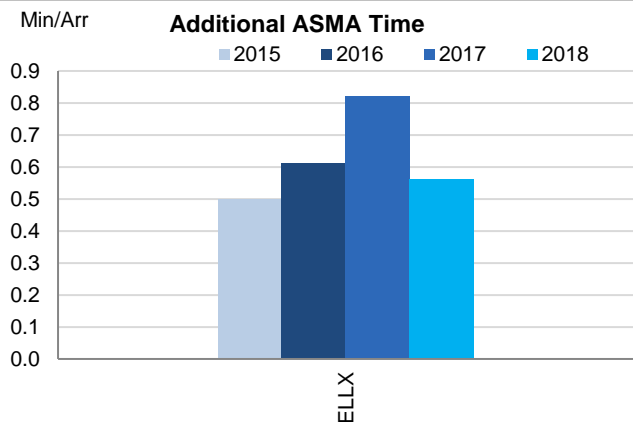
The scope of RP2 monitoring for Luxembourg comprises the main airport (ELLX), where traffic has significantly increased since the beginning of RP2 (+23% with respect to 2015)  
 The Airport Operator Data Flow is fully implemented and both environment indicators can be properly monitored as of 2017. Both environmental indicators show an improvement of performance in 2018, with additional times well below the average values for airports subject to RP2 monitoring.

**2. Additional Taxi-Out Time**



The additional taxi-out times at Luxembourg have decreased by 35% with respect to 2017. This improvement is mainly observed in the winter months.

**3. Additional ASMA Time**



Additional times in the terminal airspace have decreased by 32%, mainly during the second half of the year.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Luxembourg	ELLX	n/a	n/a	2.25	1.46		0.50	0.61	0.82	0.56	

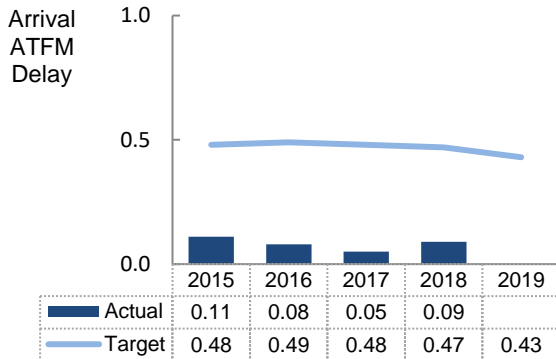
**LUXEMBOURG**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

In Luxembourg, ANS at Luxembourg airport (ELLX) are subject to RP2 monitoring, where traffic levels have drastically increased during RP2 (+23.0% with respect to 2015). Despite this fact, arrival ATFM delays are slightly lower than those in the beginning of the reference period, demonstrating a widely unconstrained capacity. The established national target is fully met. The ATFM slot adherence is just above the 80% of compliance and the ATC pre-departure delay, although increasing since the beginning of RP2, is still almost negligible in 2017.

**2. Arrival ATFM Delay**

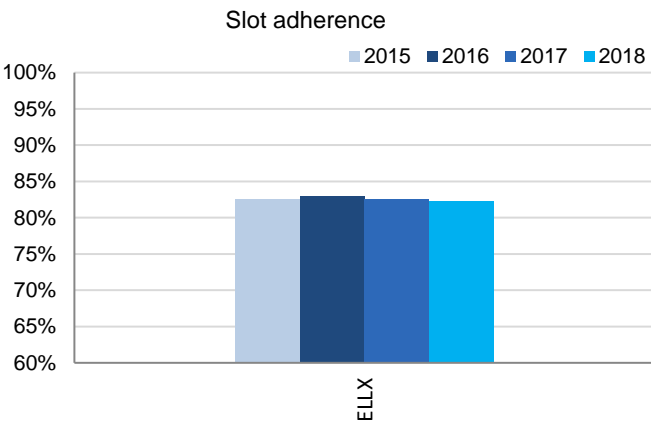


During 2018, arrival ATFM delays in Luxembourg have moderately increased with respect to the previous year (2017: 0.05 min/arr, 2018: 0.09 min/arr), but the national target has been fully met in all RP2 years so far. While the delays are attributed mostly to weather, some disruptions both ATC and non-ATC had also a significant share.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

The FABEC performance plan establishes a national target on arrival ATFM delay for Luxembourg. The established target (all causes) ranges consistently about 1/3 minute above the historic performance observed at Luxembourg (ELLX). For ANS attributable delay causes (i.e. CRSTMP) this buffer increases to about 0.45 min/arr. Luxembourg has not established an incentive scheme for the national target on arrival ATFM delay. Luxembourg reports that upon request of the European Commission, an incentive scheme has been developed, which was endorsed by the NSA and the Ministry. The scheme was presented to users during a local users meeting (AUC) in November 2017 but was not approved. There is no intention to apply the scheme in the last year of RP2.

**4. ATFM Slot Adherence**



The adherence to ATFM slots remained just above the minimum 80% threshold (82.3% compliance in 2018), which is a poor performance with an impact on network predictability and one of the lowest ATFM slot adherences in Europe.

**5. ATC Pre-departure Delay**

ATC pre-departure delay at Luxembourg (ELLX) has moderately increased over the last years and now reaches 0.09 min/dep, which is in line with the performance of other airports with similar traffic. This delay is mostly concentrated in February and June 2018.

**6. Appendix**

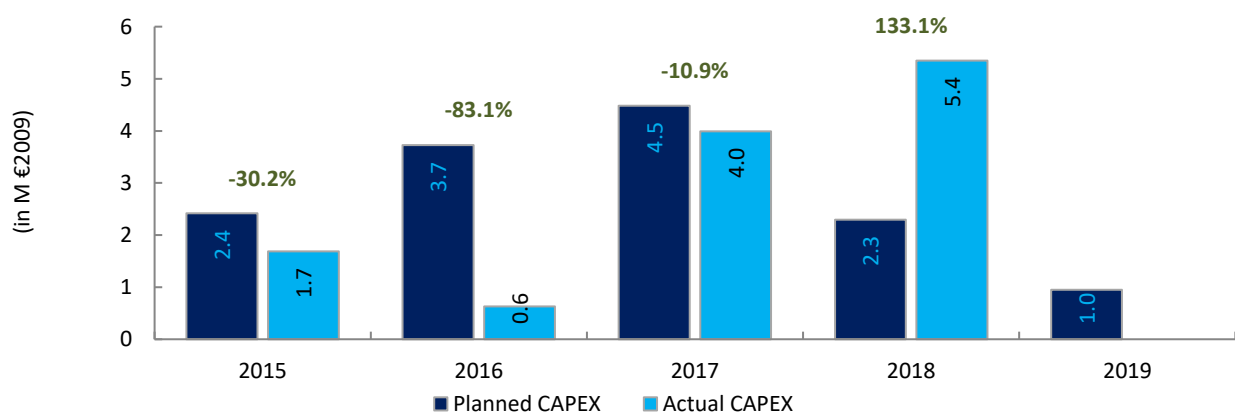
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Luxembourg	ELLX	0.11	0.08	0.05	0.09		82.6%	82.9%	82.6%	82.3%		0.02	0.01	0.04	0.09	

## LUXEMBOURG

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ANA LUX						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	2.8	4.3	5.3	2.8	1.2	16.4
Main CAPEX (in nominal M)	2.8	4.3	5.3	2.8	1.2	16.4
Inflation %	1.8%	1.8%	1.8%	1.9%	1.9%	
Inflation index (100 in 2009)	114.4	116.4	118.6	120.9	123.2	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>2.4</b>	<b>3.7</b>	<b>4.5</b>	<b>2.3</b>	<b>1.0</b>	<b>13.9</b>
Main CAPEX (in M €2009)	2.4	3.7	4.5	2.3	1.0	13.9
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	14.7	15.5	15.7	15.8	15.7	77.4
Total CAPEX as % of Real gate-to-gate ANSP costs	16.4%	24.0%	28.6%	14.6%	6.0%	17.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	1.9	0.7	4.6	6.3		
Main CAPEX (in nominal M)	1.9	0.7	4.6	6.2		
Inflation %	0.1%	0.0%	2.1%	2.0%		
Inflation index (100 in 2009)	112.5	112.5	114.8	117.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>1.7</b>	<b>0.6</b>	<b>4.0</b>	<b>5.4</b>		
Main CAPEX (in M €2009)	1.7	0.6	4.0	5.3		
% Main of Total CAPEX	100.0%	100.0%	100.0%	99.0%		
Real gate-to-gate ANSP costs (in M €2009)	15.6	15.8	15.7	15.7		
Total CAPEX as % of Real gate-to-gate ANSP costs	10.8%	4.0%	25.4%	34.2%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-0.9	-3.6	-0.7	3.5		
Total CAPEX (in M €2009)	-0.7	-3.1	-0.5	3.1		
<b>Total CAPEX (in %, M €2009)</b>	<b>-30.2%</b>	<b>-83.1%</b>	<b>-10.9%</b>	<b>133.1%</b>		

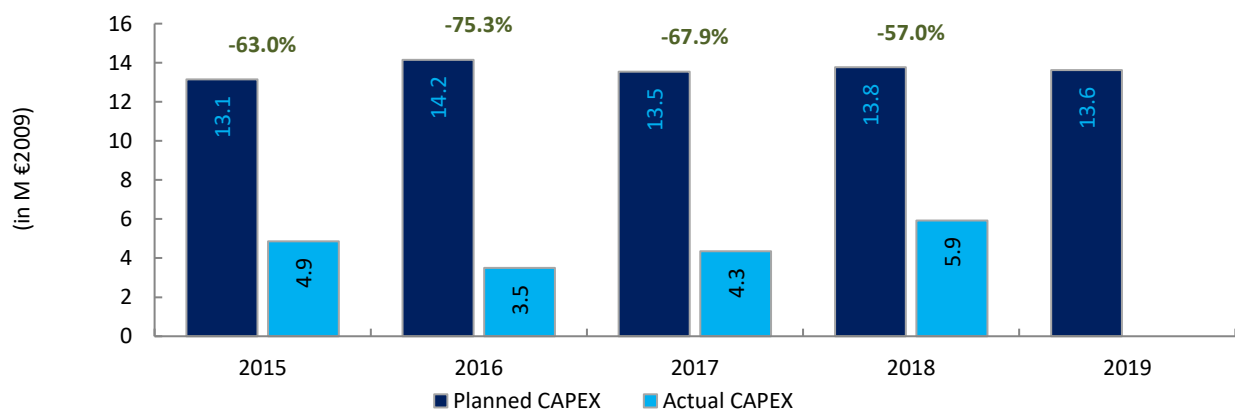


Note: Planned and actual inflation indices used to calculate CAPEX in real terms above, are based on the Terminal Reporting Tables. Two separate inflation indices are used to calculate the gate-to-gate ANSP costs in real terms.

## MUAC

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: MUAC						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	14.5	15.8	15.4	15.9	15.9	77.6
Main CAPEX (in nominal M)	12.7	14.7	14.7	15.2	15.3	72.5
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%	
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>13.1</b>	<b>14.2</b>	<b>13.5</b>	<b>13.8</b>	<b>13.6</b>	<b>68.2</b>
Main CAPEX (in M €2009)	11.5	13.1	12.9	13.2	13.1	63.7
% Main of Total CAPEX	87.3%	92.7%	95.5%	95.7%	95.8%	93.4%
Real gate-to-gate ANSP costs (in M €2009)	133.8	133.5	135.9	138.1	139.8	681.2
Total CAPEX as % of Real gate-to-gate ANSP costs	9.8%	10.6%	10.0%	10.0%	9.7%	10.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.3	3.8	4.8	6.7		
Main CAPEX (in nominal M)	5.1	3.5	4.2	6.7		
Inflation %	0.2%	0.1%	1.3%	1.6%		
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>4.9</b>	<b>3.5</b>	<b>4.3</b>	<b>5.9</b>		
Main CAPEX (in M €2009)	4.6	3.2	3.7	5.9		
% Main of Total CAPEX	94.9%	92.3%	86.3%	99.6%		
Real gate-to-gate ANSP costs (in M €2009)	123.6	131.9	135.7	139.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.9%	2.7%	3.2%	4.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-9.2	-12.0	-10.5	-9.2		
Total CAPEX (in M €2009)	-8.3	-10.7	-9.2	-7.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-63.0%</b>	<b>-75.3%</b>	<b>-67.9%</b>	<b>-57.0%</b>		







# Annual Monitoring Report 2018

Local level view  
Netherlands



## NETHERLANDS

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	74	C	B	B	D	C
LVNL	82	D	D	C	D	D
MUAC	76	C	D	D	D	D

Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.

Application of the severity classification of the Risk Analysis Tool (RAT)		
	RAT application (%)	
	ATM Ground	ATM Overall
Separation Minima Infringements (SMIs)	63%	0%
Runway Incursions (RIs)	11%	12%
ATM Specific Occurrences (ATM-S)		100%
<b>Source of RAT data:</b>	ILT	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

Just culture		
State level	Number of questions answered	
	YES	NO
Policy and its implementation	7	2
Legal/Judiciary	7	0
Occurrence reporting and Investigation	1	1
<b>TOTAL</b>	<b>15</b>	<b>3</b>

LVNL	Number of questions answered	
	YES	NO
Policy and its implementation	10	3
Legal/Judiciary	3	0
Occurrence reporting and Investigation	7	1
<b>TOTAL</b>	<b>20</b>	<b>4</b>

MUAC	Number of questions answered	
	YES	NO
Policy and its implementation	8	5
Legal/Judiciary	1	2
Occurrence reporting and Investigation	4	4
<b>TOTAL</b>	<b>13</b>	<b>11</b>

### Observations

Two out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.

Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only two are below Level C.

## NETHERLANDS

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

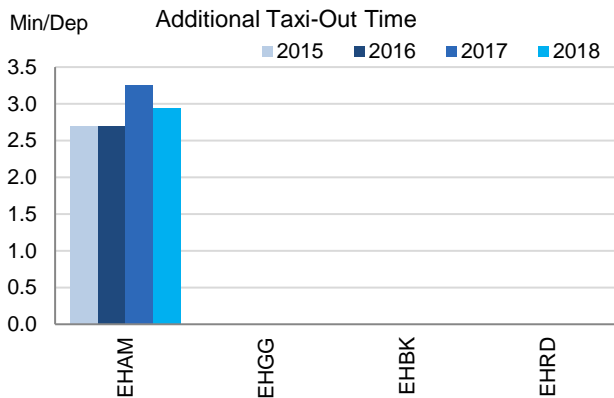
## 1. Overview

For the Netherlands, the scope of the performance monitoring of terminal services under RP2 comprises a total of 4 airports. At the time being the Airport Operator Data Flow is only established for Amsterdam, where traffic remains at the same level as last year, as the airport arrived to its maximum allowed capacity of 500 000 movements per year (second busiest airport in SES area).

Both environmental indicators have improved in 2017, showing once more remarkable environmental performance for an airport with that level of traffic.

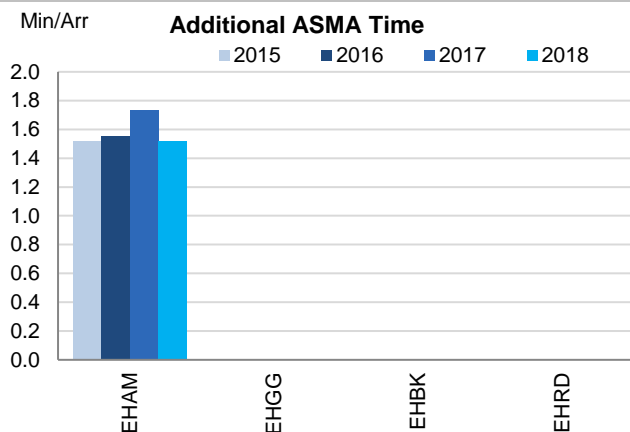
The Netherlands shall encourage the respective airport reporting entities to initiate the implementation of the Airport Operator Data Flow.

## 2. Additional Taxi-Out Time



The performance regarding taxi-out times has improved in the first half of 2018 with respect to 2017, and show very little variation from month to month, always around the 3 min/dep. The achieved annual average at Amsterdam (EHAM; 2018: 2.94 min/dep.) is, despite being the second busiest airport in Europe, below the SES average (3.57 min/dep)

## 3. Additional ASMA Time



Additional times in the terminal area of Amsterdam (EHAM; 2018: 1.52 min/arr.) have improved notably in the first 5 months of the year with respect to 2017.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Amsterdam/ Schiphol	EHAM	2.70	2.70	3.25	2.94		1.52	1.55	1.73	1.52	
Groningen	EHGG	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Maastricht-Aachen	EHBK	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Rotterdam	EHRD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

**NETHERLANDS**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	N/A	N/A	N/A	N/A	N/A	Because there are two ANSPs in the Netherlands, LVNL and EUROCONTROL (MUAC), the Netherlands did not set a national target. Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay.
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.09	0.29	0.30	0.20		

**National capacity incentive scheme**

The incentive scheme is applied for delay causes listed in Art. 15 (g) of Regulation 391/2013; data used for calculation was AUA data provided by PRU.

[The PRU is unable to validate the attributed cause of delay, which is determined by the ANSP requesting the ATFM regulation.]

The Capacity delay target at FAB level was set at an average of 0,33 min/flight for CRSTMP ATFM delays.

LVNL broken down target was set at 0,14 min/ flight.

EUROCONTROL (MUAC) broken down target was set at 0.15 min/ flight

2018 achievement (As reported by FABEC)

- FABEC: 1.42 min/ flight for CRSTMP delays

- LVNL: 0.04 min/ flight for CRSTMP delays

- EUROCONTROL (MUAC): 0.50 min/ flight for CRSTMP delays

Bonus / Malus

LVNL, as an ANSP not contributing to the underperformance is not subject to a malus.

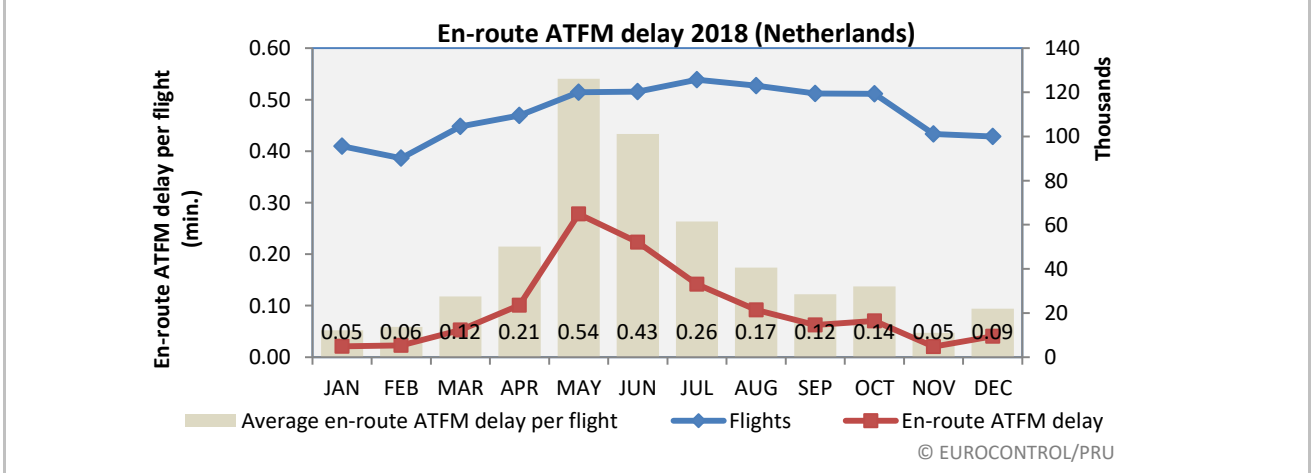
The percentage of malus for EUROCONTROL (MUAC) was -0.5% of total ANSP revenue in 2018, which equates to €834,386.36

NOTE: The penalty for EUROCONTROL (MUAC) is applicable because of the performance over the four MUAC States (Belgium, Luxembourg, Germany and the Netherlands). The breakdown of the MUAC penalty per State is: Belgium € 261.336,48; Luxembourg €8.082,70; Germany €396,559.64 and the Netherlands €168,407.54.

**Compliance issues relating to national capacity incentive scheme**

The PRB noted several compliance issues regarding the proposed FABEC en route incentive scheme submitted in the FABEC performance plan dated July 2015. The compliance issues were: the individual ANSP contributions are not consistent with the required capacity performance and that the proposed target, using CRSTMP codes only, is not consistent with the required capacity performance. FABEC addressed both issues in the Revised FABEC performance plan (version 3.0) submitted in January 2017.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Netherlands)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.04	0.04	0.18	0.12	0.17	0.11	0.12	0.09	0.29	0.30	0.20

EUROCONTROL 7 year forecast February 2014 – Netherlands											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	1143		1185		1226		1262		1302		1339
<b>Base</b>	1134	<b>1138</b>	1170	<b>1176</b>	1199	<b>1241</b>	1224	<b>1287</b>	1250	<b>1329</b>	1278
<b>Low</b>	1124		1146		1152		1159		1169		1180

Traffic levels in the Netherlands in 2018 rose by almost 3% on 2017 levels. Traffic levels were again above the high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans and associated capacity plans were being determined.

En route AFTM delay decreased by a third to 0.2 minutes per flight from 0.3 minutes in 2017.

In March 2018, MUAC implemented a third sector in the Deco West airspace increasing capacity and reducing delays from 268k minutes in 2017 to 144k minutes in 2018.

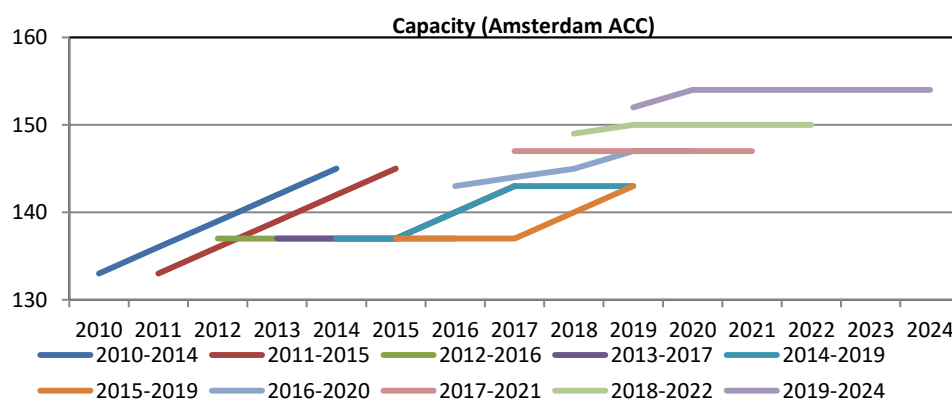
The latest Network Operations Plan 2019-2024 contains the current capacity plans and expected performance for both Amsterdam ACC and MUAC. MUAC plans to operate with only four DECO sectors available in 2019 for 8 hours daily during weekdays and 10 hours daily during weekends when they planned to deploy five DECO sectors during the same period in 2018.

The Network Manager reports that MUAC has decreased its capacity plans by between 4-8% from the plans published in 2018.

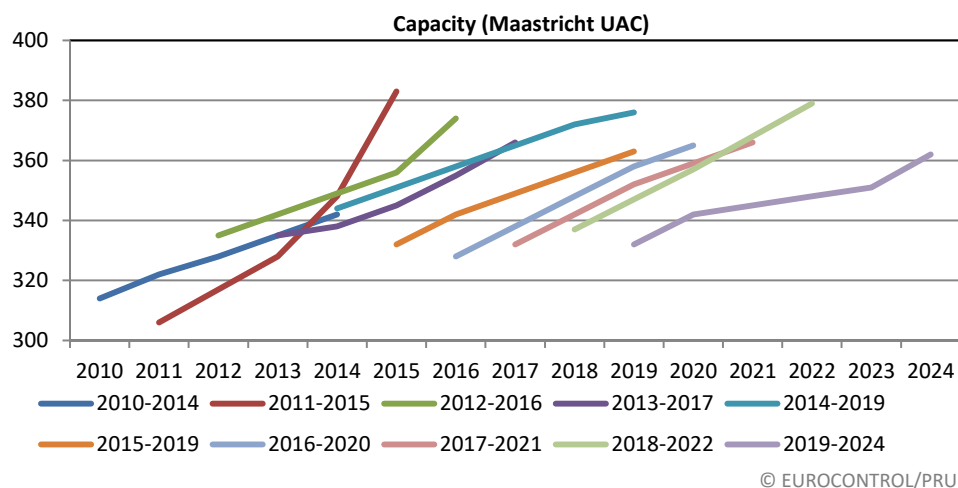
Amsterdam ACC continues to offer the same number of sector hours as it did in 2018. The Network Manager does not expect any capacity problems for Amsterdam ACC for the remainder of RP2 or for the entirety of RP3.

LVNL delay forecast							
	2019	2020	2021	2022	2023	2024	
<b>NOP 2018 - 2022</b>	<b>0.10</b>	<b>0.11</b>	<b>0.12</b>	<b>0.13</b>	N/A	N/A	
<b>NOP 2019 - 2024</b>	<b>0.06</b>	<b>0.07</b>	<b>0.07 – 0.21</b>				

EUROCONTROL (MUAC) delay forecast							
	2019	2020	2021	2022	2023	2024	
<b>NOP 2018 - 2022</b>	<b>0.89</b>	<b>0.79</b>	<b>0.47</b>	<b>0.40</b>	N/A	N/A	
<b>NOP 2019 - 2024</b>	<b>1.62</b>	<b>1.36</b>	<b>1.28 – 1.56</b>				



The graphic shows a lack of ambition to actually increase capacity year on year from 2017.



The graphic shows a continual postponement and downgrade of capacity plans over the period for MUAC. By 2024, MUAC promises less capacity than it did for 2014 in the capacity plans from 2011.

### Planning and Effective Use of CDRs

The Netherlands did not provide any data.

### Observations on Planning and Effective Use of CDRs

It is noted that the Netherlands like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
68%	60%	57%	85%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
5%	13%	17%	<1%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
82%	83%	79%	51%	

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**NETHERLANDS**

**Monitoring of Airports Contribution to CAPACITY for 2018**

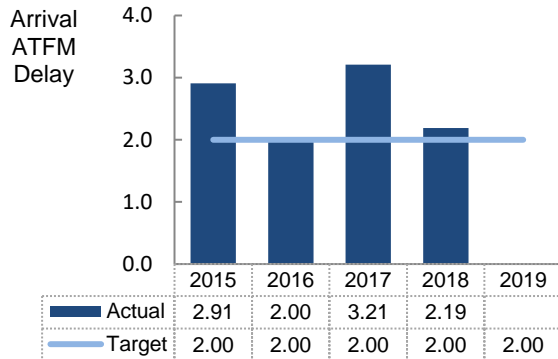
**1. Overview**

In The Netherlands, ANS at a total of 4 airports are subject to RP2 monitoring. Traffic levels at these airports have significantly increased during RP2 (+10.1% with respect to 2015). Given the traffic share at the different airports, the aggregated national performance is driven by Amsterdam/Schiphol (EHAM).

In terms of arrival ATFM delays, and although values are significantly lower than those in the beginning of the reference period (-25% in 2018 with respect to 2015), the target has been missed once again in 2018.

ATFM slot adherence has significantly improved (2015:88.1%; 2018:95.5%). With respect to ATC pre-departure delay, data quality and availability issues prevent from the calculation of the indicator.

**2. Arrival ATFM Delay**



During 2018, arrival ATFM delays in Netherlands have significantly decreased with respect to the previous year (2017: 3.21 min/arr, 2018: 2.19 min/arr). However, the delays are still the 5th highest in the SES area and miss the target (2.00 min/arr.) They are mainly associated with weather and aerodrome capacity at Schiphol, with no additional delay accumulated at the other airports. Amsterdam is the biggest contributor to arrival ATFM delay in Europe, with 610755 minutes of delay generated (12% of the total delay in Europe).

The Schiphol terminal CRSTMP target (average 0.5 minutes per controlled flight) was achieved, with 0.07 min/arr of terminal ATFM delay allocated to CRSTMP causes in 2018.

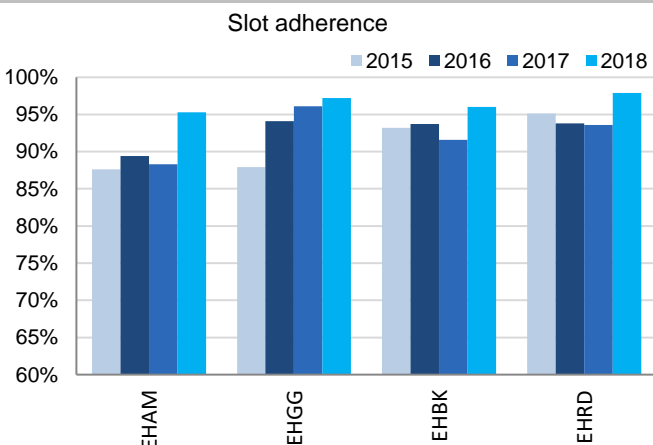
**3. Arrival ATFM Delay – National Target and Incentive Scheme**

The FABEC performance plan establishes a national target on arrival ATFM delay for The Netherlands.

The plan set out a national target (all causes) of 2.0 min/arr. with a breakdown for Amsterdam/Schiphol (EHAM) of 0.5 min/arr. (CRSTMP causes).

A respective incentive scheme is implemented by The Netherlands, based on CRSTMP performance at EHAM. The achieved performance attributed to CRSTMP causes is better than 50% of the CRSTMP delay target, leading to a maximum bonus of 0.5% of terminal ANS revenue for Schiphol Airport. A bonus will be recovered from the users in 2020.

**4. ATFM Slot Adherence**



ATFM slot adherence at Dutch airports has drastically increased in 2018, now all of them in the best in class category above 95% of ATFM slot compliance.

The most significant improvement took place in Amsterdam (EHAM; 2017: 88.3%; 2018: 95.3%) related to the final A-CDM implementation in May 2018. Taking into account the traffic levels at Amsterdam and the number of regulated departures, this improvement has an important positive effect in the predictability of the network.

**5. ATC Pre-departure Delay**

The monitoring of pre-departure delay is dependent on the establishment of the Airport Operator Data Flow.

Amsterdam implemented the Airport Operator Data Flow in July 2017 but the quality of the reporting still does not allow for the calculation of the ATC pre-departure delay indicator. For the other airports the launch of the implementation is still pending.

The Netherlands shall encourage the implementation of the Airport Operator Data Flow in the remaining airports and a proper reporting of the pre-departure delays through this data flow at all airports.



## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Amsterdam/ Schiphol	EHAM	3.18	2.17	3.47	2.39		87.6%	89.4%	88.3%	95.3%		n/a	n/a	n/a	n/a	
Groningen	EHGG	0.00	0.00	0.00	0.00		87.9%	94.1%	96.1%	97.2%		n/a	n/a	n/a	n/a	
Maastricht-Aachen	EHBK	0.03	0.00	0.02	0.03		93.2%	93.7%	91.6%	96.0%		n/a	n/a	n/a	n/a	
Rotterdam	EHRD	0.01	0.00	0.01	0.00		95.1%	93.8%	93.6%	97.9%		n/a	n/a	n/a	n/a	

## NETHERLANDS: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

## 1. Contextual economic information: en-route air navigation services

- Netherlands ECZ represents 2.7% of the SES en-route ANS determined costs in 2018
- ATSP: LVNL
- FAB: FABEC
- National currency: EUR

## 2. En-route DUC monitoring at Charging Zone level

Netherlands: Data from RP2 Performance Plan (EC Decision 2017/553 of 22 March 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	184 921 748	184 103 594	187 092 113	193 763 267	198 069 117
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0
Real en-route costs (EUR2009)	167 178 324	164 400 112	164 697 149	168 065 588	169 244 781
Total en-route Service Units	2 806 192	2 825 835	2 845 616	3 045 000	3 077 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>59.57</b>	<b>58.18</b>	<b>57.88</b>	<b>55.19</b>	<b>55.00</b>
Netherlands: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	174 897 819	187 391 677	189 932 536	202 928 049	
Inflation %	0.2%	0.1%	1.3%	1.6%	
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1	
Real en-route costs (EUR2009)	159 378 607	170 593 253	170 687 405	179 494 225	
Total en-route Service Units	2 892 654	3 099 952	3 223 221	3 392 469	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>55.10</b>	<b>55.03</b>	<b>52.96</b>	<b>52.91</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR) in value	-10 023 928	3 288 083	2 840 423	9 164 782	
in %	-5.4%	1.8%	1.5%	4.7%	
Inflation % in p.p.	-0.8 p.p.	-1.1 p.p.	-0.1 p.p.	0.1 p.p.	
Inflation index (100 in 2009) in p.p.	-0.9 p.p.	-2.1 p.p.	-2.3 p.p.	-2.2 p.p.	
Real en-route costs (EUR2009) in value	-7 799 718	6 193 141	5 990 256	11 428 638	
in %	-4.7%	3.8%	3.6%	6.8%	
Total en-route Service Units in value	86 462	274 117	377 605	347 469	
in %	3.1%	9.7%	13.3%	11.4%	
<b>Real en-route unit cost per Service Unit (EUR2009) in value</b>	<b>-4.48</b>	<b>-3.15</b>	<b>-4.92</b>	<b>-2.28</b>	
<b>in %</b>	<b>-7.5%</b>	<b>-5.4%</b>	<b>-8.5%</b>	<b>-4.1%</b>	

## 3. Focus on en-route at State/Charging Zone level

## En-route unit cost

In 2018, the actual en-route unit cost in real terms (52.91 €2009) is -4.1% lower than planned in the PP (55.19 €2009). This results from the combination of much higher than planned TSUs (+11.4%) and higher than planned en-route costs in real terms (+6.8%, or +11.4 M€2009).

## En-route service units

The difference between actual and planned TSUs (+11.4%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (LVNL) retaining an amount of +5.3 M€2009.

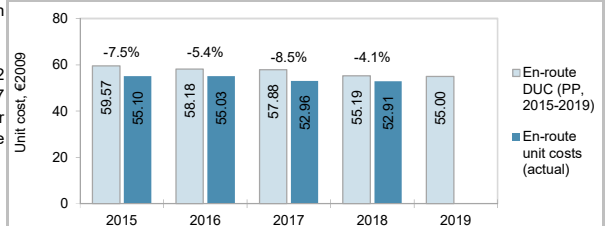
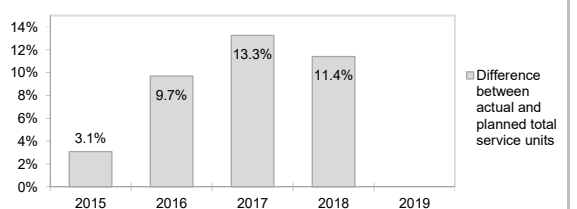
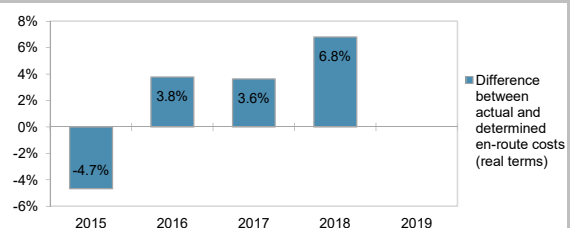
According to STATFOR February 2019 base scenario, the en-route TSUs for Netherlands are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).

## En-route costs

In nominal terms, actual en-route costs are +4.7% (+9.2 M€) higher than planned. However, since the actual inflation index is lower than planned (-2.2 p.p.), actual en-route costs are +6.8% (+11.4 M€2009) above plans when expressed in real terms.

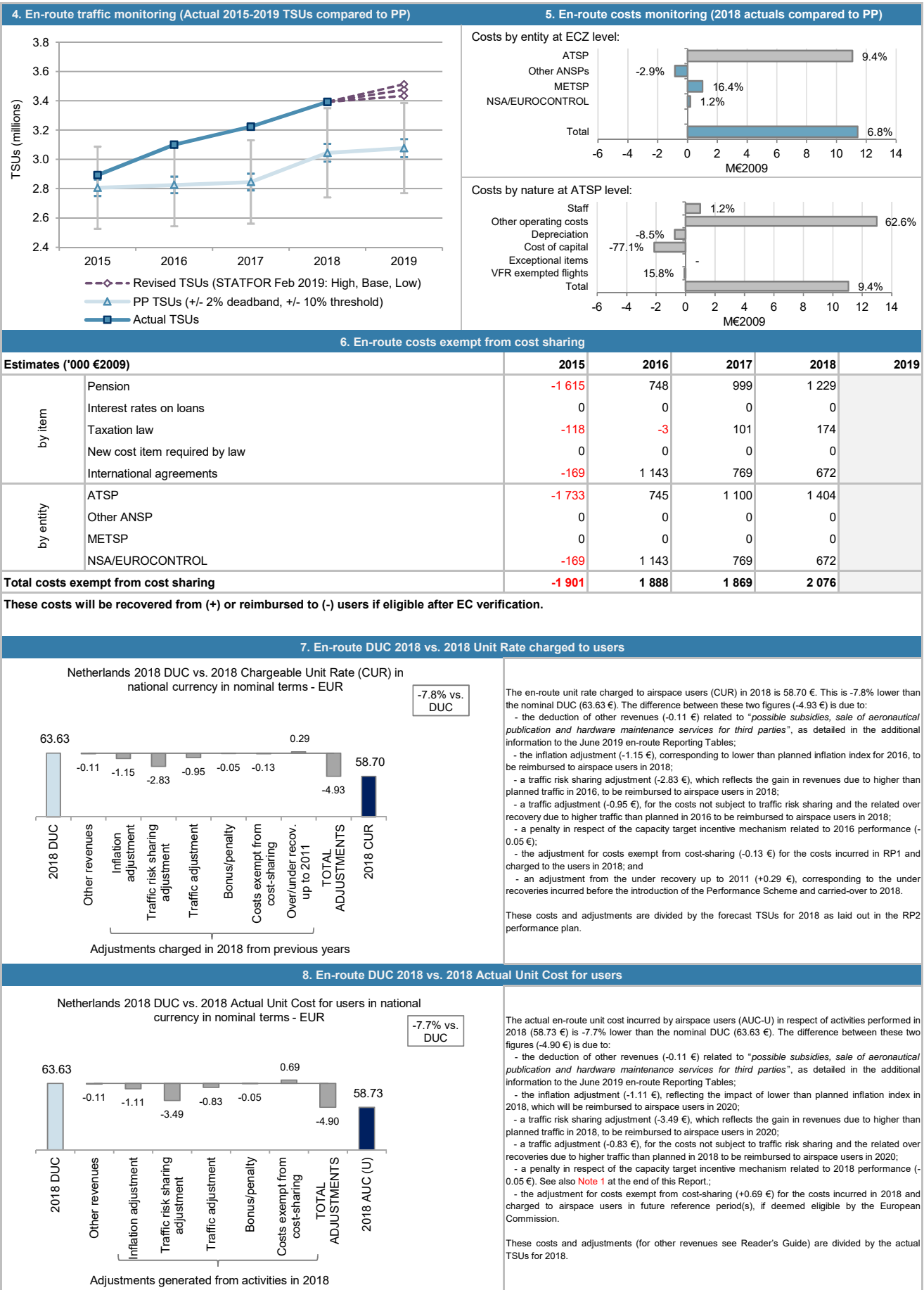
The higher than planned en-route costs in real terms are driven by LVNL (+9.4%, or +11.1 M€2009), the MET service provider (+16.4%, or +1.0 M€2009) and the NSA/EUROCONTROL (+1.2%, or +0.2 M€2009), while the costs for MUAC (-2.9%, or -0.8 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.

Costs exempt from cost-sharing are reported for a total amount of +2.1 M€2009 comprising +1.2 M€2009 for pension, +0.2 M€2009 for unforeseen changes in national taxation law and +0.7 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.



NETHERLANDS: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



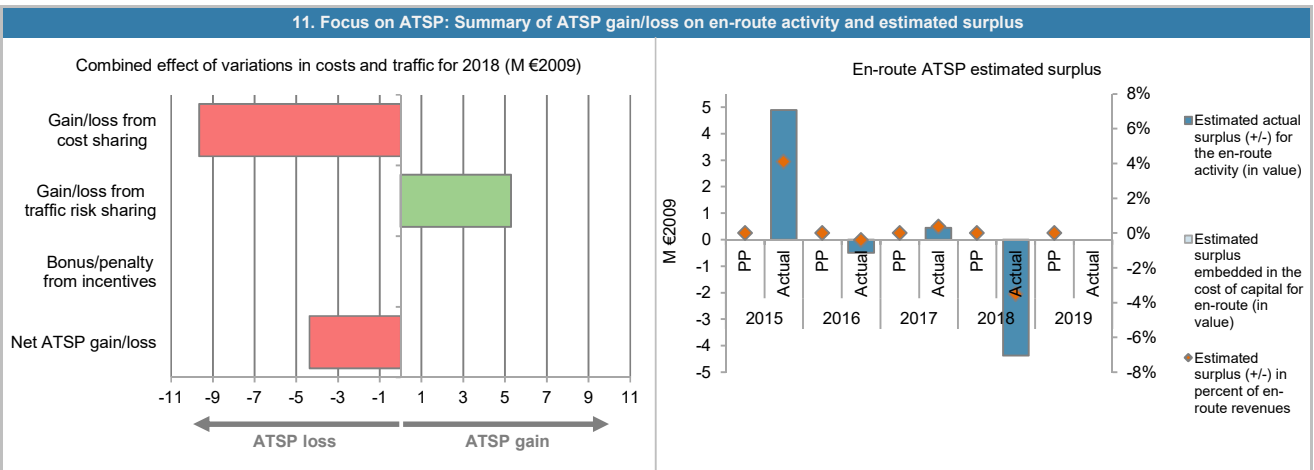
## NETHERLANDS: En-route ATSP (LVNL)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
<b>Cost sharing ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Determined costs for the ATSP (PP) - based on planned inflation	117 998	114 946	115 043	117 843	
Actual costs for the ATSP	114 137	121 235	120 868	128 904	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	3 862	-6 289	-5 825	-11 061	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-1 733	745	1 100	1 404	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>2 129</b>	<b>-5 544</b>	<b>-4 725</b>	<b>-9 657</b>	
<b>Traffic risk sharing ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Difference in total service units (actual vs PP) %	3.1%	9.7%	13.3%	11.4%	
Determined costs for the ATSP (PP) - based on actual inflation	118 940	117 184	117 444	120 172	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>2 765</b>	<b>5 051</b>	<b>5 168</b>	<b>5 288</b>	
<b>Incentives ('000 €2009)</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>4 893</b>	<b>-493</b>	<b>442</b>	<b>-4 370</b>	
<b>10. Focus on ATSP: En-route ATSP estimated surplus *</b>					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
<b>ATSP estimated surplus ('000 €2009) from RP2 Performance Plan</b>	<b>2015P</b>	<b>2016P</b>	<b>2017P</b>	<b>2018P</b>	<b>2019P</b>
Total asset base	83 092	83 822	86 100	94 793	87 082
Estimated proportion of financing through equity (in %)	-	-	-	-	-
Estimated proportion of financing through equity (in value)	0	0	0	0	0
Estimated proportion of financing through debt (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through debt (in value)	83 092	83 822	86 100	94 793	87 082
Cost of capital pre-tax (in value)	3 033	2 799	2 657	2 750	2 757
Average interest on debt (in %)	3.6%	3.3%	3.1%	2.9%	3.2%
Interest on debt (in value)	3 033	2 799	2 657	2 750	2 757
Determined RoE pre-tax rate (in %)	-	-	-	-	-
Estimated surplus embedded in the cost of capital for en-route (in value)	0	0	0	0	0
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Revenue/costs for the en-route activity</b>	<b>117 998</b>	<b>114 946</b>	<b>115 043</b>	<b>117 843</b>	<b>118 556</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>N/Appl</b>	<b>N/Appl</b>	<b>N/Appl</b>	<b>N/Appl</b>	<b>N/Appl</b>
<b>ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables</b>	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>
Total asset base	70 805	86 289	97 057	134 658	
Estimated proportion of financing through equity (in %)	-	-	-	-	
Estimated proportion of financing through equity (in value)	0	0	0	0	
Estimated proportion of financing through debt (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through debt (in value)	70 805	86 289	97 057	134 658	
Cost of capital pre-tax (in value)	1 228	812	715	628	
Average interest on debt (in %)	1.7%	0.9%	0.7%	0.5%	
Interest on debt (in value)	1 228	812	715	628	
Determined RoE pre-tax rate (in %)	-	-	-	-	
Estimated surplus embedded in the cost of capital for en-route (in value)	0	0	0	0	
Net ATSP gain(+)/loss(-) on en-route activity	4 893	-493	442	-4 370	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>4 893</b>	<b>-493</b>	<b>442</b>	<b>-4 370</b>	
<b>Revenue/costs for the en-route activity</b>	<b>119 030</b>	<b>120 742</b>	<b>121 311</b>	<b>124 534</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>4.1%</b>	<b>-0.4%</b>	<b>0.4%</b>	<b>-3.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>N/Appl</b>	<b>N/Appl</b>	<b>N/Appl</b>	<b>N/Appl</b>	

**NETHERLANDS: En-route ATSP (LVNL)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 LVNL en-route costs vs. PP**

In 2018, LVNL actual en-route costs are +9.4% (+11.1 M€2009) higher, in real terms, than planned in the PP, this results from a combination of:

- slightly higher staff costs (+1.2%, or +1.0 M€2009);
- much higher other operating costs (+62.6%, or +13.0 M€2009);
- lower depreciation costs (-8.5%, or -0.7 M€2009);
- much lower cost of capital (-77.1%, or -2.1 M€2009);

No description of the main drivers for the deviation between actual and determined costs is provided for LVNL in the additional information to June 2019 en-route Reporting Tables.

**LVNL net gain/loss on en-route activity in 2018**

As shown in box 9, LVNL generated a net loss of -4.4 M€2009 on the en-route activity. This is a combination of two elements:

- a loss of -9.7 M€2009 arising from the cost sharing mechanism; and
- a gain of +5.3 M€2009 arising from the traffic risk sharing mechanism.

The loss from cost sharing mentioned above (-9.7 M€2009) includes amounts reported by LVNL for cost exempt from cost sharing (+1.4 M€2009). Should these costs not be deemed eligible by the European Commission, LVNL would record a net loss of -5.8 M€2009 for the en-route activity in 2018.

**LVNL overall estimated surplus for the en-route activity**

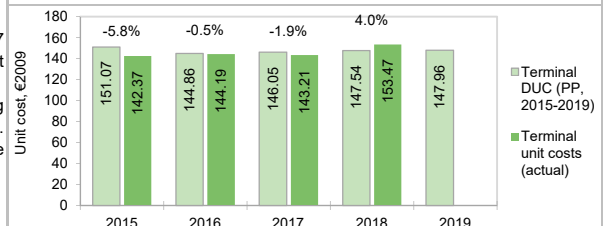
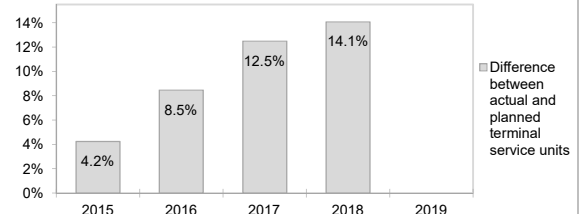
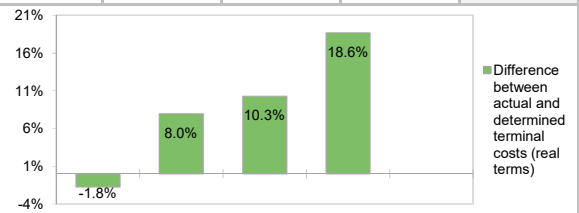
Based on the additional information to the June 2019 en-route Reporting Tables, "LVNL is an autonomous government body. Its assets are financed by debts (100%). LVNL has an equity capital, the only objective of LVNL's equity capital is to enable LVNL to recover losses resulting from the traffic volume risk, the cost risk and the capacity incentive schemes, both in the en-route and the terminal charging zone. For that reason, the WACC is only based on the interests on debts."

Because LVNL has no return on equity, no ex-ante estimated surplus was embedded in the cost of capital provided the PP for RP2. Therefore, xx-post, the overall estimated surplus is the net loss from the en-route activity mentioned above (-4.4 M€2009).

## NETHERLANDS: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

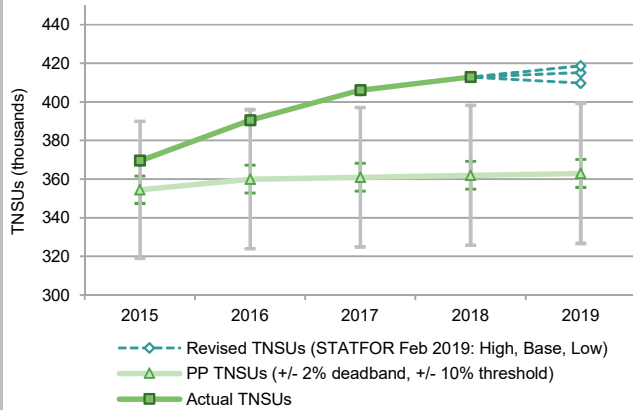
1. Contextual economic information: terminal air navigation services					
· Netherlands TCZ represents 5.0% of the SES terminal ANS determined costs in 2018			· Is this TCZ applying traffic risk sharing?		Yes
· ATSP: LVNL			· Airports with fewer than 70,000 IFRs ATMs:		3
· National currency: EUR			· Airports with between 70,000 and 225,000 IFRs ATMs:		0
· Number of airports in charging zone in 2018: 4, of which:			· Airports with more than 225,000 IFRs ATMs:		1
2. Terminal DUC monitoring at Charging Zone level					
Netherlands: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	59 241 306	58 399 022	59 894 041	61 576 384	62 857 351
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0
Real terminal costs (EUR2009)	53 557 045	52 148 932	52 724 712	53 409 871	53 709 931
Total terminal Service Units	354 510	360 000	361 000	362 000	363 000
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>151.07</b>	<b>144.86</b>	<b>146.05</b>	<b>147.54</b>	<b>147.96</b>
Netherlands: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	57 733 000	61 845 000	64 709 486	71 641 000	
Inflation %	0.2%	0.1%	1.3%	1.6%	
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1	
Real terminal costs (EUR2009)	52 610 176	56 301 005	58 152 723	63 368 005	
Total terminal Service Units	369 519	390 467	406 060	412 909	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>142.37</b>	<b>144.19</b>	<b>143.21</b>	<b>153.47</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value -1 508 306	3 445 978	4 815 445	10 064 616	
	in % -2.5%	5.9%	8.0%	16.3%	
Inflation %	in p.p. -0.8 p.p.	-1.1 p.p.	-0.1 p.p.	0.1 p.p.	
Inflation index (100 in 2009)	in p.p. -0.9 p.p.	-2.1 p.p.	-2.3 p.p.	-2.2 p.p.	
Real terminal costs (EUR2009)	in value -946 868	4 152 073	5 428 011	9 958 134	
	in % -1.8%	8.0%	10.3%	18.6%	
Total terminal Service Units	in value 15 009	30 467	45 060	50 909	
	in % 4.2%	8.5%	12.5%	14.1%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -8.70</b>	<b>-0.67</b>	<b>-2.84</b>	<b>5.93</b>	
	<b>in % -5.8%</b>	<b>-0.5%</b>	<b>-1.9%</b>	<b>4.0%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Netherlands Terminal Charging Zone (TCZ) comprising 4 airports.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (153.47 €2009) is +4.0% higher than planned in the PP (147.54 €2009). This results from the combination of much higher than planned TNSUs (+14.1%) and much higher than planned terminal costs in real terms (+18.6%, or +10.0 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Netherlands TCZ. The difference between actual and planned TNSUs (+14.1%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (LVNL) retaining an amount of +2.3 M€2009. According to STATFOR February 2019 base scenario, the TNSUs for Netherlands are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +16.3% (+10.1 M€) higher than planned. However, since the actual inflation index is lower than planned (-2.2 p.p.), actual terminal costs are +18.6% (+10.0 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by LVNL (+18.7%, or +9.7 M€2009) and the MET service provider (+16.5%, or +0.2 M€2009). A detailed analysis at ATSP level is provided in box 12. Costs exempt from cost-sharing are reported for a total amount of +0.5 M€2009 comprising +0.4 M€2009 for pensions and +0.1 M€2009 for unforeseen changes in national taxation law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



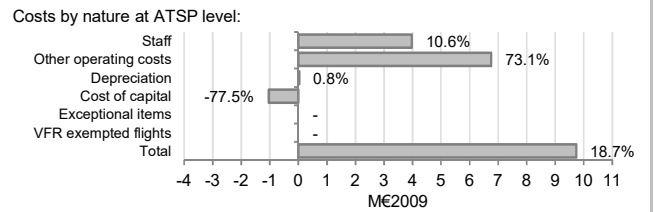
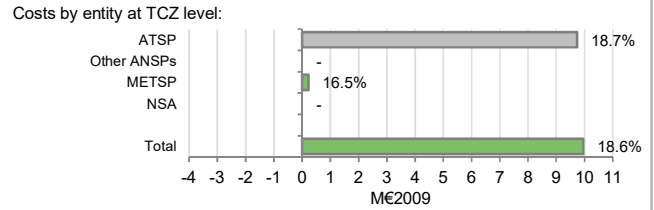
NETHERLANDS: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)



5. Terminal costs monitoring (2018 actuals compared to PP)

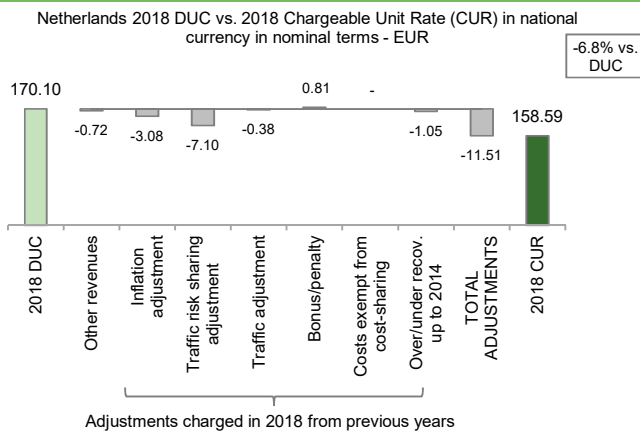


6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	-990	423	360	395	
	Interest rates on loans	0	0	0	0	
	Taxation law	-51	-1	44	76	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	-1 041	422	404	471	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>-1 041</b>	<b>422</b>	<b>404</b>	<b>471</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

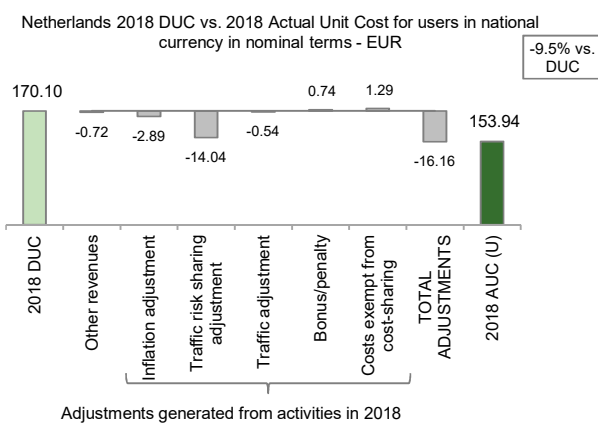


The terminal unit rate charged to airspace users (CUR) in 2018 is 158.59 €. This is -6.8% lower than the nominal DUC (170.10 €). The difference between these two figures (-11.51 €) relates to:

- the deduction of other revenues (-0.72 €) related to "sale of Aeronautical publication and hardware maintenance services for third parties", as detailed in the additional information to the June 2019 terminal Reporting Tables;
- the inflation adjustment (-3.08 €), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic risk sharing adjustment (-7.10 €), which reflects the gain in revenues due to higher than planned traffic in 2016, to be reimbursed to airspace users in 2018;
- a traffic adjustment (-0.38 €), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018;
- a bonus in respect of the capacity target incentive mechanism related to 2016 performance (+0.81 €); and
- an adjustment from the over recovery up to 2014 (-1.05 €), corresponding to the over recoveries incurred before the introduction of the Performance Scheme and carried-over to 2018.

These costs and adjustments are divided by the forecast TNSUs for 2018 as laid out in the RP2 performance plan.

8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users



The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (153.94 €) is -9.5% lower than the nominal DUC (170.10 €). The difference between these two figures (-16.16 €) is mainly due to:

- the deduction of other revenues (-0.72 €) related to "sale of Aeronautical publication and hardware maintenance services for third parties", as detailed in the additional information to the June 2019 terminal Reporting Tables;
- the inflation adjustment (-2.89 €), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020;
- a traffic risk sharing adjustment (-14.04 €), which reflects the gain in revenues due to higher than planned traffic in 2018, to be reimbursed to airspace users in 2020;
- a traffic adjustment (-0.54 €), for the costs not subject to traffic risk sharing and the related over recoveries due to higher traffic than planned in 2018 to be reimbursed to airspace users in 2020;
- a bonus in respect of the capacity target incentive mechanism related to 2018 performance (+0.74 €). See note 2; and
- the adjustment for costs exempt from cost-sharing (+1.29 €) for the costs incurred in 2018 and charged to airspace users in future reference period(s), if deemed eligible by the European Commission.

These costs and adjustments (for other revenues see Reader's Guide) are divided by the actual TNSUs in 2018.

## NETHERLANDS: Terminal ATSP (LVNL)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	52 080	50 708	51 324	52 047	
Actual costs for the ATSP	51 251	54 792	56 573	61 781	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	828	-4 083	-5 249	-9 734	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-1 041	422	404	471	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-213</b>	<b>-3 662</b>	<b>-4 845</b>	<b>-9 263</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	4.2%	8.5%	12.5%	14.1%	
Determined costs for the ATSP (PP) - based on actual inflation	52 496	51 695	52 395	53 076	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 402</b>	<b>2 036</b>	<b>2 305</b>	<b>2 335</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>267</b>	<b>274</b>	<b>269</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>1 189</b>	<b>-1 358</b>	<b>-2 265</b>	<b>-6 659</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	36 299	36 619	37 614	41 412	38 043
Estimated proportion of financing through equity (in %)	-	-	-	-	-
Estimated proportion of financing through equity (in value)	0	0	0	0	0
Estimated proportion of financing through debt (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through debt (in value)	36 299	36 619	37 614	41 412	38 043
Cost of capital pre-tax (in value)	1 320	1 220	1 264	1 339	1 338
Average interest on debt (in %)	3.6%	3.3%	3.4%	3.2%	3.5%
Interest on debt (in value)	1 320	1 220	1 264	1 339	1 338
Determined RoE pre-tax rate (in %)	-	-	-	-	-
Estimated surplus embedded in the cost of capital for terminal (in value)	0	0	0	0	0
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Revenue/costs for the terminal activity</b>	<b>52 080</b>	<b>50 708</b>	<b>51 324</b>	<b>52 047</b>	<b>52 385</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>N/AppI</b>	<b>N/AppI</b>	<b>N/AppI</b>	<b>N/AppI</b>	<b>N/AppI</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	31 705	33 894	30 253	33 563	
Estimated proportion of financing through equity (in %)	-	-	-	-	
Estimated proportion of financing through equity (in value)	0	0	0	0	
Estimated proportion of financing through debt (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through debt (in value)	31 705	33 894	30 253	33 563	
Cost of capital pre-tax (in value)	549	369	333	301	
Average interest on debt (in %)	1.7%	1.1%	1.1%	0.9%	
Interest on debt (in value)	549	369	333	301	
Determined RoE pre-tax rate (in %)	-	-	-	-	
Estimated surplus embedded in the cost of capital for terminal (in value)	0	0	0	0	
Net ATSP gain(+)/loss(-) on terminal activity	1 189	-1 358	-2 265	-6 659	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 189</b>	<b>-1 358</b>	<b>-2 265</b>	<b>-6 659</b>	
<b>Revenue/costs for the terminal activity</b>	<b>52 440</b>	<b>53 433</b>	<b>54 308</b>	<b>55 122</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.3%</b>	<b>-2.5%</b>	<b>-4.2%</b>	<b>-12.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>N/AppI</b>	<b>N/AppI</b>	<b>N/AppI</b>	<b>N/AppI</b>	



**NETHERLANDS: Terminal ATSP (LVNL)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## NETHERLANDS: Gate-to-gate

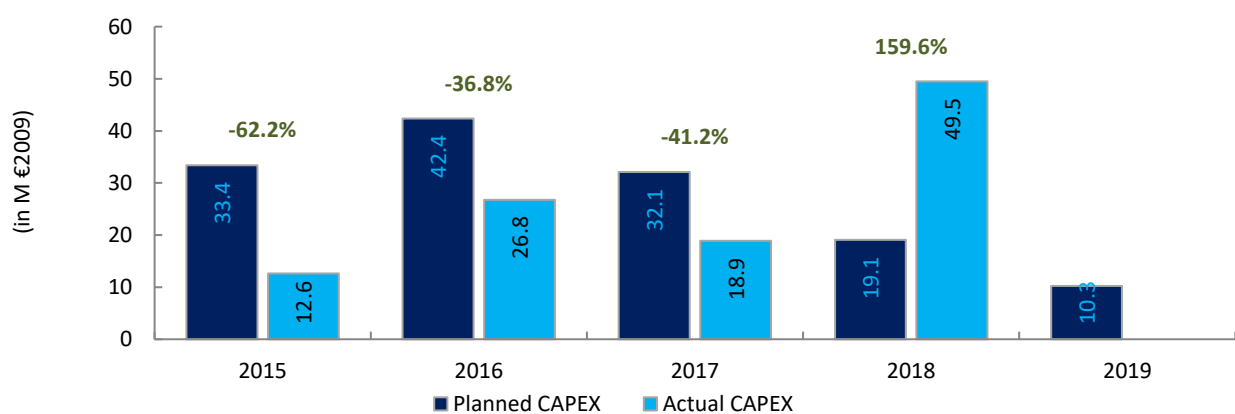
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Netherlands: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	167 178 324	164 400 112	164 697 149	168 065 588	169 244 781																																							
Real terminal costs (EUR2009)	53 557 045	52 148 932	52 724 712	53 409 871	53 709 931																																							
Real gate-to-gate costs (EUR2009)	220 735 369	216 549 044	217 421 862	221 475 459	222 954 712																																							
En-route share (%)	75.7%	75.9%	75.8%	75.9%	75.9%																																							
<b>Netherlands: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	159 378 607	170 593 253	170 687 405	179 494 225																																								
Real terminal costs (EUR2009)	52 610 176	56 301 005	58 152 723	63 368 005																																								
Real gate-to-gate costs (EUR2009)	211 988 783	226 894 258	228 840 129	242 862 231																																								
En-route share (%)	75.2%	75.2%	74.6%	73.9%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	-8 746 586	10 345 214	11 418 267	21 386 772																																								
in %	-4.0%	4.8%	5.3%	9.7%																																								
En-route share																																												
in p.p.	-0.6 p.p.	-0.7 p.p.	-1.2 p.p.	-2.0 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +9.7% (+21.4 M€2009) higher than planned due to higher than planned en-route costs (+6.8%, or +11.4 M€2009) and terminal costs (+18.6%, or +10.0 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (73.9%) is slightly lower than planned in the PP for 2018 (75.9%).</p> <p>For LVNL, the estimated gate-to-gate economic surplus in 2018 amounts to -11.0 M€2009 (see boxes 10 for the detailed analysis at charging zone level). It is noted that LVNL is entirely debt financed.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>75.7%</td> <td>24.3%</td> </tr> <tr> <td>Actual</td> <td>75.2%</td> <td>24.8%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>75.9%</td> <td>24.1%</td> </tr> <tr> <td>Actual</td> <td>75.2%</td> <td>24.8%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>75.8%</td> <td>24.2%</td> </tr> <tr> <td>Actual</td> <td>74.6%</td> <td>25.4%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>75.9%</td> <td>24.1%</td> </tr> <tr> <td>Actual</td> <td>73.9%</td> <td>26.1%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>75.9%</td> <td>24.1%</td> </tr> <tr> <td>Actual</td> <td>75.9%</td> <td>24.1%</td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	75.7%	24.3%	Actual	75.2%	24.8%	2016	Determined	75.9%	24.1%	Actual	75.2%	24.8%	2017	Determined	75.8%	24.2%	Actual	74.6%	25.4%	2018	Determined	75.9%	24.1%	Actual	73.9%	26.1%	2019	Determined	75.9%	24.1%	Actual	75.9%	24.1%
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	75.7%	24.3%																																									
	Actual	75.2%	24.8%																																									
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	Actual	75.2%	24.8%																																									
2017	Determined	75.8%	24.2%																																									
	Actual	74.6%	25.4%																																									
2018	Determined	75.9%	24.1%																																									
	Actual	73.9%	26.1%																																									
2019	Determined	75.9%	24.1%																																									
	Actual	75.9%	24.1%																																									
<b>3. Technical notes on en-route and terminal information reported by Netherlands</b>																																												
<p><b>Note 1:</b> A penalty of -168 '000€ for not achieving the local en-route capacity target is reported for MUAC in the Netherlands en-route charging zone in the 2018 FABEC Monitoring Report and in the submission of the June 2019 en-route Reporting Tables. The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission.</p>																																												
<p><b>Note 2:</b> A bonus of 304 '000€ for achieving the local terminal capacity target is reported for LVNL in the 2018 FABEC Monitoring Report and in the submission of the June 2019 terminal Reporting Tables. This amount corresponds to 0.5% of revenues for Amsterdam Schiphol Airport (EHAM) terminal operation only. The inclusion of this bonus in the chargeable cost-base will be examined by the European Commission.</p>																																												

## NETHERLANDS

## Monitoring of CAPEX for 2018

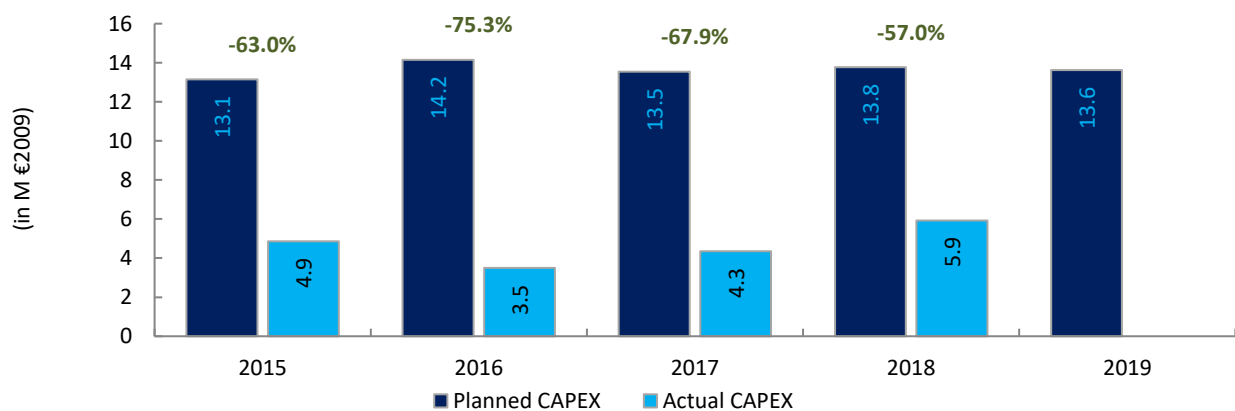
Contextual Information						
ANSP: LVNL						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	37.0	47.4	36.4	22.0	12.0	154.8
Main CAPEX (in nominal M)	30.1	45.1	35.3	21.3	3.5	135.4
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%	
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>33.4</b>	<b>42.4</b>	<b>32.1</b>	<b>19.1</b>	<b>10.3</b>	<b>137.2</b>
Main CAPEX (in M €2009)	27.2	40.2	31.1	18.5	3.0	120.1
% Main of Total CAPEX	81.5%	95.0%	97.0%	97.1%	29.4%	87.6%
Real gate-to-gate ANSP costs (in M €2009)	170.1	165.7	166.4	169.9	170.9	842.9
Total CAPEX as % of Real gate-to-gate ANSP costs	19.7%	25.6%	19.3%	11.2%	6.0%	16.3%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	13.8	29.4	21.0	55.9		
Main CAPEX (in nominal M)	7.7	22.4	11.8	31.0		
Inflation %	0.2%	0.1%	1.3%	1.6%		
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>12.6</b>	<b>26.8</b>	<b>18.9</b>	<b>49.5</b>		
Main CAPEX (in M €2009)	7.0	20.4	10.6	27.4		
% Main of Total CAPEX	55.6%	76.2%	56.1%	55.4%		
Real gate-to-gate ANSP costs (in M €2009)	165.4	176.0	177.4	190.7		
Total CAPEX as % of Real gate-to-gate ANSP costs	7.6%	15.2%	10.6%	25.9%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-23.1	-18.0	-15.4	34.0		
Total CAPEX (in M €2009)	-20.8	-15.6	-13.2	30.4		
<b>Total CAPEX (in %, M €2009)</b>	<b>-62.2%</b>	<b>-36.8%</b>	<b>-41.2%</b>	<b>159.6%</b>		



## MUAC

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: MUAC						
FAB: FABEC						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	14.5	15.8	15.4	15.9	15.9	77.6
Main CAPEX (in nominal M)	12.7	14.7	14.7	15.2	15.3	72.5
Inflation %	1.0%	1.2%	1.4%	1.5%	1.5%	
Inflation index (100 in 2009)	110.6	112.0	113.6	115.3	117.0	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>13.1</b>	<b>14.2</b>	<b>13.5</b>	<b>13.8</b>	<b>13.6</b>	<b>68.2</b>
Main CAPEX (in M €2009)	11.5	13.1	12.9	13.2	13.1	63.7
% Main of Total CAPEX	87.3%	92.7%	95.5%	95.7%	95.8%	93.4%
Real gate-to-gate ANSP costs (in M €2009)	133.8	133.5	135.9	138.1	139.8	681.2
Total CAPEX as % of Real gate-to-gate ANSP costs	9.8%	10.6%	10.0%	10.0%	9.7%	10.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.3	3.8	4.8	6.7		
Main CAPEX (in nominal M)	5.1	3.5	4.2	6.7		
Inflation %	0.2%	0.1%	1.3%	1.6%		
Inflation index (100 in 2009)	109.7	109.8	111.3	113.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>4.9</b>	<b>3.5</b>	<b>4.3</b>	<b>5.9</b>		
Main CAPEX (in M €2009)	4.6	3.2	3.7	5.9		
% Main of Total CAPEX	94.9%	92.3%	86.3%	99.6%		
Real gate-to-gate ANSP costs (in M €2009)	123.6	131.9	135.7	139.2		
Total CAPEX as % of Real gate-to-gate ANSP costs	3.9%	2.7%	3.2%	4.3%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-9.2	-12.0	-10.5	-9.2		
Total CAPEX (in M €2009)	-8.3	-10.7	-9.2	-7.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-63.0%</b>	<b>-75.3%</b>	<b>-67.9%</b>	<b>-57.0%</b>		



# Annual Monitoring Report 2018

Local level view  
Switzerland



## SWITZERLAND

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	77	C	C	C	D	C
SKYGUIDE	93	D	C	D	D	E
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			FOCA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			9	0		
Legal/Judiciary			6	1		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>17</b>	<b>1</b>		
SKYGUIDE			Number of questions answered			
			YES	NO		
Policy and its implementation			13	0		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			8	0		
<b>TOTAL</b>			<b>23</b>	<b>1</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

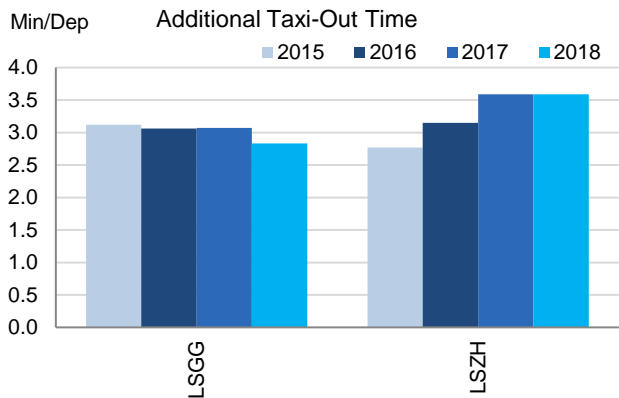
## SWITZERLAND

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

Switzerland identifies its two main airports Zurich (LSZH) and Geneva (LSGG) as subject to RP2 monitoring. Both airports have a fully implemented data flow that allows the proper monitoring of environmental indicators. In general the environmental performance of Swiss airports is commensurate with their levels of traffic.

## 2. Additional Taxi-Out Time

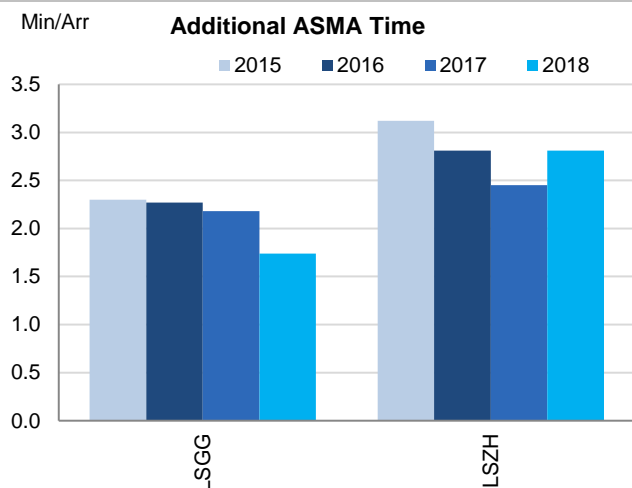


Additional taxi-out times at Geneva, where traffic levels are similar to those in 2015, have slightly decreased (LSGG; 2017: 3.07 min/dep.; 2018: 2.83 min/dep.) and remain below the SES average (3.57 min/dep.).

At Zurich (LSZH) where traffic increased by 3% in 2018 with respect to 2017, the performance in the winter months improved, while additional taxi-out times were slightly higher in the rest of the year.

Both Geneva and Zurich are A-CDM airports.

## 3. Additional ASMA Time



Additional ASMA times at Geneva have been reduced throughout the entire 2018, while at Zurich there is an increase in the second half of the year with respect to 2017.

Performance at Geneva (LSGG; 2018: 1.74 min/arr.) sits next to the SES average (1.75 min/dep), while Zurich shows the 5th highest additional ASMA times in the SES airports subject to monitoring (LSZH; 2018: 2.81 min/arr.)

According to the FABEC monitoring report: *In Geneva and Zürich, the deployment of respectively an Arrival Manager and an enhanced Extended Arrival Manager will help to further reduce the inefficiencies in the last 40NM.*

*Further actions need be conducted in Zürich in order to reduce the complexity of the operations.*

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Genève	LSGG	3.12	3.06	3.07	2.83		2.30	2.27	2.18	1.74	
Zürich	LSZH	2.77	3.15	3.59	3.59		3.12	2.81	2.45	2.81	



**SWITZERLAND**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.22	0.22	0.22	0.23	0.23	Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay and includes NM post operations adjustment.
Deadband +/-	N/A	N/A	N/A	N/A	N/A	
Actual performance	0.10	0.10	0.20	0.31		

**National capacity incentive scheme**

Incentive scheme targets:  
 The capacity delay target at FAB level was set at an average of 0.33 min/flight for CRSTMP causes ATFM delays. skyguide's broken down target was set at 0.18 min/flight.

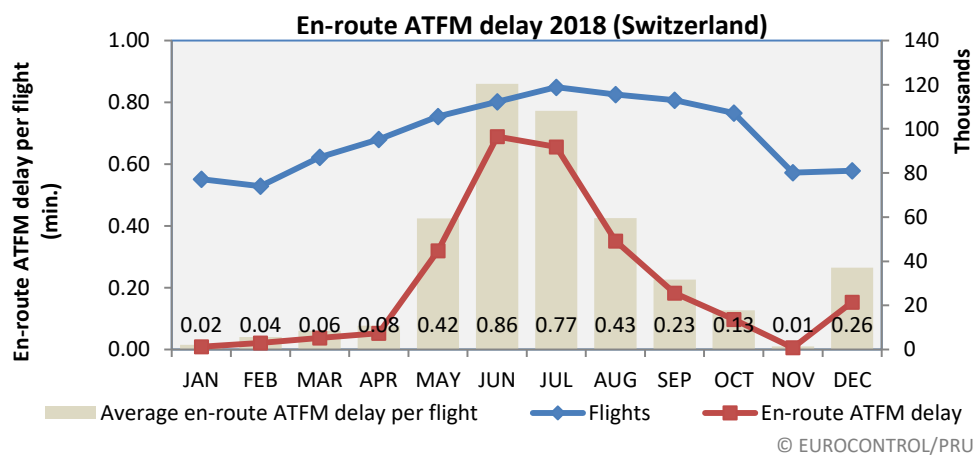
2018 achievement (As reported by FABEC)  
 - FABEC: 1.42min/flight for CRSTMP ATFM delays  
 - skyguide: 0.16 min/flight for CRSTMP delays

BONUS / MALUS  
 skyguide as an ANSP not contributing to the FAB under-performance, is not subject to a malus

**Compliance issues relating to national capacity performance**

The PRB noted several compliance issues regarding the proposed FABEC en route incentive scheme submitted in the FABEC performance plan dated July 2015. The compliance issues were: the individual ANSP contributions are not consistent with the required capacity performance and that the proposed target, using CRSTMP codes only, is not consistent with the required capacity performance. FABEC addressed both issues in the Revised FABEC performance plan (version 3.0) submitted in January 2017.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Switzerland)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.76	0.51	0.48	0.21	0.15	0.14	0.10	0.10	0.10	0.20	0.31

EUROCONTROL 7 year forecast February 2014 – Switzerland											
	2014	2015	2016	2017	2018	2019					
		actual		actual		actual		actual		actual	
High	1048		1083		1129		1164		1199		1228
Base	1034	<b>1033</b>	1060	<b>1046</b>	1088	<b>1069</b>	1110	<b>1110</b>	1134	<b>1167</b>	1160
Low	1019		1033		1039		1046		1056		1066

Traffic levels in Switzerland in 2018 rose by just over 5% on 2017 levels. Traffic levels were between the baseline and high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans and associated capacity plans were being determined.

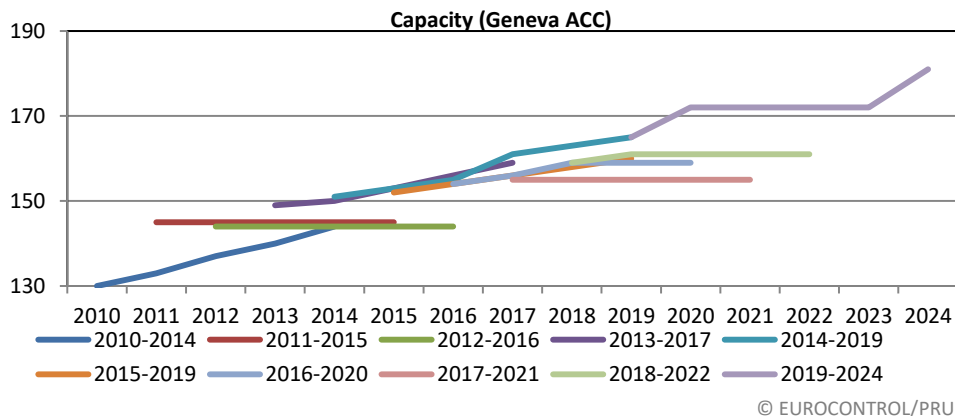
As part of the 4ACC initiative, implemented by the Network Manager and various ANSPs to address the significant capacity shortfall in Karlsruhe and Maastricht UACs, RAD constraints and scenarios were put in place to re-route traffic and Zurich ACC received an increase in traffic and delays. In accordance with the decision of the NMB, the Network Manager has reallocated 41k minutes of delay in Switzerland to Karlsruhe and Maastricht UACs.

En route AFTM delay increased by 55% to 0.31 minutes per flight from 0.2 minutes in 2017. 43% of delay was attributed to ATC capacity; 38% to adverse weather and 16% was attributed to ATC staffing. Approximately 18% of delays attributed to ATC capacity, and 10% of delays attributed to adverse weather, occurred in collapsed sectors.

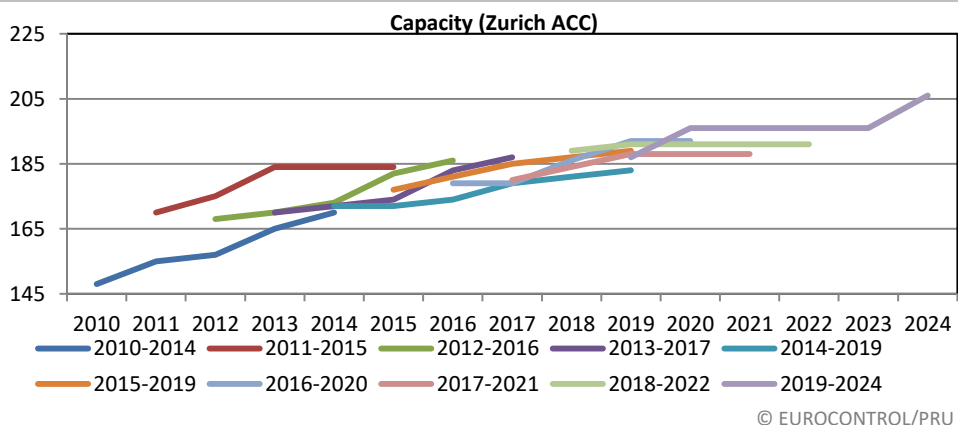
The latest version of the Network Operations Plan 2019 – 2024 contains the latest capacity plans for both Geneva and Zurich ACCs. The Network Manager recommends that Switzerland should plan for traffic growth according to the STATFOR high traffic scenario. Whilst Geneva ACC is expected to provide capacity performance close to the reference values, Zurich ACC is expected to generate delays at higher levels than the network capacity requirements.

Zurich ACC reports that it doubts the projected traffic growth and therefore does not consider it “reasonable to heavily invest in order to accommodate a traffic growth that might or might not materialise, especially if [it] is to reach the cost-efficiency targets.”

skyguide delay forecast							
		2019	2020	2021	2022	2023	2024
NOP 2018 -	2022	0.26	0.35	0.47	0.64	N/A	N/A
NOP 2019 -	2024	0.32	0.32	0.31 – 0.46			



The capacity gains might be cancelled out by the decrease in capacity linked to the cost reduction measures (which affect ATCOs, as much as technical and operational support staff).



The capacity gains might be cancelled out by the decrease in capacity linked to the cost reduction measures (which affect ATCOs, as much as technical and operational support staff).

## Planning and Effective Use of CDRs

Switzerland did not provide any data.

## Observations on Planning and Effective Use of CDRs

It is noted that Switzerland like many other States, is unable to monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network

## Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
58%	73%	70%	71%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
7%	5%	7%	7%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	100%	100%	100%	

Switzerland reports:1.The aggregated values for SUA booking/usage are not relevant for FUA analysis and evaluation. The only relevant information remains per area. The data are available and can be delivered on request.

2. Airspace is very often released at tactical level (ASM level 3), however tactical releases are yet not always recorded in ASM systems and also not always notified to the NM.

3. AUPs are made up of airspace allocations for civil and military missions and also for ASM/ATC purposes. Civil missions represented 4% of all the missions contained in the AUPs.

4. Rolling UUP and Proc 3 have been introduced by 01.01.2016.

## Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator.

**SWITZERLAND**

**Monitoring of Airports Contribution to CAPACITY for 2018**

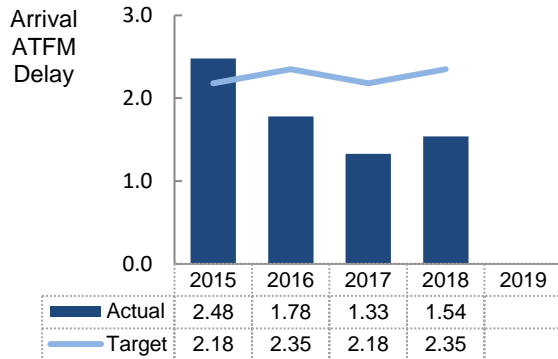
**1. Overview**

In Switzerland, ANS at Zurich (LSZH) and Geneva (LSGG) are subject to RP2 monitoring. Traffic levels at these airports have slightly increased during RP2 (+2.8% with respect to 2015), but performance has improved, as arrival ATFM delays are moderately lower than those in the beginning of the reference period (-38% in 2018 with respect to 2015) and ATFM slot adherence has increased (2015:91.8%; 2018:93.6%).

The established national target on arrival ATFM delay for 2018 was fully met.

In terms of ATC pre-departure delay, the national performance along RP2 is positively influenced by the improvement at Zurich (LSZH) although values have slightly risen in 2018 for both airports.

**2. Arrival ATFM Delay**



During 2018, arrival ATFM delays in Switzerland are moderately higher than with respect to the previous year (2017: 1.33 min/arr, 2018: 1.54 min/arr). The performance however meets the national target in 2018.

The biggest contributor to these delays are, in both airports, the weather regulations. For the rest, while in Zurich (LSZH) the other main causes are aerodrome capacity and environmental issues, in Geneva (LSGG) there is a mix of regulation reasons, but mostly ATC staffing and aerodrome capacity.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

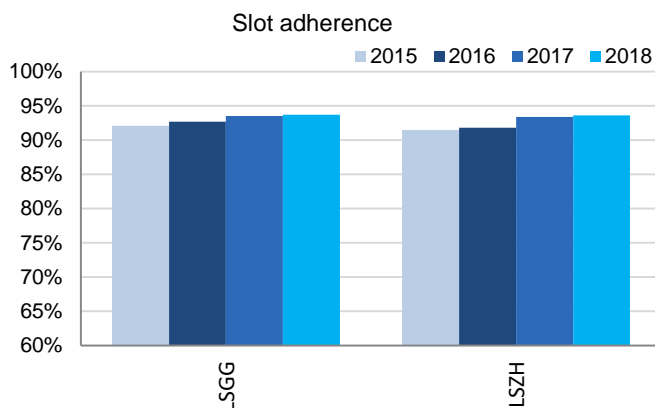
The FABEC performance plan establishes a traffic-dependent national target on arrival ATFM delay (CRSTMP delay causes).

As traffic increased by 1,1% (>1%) in 2018, the targets need to be adjusted for 2018: 2.35 min for all regulation causes and 0.46 min for CRSTMP.

The Swiss ANSP did achieve the target for all regulation causes since the actual Airport ATFM arrival delay per flight was 1.54 min/arr and achieved the target for the CRSTMP part since actual Airport CRSTMP ATFM arrival delay per flight reached 0.16 min/flt in 2018.

Switzerland has established a respective incentive scheme. As the target for all causes was met, the ANSP qualified for bonus. Given that  $0.46 - 50\% * 0.46 = 0.3$  and  $0.16 < 0.23$ , the maximum of bonus is reached, i.e., 0.5% of the revenues in the CH Terminal part.

**4. ATFM Slot Adherence**



Adherence to ATFM slots improved again slightly at both airports, getting closer to a 94% slot compliance.

**5. ATC Pre-departure Delay**

ATC pre-departure delays at Zurich (LSZH), after the improvement showed in 2017, now have increased again and range above the minute per departure, while the performance at Geneva (LSGG) has deteriorated again but remains under half a minute per departure.

**6. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Genève	LSGG	1.85	1.11	0.88	1.14		92.1%	92.7%	93.5%	93.7%		0.25	0.35	0.34	0.40	
Zürich	LSZH	2.92	2.25	1.65	1.80		91.5%	91.8%	93.4%	93.6%		1.93	1.12	0.95	1.09	

**SWITZERLAND: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**

1. Contextual economic information: en-route air navigation services					
· Switzerland ECZ represents 1.7% of the SES en-route ANS determined costs in 2018 · ATSP: Skyguide · FAB: FABEC · National currency: CHF Exchange rate 2009: 1 EUR = 1.50898 CHF					
2. En-route DUC monitoring at Charging Zone level					
Switzerland: Data from RP2 Performance Plan (EC Decision 2017/553 of 22 March 2017)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal CHF)	158 188 309	156 222 383	157 901 505	157 939 446	159 353 943
Inflation %	-1.0%	0.0%	0.5%	1.0%	1.0%
Inflation index (100 in 2009)	99.1	99.1	99.6	100.6	101.6
Real en-route costs (CHF2009)	159 633 416	157 649 529	158 551 235	157 019 140	156 856 827
Total en-route Service Units	1 452 683	1 470 066	1 490 591	1 512 889	1 565 000
<b>Real en-route unit cost per Service Unit (CHF2009)</b>	<b>109.89</b>	<b>107.24</b>	<b>106.37</b>	<b>103.79</b>	<b>100.23</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>72.82</b>	<b>71.07</b>	<b>70.49</b>	<b>68.78</b>	<b>66.42</b>
Switzerland: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal CHF)	155 396 234	143 427 824	173 557 574	167 074 878	
Inflation %	-0.8%	-0.5%	0.6%	0.9%	
Inflation index (100 in 2009)	99.3	98.8	99.4	100.3	
Real en-route costs (CHF2009)	156 499 672	145 172 138	174 620 590	166 598 800	
Total en-route Service Units	1 454 786	1 493 182	1 603 674	1 741 384	
<b>Real en-route unit cost per Service Unit (CHF2009)</b>	<b>107.58</b>	<b>97.22</b>	<b>108.89</b>	<b>95.67</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>71.29</b>	<b>64.43</b>	<b>72.16</b>	<b>63.40</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal CHF)					
in value	-2 792 076	-12 794 559	15 656 068	9 135 432	
in %	-1.8%	-8.2%	9.9%	5.8%	
Inflation %					
in p.p.	0.2 p.p.	-0.5 p.p.	0.1 p.p.	-0.1 p.p.	
Inflation index (100 in 2009)					
in p.p.	0.2 p.p.	-0.3 p.p.	-0.2 p.p.	-0.3 p.p.	
Real en-route costs (CHF2009)					
in value	-3 133 743	-12 477 391	16 069 355	9 579 660	
in %	-2.0%	-7.9%	10.1%	6.1%	
Total en-route Service Units					
in value	2 103	23 116	113 083	228 495	
in %	0.1%	1.6%	7.6%	15.1%	
<b>Real en-route unit cost per Service Unit (CHF2009)</b>					
in value	<b>-2.31</b>	<b>-10.02</b>	<b>2.52</b>	<b>-8.12</b>	
in %	<b>-2.1%</b>	<b>-9.3%</b>	<b>2.4%</b>	<b>-7.8%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-1.53</b>	<b>-6.64</b>	<b>1.67</b>	<b>-5.38</b>	
in %	<b>-2.1%</b>	<b>-9.3%</b>	<b>2.4%</b>	<b>-7.8%</b>	
3. Focus on en-route at State/Charging Zone level					
<p><b>En-route unit cost</b>                      In 2018, the actual en-route unit cost in real terms (63.40 €2009) is -7.8% lower than planned in the PP (68.78 €2009). This results from the combination of much higher than planned TSUs (+15.1%) and higher than planned en-route costs in real terms (+6.1%, or +6.3 M€2009).</p> <p><b>En-route service units</b>                      The difference between actual and planned TSUs (+15.1%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Skyguide) retaining an amount of +3.8 M€2009.                      According to STATFOR February 2019 base scenario, the en-route TSUs for Switzerland are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).</p> <p><b>En-route costs</b>                      In nominal terms, actual en-route costs are +5.8% (+9.1 MCHF) higher than planned. However, since the actual inflation index is slightly lower than planned (-0.3 p.p.), actual en-route costs are +6.1% (+6.3 M€2009) above plans when expressed in real terms.                      The higher than planned en-route costs in real terms are driven by Skyguide (+7.6%, or +6.6 M€2009) and the NSA/EUROCONTROL (+0.1%, or +0.01 M€2009), while the costs for the MET service provider (-3.6%, or -0.3 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.</p> <p>Costs exempt from cost-sharing are reported for a total amount of -2.2 M€2009 comprising -0.0 M€2009 for the variation in EUROCONTROL costs and -2.1 M€2009 for other international agreements. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>					

SWITZERLAND: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



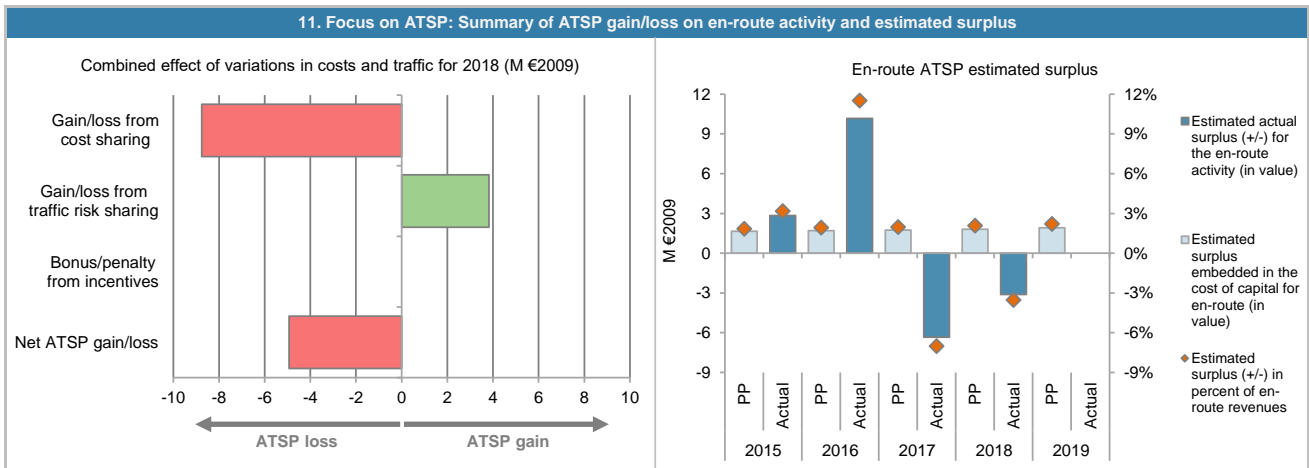
## SWITZERLAND: En-route ATSP (Skyguide)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	89 375	87 620	87 911	86 693	
Actual costs for the ATSP	88 001	79 469	98 658	93 311	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 374	8 151	-10 747	-6 618	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-151	-807	-542	-2 140	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 223</b>	<b>7 344</b>	<b>-11 289</b>	<b>-8 758</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	0.1%	1.6%	7.6%	15.1%	
Determined costs for the ATSP (PP) - based on actual inflation	89 195	87 883	88 087	86 953	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>129</b>	<b>1 382</b>	<b>3 238</b>	<b>3 826</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>1 352</b>	<b>8 726</b>	<b>-8 051</b>	<b>-4 932</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	96 080	96 991	99 196	102 582	107 482
Estimated proportion of financing through equity (in %)	65.5%	66.4%	66.9%	67.3%	67.7%
Estimated proportion of financing through equity (in value)	62 949	64 444	66 404	69 003	72 810
Estimated proportion of financing through debt (in %)	34.5%	33.6%	33.1%	32.7%	32.3%
Estimated proportion of financing through debt (in value)	33 131	32 547	32 792	33 578	34 672
Cost of capital pre-tax (in value)	2 402	2 425	2 480	2 565	2 687
Average interest on debt (in %)	2.2%	2.2%	2.2%	2.2%	2.2%
Interest on debt (in value)	739	726	732	749	774
Determined RoE pre-tax rate (in %)	2.6%	2.6%	2.6%	2.6%	2.6%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 663	1 699	1 748	1 815	1 913
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 663</b>	<b>1 699</b>	<b>1 748</b>	<b>1 815</b>	<b>1 913</b>
<b>Revenue/costs for the en-route activity</b>	<b>89 375</b>	<b>87 620</b>	<b>87 911</b>	<b>86 693</b>	<b>86 375</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>1.9%</b>	<b>1.9%</b>	<b>2.0%</b>	<b>2.1%</b>	<b>2.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	86 563	82 616	96 595	102 586	
Estimated proportion of financing through equity (in %)	65.5%	66.4%	66.9%	67.3%	
Estimated proportion of financing through equity (in value)	56 714	54 892	64 663	69 006	
Estimated proportion of financing through debt (in %)	34.5%	33.6%	33.1%	32.7%	
Estimated proportion of financing through debt (in value)	29 849	27 723	31 932	33 580	
Cost of capital pre-tax (in value)	2 164	2 065	2 415	2 565	
Average interest on debt (in %)	2.2%	2.2%	2.2%	2.2%	
Interest on debt (in value)	666	619	712	749	
Determined RoE pre-tax rate (in %)	2.6%	2.6%	2.6%	2.6%	
Estimated surplus embedded in the cost of capital for en-route (in value)	1 498	1 447	1 702	1 815	
Net ATSP gain(+)/loss(-) on en-route activity	1 352	8 726	-8 051	-4 932	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>2 850</b>	<b>10 173</b>	<b>-6 348</b>	<b>-3 116</b>	
<b>Revenue/costs for the en-route activity</b>	<b>89 353</b>	<b>88 195</b>	<b>90 607</b>	<b>88 379</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.2%</b>	<b>11.5%</b>	<b>-7.0%</b>	<b>-3.5%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>5.0%</b>	<b>18.5%</b>	<b>-9.8%</b>	<b>-4.5%</b>	

**SWITZERLAND: En-route ATSP (Skyguide)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 Skyguide en-route costs vs. PP**

In 2018, Skyguide actual en-route costs are +7.6% (+6.6 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- slightly higher staff costs (+1.7%, or +1.2 M€2009);
- much higher other operating costs (+91.9%, or +3.7 M€2009);
- much higher depreciation costs (+11.6%, or +1.8 M€2009);
- cost of capital remaining practically the same as planned (+0.00 M€2009).

According to the additional information to the June 2019 en-route Reporting Tables *"The higher costs in 2018 are explained by a decrease in financing on delegated airspaces. Skyguide could not compensate this decrease in revenue with cost savings. It is to be noted that these revenues are deducted from the determined costs (in cost items 1.1 to 1.4) to match with the Swiss FIR, as requested by the PRU"*

**Skyguide net gain/loss on en-route activity in 2018**

As shown in box 9, Skyguide generated a net loss of -4.9 M€2009 on the en-route activity. This is a combination of two elements:

- a loss of -8.8 M€2009 arising from the cost sharing mechanism; and
- a gain of +3.8 M€2009 arising from the traffic risk sharing mechanism.

The loss from cost sharing mentioned above (-8.8 M€2009) includes amounts reported by Skyguide for cost exempt from cost sharing (-2.1 M€2009). Should these costs not be deemed eligible by the European Commission, Skyguide would record a net loss of -2.8 M€2009 for the en-route activity in 2018.

**Skyguide overall estimated surplus for the en-route activity**

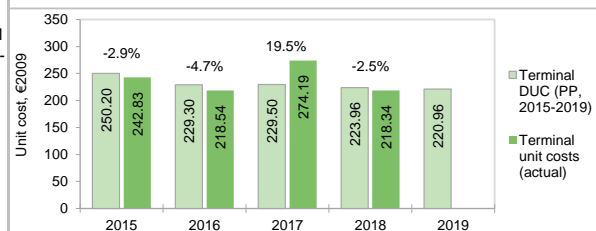
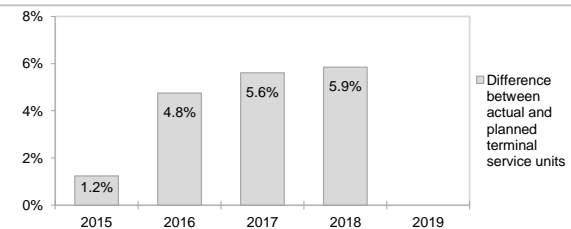
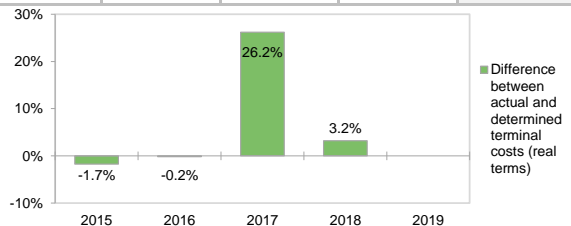
Ex-post, the overall estimated surplus taking into account the net loss from the en-route activity mentioned above (-4.9 M€2009) and the surplus embedded in the actual cost of capital (+1.8 M€2009) amounts to -3.1 M€2009 (3.5% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is -4.5%, which is much lower than the 2.6% planned in the PP.



## SWITZERLAND: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
Switzerland TCZ represents 5.8% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes		
ATSP:	Skyguide	Airports with fewer than 70,000 IFRs ATMs:		0		
National currency:	CHF	Airports with between 70,000 and 225,000 IFRs ATMs:		1		
Number of airports in charging zone in 2018:	2,	of which:	Airports with more than 225,000 IFRs ATMs:	1		
2. Terminal DUC monitoring at Charging Zone level						
Switzerland: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal CHF)	98 654 883	91 827 842	93 196 484	93 781 285	95 413 139	
Inflation %	-1.0%	0.0%	0.5%	1.0%	1.0%	
Inflation index (100 in 2009)	99.1	99.1	99.6	100.6	101.6	
Real terminal costs (CHF2009)	99 556 131	92 666 721	93 579 967	93 234 826	93 917 991	
Total terminal Service Units	263 690	267 811	270 219	275 889	281 677	
<b>Real terminal unit cost per Service Unit (CHF2009)</b>	<b>377.55</b>	<b>346.01</b>	<b>346.31</b>	<b>337.94</b>	<b>333.42</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>250.20</b>	<b>229.30</b>	<b>229.50</b>	<b>223.96</b>	<b>220.96</b>	
Switzerland: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal CHF)	97 128 233	91 402 849	117 353 678	96 490 195		
Inflation %	-0.8%	-0.5%	0.6%	0.9%		
Inflation index (100 in 2009)	99.3	98.8	99.4	100.3		
Real terminal costs (CHF2009)	97 817 921	92 514 455	118 072 454	96 215 247		
Total terminal Service Units	266 955	280 536	285 378	292 032		
<b>Real terminal unit cost per Service Unit (CHF2009)</b>	<b>366.42</b>	<b>329.78</b>	<b>413.74</b>	<b>329.47</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>242.83</b>	<b>218.54</b>	<b>274.19</b>	<b>218.34</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal CHF)	in value	-1 526 651	-424 993	24 157 194	2 708 910	
	in %	-1.5%	-0.5%	25.9%	2.9%	
Inflation %	in p.p.	0.2 p.p.	-0.5 p.p.	0.1 p.p.	-0.1 p.p.	
Inflation index (100 in 2009)	in p.p.	0.2 p.p.	-0.3 p.p.	-0.2 p.p.	-0.3 p.p.	
Real terminal costs (CHF2009)	in value	-1 738 209	-152 266	24 492 486	2 980 421	
	in %	-1.7%	-0.2%	26.2%	3.2%	
Total terminal Service Units	in value	3 265	12 724	15 158	16 144	
	in %	1.2%	4.8%	5.6%	5.9%	
<b>Real terminal unit cost per Service Unit (CHF2009)</b>	in value	<b>-11.13</b>	<b>-16.24</b>	<b>67.43</b>	<b>-8.48</b>	
	in %	<b>-2.9%</b>	<b>-4.7%</b>	<b>19.5%</b>	<b>-2.5%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>-7.37</b>	<b>-10.76</b>	<b>44.69</b>	<b>-5.62</b>	
	in %	<b>-2.9%</b>	<b>-4.7%</b>	<b>19.5%</b>	<b>-2.5%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Switzerland Terminal Charging Zone (TCZ) comprising 2 airports.						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms ( 218.34 €2009) is -2.5% lower than planned in the PP ( 223.96 €2009). This results from the combination of higher than planned TNSUs (+5.9%) and higher than planned terminal costs in real terms (+3.2%, or + 2.0 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in Switzerland TCZ. The difference between actual and planned TNSUs (+5.9%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Skyguide) retaining an amount of + 1.9 M€2009.						
According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Switzerland are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +2.9% (+ 2.7 MCHF) higher than planned. However, since the actual inflation index is slightly lower than planned (-0.3 p.p.), actual terminal costs are +3.2% (+ 2.0 M€2009) above plans when expressed in real terms.						
The higher than planned terminal costs in real terms are driven by Skyguide (+3.6%, or +2.1 M€2009), while the costs for the MET service provider (-7.0%, or -0.1 M€2009) and the NSA (-1.3%) are lower than planned. A detailed analysis at ATSP level is provided in box 12.						
There are no costs exempt from cost-sharing reported.						



SWITZERLAND: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	3.6%
Other ANSPs	-
METSP	-7.0%
NSA	-1.3%
Total	3.2%

Costs by nature at ATSP level:

Staff	2.2%
Other operating costs	-4.0%
Depreciation	20.6%
Cost of capital	-8.6%
Exceptional items	-
VFR exempted flights	-
Total	3.6%

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	0	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

Switzerland 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - CHF

The terminal unit rate charged to airspace users (CUR) in 2018 is 325.56 CHF. This is -4.2% lower than the nominal DUC ( 339.92 CHF). The difference between these two figures (- 14.36 CHF) relates to:

- the inflation adjustment (- 1.00 CHF), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018;
- a traffic risk sharing adjustment (- 6.16 CHF), which reflects the gain in revenues due to higher than planned traffic in 2016, to be reimbursed to airspace users in 2018;
- a traffic adjustment (- 0.35 CHF), for the costs not subject to traffic risk sharing and the related over recovery due to higher traffic than planned in 2016 to be reimbursed to airspace users in 2018;
- a bonus in respect of the capacity target incentive mechanism related to 2016 performance (+ 1.71 CHF); and
- an adjustment from the over recovery up to 2014 (- 8.57 CHF), corresponding to the over recoveries incurred before the introduction of the Performance Scheme and carried-over to 2018.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

Switzerland 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - CHF

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 ( 331.49 CHF) is -2.5% lower than the nominal DUC ( 339.92 CHF). The difference between these two figures (- 8.43 CHF) is mainly due to:

- the inflation adjustment (- 0.96 CHF), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020;
- a traffic risk sharing adjustment (- 8.33 CHF), which reflects the gain in revenues due to higher than planned traffic in 2018, to be reimbursed to airspace users in 2020;
- a traffic adjustment (- 0.71 CHF), for the costs not subject to traffic risk sharing and the related over recoveries due to higher traffic than planned in 2018 to be reimbursed to airspace users in 2020; and
- a bonus in respect of the capacity target incentive mechanism related to 2018 performance (+ 1.57 CHF).

These costs and adjustments (**for other revenues see Reader's Guide**) are divided by the **actual** TNSUs in 2018.

## SWITZERLAND: Terminal ATSP (Skyguide)

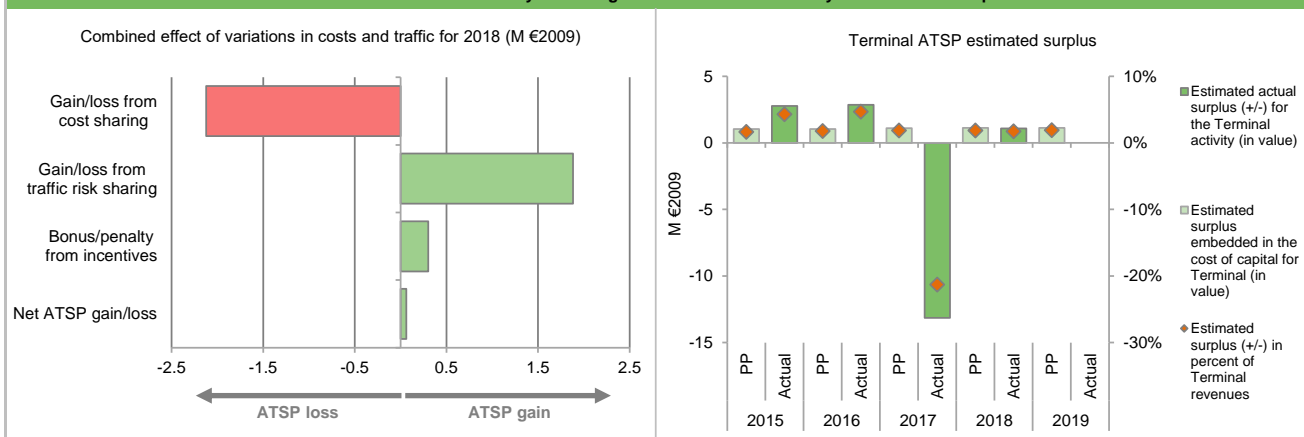
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	63 597	59 031	59 648	59 443	
Actual costs for the ATSP	62 542	59 059	76 063	61 565	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 055	-28	-16 415	-2 122	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 055</b>	<b>-28</b>	<b>-16 415</b>	<b>-2 122</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.2%	4.8%	5.6%	5.9%	
Determined costs for the ATSP (PP) - based on actual inflation	63 469	59 208	59 768	59 621	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>786</b>	<b>1 673</b>	<b>1 843</b>	<b>1 881</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>317</b>	<b>306</b>	<b>302</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>1 841</b>	<b>1 962</b>	<b>-14 267</b>	<b>61</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	60 828	59 901	63 720	63 501	64 009
Estimated proportion of financing through equity (in %)	65.2%	65.8%	66.4%	66.9%	67.5%
Estimated proportion of financing through equity (in value)	39 670	39 422	42 302	42 509	43 193
Estimated proportion of financing through debt (in %)	34.8%	34.2%	33.6%	33.1%	32.5%
Estimated proportion of financing through debt (in value)	21 157	20 479	21 419	20 992	20 816
Cost of capital pre-tax (in value)	1 521	1 498	1 593	1 588	1 600
Average interest on debt (in %)	2.2%	2.2%	2.2%	2.2%	2.2%
Interest on debt (in value)	472	457	478	468	464
Determined RoE pre-tax rate (in %)	2.6%	2.6%	2.6%	2.6%	2.6%
Estimated surplus embedded in the cost of capital for terminal (in value)	1 049	1 041	1 115	1 119	1 136
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 049</b>	<b>1 041</b>	<b>1 115</b>	<b>1 119</b>	<b>1 136</b>
<b>Revenue/costs for the terminal activity</b>	<b>63 597</b>	<b>59 031</b>	<b>59 648</b>	<b>59 443</b>	<b>59 919</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>1.6%</b>	<b>1.8%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>	<b>2.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	54 399	51 828	64 068	58 011	
Estimated proportion of financing through equity (in %)	65.2%	65.8%	66.4%	66.9%	
Estimated proportion of financing through equity (in value)	35 477	34 109	42 532	38 834	
Estimated proportion of financing through debt (in %)	34.8%	34.2%	33.6%	33.1%	
Estimated proportion of financing through debt (in value)	18 921	17 719	21 535	19 177	
Cost of capital pre-tax (in value)	1 360	1 296	1 602	1 450	
Average interest on debt (in %)	2.2%	2.2%	2.2%	2.2%	
Interest on debt (in value)	422	395	480	428	
Determined RoE pre-tax rate (in %)	2.6%	2.6%	2.6%	2.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	938	900	1 121	1 022	
Net ATSP gain(+)/loss(-) on terminal activity	1 841	1 962	-14 267	61	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>2 779</b>	<b>2 863</b>	<b>-13 146</b>	<b>1 084</b>	
<b>Revenue/costs for the terminal activity</b>	<b>64 383</b>	<b>61 021</b>	<b>61 796</b>	<b>61 627</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>4.3%</b>	<b>4.7%</b>	<b>-21.3%</b>	<b>1.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>7.8%</b>	<b>8.4%</b>	<b>-30.9%</b>	<b>2.8%</b>	

**SWITZERLAND: Terminal ATSP (Skyguide)**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 Skyguide terminal costs vs. PP**

In 2018, Skyguide actual terminal costs are +3.6% (+2.1 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- slightly higher staff costs (+2.2%, or +0.9 M€2009);
- lower other operating costs (-4.0%, or -0.3 M€2009);
- much higher depreciation costs (+20.6%, or +1.6 M€2009);
- lower cost of capital (-8.6%, or -0.1 M€2009);

**Skyguide net gain/loss on terminal activity in 2018**

As shown in box 9, Skyguide generated a net gain of +0.06 M€2009 on the terminal activity. This is a combination of three elements:

- a loss of -2.1 M€2009 arising from the cost sharing mechanism;
- a gain of +1.9 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.3 M€2009 (or +0.46 MCHF in nominal terms), corresponding to a bonus as part of the terminal capacity target incentive mechanism. This amount corresponds to 0.5% of Skyguide terminal revenues (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission.

**Skyguide overall estimated surplus for the terminal activity.**

Ex-post, the overall estimated surplus taking into account the gain from the terminal activity mentioned above (+0.06 M€2009) and the surplus embedded in the actual cost of capital (+1.0 M€2009) amounts to +1.1 M€2009 (1.8% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is 2.8%, which is slightly higher than the 2.6% planned in the PP.

## SWITZERLAND: Gate-to-gate

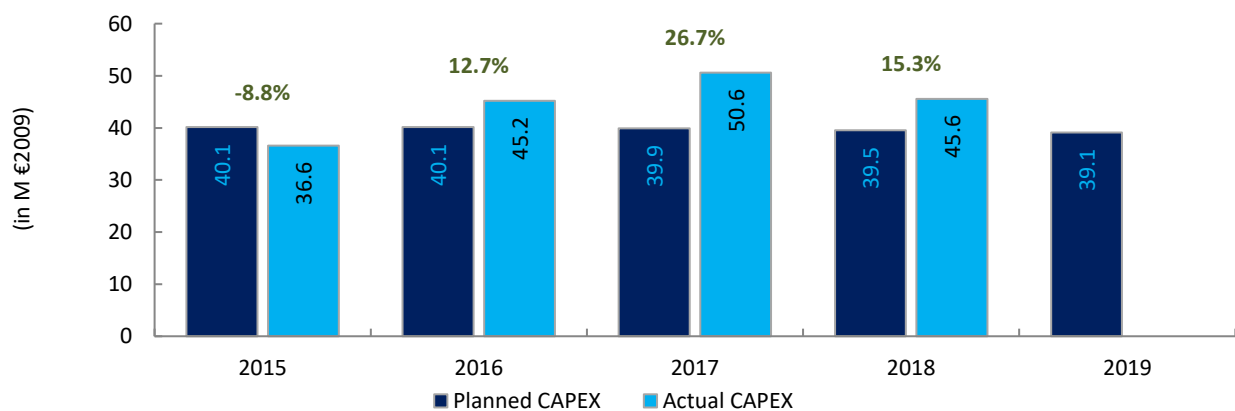
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Switzerland: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	105 788 954	104 474 234	105 071 794	104 056 476	103 948 911																																							
Real terminal costs (EUR2009)	65 975 779	61 410 172	62 015 379	61 786 655	62 239 388																																							
Real gate-to-gate costs (EUR2009)	171 764 733	165 884 406	167 087 173	165 843 130	166 188 298																																							
En-route share (%)	61.6%	63.0%	62.9%	62.7%	62.5%																																							
<b>Switzerland: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	103 712 224	96 205 475	115 720 944	110 404 909																																								
Real terminal costs (EUR2009)	64 823 869	61 309 265	78 246 533	63 761 778																																								
Real gate-to-gate costs (EUR2009)	168 536 093	157 514 741	193 967 477	174 166 687																																								
En-route share (%)	61.5%	61.1%	59.7%	63.4%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-3 228 639	-8 369 665	26 880 304	8 323 557																																								
in %	-1.9%	-5.0%	16.1%	5.0%																																								
En-route share in p.p.	-0.1 p.p.	-1.9 p.p.	-3.2 p.p.	0.6 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +5.0% (+ 8.3 M€2009) higher than planned due to higher than planned en-route costs (+6.1%, or + 6.3 M€2009) and terminal costs (+3.2%, or + 2.0 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (63.4%) is slightly higher than planned in the PP for 2018 (62.7%).</p> <p>For Skyguide, the estimated gate-to-gate economic surplus in 2018 amounts to - 2.3 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to -1.6% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>61.6%</td> <td>38.4%</td> </tr> <tr> <td>Actual</td> <td>61.5%</td> <td>38.5%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>63.0%</td> <td>37.0%</td> </tr> <tr> <td>Actual</td> <td>61.1%</td> <td>38.9%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>62.9%</td> <td>37.1%</td> </tr> <tr> <td>Actual</td> <td>59.7%</td> <td>40.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>62.7%</td> <td>37.3%</td> </tr> <tr> <td>Actual</td> <td>63.4%</td> <td>36.6%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>62.5%</td> <td>37.5%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	61.6%	38.4%	Actual	61.5%	38.5%	2016	Determined	63.0%	37.0%	Actual	61.1%	38.9%	2017	Determined	62.9%	37.1%	Actual	59.7%	40.3%	2018	Determined	62.7%	37.3%	Actual	63.4%	36.6%	2019	Determined	62.5%	37.5%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	61.6%	38.4%																																									
	Actual	61.5%	38.5%																																									
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	Actual	63.4%	36.6%																																									
2019	Determined	62.5%	37.5%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Switzerland</b>																																												

## SWITZERLAND

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Skyguide						
FAB: FABEC						
Currency: CHF						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	60.0	60.0	60.0	60.0	60.0	300.0
Main CAPEX (in nominal M)	23.4	23.3	16.9	12.5	11.8	87.9
Inflation %	-1.0%	0.0%	0.5%	1.0%	1.0%	
Inflation index (100 in 2009)	99.1	99.1	99.6	100.6	101.6	
Exchange rate 2009	1.50898	1.50898	1.50898	1.50898	1.50898	
<b>Total CAPEX (in M €2009)</b>	<b>40.1</b>	<b>40.1</b>	<b>39.9</b>	<b>39.5</b>	<b>39.1</b>	<b>198.8</b>
Main CAPEX (in M €2009)	15.7	15.6	11.2	8.2	7.7	58.4
% Main of Total CAPEX	39.0%	38.8%	28.1%	20.8%	19.7%	29.4%
Real gate-to-gate ANSP costs (in M €2009)	153.0	146.7	147.6	146.1	146.3	739.6
Total CAPEX as % of Real gate-to-gate ANSP costs	26.2%	27.4%	27.1%	27.1%	26.8%	26.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	54.8	67.4	75.8	69.0		
Main CAPEX (in nominal M)	18.8	20.3	13.1	11.0		
Inflation %	-0.8%	-0.5%	0.6%	0.9%		
Inflation index (100 in 2009)	99.3	98.8	99.4	100.3		
Exchange rate 2009	1.50898	1.50898	1.50898	1.50898		
<b>Total CAPEX (in M €2009)</b>	<b>36.6</b>	<b>45.2</b>	<b>50.6</b>	<b>45.6</b>		
Main CAPEX (in M €2009)	12.5	13.6	8.7	7.3		
% Main of Total CAPEX	34.3%	30.1%	17.3%	15.9%		
Real gate-to-gate ANSP costs (in M €2009)	150.5	138.5	174.7	154.9		
Total CAPEX as % of Real gate-to-gate ANSP costs	24.3%	32.6%	28.9%	29.4%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-5.2	7.4	15.8	9.0		
Total CAPEX (in M €2009)	-3.5	5.1	10.6	6.0		
<b>Total CAPEX (in %, M €2009)</b>	<b>-8.8%</b>	<b>12.7%</b>	<b>26.7%</b>	<b>15.3%</b>		



# Annual Monitoring Report 2018

Local level view  
NE FAB





## NEFAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management							
			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	B	B	B	
	ANSPs	For Safety Culture MO	C	C	C	D	
	ANSPs	For all other MOs	A	C	C	C	
Application of the severity classification of the Risk Analysis Tool (RAT)							
Ground Score			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	98%	96%	97%	
	Runway Incursions (RIs)		97%	94%	72%	90%	
Overall Score			2015 Value	2016 Value	2017 Target	2018 Target	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	99%	100%	100%	
	Runway Incursions (RIs)		97%	95%	78%	99%	
	ATM Specific occurrences (ATM-S)		100%	97%	91%	80%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

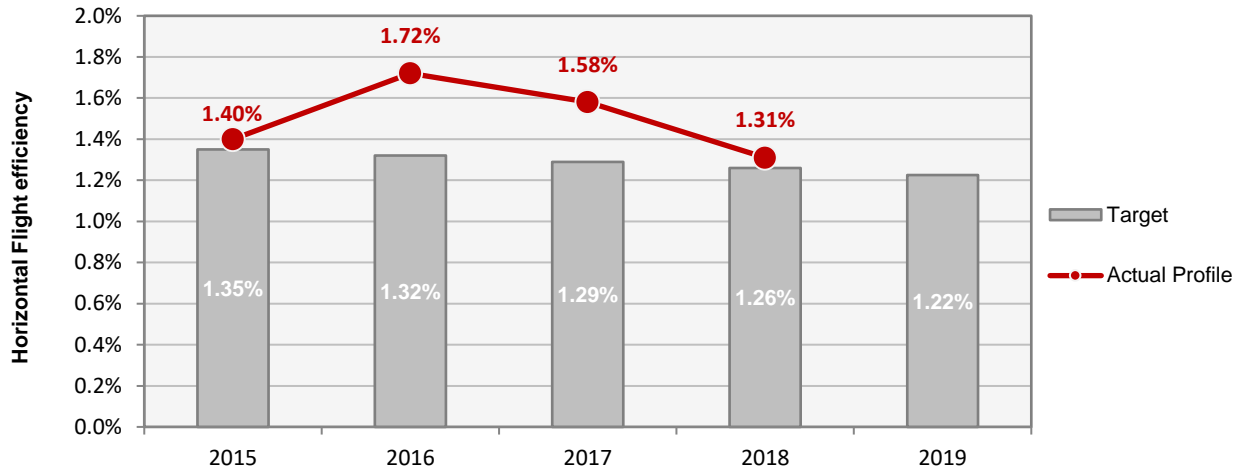
#### Observations

The lowest level in the EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. Safety Assurance is already at the 2019 EoSM target level.

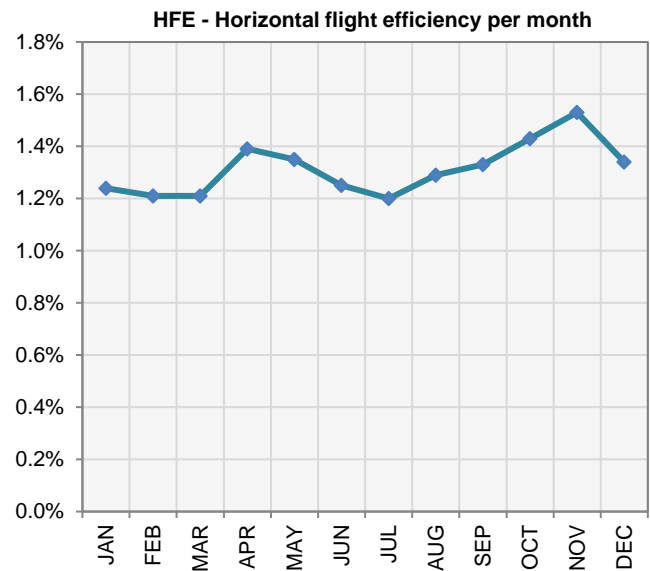
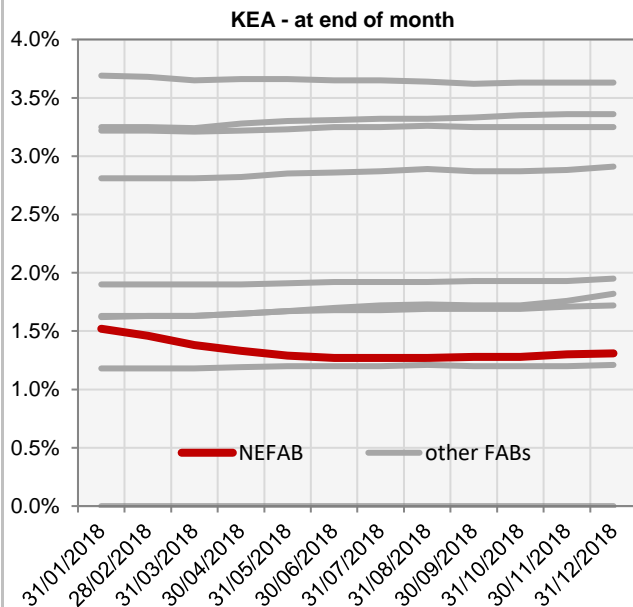
NEFAB

Monitoring of ENVIRONMENT for 2018

KEA					
	2015	2016	2017	2018	2019
FAB Target	1.35%	1.32%	1.29%	1.26%	1.22%
Actual performance	1.40%	1.72%	1.58%	1.31%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KEA (at end of month)	1.52%	1.46%	1.38%	1.33%	1.29%	1.27%	1.27%	1.27%	1.28%	1.28%	1.30%	1.31%
HFE	1.24%	1.21%	1.21%	1.39%	1.35%	1.25%	1.20%	1.29%	1.33%	1.43%	1.53%	1.34%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**NEFAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

NEFAB is cooperating with DK-SE FAB (NEFRA free route airspace established in Nov 2015) as well as with UK-Ireland FAB in the Borealis project, aiming to implement free route airspace covering the whole 9 state area.

**Observations****NM evaluation:**

2019 European target will be achieved if current routings related to crisis situations will change

**NM proposed measures:**

To implement all projects as planned including Borealis Project.

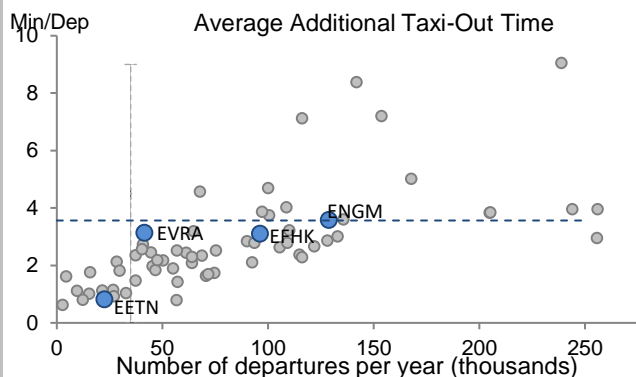
**NEFAB**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

NEFAB includes 10 airports subject to RP2 monitoring, from which only 4 have established a complete and correct airport data flow, allowing the calculation of both environment indicators. Member States shall empower the respective airport reporting entity to establish the airport operator data flow and/or address the remaining data issues. The performance shown by those airports that can be analysed within NEFAB is commensurate with the traffic levels in general terms.

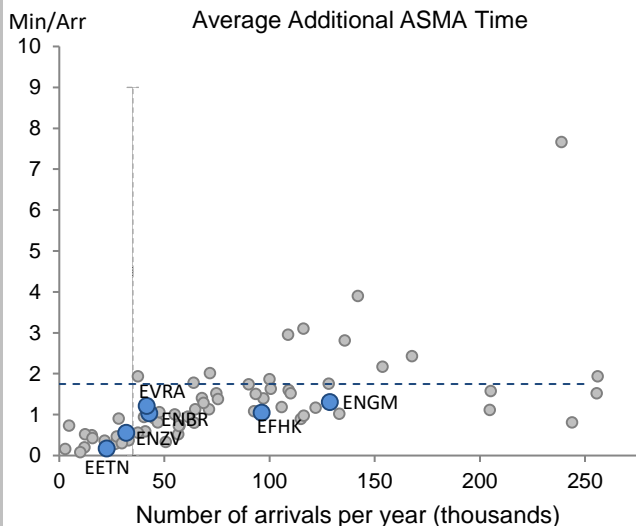
**2. Additional Taxi-Out Time**



Additional taxi-out times at three airports in NEFAB where the calculation of the indicator is possible are below the European average (3.57 min/dep., while Oslo, the busiest airport in the FAB, sits on that SES average.

The performance in Riga (EVRA) has worsened and is lower than other airports with similar number of movements.

**3. Additional ASMA Time**



Regarding additional times in the terminal area, the observed values for all airports in NEFAB, thanks to several improvements at Norwegian airports in 2018, are well below the RP2 average (1.75 min/arr.)

The performance shown by Helsinki and Oslo is among the best with similar number of movements.

## NEFAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.12	0.12	0.13	0.13	0.13	
FAB Target	0.12	0.12	0.13	0.13	0.13	
Actual performance	0.04	0.07	0.02	0.03		

## NEFAB assessment of capacity performance

The cost optimum capacity for en route delay per flight for NEFAB (ANSPs) is 0,13, but for the airspace users it would be unacceptable. This is based on the fact that a large portion of the overall traffic is transition flights with little leeway in terms of delays. In addition three of four NEFAB member states have set significant lower target values than the FAB reference value in RP2. Implementation of free route airspace (FRA) in cooperation with the Danish-Swedish FAB also contributed to better performance from 2017 .

The actual delay of 0,03 min./flt. at NEFFAB level was significant below the target set to 0,13 min./flt. Two member states hereof Finland (ANS Finland) and Norway (Avinor ANS)) achieved a delay of 0,00 min./flt. in 2018. Latvia achieved a delay of 0,04 min/flt. and Estonia (EANS) achieved a delay of 0,10 min/flt. in 2018, significant below the FAB target.

## Monitoring process for capacity performance

Monthly at national level.

## Application of Corrective Measures for Capacity

No corrective measures applied in 2018.

## Capacity Planning

According to SLA with airspace users.

## Assessment of capacity performance

For the fourth year running in RP2, by exceeding the FAB target for en route capacity, NEFAB has provided a positive contribution to the union-wide target in 2018. The evolution of traffic in NEFAB is shown below and it is noticeable that traffic levels continue to remain below the baseline scenario as calculated by STATFOR and available when the FAB performance plans and associated capacity plans were being determined.

EUROCONTROL 7 year forecast February 2014 – NEFAB											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
High	1047		1078		1121		1159		1198		1240
Base	1036	1030	1059	1015	1084	1006	1104	1031	1124	1075	1147
Low	1026		1036		1037		1041		1045		1050

In the latest Network Operations Plan 2019 -2024, the Network Manager predicts that NEFAB will continue to provide a positive contribution for en route capacity for the remainder of RP2 and for the entirety of RP3.

NEFAB delay forecast							
		2019	2020	2021	2022	2023	2024
NOP 2018 -	2022	0.02	0.03	0.02	0.02	N/A	N/A
NOP 2019 -	2024	0.02	0.02	0.02 – 0.04			

## En route Capacity Incentive Scheme

Although NEFAB did not apply a FAB-wide en route capacity incentive scheme, the PRB has been advised by the NEFAB NSA committee that the overall FAB performance is a condition of determining whether or not a national bonus or penalty is due. Each member State proposed separate national incentive schemes in the NEFAB performance plan submitted in June 2014. The review of the individual incentive schemes will be made in the national reports following this FAB analysis.

## Result of FAB Capacity Incentive Scheme

The results of the national incentive schemes are presented in the national sections following.

<b>Update on Military dimension of the plan</b>
No new information provided from the previous years report.
<b>Observations on Military dimension of the plan</b>
Nil
<b>Application of FUA</b>
No new information provided.
<b>Observations of the Application of FUA</b>
From previous year: It is noted that, with the exception of Norway, NEFAB has not actually provided information on how NEFAB authorities determine if the optimum benefits for both civil and military airspace users are being provided.

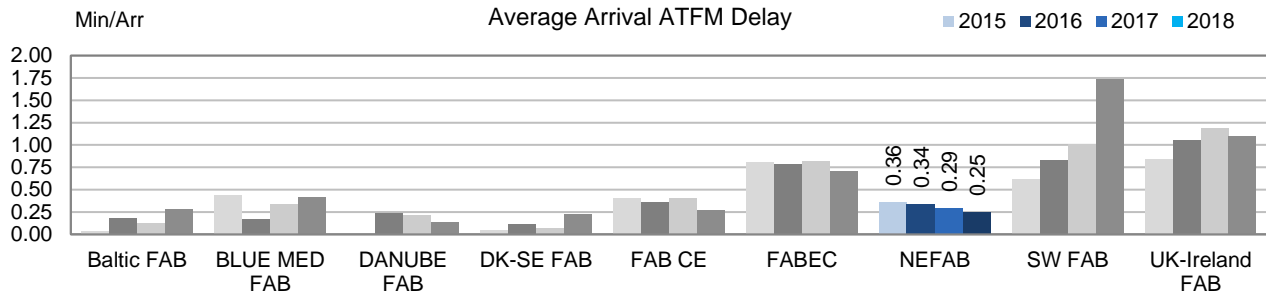
**NEFAB**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

NEFAB contributes adequately to the airport-related ANS capacity performance in Europe. The aggregated average of arrival ATFM delay has further decreased in 2018 and continues to range well below the European average (i.e. NEFAB: 0.25 min/arr. vs SES: 0.78 min/arr.) In terms of adherence to ATFM slots, the ANS performance at most NEFAB airports ranges amongst the best-in-class in Europe.

**2. Arrival ATFM Delay**

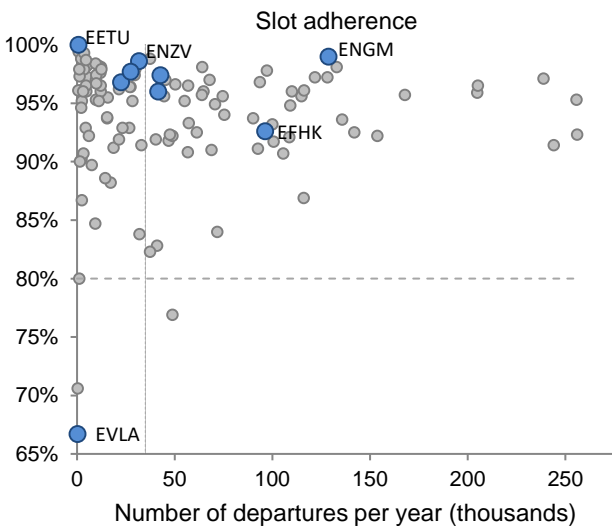


The ANS performance at NEFAB airports shows no specific capacity constraint. While Latvian and Estonian airports do not show any discernible arrival ATFM delay, Oslo Gardermoen and Helsinki show levels still below other airports in the SES area managing similar number of movements.

**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

NEFAB performance plan sets a national target on arrival ATFM delay for all 4 states with a breakdown for each of the airports in the FAB under RP2 monitoring, except the Norwegian airports. The plan also presents an incentive scheme for the national target on arrival ATFM delay for each of its Member States. Latvia and Finland miss the national target and will apply a penalty, while Norway will retrieve a bonus.

**4. ATFM Slot Adherence**



Airports in the NEFAB show very good performance regarding the adherence to ATFM slots, with values above 90% and even 100% in several cases.

**5. ATC Pre-departure Delay**

The airport operator specification has been implemented at all main airports subject to RP2 monitoring within NEFAB. ATC pre-departure delay at most NEFAB airports monitored is negligible, except for Helsinki and Oslo where it is still low compared with similar airports.





# Annual Monitoring Report 2018

## Local level view

### Estonia



## ESTONIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	56	C	B	C	B	B
EANS	88	D	D	D	D	E
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			n/a	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			ANSP			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			6	3		
Legal/Judiciary			4	3		
Occurrence reporting and Investigation			1	1		
<b>TOTAL</b>			<b>11</b>	<b>7</b>		
EANS			Number of questions answered			
			YES	NO		
Policy and its implementation			13	0		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
Two out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.						
Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only three are below Level C.						

**ESTONIA**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

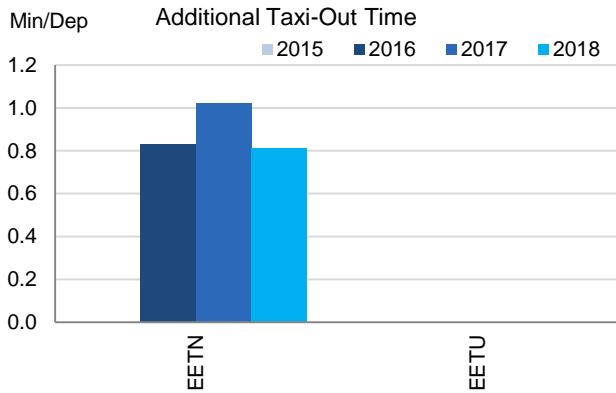
**1. Overview**

Estonia identified two airports, Tallinn and Tartu, as subject to RP2 monitoring. The Airport Operator Data Flow is established at Tallinn since 2016 allowing for the calculation of both environment indicators.

Environmental indicators at airports show a remarkable performance at Tallin (EETN) with additional times below other airports with similar traffic levels.

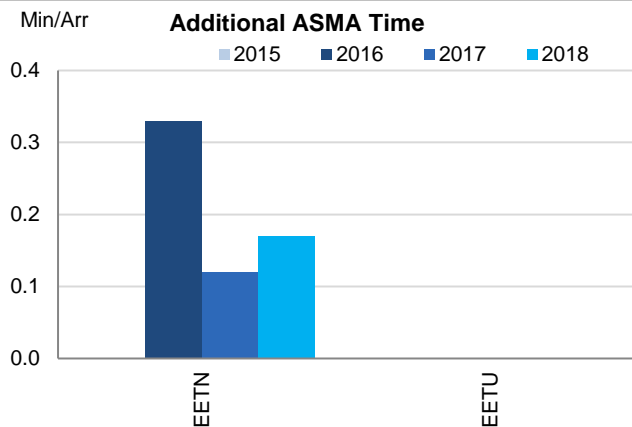
Estonia shall empower the airport reporting entity at Tartu (EETU) to establish the Airport Operator Data Flow and/or address the remaining data issues.

**2. Additional Taxi-Out Time**



With a 21% increase in traffic since the beginning of RP2, (8% with respect to 2017), Tallin keeps low levels of additional taxi-out times that have improved in 2018 (EETN; 2017: 1.02 min/dep.; 2018:0.81 min/dep.)

**3. Additional ASMA Time**



The additional time in terminal airspace is remarkably low (EETN; 2018: 0.17 min/arr.) and negligible, showing no holding at all in the terminal area.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Tallinn	EETN	n/a	0.83	1.02	0.81		n/a	0.33	0.12	0.17	
Tartu	EETU	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

## ESTONIA

## Monitoring of CAPACITY for 2018

## En route Capacity incentive scheme

	2015	2016	2017	2018	2019	Observations
National Capacity target	0.12	0.12	0.12	0.12	0.12	
Deadband +/-	0.05 - 0.13		0.05 - 0.14			
Actual performance	0.01	0.02	0.02	0.10		

## National capacity incentive scheme

Estonia applied a national incentive scheme based on the following criteria for the period 2017 – 2019:

En route ATFM delay 2017-2019:

2017-2019 Dead band: 0,05min/flt - 0,14min/flt

0,02min / flt or better: Bonus: 1 % of the revenues from air navigation services in year n

0,03min / flt: Bonus: 0,5 % of the revenues from air navigation services in year n

0,04min / flt: Bonus: 0,2% of the revenues from air navigation services in year n

0,15min / flt: Penalty: 0,2 % of the revenues from air navigation services in year n

0,16min / flt: Penalty: 0,5 % of the revenues from air navigation services in year n

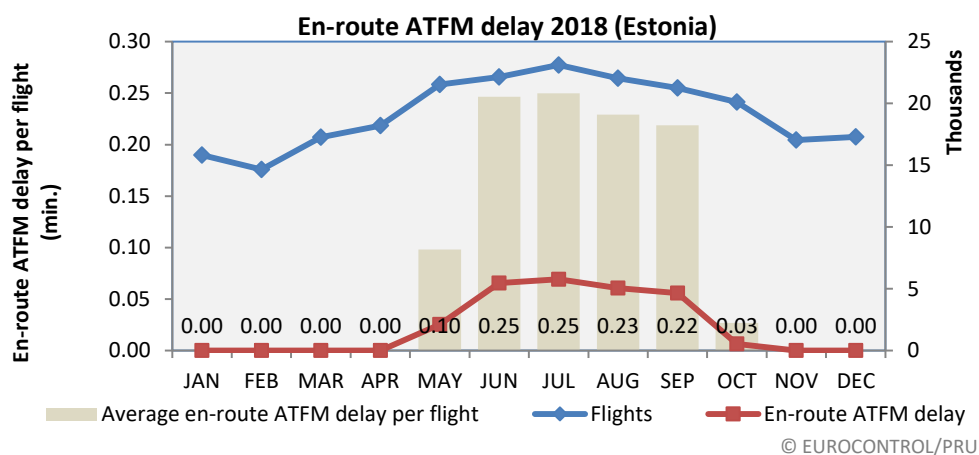
0,17min / flt or worse: Penalty: Penalty: 1% of the revenues from air navigation services in year n

With an actual en route capacity performance of 0.10 minutes per flight in 2018, the ANSP EANS will neither receive a bonus nor a penalty, since the capacity performance falls within the deadband.

## Compliance issues relating to national capacity incentive scheme

Nil

## Observations regarding national capacity performance



## En-route ATFM delay per flight (Estonia)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.02	0.00	0.03	0.02	0.11	0.02	0.03	0.01	0.02	0.02	0.10

## EUROCONTROL 7 year forecast February 2014 – Estonia

	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	
High	189	197	210	221	233	246
Base	185	<b>191</b>	199	<b>200</b>	212	<b>230</b>
Low	182	186	188	191	194	197

Traffic levels in Estonia grew by almost 7% on 2017 but remained just under the high traffic scenario for 2018 forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined.

The 7% increase in traffic saw delay levels rising from 0.02 to 0.10 minutes per flight. 2018 was the first time that Estonia failed to achieve its national target since the beginning of RP1. The airspace users commented that Tallinn ACC was a 'good performer' for capacity.

81% of delays were attributed to ATC capacity, 16% to adverse weather and 3% to ATC equipment. Although a third sector was implemented in 2018, it does not appear to have been deployed operationally since the monitoring report states "the previous configuration scheme was used" during 2018, and the Network Manager notes that only 2 sectors were opened at any one time.

The Network Manager anticipates the opening of the 3rd sector in 2019 and an additional 15% capacity. In view of this, the Network Manager does expects Estonia to provide a positive contribution to capacity for the remainder of RP2 and for the entirety of RP3.

Estonia delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP</b>	<b>2018 -</b>	<b>0.02</b>	<b>0.03</b>	<b>0.02</b>	<b>0.02</b>	N/A	N/A
<b>NOP</b>	<b>2019 -</b>	<b>0.02</b>	<b>0.02</b>	<b>0.02</b>			
<b>2022</b>							
<b>2024</b>							

#### Planning and Effective Use of CDRs

Free route airspace has been implemented in Estonia in 2015.

#### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

#### Effective booking procedures

No data was provided.

#### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## ESTONIA

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

ANS at 2 airports in Estonia are subject to RP2 monitoring: Tallinn (EETN) and Tartu (EETU). Despite the fact that traffic levels at these 2 airports have drastically increased during RP2 (+20.9% with respect to 2015), Estonia continues with past years' performance, with no accrued arrival ATFM delay and meeting the national target of zero once again in 2018. At the same time ATFM slot adherence has improved during RP2 by 5 points reaching 96.7% adherence and the ATC pre-departure delay remains negligible.

## 2. Arrival ATFM Delay

Arrival ATFM Delay

1.0  
0.5  
0.0

	2015	2016	2017	2018	2019
Actual	0.00	0.00	0.00	0.00	
Target	0.00	0.00	0.00	0.00	0.00

In all years in RP2 so far no arrival ATFM delay was observed at the Estonian airports under RP2 (Tallinn and Tartu). The achieved performance suggests no major capacity constraints in Estonia.

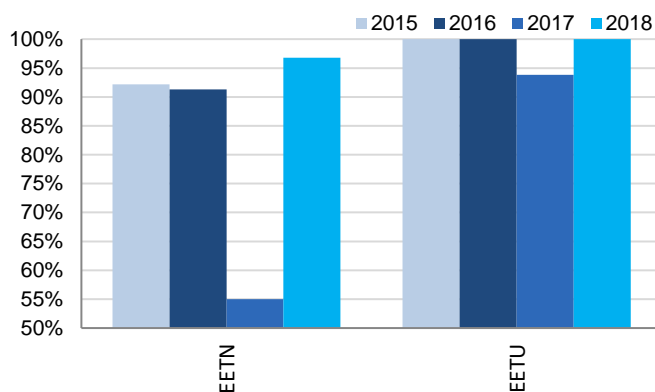
The achieved performance in 2018 meets the established national target.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

Estonia has established a national target on arrival ATFM delay and associated incentive scheme. The achieved performance ranges within the established deadband and results in no financial incentive. In fact this incentive scheme does not consider any bonuses.

## 4. ATFM Slot Adherence

Slot adherence



The ATFM slot adherence at Tallinn had dropped drastically in 2017 due to large scale of construction work at Tallinn airport and this also affected the performance in the month of January 2018. For the rest of the year until November, slot adherence at Tallinn sits well above the 95%

The slot compliance in Tartu in 2018 is a 100% with only 38 regulated departures in the year.

## 5. ATC Pre-departure Delay

The level of pre-departure delay at Tallinn in 2018 remains negligible and the quality of the reporting allows for the calculation of the indicator with a share of unreported delay below 40%.

To improve the level of operational monitoring for Tartu (EETU), Estonia may consider the establishment of the airport operator flow at this airport.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Tallinn	EETN	0.00	0.00	0.00	0.00		92.2%	91.3%	55.0%	96.8%		0.01	0.04	0.02	0.02	
Tartu	EETU	0.00	0.00	0.00	0.00		100.0%	100.0%	93.8%	100.0%		n/a	n/a	n/a	n/a	

## ESTONIA: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Estonia ECZ represents 0.3% of the SES en-route ANS determined costs in 2018					
· ATSP: EANS					
· FAB: NEFAB					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
Estonia: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	23 098 175	24 757 151	25 985 553	27 073 003	28 182 980
Inflation %	3.0%	3.1%	3.0%	3.0%	3.0%
Inflation index (100 in 2009)	123.3	127.1	130.9	134.8	138.9
Real en-route costs (EUR2009)	18 739 585	19 481 586	19 852 645	20 081 013	20 295 459
Total en-route Service Units	774 641	801 575	827 117	855 350	885 643
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>24.19</b>	<b>24.30</b>	<b>24.00</b>	<b>23.48</b>	<b>22.92</b>
Estonia: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	20 468 440	21 909 000	24 199 188	27 253 085	
Inflation %	0.1%	0.8%	3.7%	3.4%	
Inflation index (100 in 2009)	117.1	118.0	122.4	126.6	
Real en-route costs (EUR2009)	17 478 222	18 559 853	19 768 513	21 531 206	
Total en-route Service Units	815 544	834 320	864 575	919 795	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>21.43</b>	<b>22.25</b>	<b>22.87</b>	<b>23.41</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-2 629 734	-2 848 151	-1 786 365	180 082	
in %	-11.4%	-11.5%	-6.9%	0.7%	
Inflation %					
in p.p.	-2.9 p.p.	-2.3 p.p.	0.7 p.p.	0.4 p.p.	
Inflation index (100 in 2009)					
in p.p.	-6.2 p.p.	-9.0 p.p.	-8.5 p.p.	-8.2 p.p.	
Real en-route costs (EUR2009)					
in value	-1 261 363	-921 733	-84 132	1 450 192	
in %	-6.7%	-4.7%	-0.4%	7.2%	
Total en-route Service Units					
in value	40 903	32 745	37 458	64 445	
in %	5.3%	4.1%	4.5%	7.5%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-2.76</b>	<b>-2.06</b>	<b>-1.14</b>	<b>-0.07</b>	
in %	<b>-11.4%</b>	<b>-8.5%</b>	<b>-4.7%</b>	<b>-0.3%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (23.41 €2009) is -0.3% lower than planned in the PP (23.48 €2009). This results from the combination of higher than planned TSUs (+7.5%) and higher than planned en-route costs in real terms (+7.2%, or +1.5 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+7.5%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (EANS) retaining an amount of +0.6 M€2009.					
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Estonia are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are +0.7% (+0.2 M€) higher than planned. However, since the actual inflation index is lower than planned (-8.2 p.p.), actual en-route costs are +7.2% (+1.5 M€2009) above plans when expressed in real terms.					
The higher than planned en-route costs in real terms are driven by EANS (+6.6%, or +1.0 M€2009) and the NSA/EUROCONTROL (+9.7%, or +0.4 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.1 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

Year	Difference (%)
2015	-6.7%
2016	-4.7%
2017	-0.4%
2018	7.2%

Year	Difference (%)
2015	5.3%
2016	4.1%
2017	4.5%
2018	7.5%

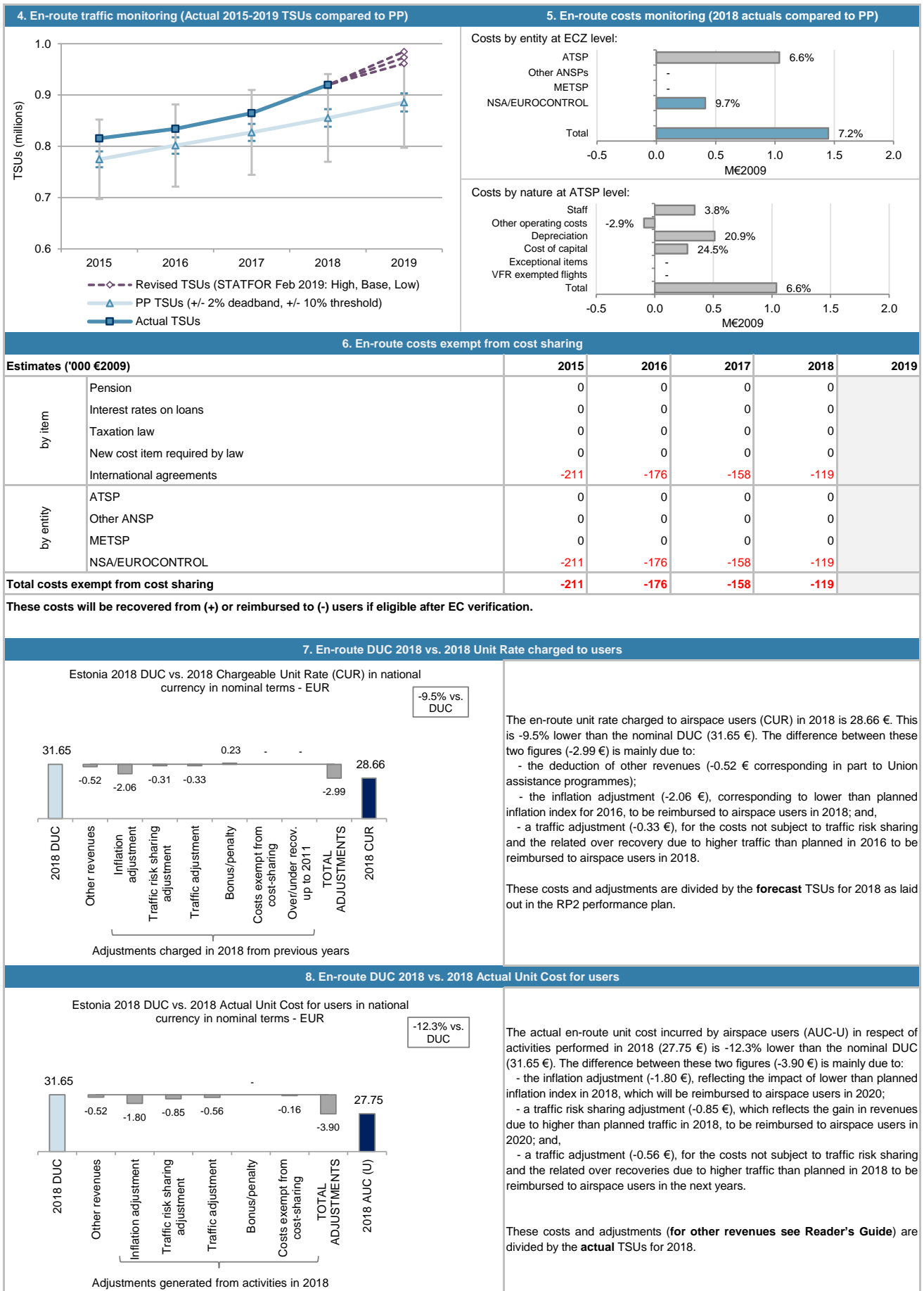
Year	En-route DUC (PP)	En-route unit costs (actual)
2015	24.19	21.43
2016	24.30	22.25
2017	24.00	22.87
2018	23.48	23.41
2019	22.92	

Year	Difference (%)
2015	5.3%
2016	4.1%
2017	4.5%
2018	7.5%



**ESTONIA: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



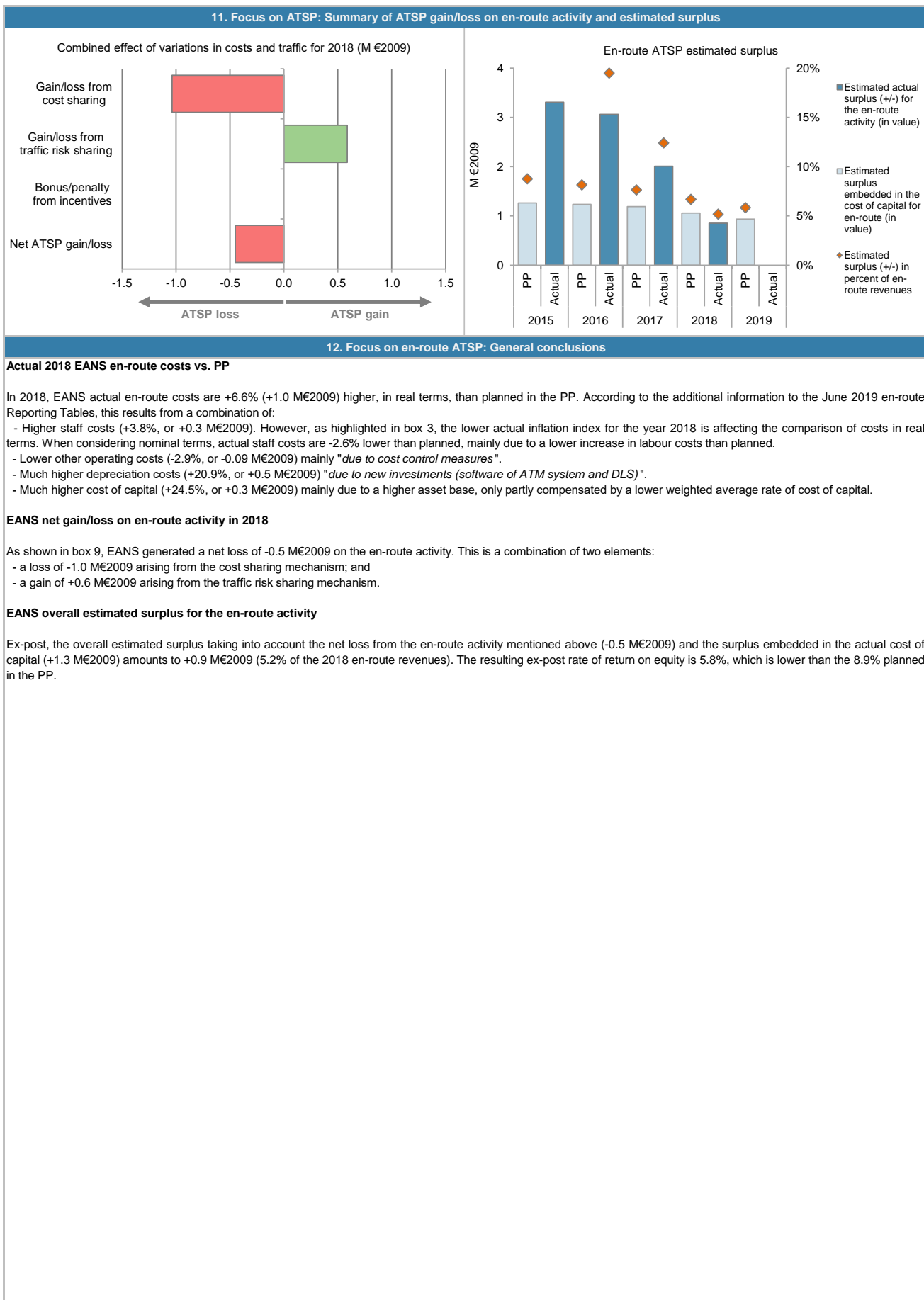
## ESTONIA: En-route ATSP (EANS)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	14 379	15 125	15 563	15 829	
Actual costs for the ATSP	13 019	14 002	15 211	16 867	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 360	1 122	353	-1 037	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 360</b>	<b>1 122</b>	<b>353</b>	<b>-1 037</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	5.3%	4.1%	4.5%	7.5%	
Determined costs for the ATSP (PP) - based on actual inflation	14 387	15 478	15 820	16 028	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>429</b>	<b>406</b>	<b>436</b>	<b>587</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>217</b>	<b>166</b>	<b>158</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>2 006</b>	<b>1 695</b>	<b>947</b>	<b>-451</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	16 933	17 088	15 586	14 129	12 757
Estimated proportion of financing through equity (in %)	83.8%	81.2%	85.9%	84.1%	82.6%
Estimated proportion of financing through equity (in value)	14 195	13 875	13 388	11 887	10 536
Estimated proportion of financing through debt (in %)	16.2%	18.8%	14.1%	15.9%	17.4%
Estimated proportion of financing through debt (in value)	2 738	3 213	2 197	2 241	2 221
Cost of capital pre-tax (in value)	1 363	1 352	1 272	1 140	1 019
Average interest on debt (in %)	3.7%	3.7%	3.7%	3.7%	3.7%
Interest on debt (in value)	100	117	80	82	81
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	8.9%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 263	1 235	1 192	1 058	938
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 263</b>	<b>1 235</b>	<b>1 192</b>	<b>1 058</b>	<b>938</b>
<b>Revenue/costs for the en-route activity</b>	<b>14 379</b>	<b>15 125</b>	<b>15 563</b>	<b>15 829</b>	<b>16 037</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>8.8%</b>	<b>8.2%</b>	<b>7.7%</b>	<b>6.7%</b>	<b>5.8%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	19 134	19 969	19 937	21 848	
Estimated proportion of financing through equity (in %)	76.4%	77.0%	59.8%	67.1%	
Estimated proportion of financing through equity (in value)	14 623	15 371	11 926	14 652	
Estimated proportion of financing through debt (in %)	23.6%	23.0%	40.2%	32.9%	
Estimated proportion of financing through debt (in value)	4 511	4 599	8 011	7 196	
Cost of capital pre-tax (in value)	1 466	1 520	1 181	1 419	
Average interest on debt (in %)	3.7%	3.3%	1.5%	1.6%	
Interest on debt (in value)	165	152	119	115	
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	
Estimated surplus embedded in the cost of capital for en-route (in value)	1 301	1 368	1 061	1 304	
Net ATSP gain(+)/loss(-) on en-route activity	2 006	1 695	947	-451	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 307</b>	<b>3 063</b>	<b>2 009</b>	<b>853</b>	
<b>Revenue/costs for the en-route activity</b>	<b>15 025</b>	<b>15 697</b>	<b>16 158</b>	<b>16 416</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>22.0%</b>	<b>19.5%</b>	<b>12.4%</b>	<b>5.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>22.6%</b>	<b>19.9%</b>	<b>16.8%</b>	<b>5.8%</b>	

**ESTONIA: En-route ATSP (EANS)**

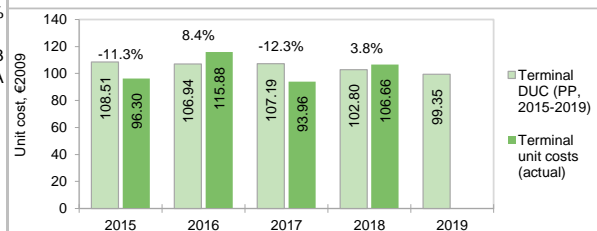
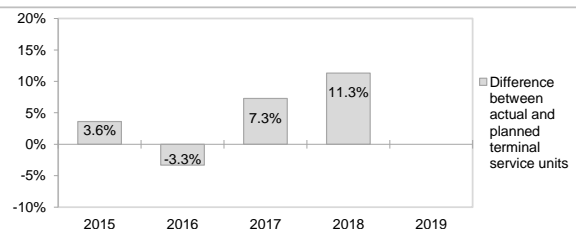
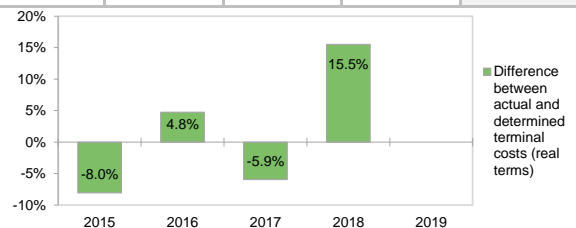
**Monitoring of en-route COST-EFFICIENCY for 2018**



## ESTONIA: Terminal charging zone

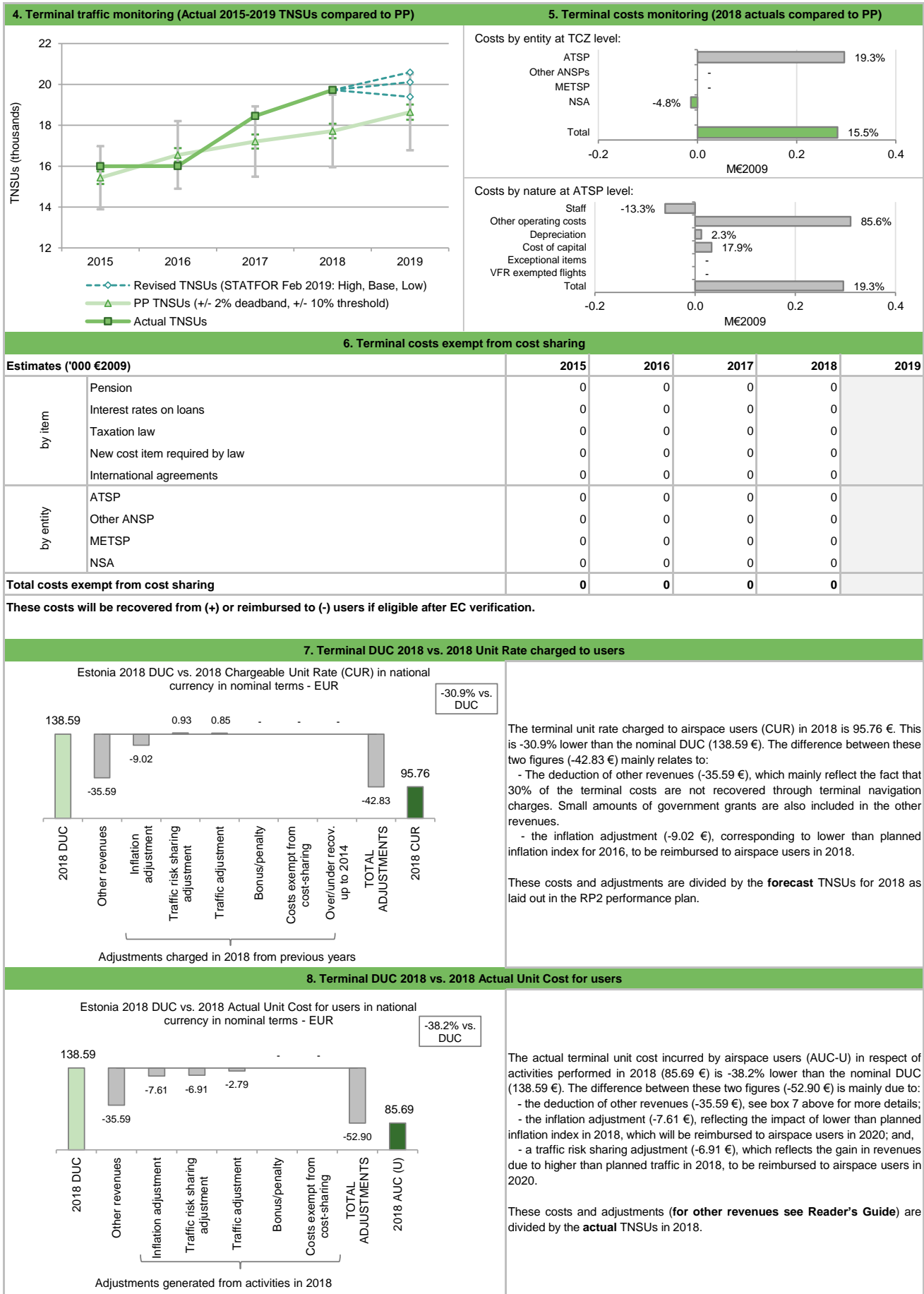
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· Estonia TCZ represents 0.2% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP:	EANS	· Airports with fewer than 70,000 IFRs ATMs:		2		
· National currency:	EUR	· Airports with between 70,000 and 225,000 IFRs ATMs:		0		
· Number of airports in charging zone in 2018:	2,	of which:	· Airports with more than 225,000 IFRs ATMs:	0		
2. Terminal DUC monitoring at Charging Zone level						
Estonia: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal EUR)	2 064 521	2 249 331	2 413 934	2 456 109	2 571 978	
Inflation %	3.0%	3.1%	3.0%	3.0%	3.0%	
Inflation index (100 in 2009)	123.3	127.1	130.9	134.8	138.9	
Real terminal costs (EUR2009)	1 674 949	1 770 015	1 844 216	1 821 784	1 852 163	
Total terminal Service Units	15 436	16 551	17 205	17 722	18 642	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>108.51</b>	<b>106.94</b>	<b>107.19</b>	<b>102.80</b>	<b>99.35</b>	
Estonia: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal EUR)	1 803 641	2 189 000	2 123 232	2 663 481		
Inflation %	0.1%	0.8%	3.7%	3.4%		
Inflation index (100 in 2009)	117.1	118.0	122.4	126.6		
Real terminal costs (EUR2009)	1 540 149	1 854 376	1 734 485	2 104 274		
Total terminal Service Units	15 994	16 003	18 460	19 728		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>96.30</b>	<b>115.88</b>	<b>93.96</b>	<b>106.66</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal EUR)	in value	-260 880	-60 331	-290 702	207 372	
	in %	-12.6%	-2.7%	-12.0%	8.4%	
Inflation %	in p.p.	-2.9 p.p.	-2.3 p.p.	0.7 p.p.	0.4 p.p.	
Inflation index (100 in 2009)	in p.p.	-6.2 p.p.	-9.0 p.p.	-8.5 p.p.	-8.2 p.p.	
Real terminal costs (EUR2009)	in value	-134 801	84 360	-109 731	282 490	
	in %	-8.0%	4.8%	-5.9%	15.5%	
Total terminal Service Units	in value	558	-548	1 255	2 006	
	in %	3.6%	-3.3%	7.3%	11.3%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-12.21</b>	<b>8.93</b>	<b>-13.23</b>	<b>3.87</b>	
	<b>in %</b>	<b>-11.3%</b>	<b>8.4%</b>	<b>-12.3%</b>	<b>3.8%</b>	
3. Focus on terminal at State/Charging Zone level						
This analysis focuses on Estonia Terminal Charging Zone (TCZ) comprising 2 airports (Tallinn Lennart and Tartu airports).						
<b>Terminal unit cost</b>						
In 2018, the actual terminal unit cost in real terms (106.66 €2009) is +3.8% higher than planned in the PP (102.80 €2009). This results from the combination of much higher than planned TNSUs (+11.3%) and much higher than planned terminal costs in real terms (+15.5%, or +0.3 M€2009).						
<b>Terminal service units</b>						
The traffic risk sharing mechanism applies in Estonia TCZ. The difference between actual and planned TNSUs (+11.3%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (EANS) retaining an amount of +0.1 M€2009. According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Estonia are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.						
<b>Terminal costs</b>						
In nominal terms, actual terminal costs are +8.4% (+0.2 M€) higher than planned. However, since the actual inflation index is lower than planned (-8.2 p.p.), actual terminal costs are +15.5% (+0.3 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by EANS (+19.3%, or +0.3 M€2009), while the costs for the NSA (-4.8%, or -0.01 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.						
There are no costs exempt from cost-sharing reported.						



**ESTONIA: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



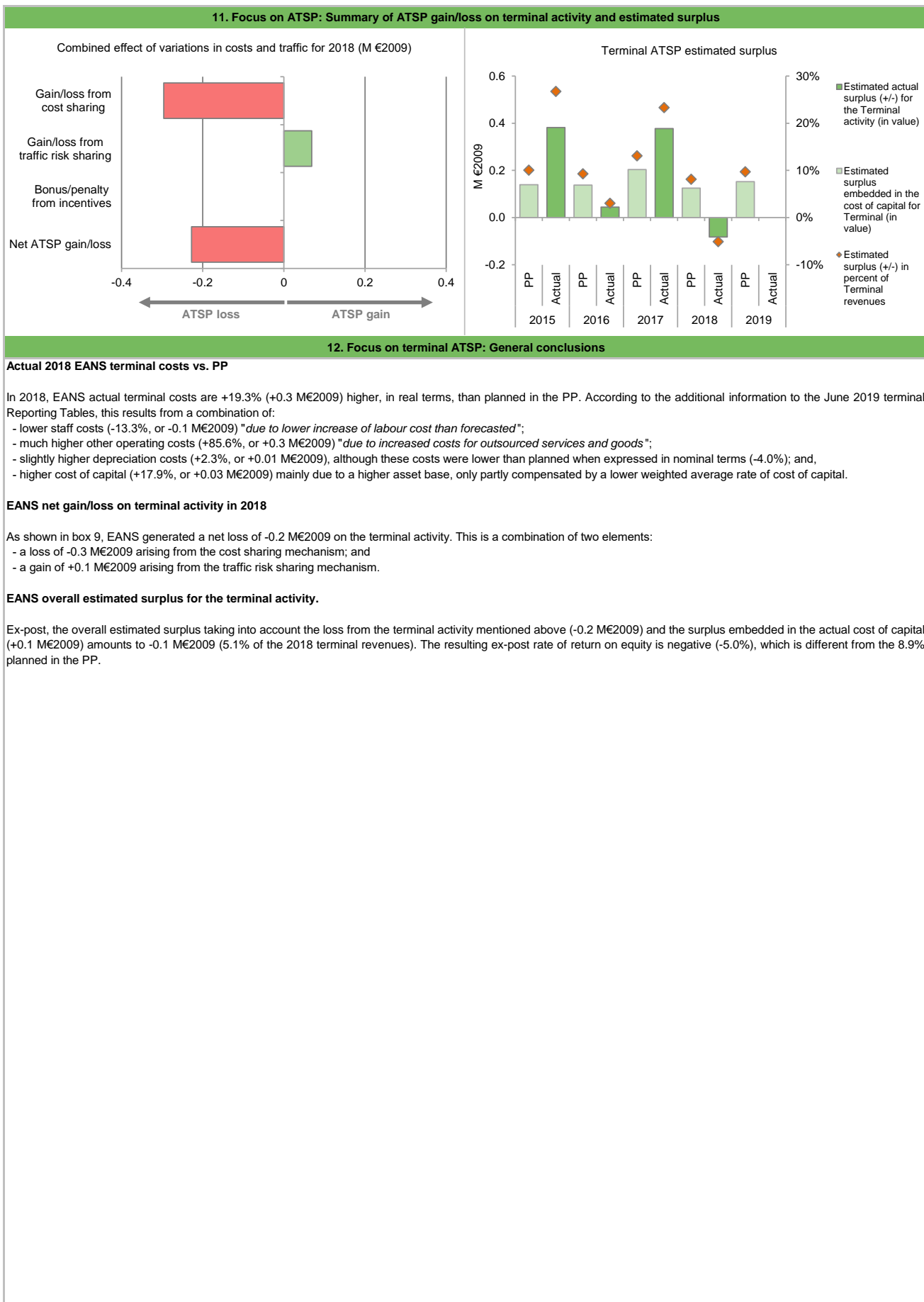
## ESTONIA: Terminal ATSP (EANS)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	1 390	1 485	1 560	1 537	
Actual costs for the ATSP	1 244	1 553	1 471	1 833	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	147	-67	89	-296	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>147</b>	<b>-67</b>	<b>89</b>	<b>-296</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	3.6%	-3.3%	7.3%	11.3%	
Determined costs for the ATSP (PP) - based on actual inflation	1 391	1 520	1 585	1 556	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>35</b>	<b>-36</b>	<b>57</b>	<b>68</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>181</b>	<b>-104</b>	<b>146</b>	<b>-228</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	3 732	3 734	3 373	3 010	2 667
Estimated proportion of financing through equity (in %)	42.0%	41.5%	68.0%	46.6%	64.1%
Estimated proportion of financing through equity (in value)	1 569	1 549	2 292	1 403	1 710
Estimated proportion of financing through debt (in %)	58.0%	58.5%	32.0%	53.4%	35.9%
Estimated proportion of financing through debt (in value)	2 163	2 185	1 081	1 607	957
Cost of capital pre-tax (in value)	219	218	243	184	187
Average interest on debt (in %)	3.7%	3.7%	3.7%	3.7%	3.7%
Interest on debt (in value)	79	80	39	59	35
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	8.9%
Estimated surplus embedded in the cost of capital for terminal (in value)	140	138	204	125	152
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>140</b>	<b>138</b>	<b>204</b>	<b>125</b>	<b>152</b>
<b>Revenue/costs for the terminal activity</b>	<b>1 390</b>	<b>1 485</b>	<b>1 560</b>	<b>1 537</b>	<b>1 568</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>10.0%</b>	<b>9.3%</b>	<b>13.1%</b>	<b>8.1%</b>	<b>9.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>	<b>8.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	4 248	5 572	5 563	6 095	
Estimated proportion of financing through equity (in %)	53.0%	29.9%	46.7%	26.8%	
Estimated proportion of financing through equity (in value)	2 251	1 663	2 600	1 635	
Estimated proportion of financing through debt (in %)	47.0%	70.1%	53.3%	73.2%	
Estimated proportion of financing through debt (in value)	1 997	3 908	2 963	4 460	
Cost of capital pre-tax (in value)	273	277	276	216	
Average interest on debt (in %)	3.7%	3.3%	1.5%	1.6%	
Interest on debt (in value)	73	129	44	71	
Determined RoE pre-tax rate (in %)	8.9%	8.9%	8.9%	8.9%	
Estimated surplus embedded in the cost of capital for terminal (in value)	200	148	231	146	
Net ATSP gain(+)/loss(-) on terminal activity	181	-104	146	-228	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>381</b>	<b>44</b>	<b>377</b>	<b>-82</b>	
<b>Revenue/costs for the terminal activity</b>	<b>1 425</b>	<b>1 449</b>	<b>1 616</b>	<b>1 606</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>26.8%</b>	<b>3.1%</b>	<b>23.3%</b>	<b>-5.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>16.9%</b>	<b>2.7%</b>	<b>14.5%</b>	<b>-5.0%</b>	

**ESTONIA: Terminal ATSP (EANS)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## ESTONIA: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

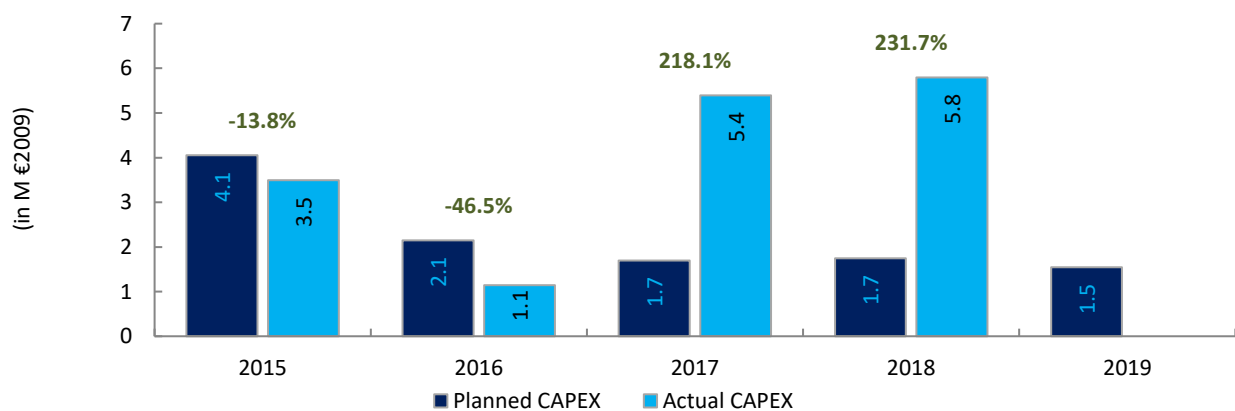
1. Monitoring of gate-to-gate ANS costs																																												
<b>Estonia: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	18 739 585	19 481 586	19 852 645	20 081 013	20 295 459																																							
Real terminal costs (EUR2009)	1 674 949	1 770 015	1 844 216	1 821 784	1 852 163																																							
Real gate-to-gate costs (EUR2009)	20 414 534	21 251 601	21 696 861	21 902 797	22 147 622																																							
En-route share (%)	91.8%	91.7%	91.5%	91.7%	91.6%																																							
<b>Estonia: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	17 478 222	18 559 853	19 768 513	21 531 206																																								
Real terminal costs (EUR2009)	1 540 149	1 854 376	1 734 485	2 104 274																																								
Real gate-to-gate costs (EUR2009)	19 018 371	20 414 229	21 502 998	23 635 480																																								
En-route share (%)	91.9%	90.9%	91.9%	91.1%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-1 396 163	-837 373	-193 863	1 732 683																																								
in %	-6.8%	-3.9%	-0.9%	7.9%																																								
En-route share in p.p.	0.1 p.p.	-0.8 p.p.	0.4 p.p.	-0.6 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +7.9% (+1.7 M€2009) higher than planned due to higher than planned en-route costs (+7.2%, or +1.5 M€2009) and terminal costs (+15.5%, or +0.3 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (91.1%) is slightly lower than planned in the PP for 2018 (91.7%).</p> <p>For EANS, the estimated gate-to-gate economic surplus in 2018 amounts to 0.8 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 4.3% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>91.8%</td> <td>8.2%</td> </tr> <tr> <td>Actual</td> <td>91.9%</td> <td>8.1%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>91.7%</td> <td>8.3%</td> </tr> <tr> <td>Actual</td> <td>90.9%</td> <td>9.1%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>91.5%</td> <td>8.5%</td> </tr> <tr> <td>Actual</td> <td>91.9%</td> <td>8.1%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>91.7%</td> <td>8.3%</td> </tr> <tr> <td>Actual</td> <td>91.1%</td> <td>8.9%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>91.6%</td> <td>8.4%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	91.8%	8.2%	Actual	91.9%	8.1%	2016	Determined	91.7%	8.3%	Actual	90.9%	9.1%	2017	Determined	91.5%	8.5%	Actual	91.9%	8.1%	2018	Determined	91.7%	8.3%	Actual	91.1%	8.9%	2019	Determined	91.6%	8.4%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	91.8%	8.2%																																									
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	Actual	91.1%	8.9%																																									
2019	Determined	91.6%	8.4%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Estonia</b>																																												



## ESTONIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: EANS						
FAB: NEFAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	5.0	2.7	2.2	2.4	2.1	14.4
Main CAPEX (in nominal M)	5.0	2.7	2.2	2.4	2.1	14.4
Inflation %	3.0%	3.1%	3.0%	3.0%	3.0%	
Inflation index (100 in 2009)	123.3	127.1	130.9	134.8	138.9	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>4.1</b>	<b>2.1</b>	<b>1.7</b>	<b>1.7</b>	<b>1.5</b>	<b>11.2</b>
Main CAPEX (in M €2009)	4.1	2.1	1.7	1.7	1.5	11.2
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	15.8	16.6	17.1	17.4	17.6	84.5
Total CAPEX as % of Real gate-to-gate ANSP costs	25.7%	12.9%	9.9%	10.1%	8.8%	13.2%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	4.1	1.4	6.6	7.3		
Main CAPEX (in nominal M)	4.1	1.4	6.6	7.3		
Inflation %	0.1%	0.8%	3.7%	3.4%		
Inflation index (100 in 2009)	117.1	118.0	122.4	126.6		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>3.5</b>	<b>1.1</b>	<b>5.4</b>	<b>5.8</b>		
Main CAPEX (in M €2009)	3.5	1.1	5.4	5.8		
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%		
Real gate-to-gate ANSP costs (in M €2009)	14.3	15.6	16.7	18.7		
Total CAPEX as % of Real gate-to-gate ANSP costs	24.5%	7.4%	32.4%	31.0%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-0.9	-1.4	4.4	5.0		
Total CAPEX (in M €2009)	-0.6	-1.0	3.7	4.0		
<b>Total CAPEX (in %, M €2009)</b>	<b>-13.8%</b>	<b>-46.5%</b>	<b>218.1%</b>	<b>231.7%</b>		





# Annual Monitoring Report 2018

## Local level view

### Finland



## FINLAND

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	84	C	C	D	D	B
ANS Finland	86	D	D	D	D	D

Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.

Application of the severity classification of the Risk Analysis Tool (RAT)		
	RAT application (%)	
	ATM Ground	ATM Overall
Separation Minima Infringements (SMIs)	100%	100%
Runway Incursions (RIs)	100%	100%
ATM Specific Occurrences (ATM-S)		100%
Source of RAT data:	FTSA	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

Just culture		
State level	Number of questions answered	
	YES	NO
Policy and its implementation	8	1
Legal/Judiciary	6	1
Occurrence reporting and Investigation	2	0
<b>TOTAL</b>	<b>16</b>	<b>2</b>

ANS Finland	Number of questions answered	
	YES	NO
Policy and its implementation	12	1
Legal/Judiciary	3	0
Occurrence reporting and Investigation	6	2
<b>TOTAL</b>	<b>21</b>	<b>3</b>

Observations
Only one question out of 36 in the EoS Component/area of the State does not meet the 2019 EoS target level (in Safety Culture)

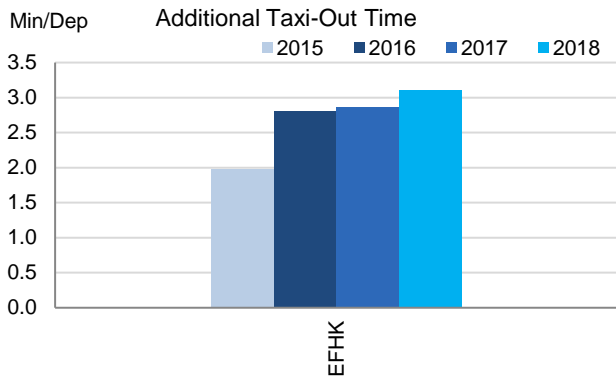
**FINLAND**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

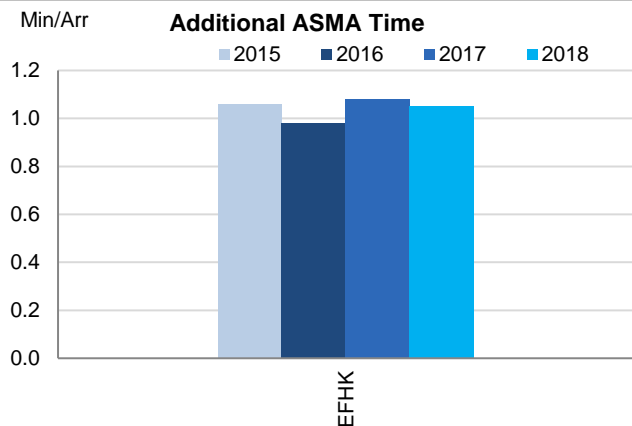
Finland has only identified the main airport at Helsinki as subject to RP2 monitoring. The Airport Operator Data Flow is correctly established allowing for the calculation of environmental indicators. With a 9% traffic increase in 2018, the additional taxi-out times remain commensurate with the level of traffic while the additional ASMA times indicate better performance than other airport with similar number of movements.

**2. Additional Taxi-Out Time**



Once more there is a marginal increase in additional taxi-out time at Helsinki airport. From May to October the additional taxi-out times are below 2 minutes, but especially during winter months these times increase significantly (up to 6.45 minutes in January) due to winter maintenance and de-icing procedures. According to NEFAB monitoring report: *Renovations project started in March 2018 to improve aerodrome capacity (ACFT stands, taxiways, and de-icing renovations), so this might increase also the additional taxi-out times.*

**3. Additional ASMA Time**



The additional time in terminal airspace has remained around 1 min/arr. throughout the entire reference period, showing little variability and outperforming other airports with this level of traffic.

**4. Appendix**

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Helsinki/ Vantaa	EFHK	1.97	2.80	2.86	3.10		1.06	0.98	1.08	1.05	

## FINLAND

## Monitoring of CAPACITY for 2018

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.08	0.08	0.08	0.08	0.08	
Deadband +/-	0.05 - 0.08					
Actual performance	0.02	0.00	0.00	0.00		

### National capacity incentive scheme

Finland applied a national incentive scheme based on the following criteria for the period 2015 – 2019:

En route ATFM delay 2015-2019:

0,02min / flt or better: Bonus: 1 % of the revenues from air navigation services in year n

0,03min / flt: Bonus: 0,5 % of the revenues from air navigation services in year n

0,04min / flt: Bonus: 0,2% of the revenues from air navigation services in year n

0,09min / flt: Penalty: 0,2 % of the revenues from air navigation services in year n

0,10min / flt: Penalty: 0,5 % of the revenues from air navigation services in year n

0,11min / flt or worse: Penalty: Penalty: 1% of the revenues from air navigation services in year n

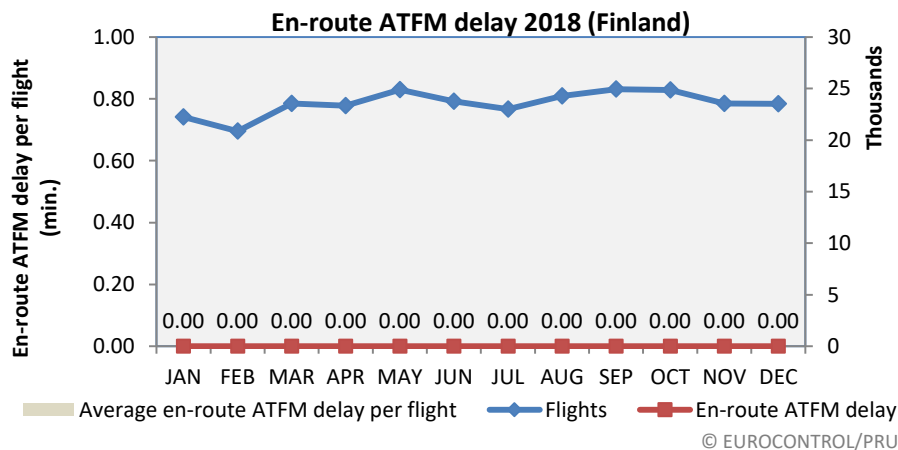
With an actual en route capacity performance of 0.00 minutes per flight in 2018, the ANSP ANS Finland will receive a bonus of 1% of the revenues from air navigation services in year n.

Finland reports that this is equivalent to €438,918 for 2018.

### Compliance issues relating to national capacity incentive scheme

Nil

### Observations regarding national capacity incentive scheme



En-route ATFM delay per flight (Finland)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.03	0.02	0.49	0.01	0.00	0.12	0.02	0.00	0.00	0.00

EUROCONTROL 7 year forecast February 2014 – Finland						
	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	
High	245	253	263	271	280	290
Base	242	248	251	255	259	264
Low	239	240	240	240	240	241

Despite an almost 8% increase in traffic from 2017 levels, the excellent en route capacity performance continued through 2018, with a positive contribution to the union-wide target.

The 8% increase brought traffic levels above the high traffic scenario in the STATFOR traffic forecast available when FAB performance plans and associated capacity plans were being determined. The Network Manager expects Finland to provide a positive capacity contribution for the remainder of RP2 and for the entirety of RP3.

Finland delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	0.01	0.01	0.01	0.01	N/A	N/A
<b>NOP 2019 - 2024</b>	0.01	0.01	0.01			

### Planning and Effective Use of CDRs

Free route airspace has been implemented in Finland in 2015.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
34%	33%	34%	28%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

Procedure 3 is not applicable within the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.



## FINLAND

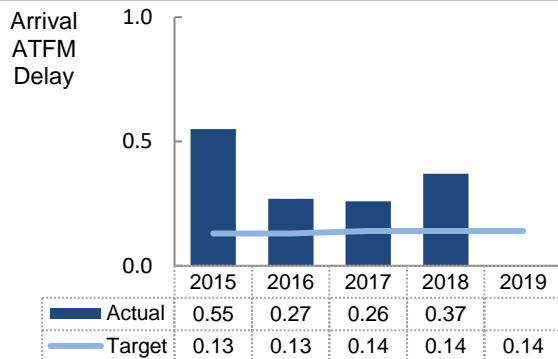
## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

Finland identifies its main airport Helsinki as subject to RP2 monitoring, where traffic levels at these airports have significantly increased during RP2 (+13.8% with respect to 2015). In terms of arrival ATFM delays, values are moderately lower than those in the beginning of the reference period (-33% in 2018 with respect to 2015) but nevertheless the target is missed for the 4th year in a row.

At the same time ATFM slot adherence has improved by almost 4 points (2015:89.0%; 2018:92.6%) and ATC pre-departure delay has increased significantly (2015:0.15 min/dep.; 2018:0.38 min/dep.)

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Finland have moderately increased with respect to the previous year (2017: 0.26 min/arr, 2018: 0.37 min/arr), and while the delays are mostly attributed to weather (and spread during the year), in August the main reason was limitations in the aerodrome capacity associated with runway construction works.

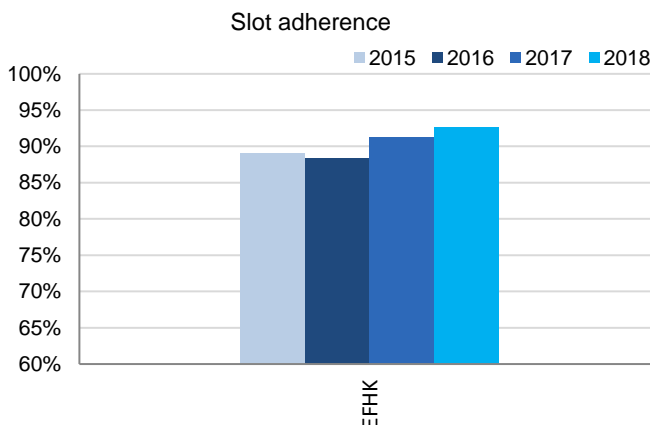
The achieved arrival ATFM delay (0.37 min/arr.) is more than double of the challenging target for 2018.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The NEFAB PP establishes a national target on arrival ATFM delay for Finland which corresponds with the breakdown for the only airport, EFHK. The challenging target is set at 50% of the observed average arrival ATFM delay over the last 5 years at the beginning of the reference period.

NEFAB presents an incentive scheme for the national targets on arrival ATFM delay for Finland. According to this incentive scheme and the achieved performance, a penalty will be applied (1% of revenues from EHK TNC services).

## 4. ATFM Slot Adherence



Slot adherence at Helsinki has increased once again in 2018 reaching 92.6%. As always, the worst results in terms of ATFM slot adherence are observed during the winter months and signal a possible problem related with de-icing.

## 5. ATC Pre-departure Delay

ATC pre-departure delay at Helsinki (EFHK) has increased every year in RP2 and now reaches 0.38 min/dep. but it is still commensurate with the level of traffic compared to other airports in RP2. Quality of the reporting, in terms of the amount of delay left unexplained has improved.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Helsinki/ Vantaa	EFHK	0.55	0.27	0.26	0.37		89.0%	88.3%	91.2%	92.6%		0.15	0.18	0.34	0.38	

## FINLAND: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Finland ECZ represents 0.6% of the SES en-route ANS determined costs in 2018					
· ATSP:	ANS Finland				
· FAB:	NEFAB				
· National currency:	EUR				
2. En-route DUC monitoring at Charging Zone level					
Finland: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	45 050 000	45 596 000	46 064 000	46 321 000	46 468 000
Inflation %	1.5%	1.7%	1.9%	2.0%	2.0%
Inflation index (100 in 2009)	114.4	116.4	118.6	121.0	123.4
Real en-route costs (EUR2009)	39 368 663	39 179 750	38 843 860	38 294 684	37 662 953
Total en-route Service Units	792 600	812 000	827 000	843 000	861 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>49.67</b>	<b>48.25</b>	<b>46.97</b>	<b>45.43</b>	<b>43.74</b>
Finland: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	44 896 400	45 347 269	42 503 630	42 365 049	
Inflation %	-0.2%	0.4%	0.8%	1.2%	
Inflation index (100 in 2009)	111.9	112.4	113.3	114.6	
Real en-route costs (EUR2009)	40 118 861	40 360 311	37 529 161	36 963 240	
Total en-route Service Units	760 383	763 829	848 430	940 208	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>52.76</b>	<b>52.84</b>	<b>44.23</b>	<b>39.31</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-153 600	-248 731	-3 560 370	-3 955 951	
in %	-0.3%	-0.5%	-7.7%	-8.5%	
Inflation %					
in p.p.	-1.7 p.p.	-1.3 p.p.	-1.1 p.p.	-0.8 p.p.	
Inflation index (100 in 2009)					
in p.p.	-2.5 p.p.	-4.0 p.p.	-5.3 p.p.	-6.3 p.p.	
Real en-route costs (EUR2009)					
in value	750 198	1 180 561	-1 314 699	-1 331 444	
in %	1.9%	3.0%	-3.4%	-3.5%	
Total en-route Service Units					
in value	-32 217	-48 171	21 430	97 208	
in %	-4.1%	-5.9%	2.6%	11.5%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>3.09</b>	<b>4.59</b>	<b>-2.74</b>	<b>-6.11</b>	
in %	<b>6.2%</b>	<b>9.5%</b>	<b>-5.8%</b>	<b>-13.5%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (39.31 €2009) is -13.5% lower than planned in the PP (45.43 €2009). This results from the combination of much higher than planned TSUs (+11.5%) and lower than planned en-route costs in real terms (-3.5%, or -1.3 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+11.5%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ANS Finland) retaining an amount of +1.5 M€2009.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Finland are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -8.5% (-4.0 M€) lower than planned. However, since the actual inflation index is also lower than planned (-6.3 p.p.), actual en-route costs are -3.5% (-1.3 M€2009) below plans when expressed in real terms.					
The lower than planned en-route costs in real terms are driven by ANS Finland (-3.3%, or -1.1 M€2009), the MET service provider (-0.8%, or -0.01 M€2009) and the NSA/EUROCONTROL (-6.2%, or -0.2 M€2009). A detailed analysis at ATSP level is provided in box 12. See also <b>Note 1</b> at the end of the report.					
Costs exempt from cost-sharing are reported for a total amount of -0.4 M€2009 comprising -0.2 M€2009 for pension and -0.2 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

Year	Difference (%)
2015	1.9%
2016	3.0%
2017	-3.4%
2018	-3.5%

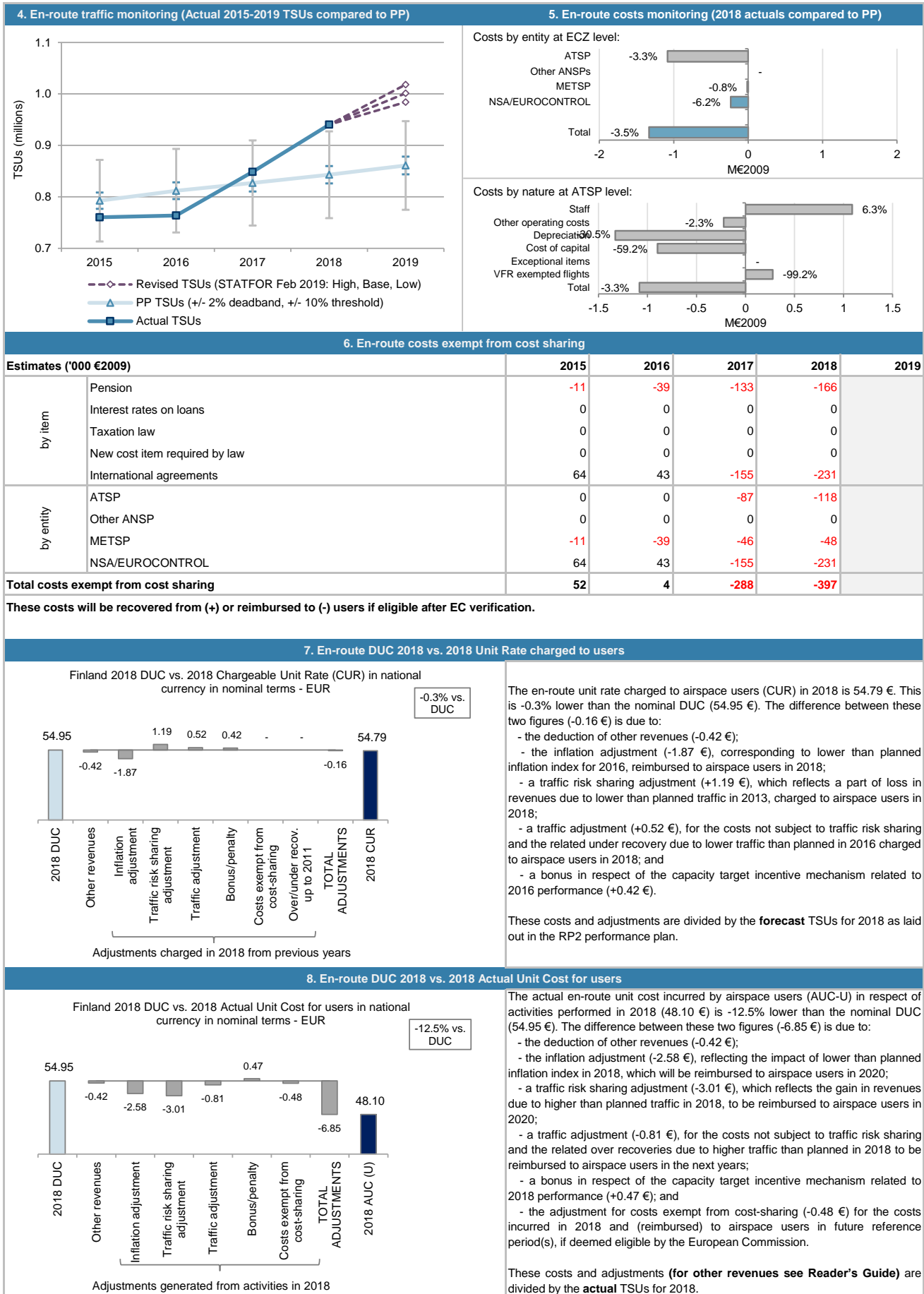
Year	Difference (%)
2015	-4.1%
2016	-5.9%
2017	2.6%
2018	11.5%

Year	En-route DUC (PP, 2015-2019)	En-route unit costs (actual)
2015	49.67	52.76
2016	48.25	52.84
2017	46.97	44.23
2018	45.43	39.31
2019	43.74	

Year	Difference (%)
2015	6.2%
2016	9.5%
2017	-5.8%
2018	-13.5%

**FINLAND: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



## FINLAND: En-route ATSP (ANS Finland)

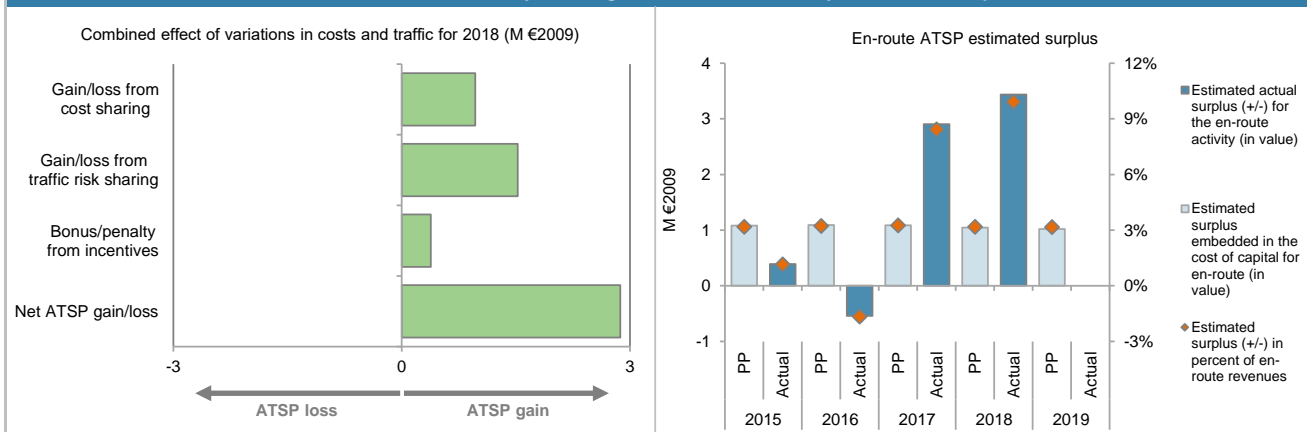
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	33 991	33 734	33 367	32 806	
Actual costs for the ATSP	34 635	34 918	32 057	31 723	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-645	-1 185	1 310	1 083	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	-87	-118	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-645</b>	<b>-1 185</b>	<b>1 223</b>	<b>965</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-4.1%	-5.9%	2.6%	11.5%	
Determined costs for the ATSP (PP) - based on actual inflation	34 757	34 941	34 938	34 622	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-910</b>	<b>-1 111</b>	<b>761</b>	<b>1 523</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>332</b>	<b>318</b>	<b>355</b>	<b>383</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>-1 223</b>	<b>-1 977</b>	<b>2 338</b>	<b>2 872</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	31 430	31 626	31 525	30 253	29 561
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.0%	40.0%	40.0%
Estimated proportion of financing through equity (in value)	12 563	12 641	12 600	12 100	11 825
Estimated proportion of financing through debt (in %)	60.0%	60.0%	60.0%	60.0%	60.0%
Estimated proportion of financing through debt (in value)	18 866	18 985	18 925	18 152	17 736
Cost of capital pre-tax (in value)	1 575	1 585	1 579	1 516	1 482
Average interest on debt (in %)	2.6%	2.6%	2.6%	2.6%	2.6%
Interest on debt (in value)	491	494	492	472	461
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	8.6%
Estimated surplus embedded in the cost of capital for en-route (in value)	1 084	1 091	1 087	1 044	1 020
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 084</b>	<b>1 091</b>	<b>1 087</b>	<b>1 044</b>	<b>1 020</b>
<b>Revenue/costs for the en-route activity</b>	<b>33 991</b>	<b>33 734</b>	<b>33 367</b>	<b>32 806</b>	<b>32 163</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.2%</b>	<b>3.2%</b>	<b>3.3%</b>	<b>3.2%</b>	<b>3.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	29 674	28 347	16 360	17 603	
Estimated proportion of financing through equity (in %)	62.9%	58.6%	40.1%	37.1%	
Estimated proportion of financing through equity (in value)	18 668	16 625	6 556	6 531	
Estimated proportion of financing through debt (in %)	37.1%	41.4%	59.9%	62.9%	
Estimated proportion of financing through debt (in value)	11 006	11 722	9 804	11 073	
Cost of capital pre-tax (in value)	1 852	1 653	615	619	
Average interest on debt (in %)	2.2%	1.9%	0.5%	0.5%	
Interest on debt (in value)	240	218	49	55	
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	
Estimated surplus embedded in the cost of capital for en-route (in value)	1 611	1 435	566	564	
Net ATSP gain(+)/loss(-) on en-route activity	-1 223	-1 977	2 338	2 872	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>388</b>	<b>-543</b>	<b>2 904</b>	<b>3 435</b>	
<b>Revenue/costs for the en-route activity</b>	<b>33 413</b>	<b>32 941</b>	<b>34 395</b>	<b>34 595</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>1.2%</b>	<b>-1.6%</b>	<b>8.4%</b>	<b>9.9%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>2.1%</b>	<b>-3.3%</b>	<b>44.3%</b>	<b>52.6%</b>	

## FINLAND: En-route ATSP (ANS Finland)

## Monitoring of en-route COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on en-route activity and estimated surplus



## 12. Focus on en-route ATSP: General conclusions

## Actual 2018 ANS Finland en-route costs vs. PP

In 2018, ANS Finland actual en-route costs are -3.3% (-1.1 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- higher staff costs (+6.3%, or +1.1 M€2009) due to "separation of ANS from airport operator Finavia in 1.4.2017: some staff was recruited from Finavia.";
- slightly lower other operating costs (-2.3%, or -0.2 M€2009) mainly due to the fact that "after 1.4.2017 the cost of centralised services are not allocated to enroute cost base. There was also some savings in rents of premises and rents of telecommunication lines related to closing of Tampere ACC.";
- much lower depreciation costs (-30.5%, or -1.3 M€2009) mainly due to "two reasons: a) some of the investments were delayed and b) some of the investment cost are now included in other operating costs (ANS Finland pays rent "käyttöomaisuuskorvaus" for the use of airport operator Finavia's ANS assets." [see Note 1];
- much lower cost of capital (-59.2%, or -0.9 M€2009) because the "value of assets is much smaller because of structural changes in 1.4.2017: Finavia owns ANS assets at the airport and ANS Finland pays rent (depreciation and cost of capital) for these assets. Rent is included in other operating costs. Actual WACC is also lower than planned because cost of debt is smaller and share of debt was higher than planned.";

## ANS Finland net gain/loss on en-route activity in 2018

As shown in box 9, ANS Finland generated a net gain of +2.9 M€2009 on the en-route activity. This is a combination of three elements:

- a gain of +1.0 M€2009 arising from the cost sharing mechanism;
- a gain of +1.5 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.4 M€2009 (or +0.44 M€ in nominal terms), corresponding to a bonus as part of the en-route capacity target incentive mechanism. This amount corresponds to 1.0% of ANS Finland en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission.

The gain from cost sharing mentioned above (+1.0 M€2009) includes amounts reported by ANS Finland for cost exempt from cost sharing (-0.1 M€2009). Should these costs not be deemed eligible by the European Commission, ANS Finland would record a net gain of +3.0 M€2009 for the en-route activity in 2018.

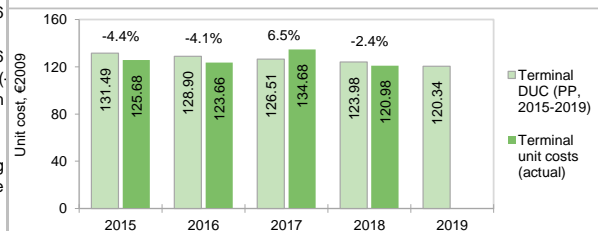
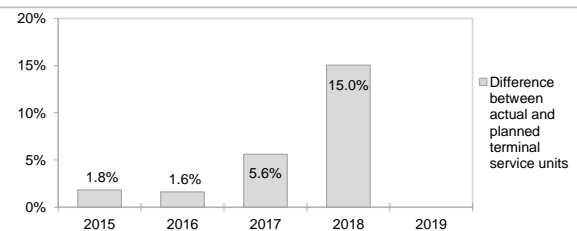
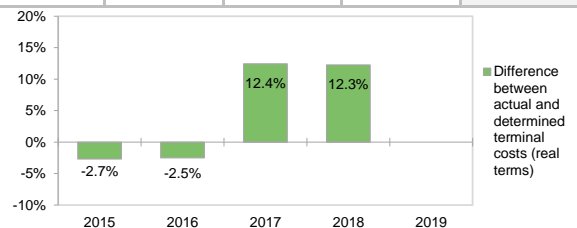
## ANS Finland overall estimated surplus for the en-route activity

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+2.9 M€2009) and the surplus embedded in the actual cost of capital (+0.6 M€2009) amounts to +3.4 M€2009 (9.9% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 52.6%, which is much higher than the 8.6% planned in the PP. See also Note 1 at the end of the report.

## FINLAND: Terminal charging zone

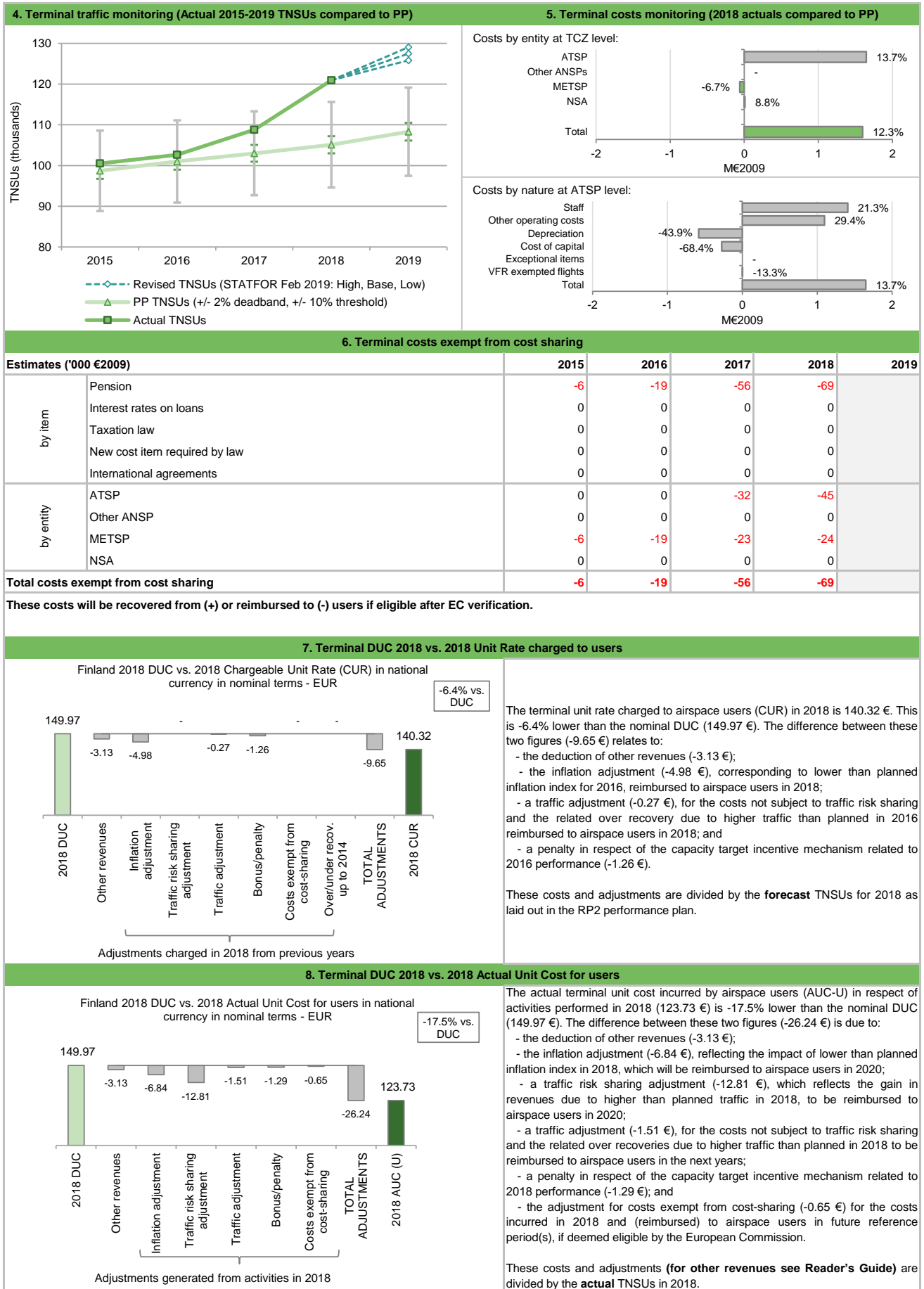
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Finland TCZ represents 1.2% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes	
ATSP:	ANS Finland	Airports with fewer than 70,000 IFRs ATMs:		0	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		1	
Number of airports in charging zone in 2018:	1,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Finland: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	14 850 590	15 150 612	15 452 687	15 761 914	16 079 096
Inflation %	1.5%	1.7%	1.9%	2.0%	2.0%
Inflation index (100 in 2009)	114.4	116.4	118.6	121.0	123.4
Real terminal costs (EUR2009)	12 977 755	13 018 624	13 030 610	13 030 753	13 032 329
Total terminal Service Units	98 700	101 000	103 000	105 100	108 300
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>131.49</b>	<b>128.90</b>	<b>126.51</b>	<b>123.98</b>	<b>120.34</b>
Finland: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	14 135 126	14 260 526	16 594 347	16 766 254	
Inflation %	-0.2%	0.4%	0.8%	1.2%	
Inflation index (100 in 2009)	111.9	112.4	113.3	114.6	
Real terminal costs (EUR2009)	12 630 972	12 692 259	14 652 206	14 628 452	
Total terminal Service Units	100 500	102 636	108 789	120 914	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>125.68</b>	<b>123.66</b>	<b>134.68</b>	<b>120.98</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-715 464	-890 086	1 141 660	1 004 340	
	in %	-4.8%	-5.9%	7.4%	6.4%
Inflation %	-1.7 p.p.	-1.3 p.p.	-1.1 p.p.	-0.8 p.p.	
Inflation index (100 in 2009)	-2.5 p.p.	-4.0 p.p.	-5.3 p.p.	-6.3 p.p.	
Real terminal costs (EUR2009)	-346 784	-326 366	1 621 596	1 597 699	
	in %	-2.7%	-2.5%	12.4%	12.3%
Total terminal Service Units	1 800	1 636	5 789	15 814	
	in %	1.8%	1.6%	5.6%	15.0%
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-5.81</b>	<b>-5.23</b>	<b>8.17</b>	<b>-3.00</b>	
	in %	<b>-4.4%</b>	<b>-4.1%</b>	<b>6.5%</b>	<b>-2.4%</b>
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Finland Terminal Charging Zone (TCZ) comprising only Helsinki-Vantaa airport (EFHK).					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (120.98 €2009) is -2.4% lower than planned in the PP (123.98 €2009). This results from the combination of much higher than planned TNSUs (+15.0%) and much higher than planned terminal costs in real terms (+12.3%, or +1.6 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Finland TCZ. The difference between actual and planned TNSUs (+15.0%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ANS Finland) retaining an amount of +0.6 M€2009.					
According to STATFOR February 2019 base scenario, the TNSUs for Finland are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +6.4% (+1.0 M€) higher than planned. However, since the actual inflation is lower than planned (-6.3 p.p.), actual terminal costs are +12.3% (+1.6 M€2009) above plans when expressed in real terms.					
The higher than planned terminal costs in real terms are driven by ANS Finland (+13.7%, or +1.6 M€2009) and the NSA (+8.8%, or +0.01 M€2009), while the costs for the MET service provider (-6.7%, or -0.1 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.07 M€2009 corresponding to pensions. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the EC.					



**FINLAND: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**





## FINLAND: Terminal ATSP (ANS Finland)

## Monitoring of terminal COST-EFFICIENCY for 2018

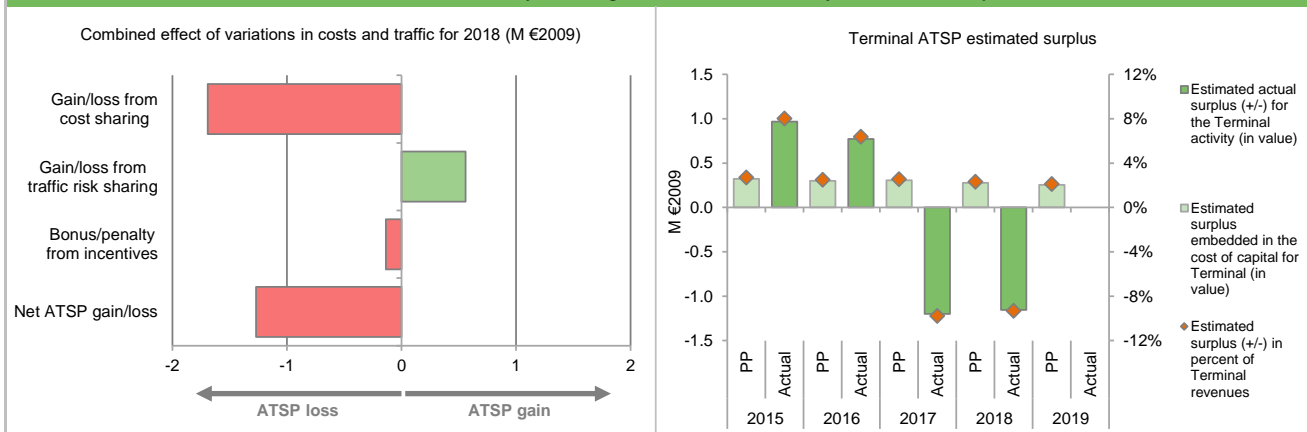
9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	11 977	12 013	12 024	12 025	
Actual costs for the ATSP	11 597	11 717	13 591	13 672	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	381	296	-1 566	-1 647	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	-32	-45	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>381</b>	<b>296</b>	<b>-1 599</b>	<b>-1 692</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.8%	1.6%	5.6%	15.0%	
Determined costs for the ATSP (PP) - based on actual inflation	12 247	12 442	12 590	12 690	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>223</b>	<b>202</b>	<b>389</b>	<b>558</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>-122</b>	<b>-118</b>	<b>-124</b>	<b>-136</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>482</b>	<b>379</b>	<b>-1 334</b>	<b>-1 270</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	9 372	8 726	8 903	8 047	7 364
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.0%	40.0%	40.0%
Estimated proportion of financing through equity (in value)	3 749	3 490	3 560	3 218	2 945
Estimated proportion of financing through debt (in %)	60.0%	60.0%	60.0%	60.0%	60.0%
Estimated proportion of financing through debt (in value)	5 623	5 236	5 343	4 829	4 419
Cost of capital pre-tax (in value)	469	437	446	403	369
Average interest on debt (in %)	2.6%	2.6%	2.6%	2.6%	2.6%
Interest on debt (in value)	146	136	139	126	115
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	8.6%
Estimated surplus embedded in the cost of capital for terminal (in value)	323	301	307	277	254
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>323</b>	<b>301</b>	<b>307</b>	<b>277</b>	<b>254</b>
<b>Revenue/costs for the terminal activity</b>	<b>11 977</b>	<b>12 013</b>	<b>12 024</b>	<b>12 025</b>	<b>12 026</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.7%</b>	<b>2.5%</b>	<b>2.6%</b>	<b>2.3%</b>	<b>2.1%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>	<b>8.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	8 947	7 765	3 905	3 619	
Estimated proportion of financing through equity (in %)	63.0%	58.8%	40.1%	37.1%	
Estimated proportion of financing through equity (in value)	5 640	4 564	1 564	1 344	
Estimated proportion of financing through debt (in %)	37.0%	41.2%	59.9%	62.9%	
Estimated proportion of financing through debt (in value)	3 307	3 200	2 340	2 275	
Cost of capital pre-tax (in value)	558	453	147	127	
Average interest on debt (in %)	2.2%	1.9%	0.5%	0.5%	
Interest on debt (in value)	72	60	12	11	
Determined RoE pre-tax rate (in %)	8.6%	8.6%	8.6%	8.6%	
Estimated surplus embedded in the cost of capital for terminal (in value)	486	394	135	116	
Net ATSP gain(+)/loss(-) on terminal activity	482	379	-1 334	-1 270	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>968</b>	<b>772</b>	<b>-1 199</b>	<b>-1 154</b>	
<b>Revenue/costs for the terminal activity</b>	<b>12 078</b>	<b>12 096</b>	<b>12 256</b>	<b>12 402</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>8.0%</b>	<b>6.4%</b>	<b>-9.8%</b>	<b>-9.3%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>17.2%</b>	<b>16.9%</b>	<b>-76.7%</b>	<b>-85.9%</b>	



## FINLAND: Terminal ATSP (ANS Finland)

## Monitoring of terminal COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus



## 12. Focus on terminal ATSP: General conclusions

## Actual 2018 ANS Finland terminal costs vs. PP

In 2018, ANS Finland actual terminal costs are +13.7% (+1.6 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much higher staff costs (+21.3%, or +1.4 M€2009) because of "higher FTE. (...) due to separation of ANS from airport operator Finavia in 1.4.2017: Some staff was recruited from Finavia";
- much higher other operating costs (+29.4%, or +1.1 M€2009) "due to structural changes in the cost base related to separation of ANS from airport operator Finavia. Finavia's overhead cost and cost of internal services were replaced by new service contracts with Finavia and other service providers. To Finavia ANS Finland pays rent for the premises, "fixed assets-fee" for the use ANS assets owned by Finavia, marketing and development fee in Helsinki-Vantaa airport. ANS Finland also pays for some IM, HR, accounting and other services, which are provided by Finavia";
- much lower depreciation costs (-43.9%, or -0.6 M€2009) because "from 1.4.2017 onwards airport operator Finavia owns the ANS assets in the airport and ANS Finland pays rent for the use of these assets. Rent includes depreciations and cost of capital of the assets. Because of this reported depreciations are lower than planned, but other operating income are higher";
- much lower cost of capital (-68.4%, or -0.3 M€2009) because the "value of assets is much smaller because of structural changes in 1.4.2017 [see above and Note 1]. Rent is included in other operating costs. Actual WACC is also lower than planned because cost of debt is smaller and share of debt was higher than planned";

## ANS Finland net gain/loss on terminal activity in 2018

As shown in box 9, ANS Finland generated a net loss of -1.3 M€2009 on the terminal activity. This is a combination of three elements:

- a loss of -1.7 M€2009 arising from the cost sharing mechanism;
- a gain of +0.6 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of -0.1 M€2009 (or -0.16 M€ in nominal terms), corresponding to a penalty as part of the terminal capacity target incentive mechanism. This amount corresponds to 1.0% of ANS Finland terminal revenues (based on the ATSP chargeable unit rate in 2018 times the actual TNSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The loss from cost sharing mentioned above (-1.7 M€2009) includes amounts reported by ANS Finland for cost exempt from cost sharing (-0.04 M€2009). Should these costs not be deemed eligible by the European Commission, ANS Finland would record a net loss of -1.2 M€2009 for the terminal activity in 2018.

## ANS Finland overall estimated surplus for the terminal activity.

Ex-post, the overall estimated surplus taking into account the net loss from the terminal activity mentioned above (-1.3 M€2009) and the surplus embedded in the actual cost of capital (+0.1 M€2009) is a negative amount of -1.2 M€2009 (in absolute terms 9.3% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is -85.9%, which indicates that the surplus embedded in the cost of capital (8.6%) was not sufficient to compensate for the loss related to the terminal activity. See also Note 1 at the end of the report.

## FINLAND: Gate-to-gate

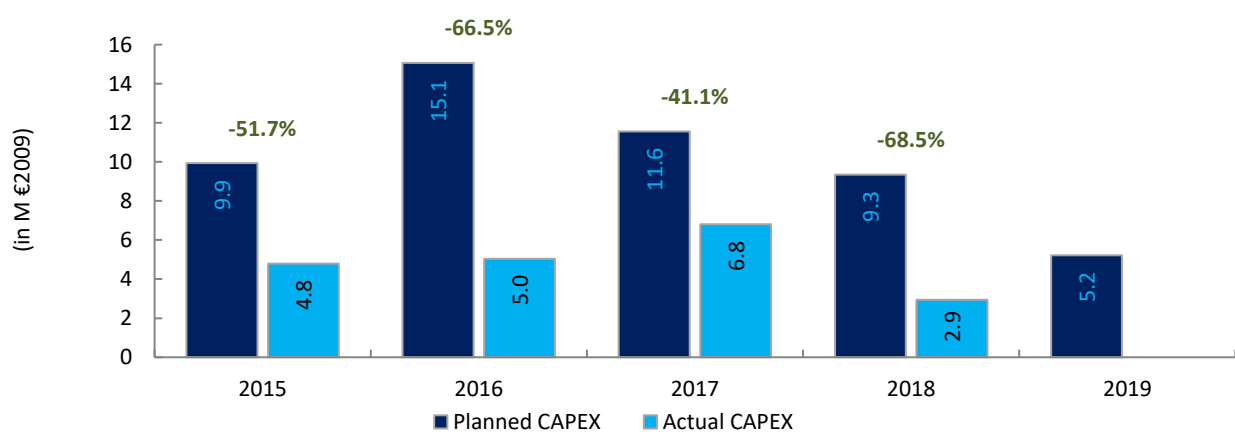
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Finland: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	39 368 663	39 179 750	38 843 860	38 294 684	37 662 953																																							
Real terminal costs (EUR2009)	12 977 755	13 018 624	13 030 610	13 030 753	13 032 329																																							
Real gate-to-gate costs (EUR2009)	52 346 419	52 198 375	51 874 470	51 325 437	50 695 282																																							
En-route share (%)	75.2%	75.1%	74.9%	74.6%	74.3%																																							
<b>Finland: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	40 118 861	40 360 311	37 529 161	36 963 240																																								
Real terminal costs (EUR2009)	12 630 972	12 692 259	14 652 206	14 628 452																																								
Real gate-to-gate costs (EUR2009)	52 749 833	53 052 570	52 181 367	51 591 692																																								
En-route share (%)	76.1%	76.1%	71.9%	71.6%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)	403 414	854 195	306 897	266 255																																								
	in value																																											
	0.8%	1.6%	0.6%	0.5%																																								
	in %																																											
En-route share	0.8 p.p.	1.0 p.p.	-3.0 p.p.	-3.0 p.p.																																								
	in p.p.																																											
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +0.5% (+0.3 M€2009) higher than planned due to higher than planned terminal costs (+12.3%, or +1.6 M€2009) while en-route costs are lower than planned (-3.5%, or -1.3 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (71.6%) is lower than planned in the PP for 2018 (74.6%).</p> <p>For ANS Finland, the estimated gate-to-gate economic surplus in 2018 amounts to 2.3 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 4.9% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>75.2%</td> <td>24.8%</td> </tr> <tr> <td>Actual</td> <td>76.1%</td> <td>23.9%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>75.1%</td> <td>24.9%</td> </tr> <tr> <td>Actual</td> <td>76.1%</td> <td>23.9%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>74.9%</td> <td>25.1%</td> </tr> <tr> <td>Actual</td> <td>71.9%</td> <td>28.1%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>74.6%</td> <td>25.4%</td> </tr> <tr> <td>Actual</td> <td>71.6%</td> <td>28.4%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>74.3%</td> <td>25.7%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	75.2%	24.8%	Actual	76.1%	23.9%	2016	Determined	75.1%	24.9%	Actual	76.1%	23.9%	2017	Determined	74.9%	25.1%	Actual	71.9%	28.1%	2018	Determined	74.6%	25.4%	Actual	71.6%	28.4%	2019	Determined	74.3%	25.7%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Finland</b>																																												
<b>Note 1:</b>																																												
<b>Organisational changes in Finland in RP2</b>																																												
<p>The Finnish state owned provider of the air navigation services has been separated from Finavia corporation (Finavia) to its own company which is totally independent from Finavia. The new legal entity Air Navigation Services Finland Oy (ANS Finland) has been established for the provision of the en-route and terminal air navigation services. ANS Finland started operating on 1 April 2017.</p> <p>ANS Finland is state-owned. It will function as a special assignment company under the ownership steering of the Ministry of Transport and Communications. The responsibility for Finavia's ownership steering has been transferred to the Ownership Steering Department of the Prime Minister's Office.</p> <p>ANS Finland provides en-route services as well as aerodrome control services and approach control services for 22 airports in Finland. En-route services include Finnish area control services, airspace management, aeronautical search and rescue and air traffic flow management.</p> <p>The cost allocation principles for the en-route and EFHK TN navigation services remains in principle the same as defined in the Performance Plan for Reference Period 2. Finavia's internal cost allocations have been replaced by the service agreements between Finavia and ANS Finland. Most of the assets included in the en-route cost base are owned by ANS Finland. For the EFHK TN navigation services most of the assets are owned by the Finavia.</p> <p>En-route charges are collected by the Eurocontrol on the behalf of the ANS Finland. EFHK TN navigation charges are collected by the Finavia on behalf of the ANS Finland.</p> <p>ANS Finland's cost base (other operating costs) includes (among others) costs incurred for the purchases from Finavia. These include goods and services used to support air navigation services provision. These outsourced services are in particular external staff, material, energy, utilities, rental of buildings, equipment and facilities, maintenance.</p> <p>In 1.4.2017 ANS Finland was separated from the airport operator Finavia. It was decided that ANS assets in the airports belong to Finavia and ANS Finland pays lease for the use of these assets. Rent is based on depreciation and cost of capital of these assets. In the case of new investments ANS Finland suggests new ANS investments for Finavia and Finavia makes final decision of the implementation. ANS Finland provides project management services to Finavia in these projects.</p> <p>From 1.1.2019 onwards ANS Finland is part of the Traffic Management Finland Group. Information about TMFG: <a href="https://tmfg.fi/en/tmfg">https://tmfg.fi/en/tmfg</a>. TMF provides services to ANS Finland related to ICT, HR, Financing, law, public relations etc. Cost of these services are allocated to different TMFG companies using FTE and turnover as allocation keys.</p> <p>The Finnish Transport Safety Agency (Trafi), the Finnish Communications Regulatory Authority (FICORA) and certain functions of the Finnish Transport Agency merged to form the Finnish Transport and Communications Agency Traficom on 1 January 2019. This change however hasn't any influence to the NSA's organizing or cost base.</p>																																												

## FINLAND

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ANS Finland						
FAB: NEFAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	11.4	17.5	13.7	11.3	6.5	60.3
Main CAPEX (in nominal M)	7.3	11.3	9.8	8.2	4.5	41.0
Inflation %	1.5%	1.7%	1.9%	2.0%	2.0%	
Inflation index (100 in 2009)	114.4	116.4	118.6	121.0	123.4	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>9.9</b>	<b>15.1</b>	<b>11.6</b>	<b>9.3</b>	<b>5.2</b>	<b>51.1</b>
Main CAPEX (in M €2009)	6.3	9.7	8.3	6.8	3.6	34.7
% Main of Total CAPEX	63.8%	64.3%	71.5%	72.6%	69.0%	67.8%
Real gate-to-gate ANSP costs (in M €2009)	46.0	45.7	45.4	44.8	44.2	226.1
Total CAPEX as % of Real gate-to-gate ANSP costs	21.6%	32.9%	25.5%	20.8%	11.8%	22.6%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	5.4	5.7	7.7	3.4		
Main CAPEX (in nominal M)	3.7	3.9	5.3	2.5		
Inflation %	-0.2%	0.4%	0.8%	1.2%		
Inflation index (100 in 2009)	111.9	112.4	113.3	114.6		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>4.8</b>	<b>5.0</b>	<b>6.8</b>	<b>2.9</b>		
Main CAPEX (in M €2009)	3.3	3.5	4.7	2.2		
% Main of Total CAPEX	69.8%	68.6%	69.4%	73.5%		
Real gate-to-gate ANSP costs (in M €2009)	46.2	46.6	45.6	45.4		
Total CAPEX as % of Real gate-to-gate ANSP costs	10.4%	10.8%	14.9%	6.5%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-6.0	-11.9	-6.0	-7.9		
Total CAPEX (in M €2009)	-5.1	-10.0	-4.7	-6.4		
<b>Total CAPEX (in %, M €2009)</b>	<b>-51.7%</b>	<b>-66.5%</b>	<b>-41.1%</b>	<b>-68.5%</b>		





# Annual Monitoring Report 2018

Local level view

Latvia



## LATVIA

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
<b>State level</b>	71	C	D	C	D	C
<b>LGS</b>	78	C	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			#VALUE!	#VALUE!		
Runway Incursions (RIs)			n/a	n/a		
ATM Specific Occurrences (ATM-S)				n/a		
<b>Source of RAT data:</b>			CAA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			7	2		
Legal/Judiciary			5	2		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>14</b>	<b>4</b>		
<b>LGS</b>			Number of questions answered			
			YES	NO		
Policy and its implementation			12	1		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>21</b>	<b>3</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

## LATVIA

## Monitoring of Airports Contribution to ENVIRONMENT for 2018

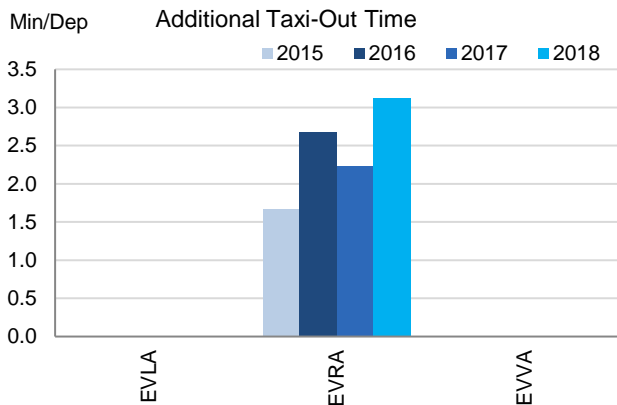
## 1. Overview

Latvia identified 3 airports as subject to RP2 monitoring, from which only Riga (EVRA) has established the Airport Operator Data Flow. Results for Latvia are therefore only representing this airport.

With a traffic increase of 12% with respect to 2017 at Riga, the additional times have increased and remain high for an airport with that level of traffic.

Both EVLA and EVVA are uncontrolled aerodromes, no data is available for any evaluation of the environmental performance.

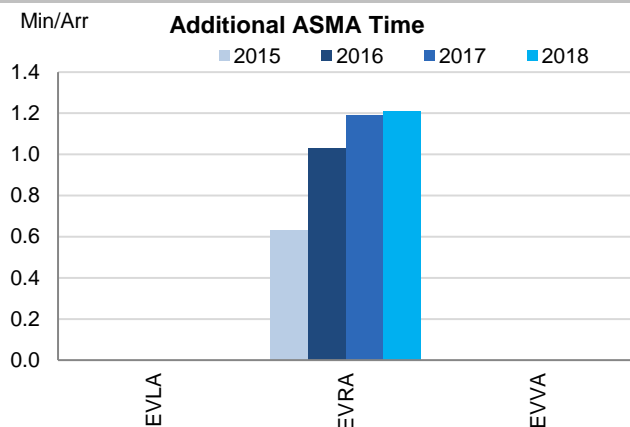
## 2. Additional Taxi-Out Time



There is a significant increase of the additional taxi-out times at Riga (EVRA) in 2018 (+40%) observed throughout the entire year. NEFAB monitoring report argues the *increase in the taxi out time could be attributed to the increase of movements in general at Riga airport, especially during the summer months (on average, air traffic 10% increase)*. Also *aerodrome taxi way construction works may have contributed to increase in taxi out time*.

The additional taxi-out time at Riga (EVRA: 3.13 min/dep.) is just below the European average (RP2 airports: 3.57 min/dep.) and higher than other airports with a similar number of movements.

## 3. Additional ASMA Time



Additional times in the terminal airspace of Riga have not changed much with respect to 2017 and reaches 1.21 min/arr.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Liepaja	EVLA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Riga	EVRA	1.67	2.68	2.23	3.13		0.63	1.03	1.19	1.21	
Ventspils	EVVA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	



**LATVIA**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.04	0.04	0.04	0.04	0.04	
Deadband +/-	0.01	0.01	0.01	0.01	0.01	
Actual performance	0.00	0.00	0.00	0.04		

**National capacity incentive scheme**

Latvia applied a national incentive scheme based on the following criteria for the period 2015 – 2019:

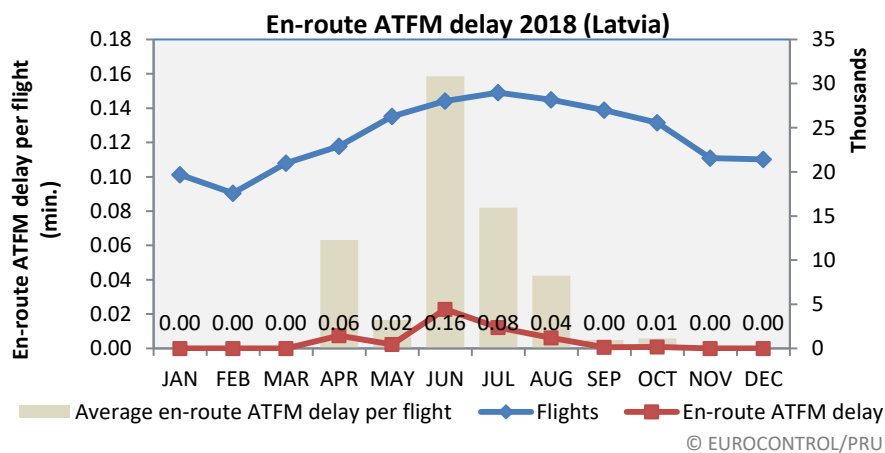
- 0,00min / flt or better: Bonus: 1 % of the revenues from air navigation services in year n
- 0,01min / flt: Bonus: 0,7% of the revenues from air navigation services in year n
- 0,02min / flt: Bonus: 0,5% of the revenues from air navigation services in year n
- 0,03min / flt: Bonus: 0,2% of the revenues from air navigation services in year n
- 0,05min / flt: Penalty: 0,2 % of the revenues from air navigation services in year n
- 0,06min / flt: Penalty: 0,5 % of the revenues from air navigation services in year n
- 0,07min / flt or worse: Penalty: Penalty: 1% of the revenues from air navigation services in year n

With an actual en route capacity performance of 0.04 minutes per flight in 2018, the ANSP LGS will neither receive a bonus nor a penalty, since this falls within the deadband.

**Compliance issues relating to national capacity incentive scheme**

Nil

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Latvia)											
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2018
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04

EUROCONTROL 7 year forecast February 2014 –Latvia										
	2014	2015	2016	2017	2018	2019				
	actual	actual	actual	actual	actual					
High	255	267	283	298	313	330				
Base	250	243	258	244	265	288				
Low	246	249	251	253	255	258				

Traffic levels in Latvia grew by almost 9% on 2017 but remained under the high traffic scenario for 2018 forecasted by STATFOR back in 2014 when the FAB performance plans, and associated capacity plans were being determined.

The 9% increase in traffic saw delay levels rising from 0.00 to 0.04 minutes per flight. 2018 was the first time that Latvia failed to beat its national target since the beginning of RP1. The airspace users commented that Riga ACC was a 'good performer' for capacity.

56% of delays were attributed to ATC staffing, 21% to airspace management, 14% to adverse weather and 7% to ATC capacity.

The Network Manager expects Latvia to provide a positive contribution to capacity for the remainder of RP2 and for the entirety of RP3.

Latvia delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>			

### Planning and Effective Use of CDRs

Free route airspace has been implemented in Latvia in 2015.

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
41%	64%	35%	25%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
0%	0%	0%	0%	

Procedure 3 is not applicable within the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## LATVIA

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

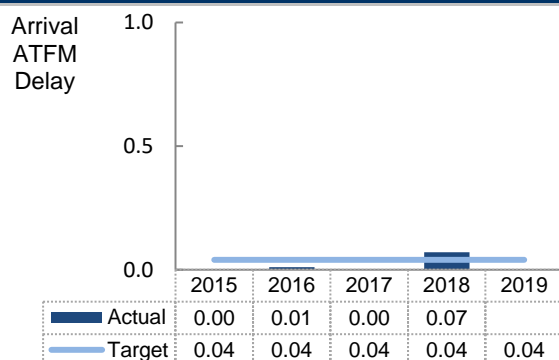
ANS at a total of 3 airports are subject to RP2 monitoring in Latvia, although NEFAB reports that Liepaja (EVLA) and Ventspils (EVVA) do not have ATC services, only AFIS and class G airspace. Traffic at Liepaja (EVLA) and Ventspils (EVVA) is marginal with little or no impact on the network.

Traffic levels at Riga have drastically increased during RP2 (+23.0% with respect to 2015) and arrival ATFM delays have appeared only marginally in 2016 and now discernible in 2018.

A national target on arrival ATFM has been established and it is missed in 2018 for the first time.

ATFM slot adherence has not changed much during RP2 and ATC Pre-departure delay can only be monitored at the time being for Riga (EVRA), where these delays are negligible.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Latvia have become discernible for the first time in RP2 (0.07 min/arr.), missing the established national target. The performance is driven by the delays observed at Riga (EVRA) as the other airports do not present any arrival ATFM delay.

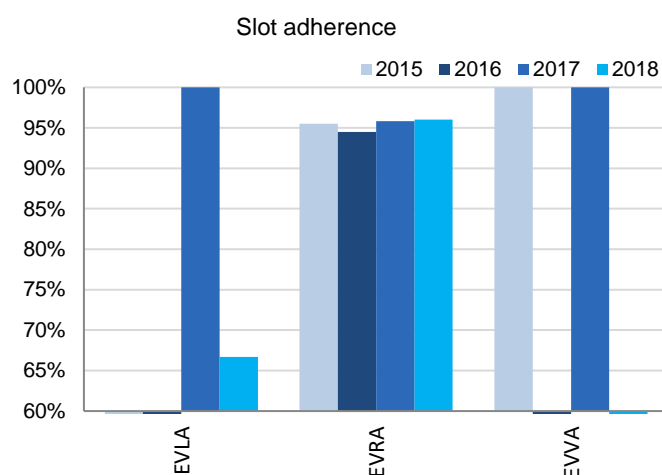
Delays at Riga are associated to Aerodrome capacity issues and concentrated almost exclusively in the month of July, when the monthly average reached 0.75 min/arr.). Although not exclusively concentrated in July, there were several works in progress at Riga during the summer months.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The NEFAB performance plan establishes a national target on arrival ATFM delay for Latvia, with breakdown only for Riga (EVRA). The conservative national target of 0.4 min/arr. is constant for the entire reference period 2.

The performance plan also presents an incentive scheme for Latvia. The target is missed in 2018 and according to NEFAB performance plan and the achieved performance, the maximum penalty applies (1% of terminal ANS revenues)

## 4. ATFM Slot Adherence



The adherence to ATFM slots at Riga (EVRA) exceeds once again the 95% threshold.

The share of regulated departures at Liepaja (EVLA) and Ventspils (EVVA) in 2018 is negligible, so much that the indicator has little meaning.

Nevertheless, according to NEFAB monitoring report, since: *EVLA airport has AFIS only and the AFIS operator provides only information (not a clearance) to the flight crew, in certain cases flight crew makes decision for earlier departure.*

*In order to avoid such situations in the future, starting from June 1st, 2019, AFIS operators at EVLA are authorized to prohibit departure from EVLA outside of designated ATFM slot times. Currently, only domestic regular commercial flights are served at EVLA.*

## 5. ATC Pre-departure Delay

The Airport Operator Data Flow is established for Riga (EVRA) and allows for the monitoring of pre-departure delay. Riga accrued negligible pre-departure delay along RP2 years. This level of performance is commensurate with the level of traffic observed.

## 6. Appendix

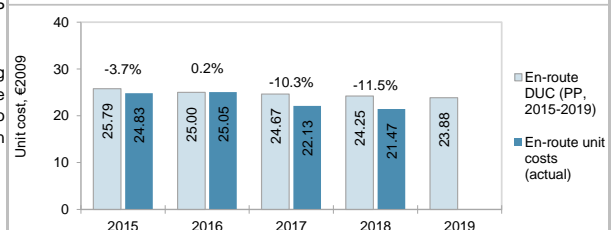
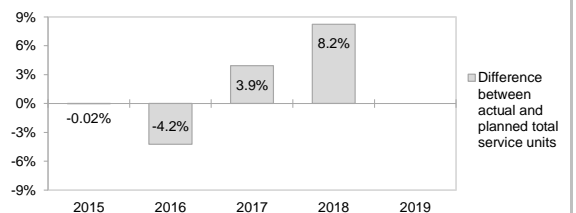
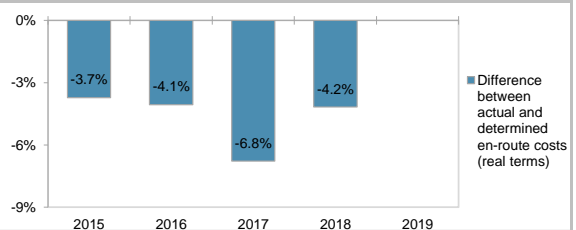
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Liepaja	EVLA	0.00	0.00	0.00	0.00		n/a	n/a	100.0%	66.7%		n/a	n/a	n/a	n/a	
Riga	EVRA	0.00	0.01	0.00	0.07		95.5%	94.5%	95.8%	96.0%		n/a	0.08	0.05	0.05	
Ventspils	EVVA	0.00	0.00	0.00	0.00		100.0%	n/a	100.0%	n/a		n/a	n/a	n/a	n/a	

## LATVIA: En-route charging zone

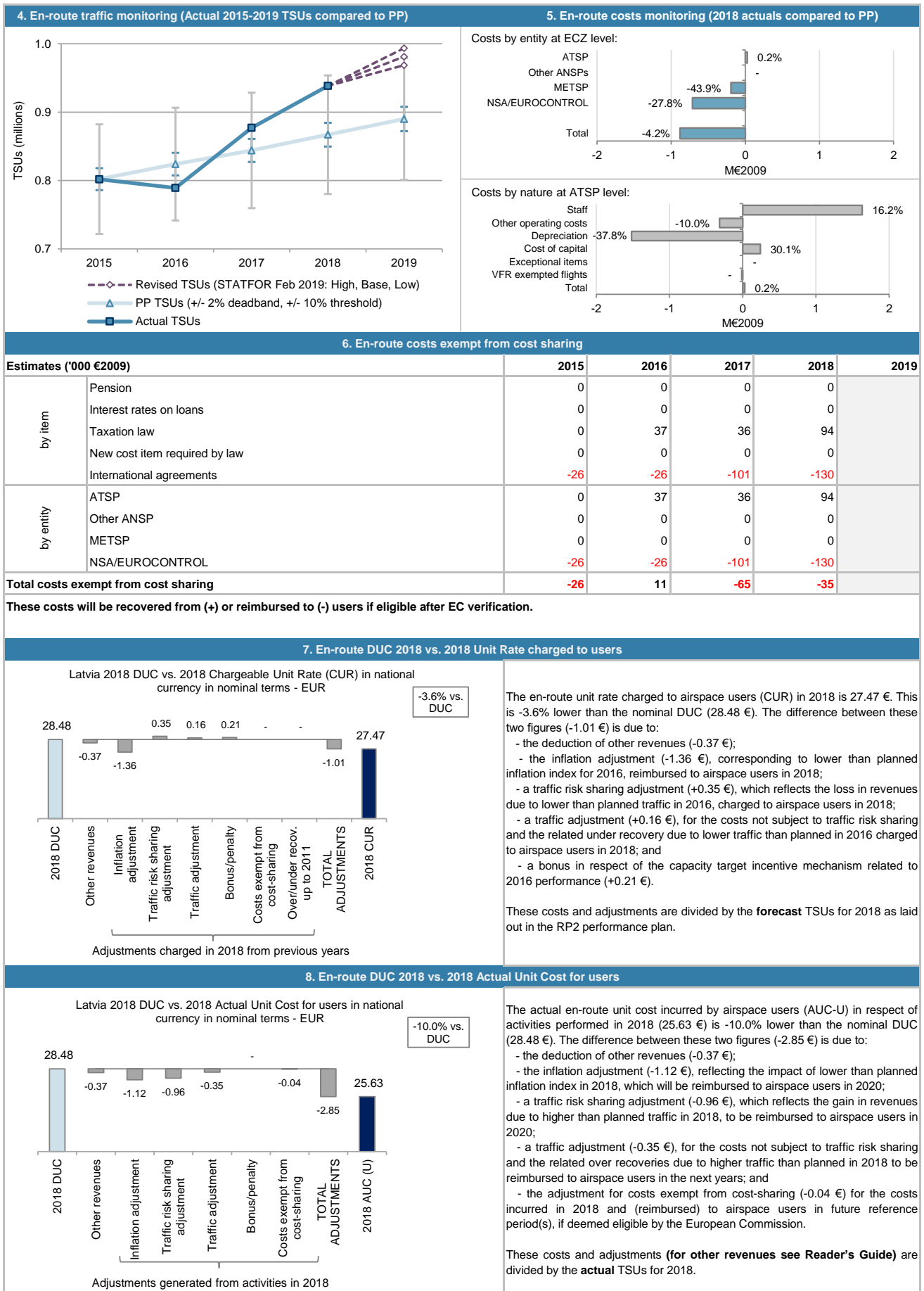
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Latvia ECZ represents 0.3% of the SES en-route ANS determined costs in 2018					
· ATSP: LGS					
· FAB: NEFAB					
· National currency: EUR					
2. En-route DUC monitoring at Charging Zone level					
Latvia: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	22 680 662	23 118 000	23 902 000	24 692 818	25 534 000
Inflation %	2.5%	2.3%	2.3%	2.3%	2.3%
Inflation index (100 in 2009)	109.7	112.2	114.8	117.4	120.1
Real en-route costs (EUR2009)	20 683 885	20 603 685	20 823 477	21 028 777	21 256 247
Total en-route Service Units	802 000	824 000	844 000	867 000	890 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>25.79</b>	<b>25.00</b>	<b>24.67</b>	<b>24.25</b>	<b>23.88</b>
Latvia: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	21 182 494	21 047 181	21 268 039	22 652 286	
Inflation %	0.2%	0.1%	2.9%	2.6%	
Inflation index (100 in 2009)	106.4	106.5	109.6	112.4	
Real en-route costs (EUR2009)	19 913 164	19 766 193	19 410 698	20 150 155	
Total en-route Service Units	801 836	789 087	877 214	938 372	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>24.83</b>	<b>25.05</b>	<b>22.13</b>	<b>21.47</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR) in value	-1 498 168	-2 070 819	-2 633 961	-2 040 532	
in %	-6.6%	-9.0%	-11.0%	-8.3%	
Inflation % in p.p.	-2.3 p.p.	-2.2 p.p.	0.6 p.p.	0.3 p.p.	
Inflation index (100 in 2009) in p.p.	-3.3 p.p.	-5.7 p.p.	-5.2 p.p.	-5.0 p.p.	
Real en-route costs (EUR2009) in value	-770 722	-837 492	-1 412 779	-878 622	
in %	-3.7%	-4.1%	-6.8%	-4.2%	
Total en-route Service Units in value	-164	-34 913	33 214	71 372	
in %	-0.02%	-4.2%	3.9%	8.2%	
<b>Real en-route unit cost per Service Unit (EUR2009) in value</b>	<b>-0.96</b>	<b>0.04</b>	<b>-2.54</b>	<b>-2.78</b>	
<b>in %</b>	<b>-3.7%</b>	<b>0.2%</b>	<b>-10.3%</b>	<b>-11.5%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (21.47 €2009) is -11.5% lower than planned in the PP (24.25 €2009). This results from the combination of higher than planned TSUs (+8.2%) and lower than planned en-route costs in real terms (-4.2%, or -0.9 M€2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+8.2%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (LGS) retaining an amount of +0.7 M€2009.					
According to STATFOR February 2019 base scenario, the en-route TSUs for Latvia are expected to slightly exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -8.3% (-2.0 M€) lower than planned. However, since the actual inflation index is also lower than planned (-5.0 p.p.), actual en-route costs are -4.2% (-0.9 M€2009) below plans when expressed in real terms.					
The lower than planned en-route costs in real terms are driven by the MET service provider (-43.9%, or -0.2 M€2009) and the NSAEUROCONTROL (-27.8%, or -0.7 M€2009), while the costs for LGS (+0.2%, or +0.03 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -0.04 M€2009 comprising +0.09 M€2009 for unforeseen changes in national taxation law and -0.13 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



LATVIA: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



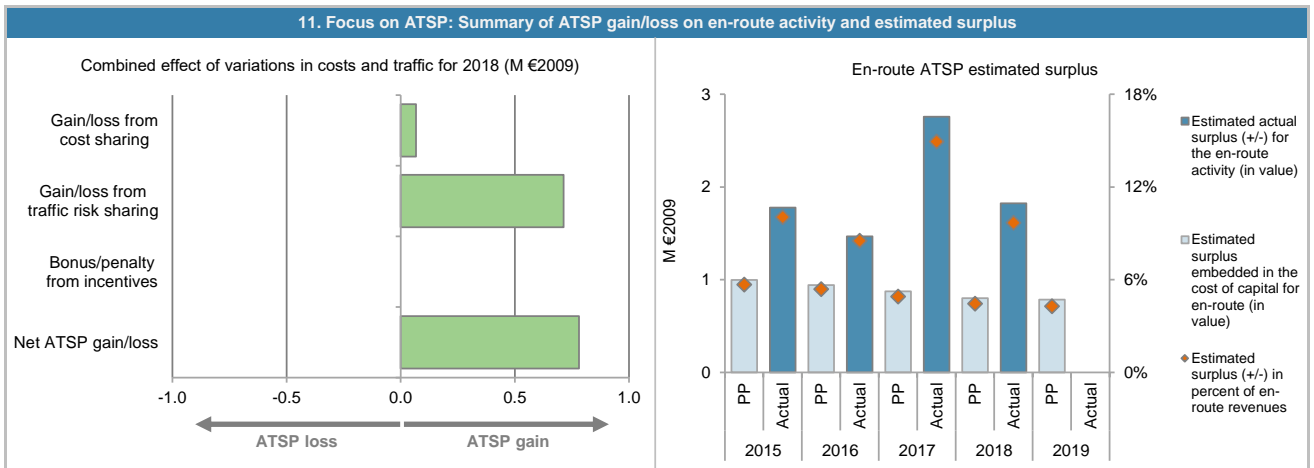
## LATVIA: En-route ATSP (LGS)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	17 518	17 486	17 751	18 030	
Actual costs for the ATSP	16 896	16 737	16 711	18 057	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	622	749	1 040	-27	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	37	36	94	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>622</b>	<b>786</b>	<b>1 076</b>	<b>67</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.02%	-4.2%	3.9%	8.2%	
Determined costs for the ATSP (PP) - based on actual inflation	17 682	18 043	18 211	18 444	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-4</b>	<b>-482</b>	<b>470</b>	<b>714</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>176</b>	<b>172</b>	<b>188</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>794</b>	<b>476</b>	<b>1 734</b>	<b>781</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	15 008	14 296	13 320	12 335	11 907
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	15 008	14 296	13 320	12 335	11 907
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	996	943	873	801	786
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	6.6%	6.6%	6.6%	6.5%	6.6%
Estimated surplus embedded in the cost of capital for en-route (in value)	996	943	873	801	786
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>996</b>	<b>943</b>	<b>873</b>	<b>801</b>	<b>786</b>
<b>Revenue/costs for the en-route activity</b>	<b>17 518</b>	<b>17 486</b>	<b>17 751</b>	<b>18 030</b>	<b>18 325</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>5.7%</b>	<b>5.4%</b>	<b>4.9%</b>	<b>4.4%</b>	<b>4.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.6%</b>	<b>6.6%</b>	<b>6.6%</b>	<b>6.5%</b>	<b>6.6%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	14 812	15 012	15 598	16 046	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	14 812	15 012	15 598	16 046	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	983	990	1 022	1 043	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	6.6%	6.6%	6.6%	6.5%	
Estimated surplus embedded in the cost of capital for en-route (in value)	983	990	1 022	1 043	
Net ATSP gain(+)/loss(-) on en-route activity	794	476	1 734	781	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>1 777</b>	<b>1 466</b>	<b>2 756</b>	<b>1 823</b>	
<b>Revenue/costs for the en-route activity</b>	<b>17 690</b>	<b>17 213</b>	<b>18 444</b>	<b>18 838</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>10.0%</b>	<b>8.5%</b>	<b>14.9%</b>	<b>9.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>12.0%</b>	<b>9.8%</b>	<b>17.7%</b>	<b>11.4%</b>	

**LATVIA: En-route ATSP (LGS)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 LGS en-route costs vs. PP**

In 2018, LGS actual en-route costs are +0.2% (+0.03 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- much higher staff costs (+16.2%, or +1.6 M€2009) due to higher ATCOs salaries : "As a consequence of the ATCOs leaving LGS due to low salaries for better paid work and materially increased traffic, Latvia recorded delays. It is worth mentioning that the salaries of the staff regarded as administrative functions were raised by 5% to compensate the inflation, while ATSEP personnel staff costs increased by 10% in order to maintain staff in LGS. Nevertheless, ANSP had a staff turnover ration of 7.7%, 5 out of 27 persons that left LGS were ATCOs in 2018. Total number of ATCOs left LGS in 2017-2018 was 9 (approximately 10%).";
- lower other operating costs (-10.0%, or -0.3 M€2009) while it is noted that there is a "new ATCO training programme which will have further effect in years 2019, 2020 and 2021." ;
- much lower depreciation costs (-37.8%, or -1.5 M€2009) due to "several reasons. End of useful life of several FA and investments made, but not yet put into operations. It is worth mentioning that ANSP did increase useful lives of newly bought assets in 2015.";
- much higher cost of capital (+30.1%, or +0.2 M€2009) reflecting higher than planned 2018 asset base (+30.1%, or +3.7 M€2009).

**LGS net gain/loss on en-route activity in 2018**

As shown in box 9, LGS generated a net gain of +0.8 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +0.07 M€2009 arising from the cost sharing mechanism; and
- a gain of +0.7 M€2009 arising from the traffic risk sharing mechanism.

The gain from cost sharing mentioned above (+0.07 M€2009) includes amounts reported by LGS for cost exempt from cost sharing (+0.09 M€2009). Should these costs not be deemed eligible by the European Commission, LGS would record a net gain of +0.7 M€2009 for the en-route activity in 2018.

**LGS overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+0.8 M€2009) and the surplus embedded in the actual cost of capital (+1.0 M€2009) amounts to +1.8 M€2009 (9.7% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 11.4%, which is higher than the 6.5% planned in the PP.

## LATVIA: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Latvia TCZ represents 0.6% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		No	
· ATSP: LGS		· Airports with fewer than 70,000 IFRs ATMs:		3	
· National currency: EUR		· Airports with between 70,000 and 225,000 IFRs ATMs:		0	
· Number of airports in charging zone in 2018: 3, of which:		· Airports with more than 225,000 IFRs ATMs:		0	
2. Terminal DUC monitoring at Charging Zone level					
Latvia: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	7 583 029	7 698 210	7 903 554	8 108 786	8 262 790
Inflation %	2.5%	2.3%	2.3%	2.3%	2.3%
Inflation index (100 in 2009)	109.7	112.2	114.8	117.4	120.1
Real terminal costs (EUR2009)	6 915 428	6 860 952	6 885 595	6 905 565	6 878 511
Total terminal Service Units	32 200	32 600	32 900	33 300	33 900
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>214.76</b>	<b>210.46</b>	<b>209.29</b>	<b>207.37</b>	<b>202.91</b>
Latvia: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	6 030 644	6 010 389	5 966 105	5 912 000	
Inflation %	0.2%	0.1%	2.9%	2.6%	
Inflation index (100 in 2009)	106.4	106.5	109.6	112.4	
Real terminal costs (EUR2009)	5 669 267	5 644 581	5 445 084	5 258 971	
Total terminal Service Units	31 690	31 722	35 442	41 367	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>178.90</b>	<b>177.94</b>	<b>153.63</b>	<b>127.13</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value -1 552 384	in value -1 687 821	in value -1 937 449	in value -2 196 786	
	in % -20.5%	in % -21.9%	in % -24.5%	in % -27.1%	
Inflation %	in p.p. -2.3 p.p.	in p.p. -2.2 p.p.	in p.p. 0.6 p.p.	in p.p. 0.3 p.p.	
Inflation index (100 in 2009)	in p.p. -3.3 p.p.	in p.p. -5.7 p.p.	in p.p. -5.2 p.p.	in p.p. -5.0 p.p.	
Real terminal costs (EUR2009)	in value -1 246 162	in value -1 216 371	in value -1 440 510	in value -1 646 594	
	in % -18.0%	in % -17.7%	in % -20.9%	in % -23.8%	
Total terminal Service Units	in value -510	in value -878	in value 2 542	in value 8 067	
	in % -1.6%	in % -2.7%	in % 7.7%	in % 24.2%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -35.87</b>	<b>in value -32.52</b>	<b>in value -55.66</b>	<b>in value -80.24</b>	
	<b>in % -16.7%</b>	<b>in % -15.5%</b>	<b>in % -26.6%</b>	<b>in % -38.7%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Latvia Terminal Charging Zone (TCZ) comprising 3 airports (Riga, Liepaja and Ventspils).					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (127.13 €2009) is -38.7% lower than planned in the PP (207.37 €2009). This results from the combination of much higher than planned TNSUs (+24.2%) and much lower than planned terminal costs in real terms (-23.8%, or -1.6 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism does not apply in Latvia TCZ. In 2018, the actual TNSUs in Latvia TCZ are +24.2% higher than planned in the PP. According to STATFOR February 2019 base scenario, the TNSUs for Latvia are expected to remain largely above the planned values for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -27.1% (-2.2 M€) lower than planned. However, since the actual inflation is also lower than planned (-5.0 p.p.), actual terminal costs are -23.8% (-1.6 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by LGS (-18.9%, or -1.2 M€2009), the MET service provider (-69.6%, or -0.2 M€2009) and the NSA (-56.7%, or -0.3 M€2009). A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +0.04 M€2009 corresponding to unforeseen changes in national taxation law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

Year	Difference (%)
2015	-18.0%
2016	-17.7%
2017	-20.9%
2018	-23.8%

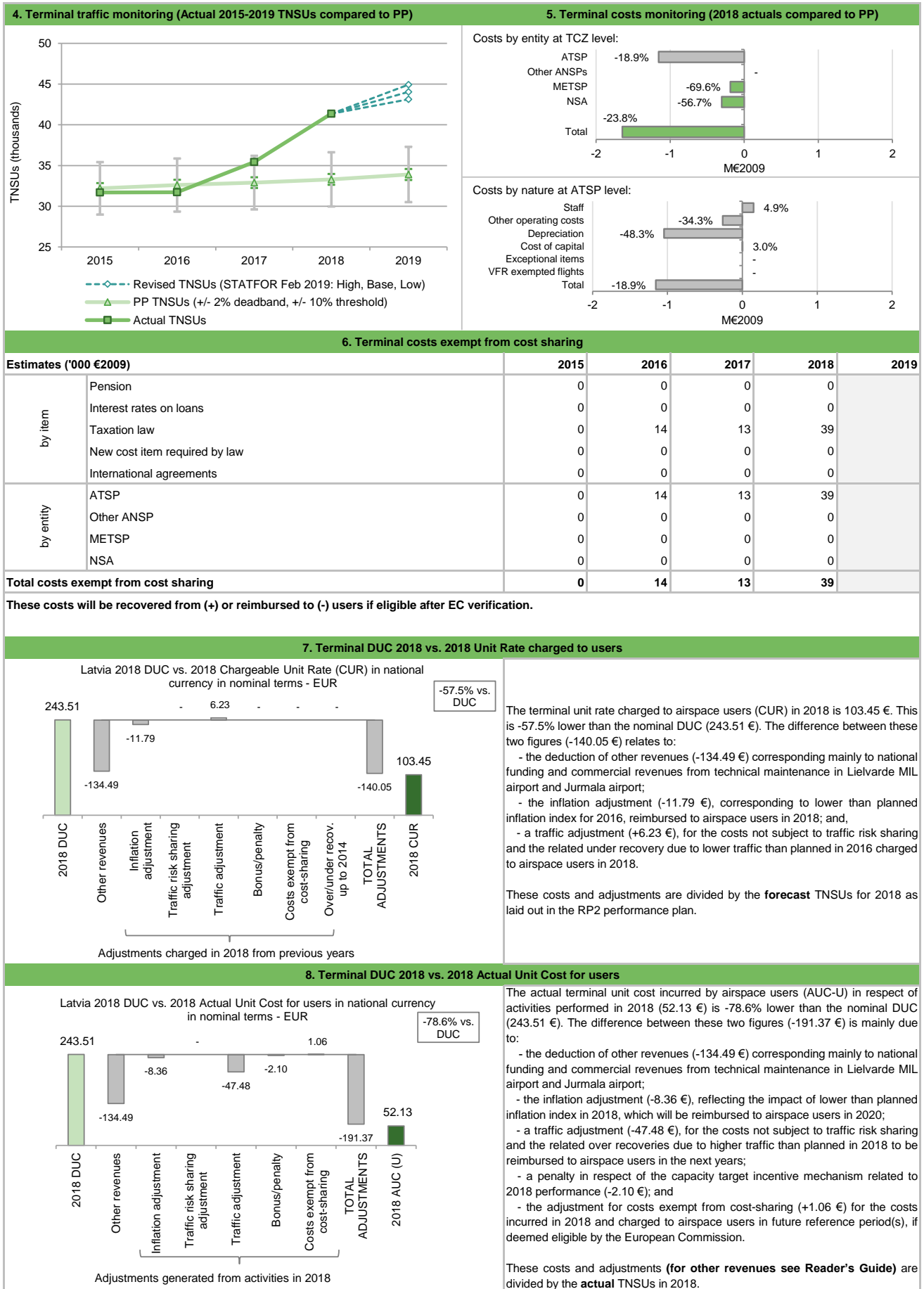
Year	Difference (%)
2015	-1.6%
2016	-2.7%
2017	7.7%
2018	24.2%

Year	Terminal DUC (PP)	Terminal unit costs (actual)
2015	214.76	178.90
2016	210.46	177.94
2017	209.29	153.63
2018	207.37	127.13



LATVIA: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018



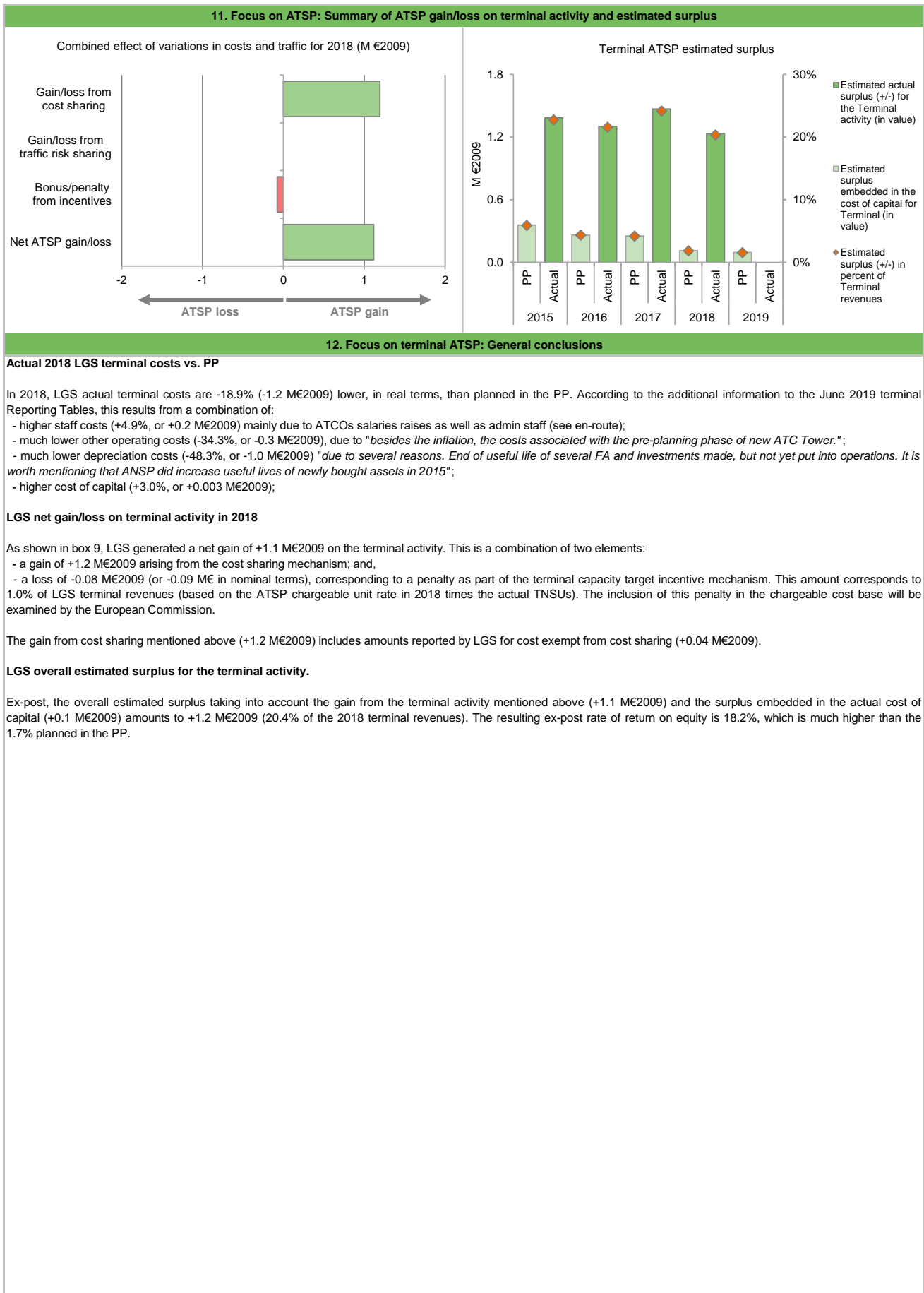
## LATVIA: Terminal ATSP (LGS)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	6 080	6 032	6 062	6 101	
Actual costs for the ATSP	5 018	4 989	4 829	4 945	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 062	1 043	1 233	1 156	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	14	13	39	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 062</b>	<b>1 057</b>	<b>1 246</b>	<b>1 195</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Not Applicable					
Not Applicable					
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>-77</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>1 062</b>	<b>1 057</b>	<b>1 246</b>	<b>1 117</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	6 855	6 774	6 739	6 587	6 737
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	100.0%
Estimated proportion of financing through equity (in value)	6 855	6 774	6 739	6 587	6 737
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Estimated proportion of financing through debt (in value)	0	0	0	0	0
Cost of capital pre-tax (in value)	358	262	254	113	95
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	0.0%
Interest on debt (in value)	0	0	0	0	0
Determined RoE pre-tax rate (in %)	5.2%	3.9%	3.8%	1.7%	1.4%
Estimated surplus embedded in the cost of capital for terminal (in value)	358	262	254	113	95
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>358</b>	<b>262</b>	<b>254</b>	<b>113</b>	<b>95</b>
<b>Revenue/costs for the terminal activity</b>	<b>6 080</b>	<b>6 032</b>	<b>6 062</b>	<b>6 101</b>	<b>6 092</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>5.9%</b>	<b>4.3%</b>	<b>4.2%</b>	<b>1.9%</b>	<b>1.6%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>5.2%</b>	<b>3.9%</b>	<b>3.8%</b>	<b>1.7%</b>	<b>1.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	6 145	6 352	5 888	6 784	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	6 145	6 352	5 888	6 784	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	321	245	222	117	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	5.2%	3.9%	3.8%	1.7%	
Estimated surplus embedded in the cost of capital for terminal (in value)	321	245	222	117	
Net ATSP gain(+)/loss(-) on terminal activity	1 062	1 057	1 246	1 117	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 383</b>	<b>1 303</b>	<b>1 468</b>	<b>1 234</b>	
<b>Revenue/costs for the terminal activity</b>	<b>6 080</b>	<b>6 046</b>	<b>6 075</b>	<b>6 062</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>22.8%</b>	<b>21.5%</b>	<b>24.2%</b>	<b>20.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>22.5%</b>	<b>20.5%</b>	<b>24.9%</b>	<b>18.2%</b>	

**LATVIA: Terminal ATSP (LGS)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## LATVIA: Gate-to-gate

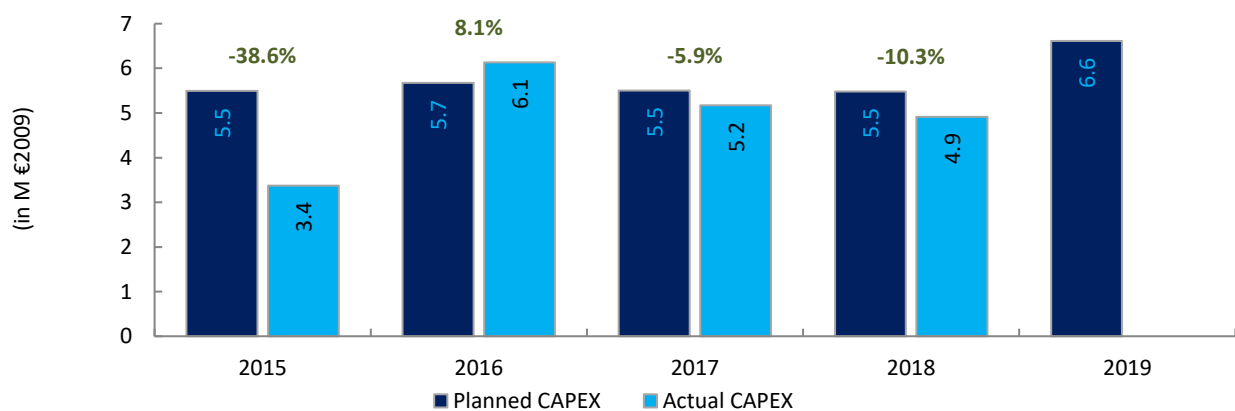
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Latvia: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	20 683 885	20 603 685	20 823 477	21 028 777	21 256 247																																							
Real terminal costs (EUR2009)	6 915 428	6 860 952	6 885 595	6 905 565	6 878 511																																							
Real gate-to-gate costs (EUR2009)	27 599 314	27 464 637	27 709 071	27 934 342	28 134 758																																							
En-route share (%)	74.9%	75.0%	75.2%	75.3%	75.6%																																							
<b>Latvia: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	19 913 164	19 766 193	19 410 698	20 150 155																																								
Real terminal costs (EUR2009)	5 669 267	5 644 581	5 445 084	5 258 971																																								
Real gate-to-gate costs (EUR2009)	25 582 430	25 410 774	24 855 782	25 409 126																																								
En-route share (%)	77.8%	77.8%	78.1%	79.3%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-2 016 884	-2 053 863	-2 853 289	-2 525 216																																								
in %	-7.3%	-7.5%	-10.3%	-9.0%																																								
En-route share in p.p.	2.9 p.p.	2.8 p.p.	2.9 p.p.	4.0 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -9.0% (-2.5 M€2009) lower than planned due to lower than planned terminal costs (-23.8%, or -1.6 M€2009) and en-route costs (-4.2%, or -0.9 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (79.3%) is higher than planned in the PP for 2018 (75.3%).</p> <p>For LGS, the estimated gate-to-gate economic surplus in 2018 amounts to 3.1 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 12.3% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>74.9%</td> <td>25.1%</td> </tr> <tr> <td>Actual</td> <td>77.8%</td> <td>22.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>75.0%</td> <td>25.0%</td> </tr> <tr> <td>Actual</td> <td>77.8%</td> <td>22.2%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>75.2%</td> <td>24.8%</td> </tr> <tr> <td>Actual</td> <td>78.1%</td> <td>21.9%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>75.3%</td> <td>24.7%</td> </tr> <tr> <td>Actual</td> <td>79.3%</td> <td>20.7%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>75.6%</td> <td>24.4%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	74.9%	25.1%	Actual	77.8%	22.2%	2016	Determined	75.0%	25.0%	Actual	77.8%	22.2%	2017	Determined	75.2%	24.8%	Actual	78.1%	21.9%	2018	Determined	75.3%	24.7%	Actual	79.3%	20.7%	2019	Determined	75.6%	24.4%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	74.9%	25.1%																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Latvia</b>																																												

## LATVIA

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: LGS						
FAB: NEFAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	6.0	6.4	6.3	6.4	7.9	33.1
Main CAPEX (in nominal M)	1.4	2.3	1.2	1.2	2.5	8.6
Inflation %	2.5%	2.3%	2.3%	2.3%	2.3%	
Inflation index (100 in 2009)	109.7	112.2	114.8	117.4	120.1	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>5.5</b>	<b>5.7</b>	<b>5.5</b>	<b>5.5</b>	<b>6.6</b>	<b>28.8</b>
Main CAPEX (in M €2009)	1.3	2.0	1.1	1.1	2.1	7.5
% Main of Total CAPEX	23.3%	35.6%	19.6%	19.2%	31.6%	26.1%
Real gate-to-gate ANSP costs (in M €2009)	23.6	23.5	23.8	24.1	24.4	119.5
Total CAPEX as % of Real gate-to-gate ANSP costs	23.3%	24.1%	23.1%	22.7%	27.1%	24.1%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	3.6	6.5	5.7	5.5		
Main CAPEX (in nominal M)	0.6	1.2	2.0	1.7		
Inflation %	0.2%	0.1%	2.9%	2.6%		
Inflation index (100 in 2009)	106.4	106.5	109.6	112.4		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>3.4</b>	<b>6.1</b>	<b>5.2</b>	<b>4.9</b>		
Main CAPEX (in M €2009)	0.5	1.1	1.9	1.5		
% Main of Total CAPEX	15.4%	18.3%	35.9%	30.3%		
Real gate-to-gate ANSP costs (in M €2009)	21.9	21.7	21.5	23.0		
Total CAPEX as % of Real gate-to-gate ANSP costs	15.4%	28.2%	24.0%	21.4%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-2.4	0.2	-0.6	-0.9		
Total CAPEX (in M €2009)	-2.1	0.5	-0.3	-0.6		
<b>Total CAPEX (in %, M €2009)</b>	<b>-38.6%</b>	<b>8.1%</b>	<b>-5.9%</b>	<b>-10.3%</b>		





# Annual Monitoring Report 2018

## Local level view

### Norway





## NORWAY

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	68	B	C	D	D	B
Avinor	80	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
	RAT application (%)					
	ATM Ground		ATM Overall			
Separation Minima Infringements (SMIs)	97%		100%			
Runway Incursions (RIs)	75%		99%			
ATM Specific Occurrences (ATM-S)			78%			
Source of RAT data:			NCAA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level	Number of questions answered					
	YES		NO			
Policy and its implementation	8		1			
Legal/Judiciary	5		2			
Occurrence reporting and Investigation	2		0			
<b>TOTAL</b>	<b>15</b>		<b>3</b>			
Avinor	Number of questions answered					
	YES		NO			
Policy and its implementation	13		0			
Legal/Judiciary	2		1			
Occurrence reporting and Investigation	7		1			
<b>TOTAL</b>	<b>22</b>		<b>2</b>			
Observations						
<p>One (Safety Policy and Objectives) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), only one is below Level C.</p>						

## NORWAY

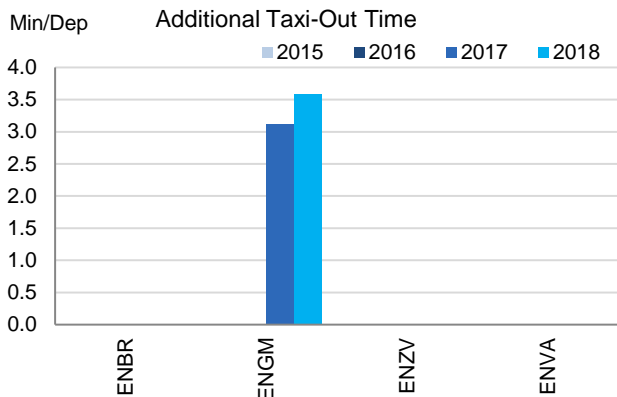
## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

Norway has identified four airports as subject to RP2 monitoring. Currently all of these airports are providing data on a monthly basis, but key information for the calculation of the additional taxi-out times is still missing. Oslo (A-CDM implemented) is the only Norwegian airport that has finished the full implementation of the Airport Operator Data Flow and the monitoring can be performed as of 2017. According to NEFAB monitoring report, and as previously mentioned in last year's monitoring exercise: *Avinor Flysikring AS, the service provider in Norway, has not been able to deliver reports on additional taxi-out time for all airports in 2018. This is due to the fact that their ATM system is not ready to deliver these data automatically for three of four airports. Avinor is still considering alternate solution, but need to take into account the additional cost required.*

In terms of ASMA, although all of them stay below the RP2 average (1.75 min/arr.), Bergen and Stavanger range within the highest additional times for airports with those traffic levels.

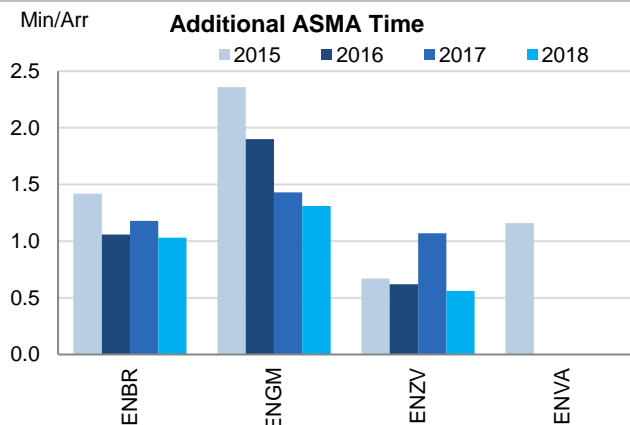
## 2. Additional Taxi-Out Time



The additional taxi-out times at Oslo have increased in 2018 (ENGM; 2017: 3.12 min/dep.; 2018: 3.58 min/dep.) due to the longer taxi-out times from January to March compared to last year.

The performance sits with the RP2 average (3.57 min/dep.) and is commensurate with the airport's traffic level.

## 3. Additional ASMA Time



Additional ASMA times at the three Norwegian airports that can be monitored have decreased in 2018.

While Stavanger (ENZV) and Bergen (ENBR) show a performance commensurate with their traffic levels, additional ASMA times at Oslo (ENGM; 2018: 1.31 min/arr.) are lower than at other airports in the SES area with a similar number of movements.

Data issues in the reporting from ENVA prevent the calculation of the ASMA indicator for this airport.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bergen	ENBR	n/a	n/a	n/a	n/a		1.42	1.06	1.18	1.03	
Oslo/ Gardermoen	ENGM	n/a	n/a	3.12	3.58		2.36	1.90	1.43	1.31	
Stavanger	ENZV	n/a	n/a	n/a	n/a		0.67	0.62	1.07	0.56	
Trondheim	ENVA	n/a	n/a	n/a	n/a		1.16	n/a	n/a	n/a	

**NORWAY**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.08	0.08	0.08	0.08	0.08	
Deadband +/-	0.03 - 0.13		0.03 - 0.14			
Actual performance	0.05	0.11	0.02	0.00		

**National capacity incentive scheme**

Norway applied a national incentive scheme based on the following criteria for the period 2017 – 2019:

En route ATFM delay 2017 - 2019:

Over/under-achievement (Percentage) Aggregated Penalties/Bonuses (Percentage)

0,00 min / fth or better Bonus: 1 % of the revenues from air navigation services in year n

0,01 min / fth Bonus: 0,5 % of the revenues from air navigation services in year n

0,02 min / fth Bonus: 0,2% of the revenues from air navigation services in year n

Dead band 0,03 min / fth – 0,14 min / fth

0,15 min / fth Penalty: 0,2 % of the revenues from air navigation services in year n

0,16 min / fth Penalty: 0,5 % of the revenues from air navigation services in year n

0,17 min / fth or worse Penalty: 1% of the revenues from air navigation services in year n

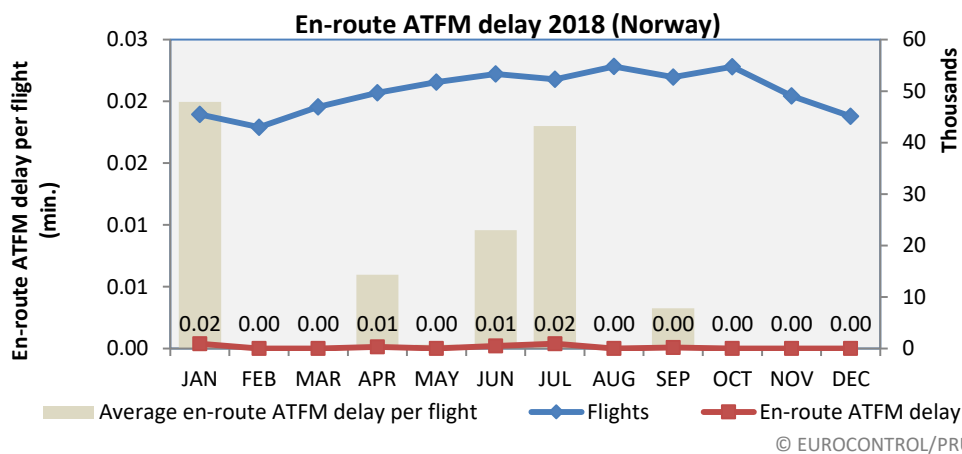
With an actual en route capacity performance of 0.00 minutes per flight in 2018, the ANSP Avinor will receive a bonus of 1% of the revenues from air navigation services in year n.

Norway has informed the PRB that the expected bonus will be 9 727 114 NOK for 2018.

**Compliance issues relating to national capacity incentive scheme**

Nil

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (Norway)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.00	0.00	0.00	0.00	0.28	0.04	0.03	0.05	0.11	0.02	0.00

EUROCONTROL 7 year forecast February 2014 – Norway											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
High	629		646		666		685		701		721
Base	625	619	640	603	654	599	665	591	676	599	688
Low	621		629		630		631		633		635

Traffic remained relatively static in Norway with an annual increase of just over 1% on 2017 levels. Traffic in Norway has remained below the low traffic scenario forecast by STATFOR in 2014 when the FAB performance plans and associated capacity plans were being determined.

En route capacity performance improved from 0.02 minutes per flight to no delay for airspace users.

The Network Manager, in the latest NOP 2019 – 2024, predicts that Norway will provide a positive contribution to en route capacity with sufficient capacity at each of the three Norwegian ACCs.

Norway delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.02</b>	<b>0.04</b>	<b>0.02</b>	<b>0.02</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.02</b>	<b>0.02</b>	<b>0.02 – 0.06</b>			

### Planning and Effective Use of CDRs

There are no CDR routes in Norway anymore (they were removed 12NOV2015 in relation with FRA / changed FUA concept).

### Observations on Planning and Effective Use of CDRs

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
41%	54%	55%	58%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	N/A	N/A	N/A	

Procedure 3 is not applicable in the State.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## NORWAY

## Monitoring of Airports Contribution to CAPACITY for 2018

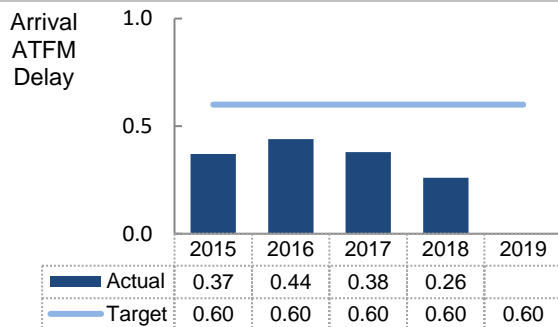
## 1. Overview

Norway identifies 4 airports as subject to RP2 monitoring where traffic levels have slightly decreased during RP2 (-1.2% with respect to 2015).

In terms of arrival ATFM delays, values are moderately lower than those in the beginning of the reference period (-30.6% in 2018 with respect to 2015) and the established national target is fully met.

ATFM slot adherence, that was already best in class, has even slightly improved (2015:98.2%; 2018:98.6%) and the level of pre-departure delay is very low (Oslo) or negligible.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Norway have moderately decreased with respect to the previous year (2017: 0.38 min/arr, 2018: 0.26 min/arr)

National average is highly driven by Oslo (ENGM) where delays significantly decreased in 2018 (ENGM: 2017: 0.69 min/arr.; 2018: 0.45 min/arr.). Most of these delays are associated to weather and especially high in January and February.

Some minor delays are registered at Bergen (ENBR).

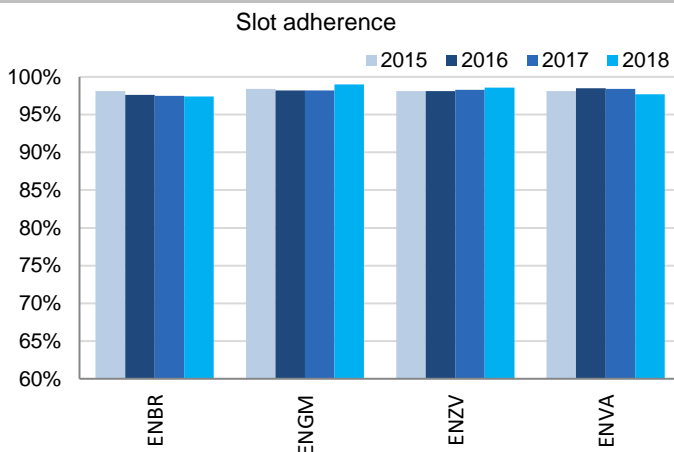
The NEFAB monitoring reports adds that most of the delays are reported to be caused by weather approx. 94%. Arrival delays caused by weather at ENGM were significant lower in 2018 equal to 0,42 min./arr. than in 2017 equal to 0,62 min/arr. Other delay causes are related to ATCO capacity and staffing in 2018.

## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The NEFAB performance plan sets a national target on arrival ATFM delay that is consistent with the historical performance and forms a lower bound with respect to the years previous to RP2. No further breakdown of the target per airport is made, inhibiting identification of the contribution of individual airports.

The performance plan presents an incentive scheme for the national targets on arrival ATFM delay for Norway. According to this incentive scheme, the achieved performance results in a bonus of 1% of the revenues of TNC services.

## 4. ATFM Slot Adherence



The adherence to ATFM slots at the 4 Norwegian airports consistently ranges in the group of best-in-class performers across Europe, with actual values well above the 95% threshold.

## 5. ATC Pre-departure Delay

The delay reporting by the Norwegian airports under monitoring allows for the computation of the pre-departure delay indicator for all 4 airports during RP2.

Like in previous years, the level of accrued delay is zero or negligible at Bergen, Stavanger and Trondheim. Oslo shows another small increase in the pre-departure delay but it is still one of the lowest in Europe for airports with that level of traffic.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Bergen	ENBR	0.11	0.09	0.02	0.03		98.1%	97.6%	97.5%	97.4%		0.01	0.01	0.01	0.01	
Oslo/ Gardermoen	ENGM	0.67	0.79	0.69	0.45		98.4%	98.2%	98.2%	99.0%		0.06	0.08	0.15	0.18	
Stavanger	ENZV	0.02	0.00	0.00	0.02		98.1%	98.1%	98.3%	98.6%		0.01	0.01	0.00	0.01	
Trondheim	ENVA	0.00	0.00	0.00	0.00		98.1%	98.5%	98.4%	97.7%		0.00	0.00	0.00	0.00	

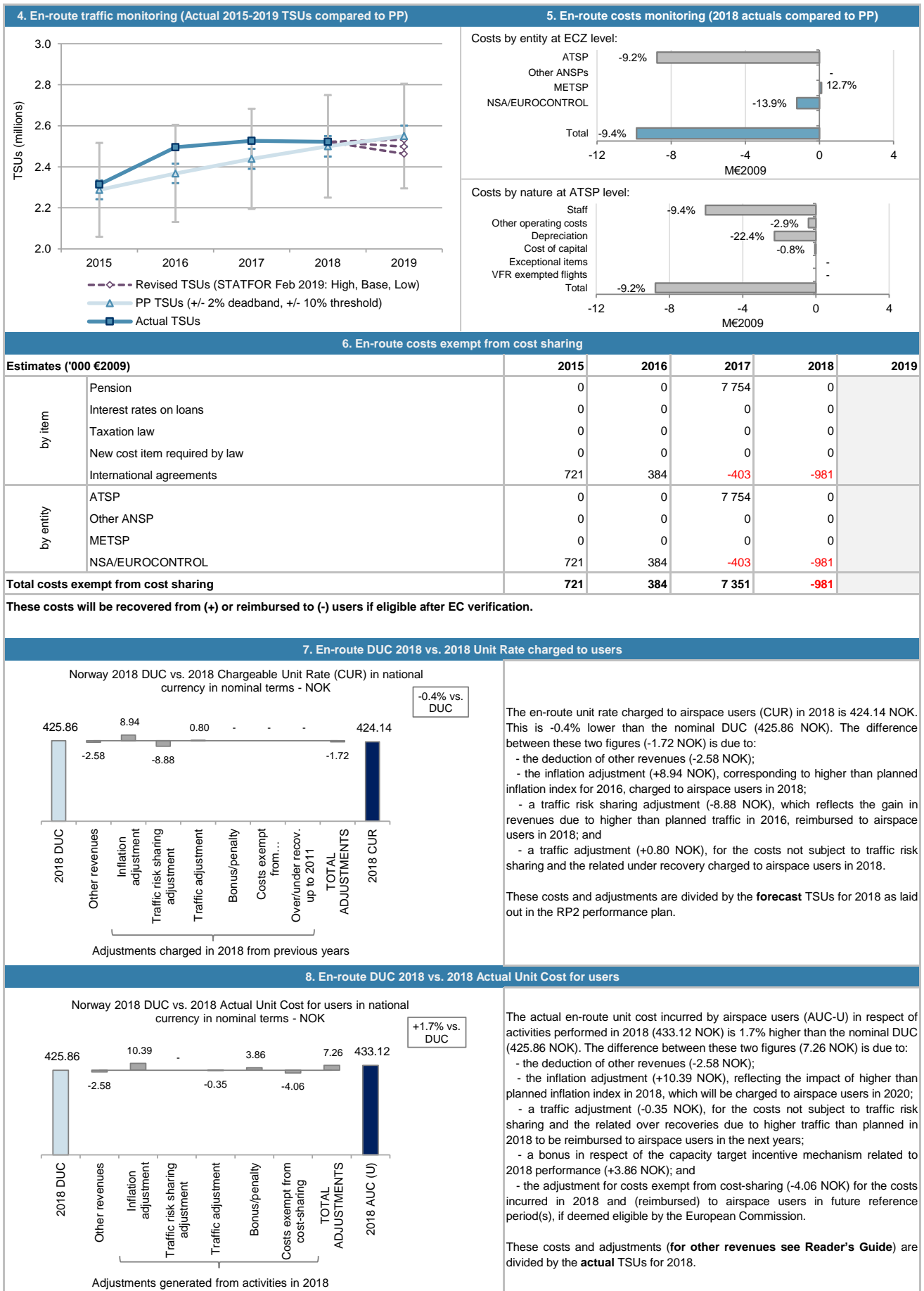
## NORWAY: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Norway ECZ represents 1.7% of the SES en-route ANS determined costs in 2018					
· ATSP: Avinor					
· FAB: NEFAB					
· National currency: NOK Exchange rate 2009: 1 EUR = 8.72807 NOK					
2. En-route DUC monitoring at Charging Zone level					
Norway: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal NOK)	1 006 927 248	1 032 667 449	1 051 204 724	1 064 624 439	1 073 048 403
Inflation %	1.6%	1.7%	2.1%	2.5%	2.5%
Inflation index (100 in 2009)	109.5	111.4	113.7	116.6	119.5
Real en-route costs (NOK2009)	919 164 836	926 904 186	924 136 061	913 105 964	897 883 922
Total en-route Service Units	2 287 878	2 367 954	2 438 992	2 499 967	2 549 966
<b>Real en-route unit cost per Service Unit (NOK2009)</b>	<b>401.75</b>	<b>391.44</b>	<b>378.90</b>	<b>365.25</b>	<b>352.12</b>
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>46.03</b>	<b>44.85</b>	<b>43.41</b>	<b>41.85</b>	<b>40.34</b>
Norway: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal NOK)	968 642 559	932 421 601	1 070 819 986	987 910 794	
Inflation %	2.0%	3.9%	1.9%	3.0%	
Inflation index (100 in 2009)	109.5	113.8	116.0	119.5	
Real en-route costs (NOK2009)	884 206 780	819 194 585	923 245 142	826 953 460	
Total en-route Service Units	2 313 891	2 495 164	2 526 846	2 522 273	
<b>Real en-route unit cost per Service Unit (NOK2009)</b>	<b>382.13</b>	<b>328.31</b>	<b>365.37</b>	<b>327.86</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>43.78</b>	<b>37.62</b>	<b>41.86</b>	<b>37.56</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
En-route costs (nominal NOK) in value	-38 284 689	-100 245 848	19 615 263	-76 713 645	
in %	-3.8%	-9.7%	1.9%	-7.2%	
Inflation % in p.p.	0.4 p.p.	2.2 p.p.	-0.2 p.p.	0.5 p.p.	
Inflation index (100 in 2009) in p.p.	0.0 p.p.	2.4 p.p.	2.2 p.p.	2.9 p.p.	
Real en-route costs (NOK2009) in value	-34 958 056	-107 709 601	-890 919	-86 152 504	
in %	-3.8%	-11.6%	-0.1%	-9.4%	
Total en-route Service Units in value	26 013	127 210	87 854	22 306	
in %	1.1%	5.4%	3.6%	0.9%	
<b>Real en-route unit cost per Service Unit (NOK2009) in value</b>	<b>-19.62</b>	<b>-63.12</b>	<b>-13.53</b>	<b>-37.39</b>	
<b>in %</b>	<b>-4.9%</b>	<b>-16.1%</b>	<b>-3.6%</b>	<b>-10.2%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009) in value</b>	<b>-2.25</b>	<b>-7.23</b>	<b>-1.55</b>	<b>-4.28</b>	
<b>in %</b>	<b>-4.9%</b>	<b>-16.1%</b>	<b>-3.6%</b>	<b>-10.2%</b>	
3. Focus on en-route at State/Charging Zone level					
<b>En-route unit cost</b>					
In 2018, the actual en-route unit cost in real terms (37.56 €2009) is -10.2% lower than planned in the PP (41.85 €2009). This results from the combination of slightly higher than planned TSUs (+0.9%) and lower than planned en-route costs in real terms (-9.4%, or -9.9 ME2009).					
<b>En-route service units</b>					
The difference between actual and planned TSUs (+0.9%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues (+0.8 ME2009) is therefore fully retained by the main ATSP (Avinor). According to STATFOR February 2019 base forecast scenario, the en-route TSUs for Norway are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>En-route costs</b>					
In nominal terms, actual en-route costs are -7.2% (-76.7 MNOK) lower than planned. However, since the actual inflation index is higher than planned (+2.9 p.p.), actual en-route costs are -9.4% (-9.9 ME2009) below plans when expressed in real terms. The lower than planned en-route costs in real terms are driven by Avinor (-9.2%, or -8.8 ME2009) and the NSA/EUROCONTROL (-13.9%, or -1.2 ME2009), while the costs for the MET service provider (+12.7%, or +0.1 ME2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of -1.0 ME2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					

**NORWAY: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



## NORWAY: En-route ATSP (Avinor)

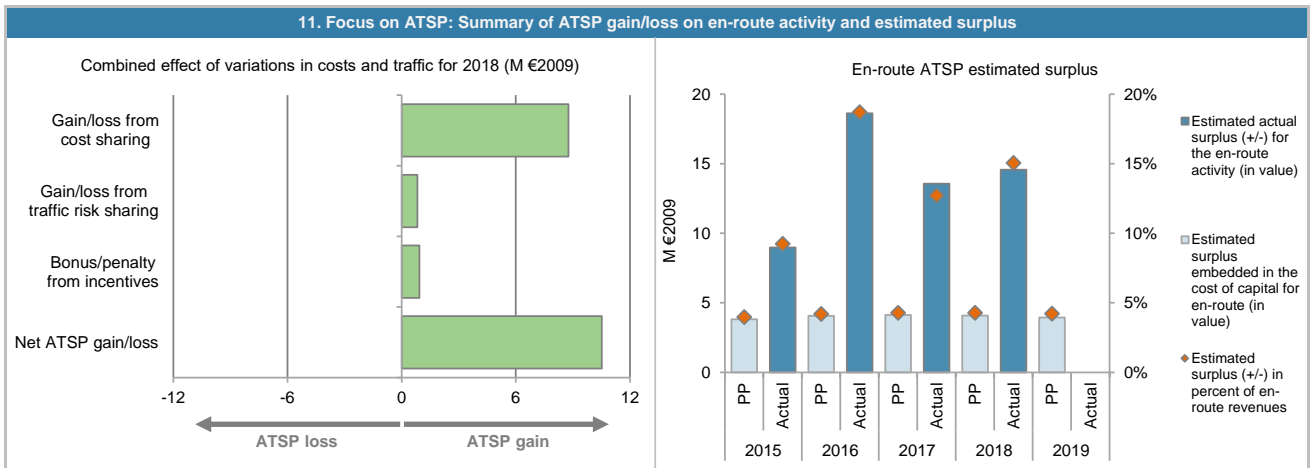
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	96 046	96 703	96 257	94 931	
Actual costs for the ATSP	91 436	84 272	96 836	86 169	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	4 611	12 432	-578	8 762	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	7 754	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>4 611</b>	<b>12 432</b>	<b>7 176</b>	<b>8 762</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.1%	5.4%	3.6%	0.9%	
Determined costs for the ATSP (PP) - based on actual inflation	96 045	94 655	94 403	92 650	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 092</b>	<b>2 851</b>	<b>2 342</b>	<b>827</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>195</b>	<b>933</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>5 703</b>	<b>15 282</b>	<b>9 713</b>	<b>10 521</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	87 373	92 744	94 221	93 175	89 787
Estimated proportion of financing through equity (in %)	40.2%	40.2%	40.2%	40.2%	40.2%
Estimated proportion of financing through equity (in value)	35 139	37 299	37 893	37 473	36 110
Estimated proportion of financing through debt (in %)	59.8%	59.8%	59.8%	59.8%	59.8%
Estimated proportion of financing through debt (in value)	52 234	55 445	56 327	55 702	53 677
Cost of capital pre-tax (in value)	6 640	7 049	7 161	7 081	6 824
Average interest on debt (in %)	5.4%	5.4%	5.4%	5.4%	5.4%
Interest on debt (in value)	2 810	2 983	3 030	2 997	2 888
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	10.9%
Estimated surplus embedded in the cost of capital for en-route (in value)	3 830	4 066	4 130	4 085	3 936
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 830</b>	<b>4 066</b>	<b>4 130</b>	<b>4 085</b>	<b>3 936</b>
<b>Revenue/costs for the en-route activity</b>	<b>96 046</b>	<b>96 703</b>	<b>96 257</b>	<b>94 931</b>	<b>93 126</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>4.0%</b>	<b>4.2%</b>	<b>4.3%</b>	<b>4.3%</b>	<b>4.2%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	74 631	76 451	87 803	92 408	
Estimated proportion of financing through equity (in %)	40.2%	40.2%	40.2%	40.2%	
Estimated proportion of financing through equity (in value)	30 015	30 746	35 312	37 164	
Estimated proportion of financing through debt (in %)	59.8%	59.8%	59.8%	59.8%	
Estimated proportion of financing through debt (in value)	44 617	45 704	52 491	55 244	
Cost of capital pre-tax (in value)	5 672	5 810	6 673	7 023	
Average interest on debt (in %)	5.4%	5.4%	5.4%	5.4%	
Interest on debt (in value)	2 400	2 459	2 824	2 972	
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	
Estimated surplus embedded in the cost of capital for en-route (in value)	3 272	3 351	3 849	4 051	
Net ATSP gain(+)/loss(-) on en-route activity	5 703	15 282	9 713	10 521	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>8 974</b>	<b>18 634</b>	<b>13 562</b>	<b>14 572</b>	
<b>Revenue/costs for the en-route activity</b>	<b>97 138</b>	<b>99 554</b>	<b>106 548</b>	<b>96 691</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>9.2%</b>	<b>18.7%</b>	<b>12.7%</b>	<b>15.1%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>29.9%</b>	<b>60.6%</b>	<b>38.4%</b>	<b>39.2%</b>	



**NORWAY: En-route ATSP (Avinor)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 Avinor en-route costs vs. PP**

In 2018, Avinor actual en-route costs are -9.2% (-8.8 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-9.4%, or -6.0 M€2009) "due to increased productivity, reduced sickness leave, decreased overtime cost and other factors within the En-Route operations. In addition to this, pension cost is 33 MNOK (47.6% share of total pension cost) due to changes in external factors such as interest rates and life expectancy.";
- lower other operating costs (-2.9%, or -0.4 M€2009) reported to be "in line with the plan";
- much lower depreciation costs (-22.4%, or -2.3 M€2009) "due to a capex underspending and a later date of capitalisation than previously expected.";
- slightly lower cost of capital (-0.8%, or -0.1 M€2009) (see above);

**Avinor net gain/loss on en-route activity in 2018**

As shown in box 9, Avinor generated a net gain of +10.5 M€2009 on the en-route activity. This is a combination of three elements:

- a gain of +8.8 M€2009 arising from the cost sharing mechanism;
- a gain of +0.8 M€2009 arising from the traffic risk sharing mechanism; and
- a gain of +0.9 M€2009 (or +9.7 MNOK in nominal terms), corresponding to a bonus as part of the en-route capacity target incentive mechanism. This amount corresponds to 1.0% of Avinor en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this bonus in the chargeable cost base will be examined by the European Commission.

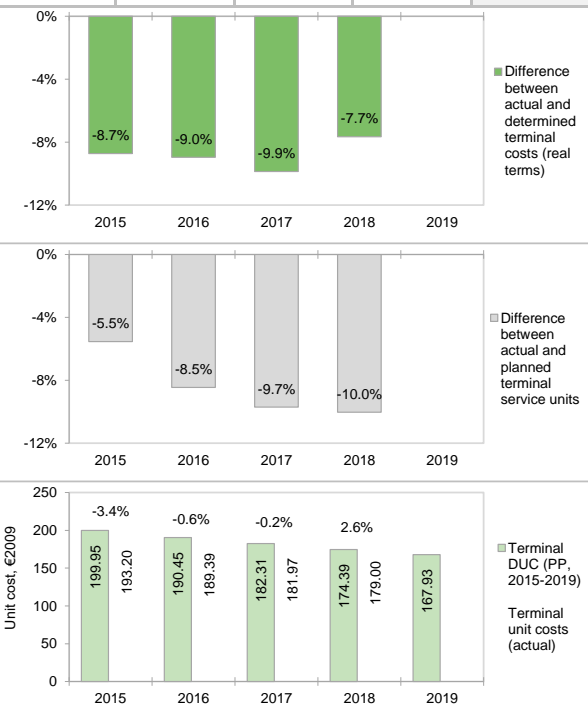
**Avinor overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+10.5 M€2009) and the surplus embedded in the cost of capital (+4.1 M€2009) amounts to +14.6 M€2009 (15.1% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 39.2%, which is much higher than the 10.9% planned in the PP.

## NORWAY: Terminal charging zone

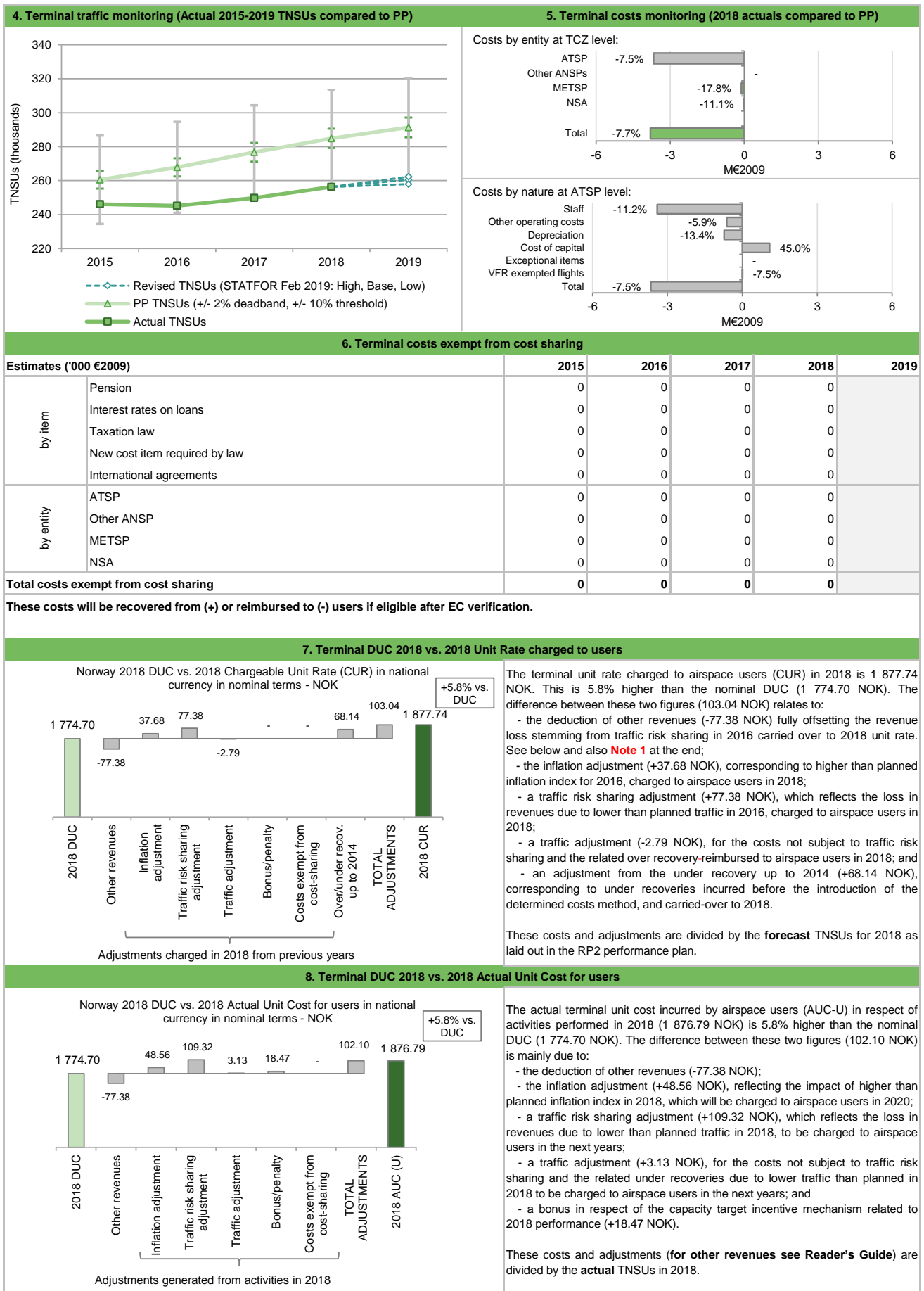
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
· Norway TCZ represents 4.6% of the SES terminal ANS determined costs in 2018			· Is this TCZ applying traffic risk sharing?		Yes
· ATSP:	Avinor	} Airports with fewer than 70,000 IFRs ATMs: 1 Airports with between 70,000 and 225,000 IFRs ATMs: 2 Airports with more than 225,000 IFRs ATMs: 1			
· National currency:	NOK				
· Number of airports in charging zone in 2018:	4, of which:				
2. Terminal DUC monitoring at Charging Zone level					
Norway: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal NOK)	498 031 263	495 968 632	500 784 828	505 570 149	510 317 178
Inflation %	1.6%	1.7%	2.1%	2.5%	2.5%
Inflation index (100 in 2009)	109.5	111.4	113.7	116.6	119.5
Real terminal costs (NOK2009)	454 623 534	445 172 743	440 250 417	433 616 871	427 012 974
Total terminal Service Units	260 503	267 818	276 677	284 877	291 330
<b>Real terminal unit cost per Service Unit (NOK2009)</b>	<b>1 745.18</b>	<b>1 662.22</b>	<b>1 591.21</b>	<b>1 522.12</b>	<b>1 465.74</b>
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>199.95</b>	<b>190.45</b>	<b>182.31</b>	<b>174.39</b>	<b>167.93</b>
Norway: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal NOK)	454 600 144	461 305 825	460 212 882	478 363 139	
Inflation %	2.0%	3.9%	1.9%	3.0%	
Inflation index (100 in 2009)	109.5	113.8	116.0	119.5	
Real terminal costs (NOK2009)	414 973 022	405 287 944	396 788 735	400 424 872	
Total terminal Service Units	246 093	245 182	249 825	256 300	
<b>Real terminal unit cost per Service Unit (NOK2009)</b>	<b>1 686.24</b>	<b>1 653.01</b>	<b>1 588.27</b>	<b>1 562.33</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>193.20</b>	<b>189.39</b>	<b>181.97</b>	<b>179.00</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal NOK)	in value -43 431 119	in value -34 662 807	in value -40 571 946	in value -27 207 010	
	in % -8.7%	in % -7.0%	in % -8.1%	in % -5.4%	
Inflation %	in p.p. 0.4 p.p.	in p.p. 2.2 p.p.	in p.p. -0.2 p.p.	in p.p. 0.5 p.p.	
Inflation index (100 in 2009)	in p.p. 0.0 p.p.	in p.p. 2.4 p.p.	in p.p. 2.2 p.p.	in p.p. 2.9 p.p.	
Real terminal costs (NOK2009)	in value -39 650 512	in value -39 884 799	in value -43 461 682	in value -33 191 999	
	in % -8.7%	in % -9.0%	in % -9.9%	in % -7.7%	
Total terminal Service Units	in value -14 410	in value -22 636	in value -26 852	in value -28 577	
	in % -5.5%	in % -8.5%	in % -9.7%	in % -10.0%	
<b>Real terminal unit cost per Service Unit (NOK2009)</b>	<b>in value -58.93</b>	<b>in value -9.21</b>	<b>in value -2.94</b>	<b>in value 40.21</b>	
	<b>in % -3.4%</b>	<b>in % -0.6%</b>	<b>in % -0.2%</b>	<b>in % 2.6%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -6.75</b>	<b>in value -1.06</b>	<b>in value -0.34</b>	<b>in value 4.61</b>	
	<b>in % -3.4%</b>	<b>in % -0.6%</b>	<b>in % -0.2%</b>	<b>in % 2.6%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Norway Terminal Charging Zone (TCZ) comprising 4 airports (Bergen/Flesland, Oslo/Gardermoen, Stavanger/Sola and Trondheim/Vaernes), for which the traffic risk sharing applies.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (179.00 €2009) is +2.6% higher than planned in the PP (174.39 €2009). This results from the combination of much lower than planned TNSUs (-10.0%) and lower than planned terminal costs in real terms (-7.7%, or -3.8 ME2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in the Norway TCZ. The difference between actual and planned TNSUs (-10.03%) just exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting loss of terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (Avinor) bearing a loss of -2.1 ME2009. According to STATFOR February 2019 base forecast scenario, the TNSUs for Norway are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -5.4% (-27.2 MNOK) lower than planned. However, since the actual inflation is higher than planned (+2.9 p.p.), actual terminal costs are -7.7% (-3.8 ME2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by Avinor (-7.5%, or -3.7 ME2009), the MET service provider (-17.8%, or -0.1 ME2009) and the NSA (-11.1%, or -0.01 ME2009). A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported for terminal.					



NORWAY: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018



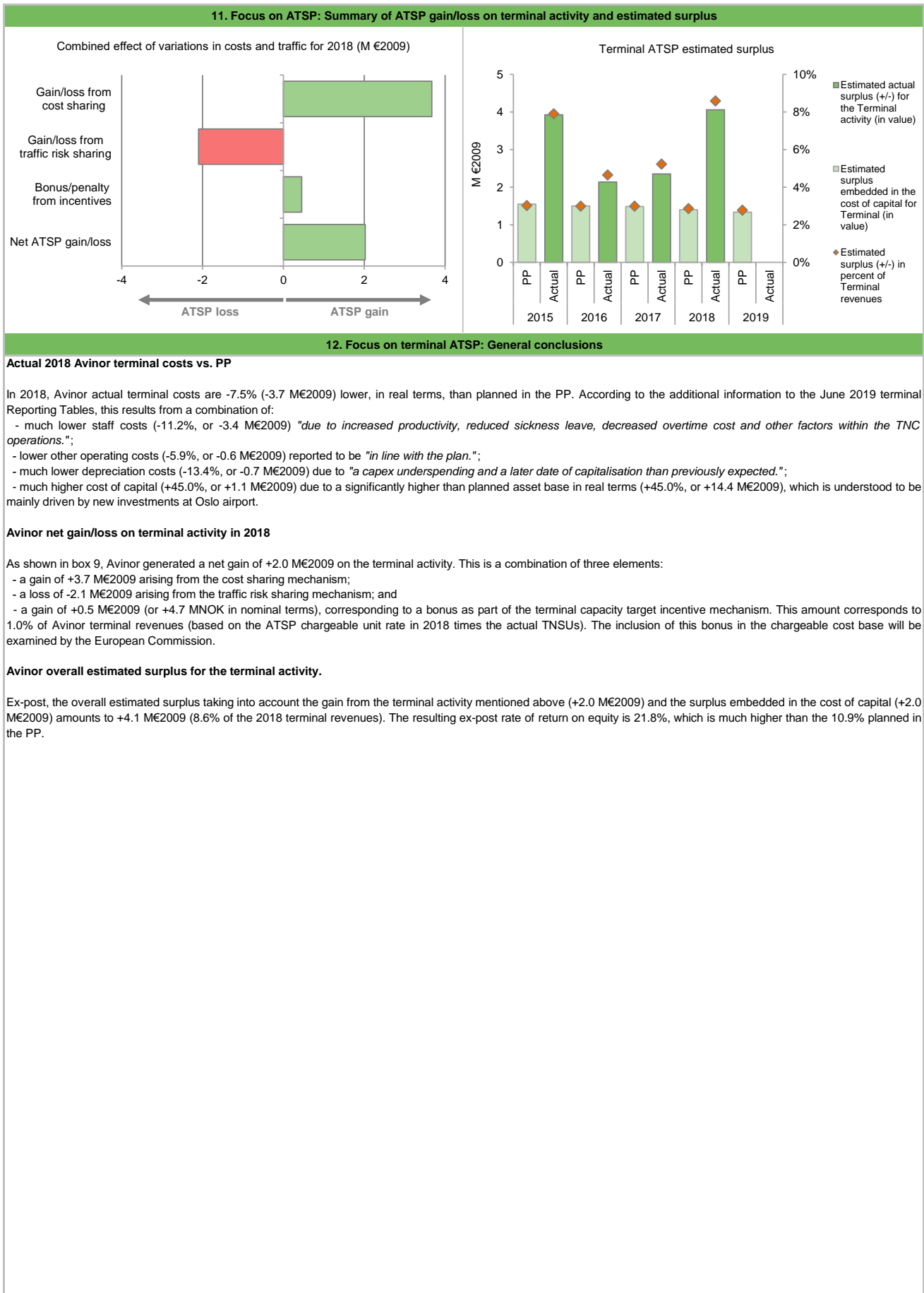
## NORWAY: Terminal ATSP (Avinor)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	51 271	50 195	49 642	48 895	
Actual costs for the ATSP	46 672	45 826	44 822	45 224	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	4 599	4 370	4 820	3 671	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>4 599</b>	<b>4 370</b>	<b>4 820</b>	<b>3 671</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-5.5%	-8.5%	-9.7%	-10.0%	
Determined costs for the ATSP (PP) - based on actual inflation	51 270	49 132	48 685	47 720	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-1 569</b>	<b>-4 153</b>	<b>-4 569</b>	<b>-2 100</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>454</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>3 031</b>	<b>217</b>	<b>251</b>	<b>2 025</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	35 326	34 239	33 818	31 947	30 459
Estimated proportion of financing through equity (in %)	40.2%	40.2%	40.2%	40.2%	40.2%
Estimated proportion of financing through equity (in value)	14 214	13 776	13 607	12 854	12 256
Estimated proportion of financing through debt (in %)	59.8%	59.8%	59.8%	59.8%	59.8%
Estimated proportion of financing through debt (in value)	21 112	20 463	20 211	19 093	18 204
Cost of capital pre-tax (in value)	2 685	2 602	2 570	2 428	2 315
Average interest on debt (in %)	5.4%	5.4%	5.4%	5.4%	5.4%
Interest on debt (in value)	1 136	1 101	1 087	1 027	979
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	10.9%
Estimated surplus embedded in the cost of capital for terminal (in value)	1 549	1 501	1 483	1 401	1 336
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 549</b>	<b>1 501</b>	<b>1 483</b>	<b>1 401</b>	<b>1 336</b>
<b>Revenue/costs for the terminal activity</b>	<b>51 271</b>	<b>50 195</b>	<b>49 642</b>	<b>48 895</b>	<b>48 151</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>2.9%</b>	<b>2.8%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	20 412	43 834	47 954	46 339	
Estimated proportion of financing through equity (in %)	40.2%	40.2%	40.2%	40.2%	
Estimated proportion of financing through equity (in value)	8 213	17 637	19 298	18 645	
Estimated proportion of financing through debt (in %)	59.8%	59.8%	59.8%	59.8%	
Estimated proportion of financing through debt (in value)	12 199	26 197	28 656	27 694	
Cost of capital pre-tax (in value)	1 551	3 331	3 645	3 522	
Average interest on debt (in %)	5.4%	5.4%	5.4%	5.4%	
Interest on debt (in value)	656	1 409	1 542	1 490	
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	
Estimated surplus embedded in the cost of capital for terminal (in value)	895	1 922	2 103	2 032	
Net ATSP gain(+)/loss(-) on terminal activity	3 031	217	251	2 025	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>3 926</b>	<b>2 139</b>	<b>2 354</b>	<b>4 057</b>	
<b>Revenue/costs for the terminal activity</b>	<b>49 702</b>	<b>46 043</b>	<b>45 073</b>	<b>47 249</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>7.9%</b>	<b>4.6%</b>	<b>5.2%</b>	<b>8.6%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>47.8%</b>	<b>12.1%</b>	<b>12.2%</b>	<b>21.8%</b>	

**NORWAY: Terminal ATSP (Avinor)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## NORWAY: Gate-to-gate

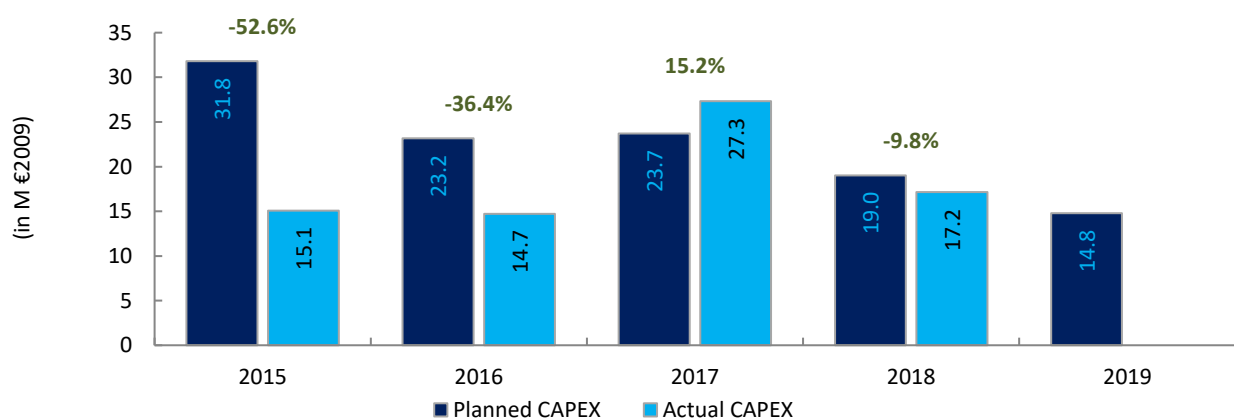
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Norway: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	105 311 350	106 198 070	105 880 918	104 617 168	102 873 135																																							
Real terminal costs (EUR2009)	52 087 522	51 004 717	50 440 752	49 680 728	48 924 101																																							
Real gate-to-gate costs (EUR2009)	157 398 872	157 202 787	156 321 670	154 297 896	151 797 235																																							
En-route share (%)	66.9%	67.6%	67.7%	67.8%	67.8%																																							
<b>Norway: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	101 306 105	93 857 472	105 778 843	94 746 428																																								
Real terminal costs (EUR2009)	47 544 649	46 435 002	45 461 223	45 877 825																																								
Real gate-to-gate costs (EUR2009)	148 850 754	140 292 473	151 240 065	140 624 254																																								
En-route share (%)	68.1%	66.9%	69.9%	67.4%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009) in value	-8 548 118	-16 910 313	-5 081 605	-13 673 642																																								
in %	-5.4%	-10.8%	-3.3%	-8.9%																																								
En-route share in p.p.	1.2 p.p.	-0.7 p.p.	2.2 p.p.	-0.4 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -8.9% (-13.7 M€2009) lower than planned due to lower than planned en-route costs (-9.4%, or -9.9 M€2009) and terminal costs (-7.7%, or -3.8 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (67.4%) is in line with that planned in the PP for 2018 (67.8%).</p> <p>For Avinor, the estimated gate-to-gate economic surplus in 2018 amounts to 18.6 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 12.9% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>66.9%</td> <td>33.1%</td> </tr> <tr> <td>Actual</td> <td>68.1%</td> <td>31.9%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>67.6%</td> <td>32.4%</td> </tr> <tr> <td>Actual</td> <td>66.9%</td> <td>33.1%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>67.7%</td> <td>32.3%</td> </tr> <tr> <td>Actual</td> <td>69.9%</td> <td>30.1%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>67.8%</td> <td>32.2%</td> </tr> <tr> <td>Actual</td> <td>67.4%</td> <td>32.6%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>67.8%</td> <td>32.2%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	66.9%	33.1%	Actual	68.1%	31.9%	2016	Determined	67.6%	32.4%	Actual	66.9%	33.1%	2017	Determined	67.7%	32.3%	Actual	69.9%	30.1%	2018	Determined	67.8%	32.2%	Actual	67.4%	32.6%	2019	Determined	67.8%	32.2%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
2015	Determined	66.9%	33.1%																																									
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2018	Determined	67.8%	32.2%																																									
	Actual	67.4%	32.6%																																									
2019	Determined	67.8%	32.2%																																									
	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Norway</b>																																												
<b>Note 1: Reimbursement of a part of surplus generated in 2016 and 2017</b>																																												
<p>In 2018 and 2019, Avinor reimbursed to airspace users a part of the surplus stemming mainly from the cost sharing mechanism in 2016 and 2017 by reducing the grand total for the calculation of 2018 and 2019 unit rates. Therefore, part of revenue losses of -22 MNOK and -27 MNOK stemming from the traffic risk sharing mechanism in 2016 and 2017 respectively, which were carried over to 2018 and 2019 unit rates, were almost completely offset by other revenues (ref. Terminal Table 2 ANSP, item 5.6 "Other other revenues"). In other words, the revenue losses resulting from significantly lower terminal traffic than planned in 2016 and 2017 (-8.5% and -9.7%, respectively) were almost completely born by Avinor (i.e. not shared with airspace users).</p>																																												

## NORWAY

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: Avinor						
FAB: NEFAB						
Currency: NOK						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	304.0	225.4	235.6	193.6	154.1	1 112.5
Main CAPEX (in nominal M)	304.0	225.4	235.6	193.6	154.1	1 112.5
Inflation %	1.6%	1.7%	2.1%	2.5%	2.5%	
Inflation index (100 in 2009)	109.5	111.4	113.7	116.6	119.5	
Exchange rate 2009	8.72807	8.72807	8.72807	8.72807	8.72807	
<b>Total CAPEX (in M €2009)</b>	<b>31.8</b>	<b>23.2</b>	<b>23.7</b>	<b>19.0</b>	<b>14.8</b>	<b>112.5</b>
Main CAPEX (in M €2009)	31.8	23.2	23.7	19.0	14.8	112.5
% Main of Total CAPEX	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Real gate-to-gate ANSP costs (in M €2009)	147.3	146.9	145.9	143.8	141.3	725.2
Total CAPEX as % of Real gate-to-gate ANSP costs	21.6%	15.8%	16.3%	13.2%	10.5%	15.5%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	144.2	146.3	276.7	178.9		
Main CAPEX (in nominal M)	144.2	146.3	265.3	168.4		
Inflation %	2.0%	3.9%	1.9%	3.0%		
Inflation index (100 in 2009)	109.5	113.8	116.0	119.5		
Exchange rate 2009	8.72807	8.72807	8.72807	8.72807		
<b>Total CAPEX (in M €2009)</b>	<b>15.1</b>	<b>14.7</b>	<b>27.3</b>	<b>17.2</b>		
Main CAPEX (in M €2009)	15.1	14.7	26.2	16.2		
% Main of Total CAPEX	100.0%	100.0%	95.9%	94.1%		
Real gate-to-gate ANSP costs (in M €2009)	138.1	130.1	141.7	131.4		
Total CAPEX as % of Real gate-to-gate ANSP costs	10.9%	11.3%	19.3%	13.1%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-159.9	-79.0	41.1	-14.6		
Total CAPEX (in M €2009)	-16.7	-8.4	3.6	-1.9		
<b>Total CAPEX (in %, M €2009)</b>	<b>-52.6%</b>	<b>-36.4%</b>	<b>15.2%</b>	<b>-9.8%</b>		







# **Annual Monitoring Report 2018**

Local level view  
SOUTH WEST FAB



## SW FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	A	A	B	B	
	ANSPs	For Safety Culture MO	C	C	C	C	
	ANSPs	For all other MOs	D	D	D	D	
Application of the severity classification of the Risk Analysis Tool (RAT)			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Ground Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	100%	100%	
	Runway Incursions (RIs)		100%	100%	100%	100%	
Overall Score							
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		39%	54%	79%	89%	
	Runway Incursions (RIs)		7%	26%	61%	64%	
	ATM Specific occurrences (ATM-S)		27%	23%	66%	73%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

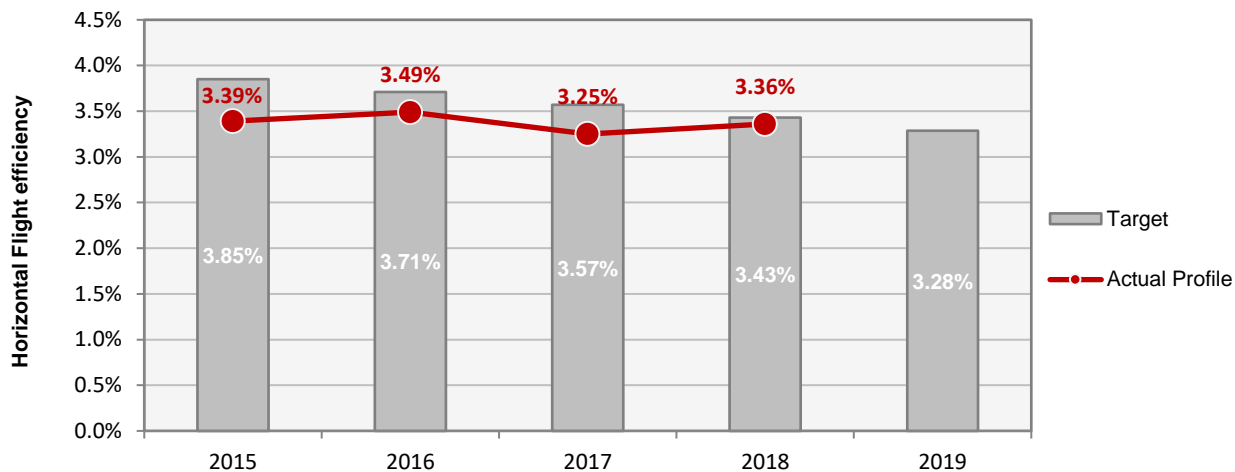
#### Observations

The lowest level in the EoSM Components/areas of the States is Level "B" which is below the 2019 EoSM target level. Safety Risk Management is already at the 2019 EoSM target level.

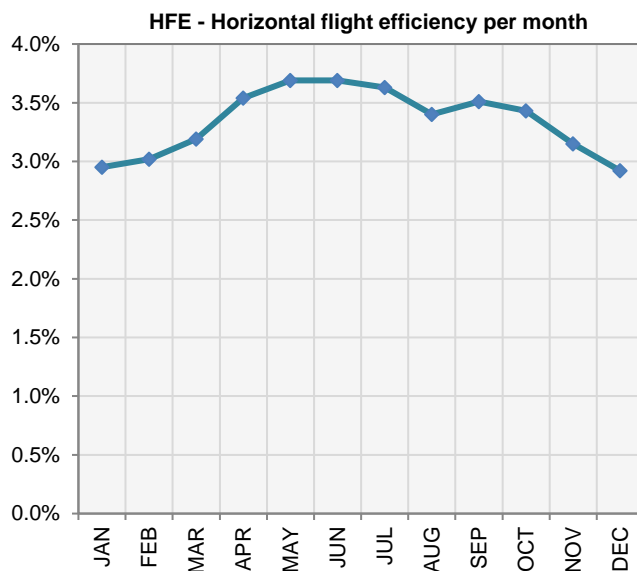
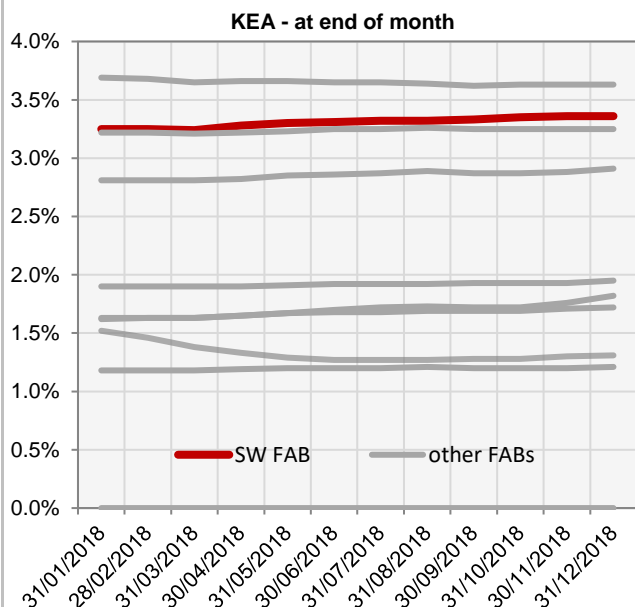
SW FAB

Monitoring of ENVIRONMENT for 2018

KEA					
	2015	2016	2017	2018	2019
FAB Target	3.85%	3.71%	3.57%	3.43%	3.28%
Actual performance	3.39%	3.49%	3.25%	3.36%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KEA (at end of month)	3.25%	3.25%	3.24%	3.28%	3.30%	3.31%	3.32%	3.32%	3.33%	3.35%	3.36%	3.36%
HFE	2.95%	3.02%	3.19%	3.54%	3.69%	3.69%	3.63%	3.40%	3.51%	3.43%	3.15%	2.92%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**SW FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

The target for 2018 was accomplished, with a reduction of .07 percentual points with respect to the objective identified in the SW FAB Performance. In relation to the Spanish airspace the KEA indicator at national level in 2018 (3.79%) continues complying with the expected contribution to the SWFAB target (3.98%), as per application of the following measures to improve the horizontal efficiency of the routes:

- Implementation of routes with direct point to point in the upper airspace.
- Increase in the number of direct clearance in tactical.

As part of the NM Action Plan, "Addressing structural airspace bottlenecks" activity, the SW FAB airspace has been selected as one of the three (3) working groups covering the 3 areas of ECAC airspace. Main focus of this working group is the improvement of the interface between SW FAB and FABEC, with the possibility to extend to UK-IRL FAB, taking advantage of the extension of the free-route airspace in Lisbon FIR.

**Observations****NM evaluation:**

Full FRA already implemented in Portugal. FRA projects definition required in Spain.

**NM proposed measures:**

In order to meet the European target, cross-border FRA projects implementation must be considered for the entire SW FAB.

The interface between SW FAB, FABEC needs to be addressed with priority.

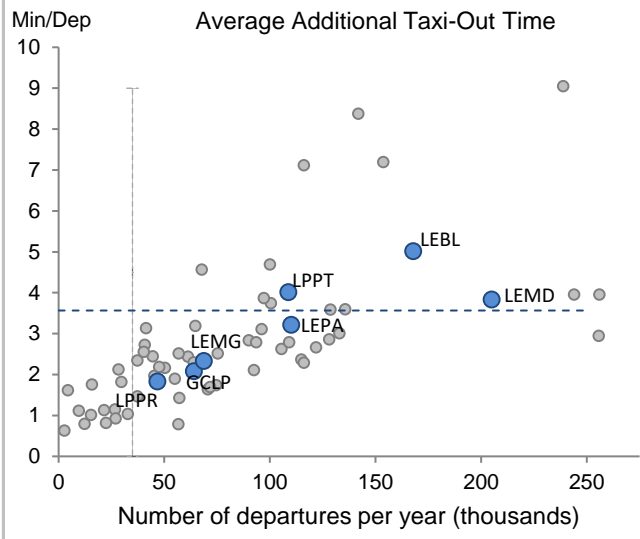
**SW FAB**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

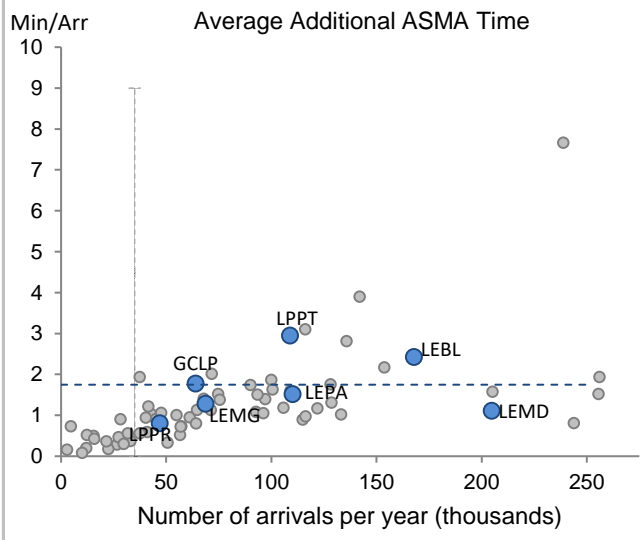
SW FAB states identify a total of 15 airports as subject to RP2 monitoring. However, only the busiest 7 had established in 2018 the proper reporting through the airport data flow to allow such monitoring. Member States shall empower the respective airport reporting entity to establish the airport operator data flow and/or address the remaining data issues. In general terms, the environmental performance indicators in the SW FAB airports are commensurate with their levels of traffic, with Madrid showing in addition very good values together with some of the busiest airports in Europe.

**2. Additional Taxi-Out Time**



The situation concerning additional taxi-out times at airports in SW FAB remains similar as last year, with only 3 airports (Barcelona, Madrid and Lisbon) showing additional taxi-out times above the average of airports in RP2 in 2018 (3.57 min/dep.)

**3. Additional ASMA Time**



Regarding additional time in terminal airspace, Lisbon (LPPT) and Barcelona (LEBL) have two of the highest values in the SES area, while Madrid has remarkably low additional ASMA times given its traffic.

## SW FAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
<b>FAB Reference Value</b>	0.30	0.31	0.31	0.30	0.30	The total presented includes the results of NM post operations adjustment process and is affected by 4ACC initiative.
<b>FAB Target</b>	0.30	0.31	0.31	0.30	0.30	
<b>Actual performance</b>	0.46	0.42	0.40	0.64		

## SW FAB assessment of capacity performance

In the framework of the capacity KPA the SW FAB highlights that the traffic forecasts set in 2014 for the preparation of the SOWEPP have been overwhelmed (+24%) along RP2 with the current unexpected traffic figures, so the delay objectives set at that time were based on values that are completely out of date.

It is worth mentioning that Spain obtained a significantly lower result (-65.5%) than the European average (1.74 min/flight for the EUROCONTROL area). The Spanish contribution to the en-route capacity (0.60 min/flight) was higher than the expected contribution (0.27) as a consequence of the strong increase in the following causes:

- Meteorological causes were 154% higher than the previous year, representing almost 28% of the total ATFM en-route delay of Spain. They were mainly located in Barcelona ACC (69% of the Spanish weather delay), and were generated during the months with more traffic demand (Summer).
- ATC Capacity causes were 52% higher than the previous year, representing near 62% of the total ATFM en-route delay of Spain. Barcelona ACC was the main contributor (51% of the total ATC Capacity delay).
- Special Event causes increased as a consequence of the BRAIN transition which generated around 13,000 minutes of delay, as well as military manoeuvres with nearly 24,000 minutes of delay.

Part of the minutes of ATFM route delay were reassigned after the application of the Post-Ops process by the Network Manager (those associated with strikes in France, which represented a total of 40,627 minutes).

Since 2016 traffic has growth 13% in Lisbon FIR with a capacity increase to accommodate this traffic demand of 17%. As a consequence of the significant capacity effort in the previous years in 2018 capacity is reaching at its limit and the NM capacity growth calculation of 3% in 2018 permitted NAV Portugal to achieve a delay performance of 0.19 min/flight, just 0.03 min/flight above the target. Technical reasons, in particularly the replacement of the single surveillance source in Porto Santo ( Mode S radar) was one of the main impacting factors, responsible for 28% of the whole delay reasons. Without considering this exceptional situation, Lisbon FIR En Route ATFM delay would be 0.13 min/flight, below the ATFM delay target of 0.14 min/flight for 2018.

## Monitoring process for capacity performance

The AESA Monitoring Process has been streamlined to be more efficient. The en route delay indicator was monitored against the FAB level target during 2018 on a monthly basis against an alert mechanism in the context of the RP2 SOWEPP Monitoring Process. Issues in Spain were identified by AESA in midyear and ENAIRE was consulted for reasons and set out corrective measures.

AESA identified after analysing the data versus the alerts and the information made available by ENAIRE that the target was not going to be met by the end of the year. Consequently, in compliance to Regulation (EU) No 390/2013 Article 18.4, AESA submitted a notification to the EC in October analysing the situation and providing information about:

- An insight of how the implementation of planned activities were affecting performance.
- Information on factors that have contributed to the noncompliance of the targets
- A preview of some measures to come that would focus on elements to be improved.

The overall conclusion was that the set of measures deployed would not be sufficient to meet the Spain target by the end of the year, which ended up being true. Causes for not meeting the target, identified in the letter sent to the CE, have finally been confirmed: several improvement projects implemented (BAMBI, BRAIN), the unusual occurrence of weather events and overall traffic above forecast. However, the efforts made by ENAIRE will require time before they come to fruition.

Monitoring of en route ATFM delay by ANSPs is done through the PRU monitoring process, taking into account, when necessary, the results of the PostOps process carried out by the Network Manager.

### Application of Corrective Measures for Capacity

As agreed with the NM as part of the NOP process, the following measures were implemented in Spain within the Capacity Plan in 2018 in order to contribute to the reduction of delay figures:

- ALL ACCs: Full Datalink at UIR Madrid, Barcelona and Canary Islands; New version of Automated System (SACTA); AGDL in Madrid, Barcelona, Canarias and Sevilla ACCs, and the progressive incorporation of ATCOs, that will be one of the main to reduce the delay in following years.
- MADRID ACC: BAMBI LECM-LFBB Interface; arrivals capacity increase in Final Sector (48 to 51 in North Config. and 46 to 48 in South).
- BARCELONA ACC: Split PONEN/GO sectors; BRAIN project (Redesign of the TMA: trombone approaches).
- SEVILLA ACC: AMAN in LEMG

In relation to the Portuguese airspace, during 2018 NAV Portugal accomplished all the capacity measures agreed with the NM except the Datalink project. From all these measures it is possible to highlight next ones: The availability of ATCOs to open up to 9-10 sectors (6/7 ENR, 2/3 TMA), the Flexible rostering, a enhanced ATFCM procedures including STAM, the vertical split of South sector and the dynamic split of West sector.

### Capacity Planning

Last 10th December 2018 the SWFAB celebrated a tripartite meeting between ENAIRE, NAV Portugal and the NM to prepare the capacity plan for the planning period 2019-2024 as part of the NOP process. In addition, ENAIRE has prepared its Summer Plan 2019-2020, which details the projects and actions planned to increase and improve capacity, focusing efforts in the less performing areas (Note that this Summer Plan is a living document that will be monitored and updated regularly in order to be adapted to the changing conditions of the Air Navigation Service). The main projects planned are:

- ALL ACCs: Progressive incorporation of ATCOs; Evolution of SACTA (3.z5.80); New ATFCM & Flow Tools and review of sectors Capacity.
- MADRID ACC: Sectorization improvements (sector SANTIAGO design: Intermediate volume (2019); collateral interface: Swanwick (2020)).
- BARCELONA ACC: Improvements of operational procedures and partial split for UM985 (Valencia – Barcelona) (2020) and Splitting of BALSE sector (2020).
- SEVILLA ACC: Splitting of SEVILLA sector (LECSSEV) (2019).
- CANARIAS ACC: Improvements of NW sectors (2020) and Splitting of NE sector & New Cluster (2021).

In relation to NAV Portugal the new planning period will be very challenging due to several operational and technical projects. In relation to the significant events for the period 2019-2024 NAV Portugal will coordinate with the NM the Transition Plan for the implementation of the new ATM system in Lisbon ACC. As agreed with the NM in the preparation of the Portuguese capacity plan 2019-2024, NAV Portugal will be severe affected by the preparation, implementation and final stabilization of a completely new ATM system in Lisbon ACC and main TWRs. Consequently it is expected that Lisbon ACC will generate delays at higher levels than the network capacity requirements. Also, a new airport for Lisbon and a completely airspace restructuration for its TMA airspace will have an impact in the planning cycle.

SW FAB fully supports the implementation of the eNM/S2019 measures which will have an impact in the traffic flows distribution in the SW FAB airspace. This re-routing of traffic may affect actual critical sectors at SW FAB airspace which may have a direct impact in the delay forecast.

### Assessment of capacity performance

EUROCONTROL 7 year forecast February 2014 – SW FAB											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	1648		1708		1783		1848		1921		1997
<b>Base</b>	1625	1727	1667	1782	1711	1930	1750	2059	1795	2168	1841
<b>Low</b>	1600		1622		1629		1643		1662		1681



For the fourth year in a row, SW FAB failed to meet its adopted target for en route capacity performance, albeit with higher than predicted traffic levels for each of those years. Traffic levels in 2017 were already above the highest traffic level predicted for SW FAB in the STATFOR forecast of 2014, for the entirety of RP2, when the FAB performance plans and associated capacity plans were being determined.

Traffic levels in 2018 were an additional 5% on top of 2017 levels (and 8.5% above 2019 high traffic scenario). En route AFTM delays increased by 60% to 0.64 minutes per flight, from 0.4 minutes per flight in 2017.

In their summary of Network performance in 2018, the airspace users praised SW FAB performance by stating: "Along with another traffic increase, a good en-route delay performance is again noted for Portugal. Similarly, despite difficulties caused by other ACCs on the [South-West] axis, Spanish ACCs overall have performed well."

61% of en route ATFM delays were attributed to ATC capacity, 25% to adverse weather, 5% to 'Other' including 63k minutes attributed to ATC strikes in France and 17k minutes attributed to the interface between Bordeaux ACC and Barcelona ACC. [The 63k minutes of delay attributed to ATC strikes in France were submitted to the NM post operations adjustment process and reallocated to France (in accordance with the decision of the NMB), therefore they are not included in the FAB total shown above.]

In the latest version of the Network Operations Plan 2019 – 2024, the Network Manager reports that Southwest FAB is not expected to meet its reference values for the remainder of RP2 and for the entirety of RP3.

SW FAB delay forecast							
		2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	-	0.63	0.33	0.32	0.24	N/A	N/A
NOP 2019 - 2024	-	0.48	0.59	0.39 – 0.54			

The Network Operations Plan 2019 -2024 reports that all ACCs in Southwest FAB are expected to deliver capacity performance close to their reference values with the exception of Barcelona ACC. Barcelona ACC is expected to generate delays at higher levels than the network capacity requirements, in part due to a considerable decrease in its capacity plan (8 - 12% lower than in NOP 2018- 2022.)

**En route Capacity Incentive Scheme**

SW FAB provided details of an en route capacity incentive scheme in their revised performance plan v2.0, dated July 2016. This incentive scheme was based on a FAB target of 0.30 minutes per flight with a dead-band between 0.54 - 0.16 minutes per flight. The incentive scheme was based on all causes of delays but there were caveats regarding 'unusually high' incidences of certain delays codes activating an exclusion system based on Article 15(g) of Regulation 391/2013.

**Result of FAB Capacity Incentive Scheme**

The incentive mechanism was triggered. However, the ANSPs made a claim based on a safeguard clause included in the description of the scheme within the SOWEPP. The application of this clause, according to the SOWEPP, requires taking a number of steps including an analysis by the NSAs and a consultation with the airspace users, among other elements. Since there has been no opportunity to take those steps prior to the 1st of June, considering that the claim of the ANSPs was received on the 24th of May, the final decision has been postponed. However, the final result will be available to report the exact amount of the incentive by the 1st of November deadline.

**Update on Military dimension of the plan**

No new information was provided in the SW FAB annual monitoring report.

**Observations on Military dimension of the plan**

Nil

### Application of FUA

For Spain: Strategic ASM Level 1 actually is performed by the civil/military high level body CIDEFO and its Working Groups (Ponencias), specifically through PREA and UPEA. User requirements and route improvements are handled by CIDEFO through sub working groups. UPEA will be working during 2019 towards the establishment of the transition plan for a single CDR category.

Pre tactical ASM level 2 is performed by the Spanish AMC. FUA structures manageable are handled through AUP and UUP via CIAM Tool from NM. Airspace Structures which are going to be applied in Spain in application of the "FUA Concept" has been approved by CIDEFO on March 2015 (Plenary meeting 01/2015). LARA tool has been deployed in Spanish military and civil units and its use is planned for the end of 2019.

Tactical ASM level 3 is performed in the Ops Room through a direct coordination between ATCOs and military positions in the ACCs. Coordination through AMC is available as well on request. Direct link between LARA and the Ops Room Working Positions is planned for the end of 2021.

### Observations of the Application of FUA

It is noted that SW FAB has not actually provided information on how SW FAB authorities determine if the optimum benefits for both civil and military airspace users have been provided.

**SW FAB**

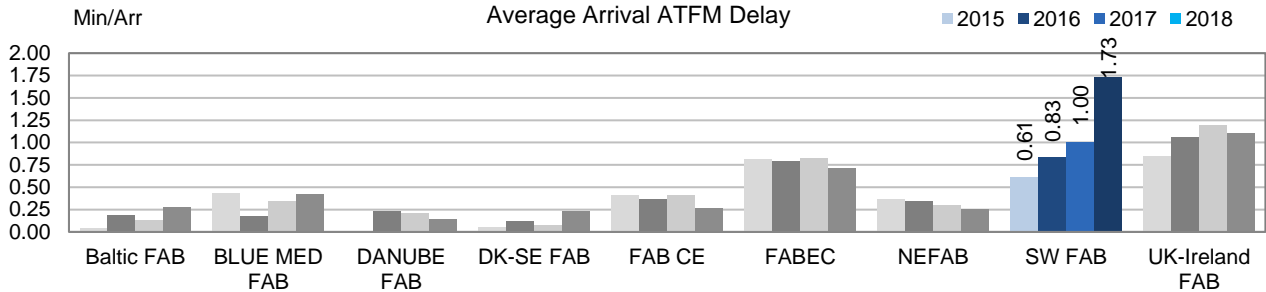
**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

SW FAB includes some of the most capacity constrained airports in Europe. In 2018, SW FAB shows the worst performance reached by a FAB during RP2 in terms of arrival ATFM delays, reaching now an average 1.73 min/arr., almost a minute above the European average (0.78 min/arr)

Next to FABEC and UK-Ireland FAB, SW FAB performance influences the European average significantly. Efforts are required to reduce the high level of arrival ATFM delay that represents 24% of all arrival ATFM in the SES monitoring airports and 13% of the traffic.

**2. Arrival ATFM Delay**



The main driver for the increase in the aggregated arrival ATFM delay is Lisbon (LPPT), followed by Barcelona (LEBL), Porto (LPPR) and Palma de Mallorca (LEPA). Lisbon and Barcelona show the highest arrival ATFM delay per flight in the SES area.

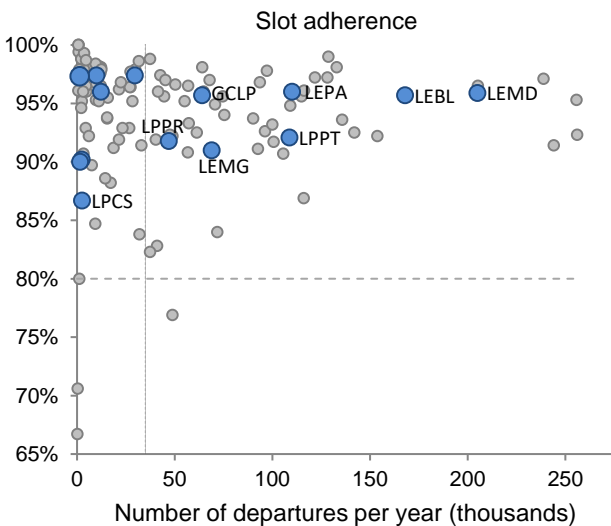
**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

The SW FAB performance plan sets a national target on arrival ATFM delay with a breakdown per airport for each of the years of the reference period for Spain. For Portugal, the breakdown is provided for two airports while the other 7 airports are aggregated into a third summary value. The national targets set are consistent with the observed performance at the beginning of the reference period.

Both Portugal and Spain have missed their national target in 2016, 2017 and 2018, with a deterioration that drives them each year further from the target.

The SW FAB performance plan presents no incentive schemes for the national targets on arrival ATFM delay.

**4. ATFM Slot Adherence**



The adherence to ATFM slots at all airports in the SW FAB is above 85%. A group of airports in SW FAB also show best-in-class performance with adherences above 95%.

**5. ATC Pre-departure Delay**

ATC pre-departure delay at Lisbon is the highest in the SES area, reaching even a higher value than the arrival ATFM delay in any airport in Europe. Except for this case, the rest of airports in SW FAB show levels of ATC pre-departure delay commensurate with the level of traffic.



# Annual Monitoring Report 2018

Local level view  
Portugal



## PORTUGAL

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	53	B	C	B	B	C
NAV Portugal	95	D	E	D	D	E
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			NAV-P			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			6	3		
Legal/Judiciary			7	0		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>15</b>	<b>3</b>		
NAV Portugal			Number of questions answered			
			YES	NO		
Policy and its implementation			9	4		
Legal/Judiciary			2	1		
Occurrence reporting and Investigation			8	0		
<b>TOTAL</b>			<b>19</b>	<b>5</b>		
Observations						
<p>Three out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C". After verification some answers above the target level were downgraded to align them with EASA audit results to the end of 2018 or because the justification was not sufficient. Detailed feedback has been sent to the State focal point by EASA Standardisation team.</p> <p>Out of 34 questions in Components 1-4 (not including Component - Safety Culture), six are below Level C.</p>						

## PORTUGAL

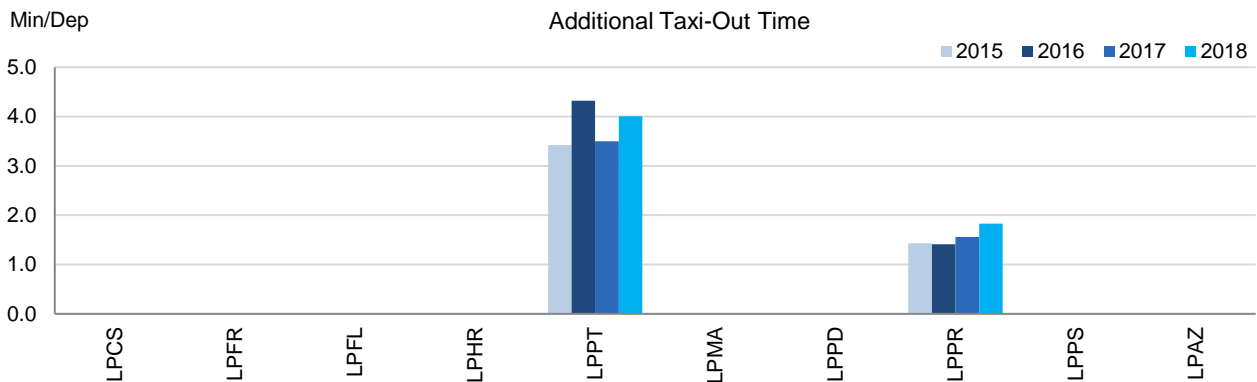
## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

The scope of RP2 monitoring for Portugal comprises 10 airports in 2016, from which the Airport Operator Data Flow is only established for 2 (Porto and Lisbon). Faro recently established the APDF and monitoring will be possible as of 2019. Cascais (LPCS) is added to the list of airports in 2016 after its inclusion in the Charging Zone. Portugal shall encourage the respective airport reporting entities to initiate the implementation of the Airport Operator Data Flow.

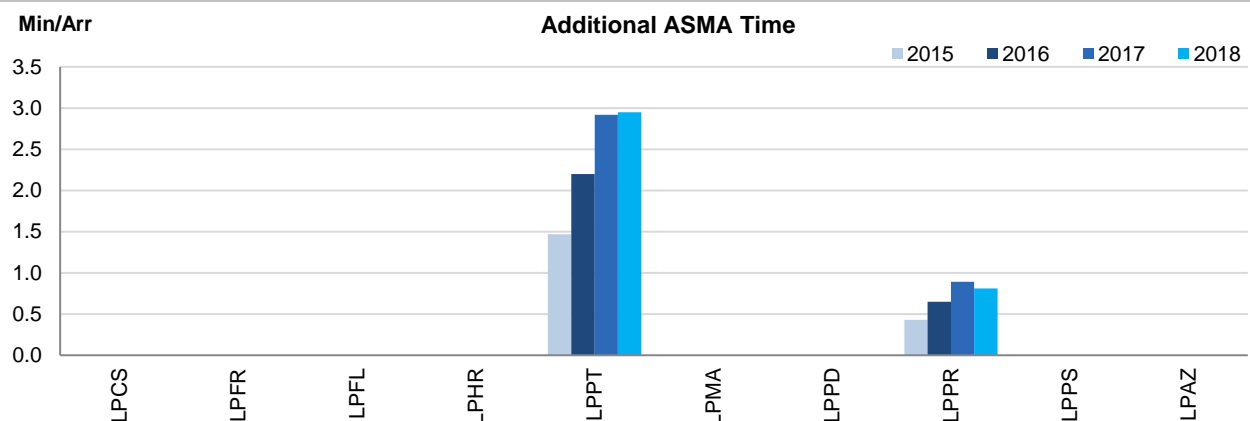
The environmental performance at the two Portuguese airports that can be monitored, where traffic has drastically increased since the beginning of the reference period (+32% with respect to 2015) is to a certain extent commensurate with that traffic.

## 2. Additional Taxi-Out Time



Additional taxi-out times at both Lisbon and Porto have increased in 2018 by approximately 15% throughout the entire year. Lisbon's additional time (LPPT; 2018: 4.01 min/dep.) is above the SES average (3.57 min/dep.) and also higher than most other airports with similar number of movements.

## 3. Additional ASMA Time



Additional times in the terminal airspace in Portuguese airports have not significantly changed in 2018. Lisbon (LPPT; 2018: 2.95 min/arr.) has the 4th longest additional ASMA times in the SES area, reaching up to 3.5 min/arr. in October.

## 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Cascais	LPCS		n/a	n/a	n/a			n/a	n/a	n/a	
Faro	LPFR	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Flores	LPFL	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Horta	LPHR	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Lisbon	LPPT	3.42	4.32	3.50	4.01		1.47	2.20	2.92	2.95	
Madeira	LPMA	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Ponta Delgada	LPPD	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Porto	LPPR	1.43	1.41	1.56	1.83		0.43	0.65	0.89	0.81	
Porto Santo	LPPS	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Santa Maria	LPAZ	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	



**PORTUGAL**

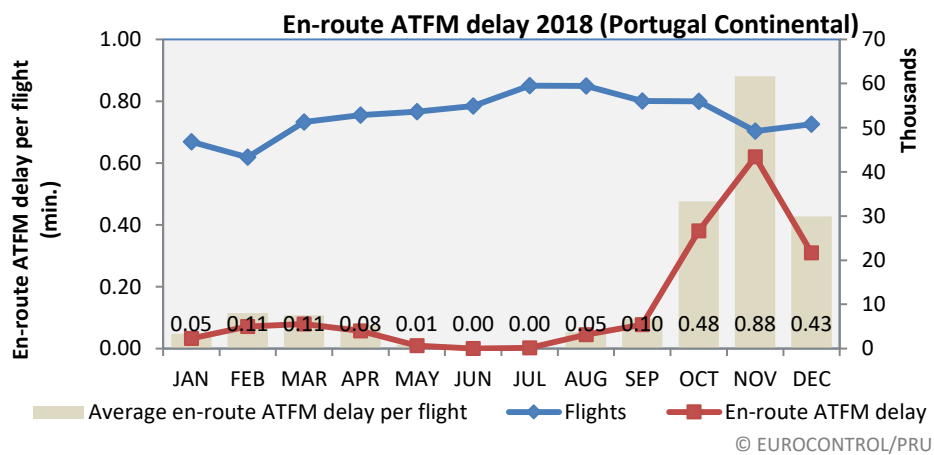
**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.19	0.15	0.14	0.14	0.13	
Deadband +/-	0.00	0.00	0.00	0.00	0.00	
Actual performance	0.48	0.21	0.19	0.19		

**National capacity incentive scheme**

Not applicable: incentive scheme defined at FAB level.

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Portugal)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.19	0.02	0.01	0.16	0.65	0.27	0.50	0.48	0.21	0.19	0.19

EUROCONTROL 7 year forecast February 2014 – Portugal (Lisbon FIR)						
	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	
High	483	507	529	547	568	589
Base	476	480	494	505	514	536
Low	469	480	481	482	485	488

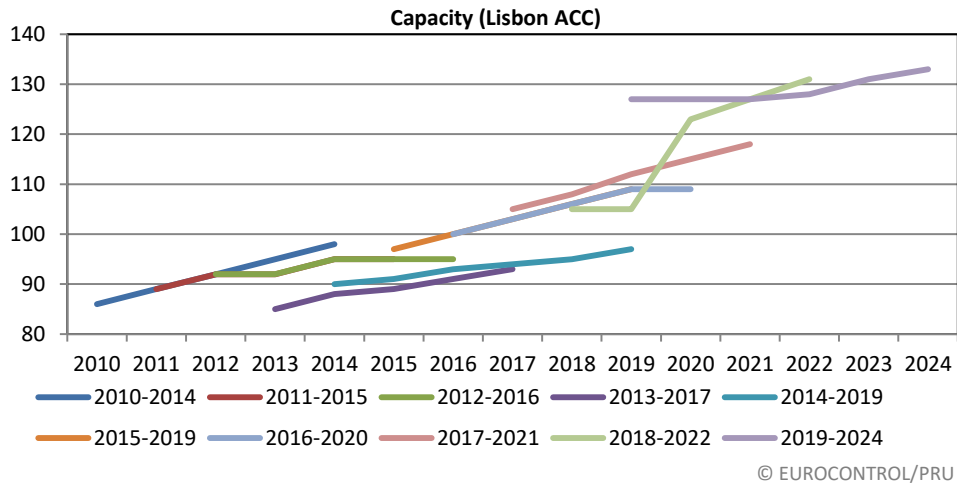
Although Portugal did not achieve its national target in 2018, en route capacity performance remained at the same level as it was in 2017 (0,19 minutes per flight). Traffic levels increased by 3.5% from 2017 levels which were already 4% greater than the highest traffic levels predicted in the STATFOR forecast available when the national /FAB performance targets were being set and the associated capacity plans developed. The airspace users commented favourably on the good en route performance of Lisbon ACC in 2018.

Nav Portugal delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	1.39	0.30	0.28	0.21	N/A	N/A
NOP 2019 - 2024	0.15	0.36	0.14 – 0.35			

The Network Manager reports that the capacity issues experienced in Lisbon ACC during the final quarter of 2018 was partly due to the record traffic on the flows to the Canary Islands.

63% of en route ATFM delays were attributed to ATC capacity, 28% to ATC equipment (primarily radar and communications system problems) with 6% attributed to adverse weather.

In the Network Operations Plan 2019 – 2024, the Network Manager states that Lisboa ACC is expected to deliver capacity performance close to the reference value for the remainder of RP2 and for RP3, with a caveat that the implementation of a new ATM system in 2021 will constrain capacity planning.



Lisbon ACC has been continuously and significantly increasing capacity plans since 2013.

**Planning and Effective Use of CDRs**

No data was provided at national level, since Portugal has implemented free route airspace operations.

**Observations on Planning and Effective Use of CDRs**

It is noted that Portugal has implemented free route airspace operations throughout the Lisbon FIR, making CDRs obsolete. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

**Effective booking procedures**

No data was provided.

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

## PORTUGAL

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

Currently ANS at 10 Portuguese airports are subject to RP2 monitoring. With the monitoring of 2016, performance at Cascais (LPCS) was added to the monitoring. Traffic levels at these airports have drastically increased during RP2 (+31.6% with respect to 2015).

Along with the increase in traffic, arrival ATFM delays have suffered, tripling those in the beginning of the reference period. Portugal has established a national target on arrival ATFM delay that was widely exceeded again in 2018.

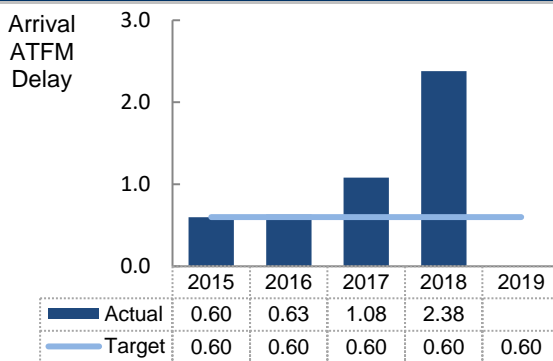
ATFM slot adherence has improved by 4 points in RP2 (2015:89.3%; 2018:93.3%).

The airport operator data required for the monitoring of ATC pre-departure delay is still only limited to Lisbon (LPPT) and Porto (LPPR). Nevertheless, Faro has recently implemented the Airport Operator Data Flow and monitoring is possible as of January 2019.

To ensure the consistent monitoring of pre-departure delay, Portugal is encouraged to strengthen the level of implementation of the Airport Operator Data Flow across the airports.

The capacity problems at Lisbon stand out and delays are exponentially increasing. In 2018 Lisbon shows the highest arrival ATFM delay (3.82 min/arr.) and ATC pre-departure delay (4.32 min/dep.) in Europe.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Portugal have drastically increased with respect to the previous year (2017: 1.08 min/arr, 2018: 2.38 min/arr), driven by the dramatic increase of the delays at Lisbon and to a second degree at Porto.

Lisbon (LPPT: 2018: 3.82 min/arr.) is the 4th biggest contributor to arrival ATFM delays in the SES area despite being only the 20th in terms of movements. 47% of these delays are attributed to Aerodrome Capacity, 28% to Weather and 21% to Airspace Management due to military activity affecting the arrival flow into Lisbon.

SWFAB's monitoring report states that *the arrival atfm delay for Portugal of 2,38 min/flight is directly related with the unexpected traffic growth (+11% in 2017 and +7% in 2018) and its infrastructure limitations in Lisbon airport, resulting in huge ground capacity constraints, still to be addressed by the AOP - ANA S.A, which cause delays to rise exponentially since 2016.*

*The ARR ATFM delay in Portugal has mainly two causes. In Lisbon, Aerodrome Capacity is responsible for 47% of all delay causes and weather for 28%. In Porto, weather is the responsible for 87,5% off all total causes.*

*Except in particular months, ATFM ARR delay in Lisboa is the major contributor of the overall ARR delay in Portugal.*

*Along 2018 there was also an intense military activity affecting Lisbon ARR traffic. ARR capacity reductions may achieve -26% of available capacity. Total ASM delay impacted was 89.000 minutes of a total of 416.026 min of delay.*

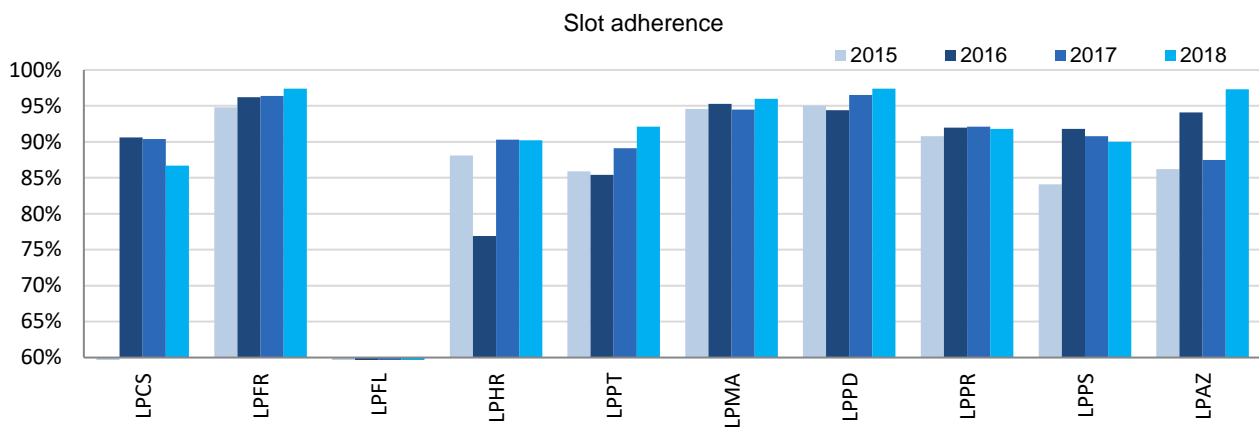
## 3. Arrival ATFM Delay – National Target and Incentive Scheme

The SW FAB performance plan establishes a national target on arrival ATFM delay (0.60 min/arr.) with a breakdown for the two major airports (i.e. Lisbon and Porto) and aggregates the remaining 7 airports into a single value for each of the years of the reference period. Cascais (LPCS) is not included in this group as this airport has now been added to the monitoring. Therefore no reference is established for LPCS.

The national target on arrival ATFM delay is not met. At airport level, while almost all the smaller airports (except Madeira, that exceeds its reference value by 0.05 min/arr.) perform better than their reference target value, the actual values at both Lisbon and Porto are dramatically higher than their reference value (i.e. LPPR: PP2018 = 0.75 min/arr vs Actual2018 = 2.03 min/arr. and LPPT: PP2018 = 0.50 min/arr vs Actual2018 = 3.82 min/arr.).

The SW FAB performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for Portugal.

#### 4. ATFM Slot Adherence



Since the beginning of RP2, slot adherence at Portuguese airports has improved in general reaching now an average national slot compliance of 93.3% in 2018.

Slot adherence at Lisbon has improved and it now exceeds the 90%, so the 3 main airports in Portugal (Lisbon, Porto and Faro) show very good ATFM slot compliance above 90%.

The low traffic levels at Santa Maria (LPAZ), Horta (LPHR), Cascais (LPCS) and Porto Santo (LPPS) make the compliance indicator very volatile, as only a few flights might have a big impact.

For another year, there are no regulated departures at LPFL.

#### 5. ATC Pre-departure Delay

The Airport Operator Data Flow during 2018 was established only for Lisbon (LPPT) and Porto (LPPR), so the calculation of the pre-departure delay is only possible for these 2 airports.

The accrued ATC pre-departure delay at both airports is very significant and in the case of Lisbon reaches the highest value in the SES area (LPPT: 2018: 4.32 min/dep.)

SW FAB reports that *the increase in the pre-departure delay in Lisbon, during 2018, reflects the excessive departure demand concentrated along some periods which impacts the traffic sequence for departure. The airport infrastructure limitation is the main contributor for this cause as a consequence of the rapid increase in traffic in the last few years which was not followed by the necessary improvements at ground level.*

The rest of Portuguese airports subject to RP2 monitoring are not reporting at the moment, so the calculation of this indicator is not possible. Nevertheless, Faro (LPFR) established the required data flow and the indicator will be available as of January 2019.

#### 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Cascais	LPCS		0.00	0.00	0.00		n/a	90.6%	90.4%	86.7%			n/a	n/a	n/a	
Faro	LPFR	0.06	0.00	0.00	0.02		94.8%	96.2%	96.4%	97.4%		n/a	n/a	n/a	n/a	
Flores	LPFL	0.00	0.00	0.00	0.00		n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	
Horta	LPHR	0.00	0.00	0.00	0.00		88.1%	76.9%	90.3%	90.2%		n/a	n/a	n/a	n/a	
Lisbon	LPPT	0.79	0.88	1.65	3.82		85.9%	85.4%	89.1%	92.1%		n/a	n/a	2.60	4.32	
Madeira	LPMA	0.01	0.02	0.06	0.07		94.6%	95.3%	94.5%	96.0%		n/a	n/a	n/a	n/a	
Ponta Delgada	LPPD	0.00	0.00	0.00	0.00		95.0%	94.4%	96.5%	97.4%		n/a	n/a	n/a	n/a	
Porto	LPPR	0.87	0.93	1.22	2.03		90.8%	92.0%	92.1%	91.8%		n/a	n/a	0.59	0.61	
Porto Santo	LPPS	0.00	0.00	0.00	0.00		84.1%	91.8%	90.8%	90.0%		n/a	n/a	n/a	n/a	
Santa Maria	LPAZ	0.00	0.00	0.00	0.00		86.2%	94.1%	87.5%	97.3%		n/a	n/a	n/a	n/a	

## PORTUGAL: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
<ul style="list-style-type: none"> <li>Portugal ECZ represents 1.9% of the SES en-route ANS determined costs in 2018</li> <li>ATSP: NAV Portugal</li> <li>FAB: SW FAB</li> <li>National currency: EUR</li> </ul>						
2. En-route DUC monitoring at Charging Zone level						
Portugal: Data from RP2 Performance Plan (EC Decision 2018/2021 of 17 December 2018)						
	2015D	2016D	2017D	2018D	2019D	
En-route costs (nominal EUR)	111 331 252	117 112 878	121 117 127	133 551 913	137 314 735	
Inflation %	1.2%	1.5%	1.5%	1.6%	1.6%	
Inflation index (100 in 2009)	110.5	112.2	113.8	112.9	114.7	
Real en-route costs (EUR2009)	100 758 704	104 424 905	106 399 345	118 261 552	119 678 710	
Total en-route Service Units	3 095 250	3 104 536	3 122 232	3 895 148	4 077 832	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>32.55</b>	<b>33.64</b>	<b>34.08</b>	<b>30.36</b>	<b>29.35</b>	
Portugal: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
En-route costs (nominal EUR)	110 975 595	112 678 540	124 561 665	141 180 751		
Inflation %	0.5%	0.6%	1.6%	1.2%		
Inflation index (100 in 2009)	108.7	109.4	111.2	112.5		
Real en-route costs (EUR2009)	102 048 433	102 996 411	112 065 407	125 511 103		
Total en-route Service Units	3 150 186	3 509 556	3 777 024	3 855 541		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>32.39</b>	<b>29.35</b>	<b>29.67</b>	<b>32.55</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
En-route costs (nominal EUR)	in value	-355 657	-4 434 338	3 444 537	7 628 838	
	in %	-0.3%	-3.8%	2.8%	5.7%	
Inflation %	in p.p.	-0.7 p.p.	-0.9 p.p.	0.1 p.p.	-0.4 p.p.	
	in p.p.	-1.7 p.p.	-2.7 p.p.	-2.7 p.p.	-0.4 p.p.	
Real en-route costs (EUR2009)	in value	1 289 729	-1 428 495	5 666 062	7 249 551	
	in %	1.3%	-1.4%	5.3%	6.1%	
Total en-route Service Units	in value	54 936	405 020	654 792	-39 607	
	in %	1.8%	13.0%	21.0%	-1.0%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-0.16</b>	<b>-4.29</b>	<b>-4.41</b>	<b>2.19</b>	
	<b>in %</b>	<b>-0.5%</b>	<b>-12.8%</b>	<b>-12.9%</b>	<b>7.2%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
<p>In 2018, the actual en-route unit cost in real terms (32.55 €2009) is +7.2% higher than planned in the PP (30.36 €2009). This results from the combination of slightly lower than planned TSUs (-1.0%) and higher than planned en-route costs in real terms (+6.1%, or +7.2 M€2009). See <b>Note 1</b> at the end of this Report.</p>						
<b>En-route service units</b>						
<p>The difference between actual and planned TSUs (-1.0%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting loss of en-route revenues (-1.0 M€2009) is therefore fully borne by the main ATSP (NAV Portugal).</p> <p>According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Portugal are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.</p>						
<b>En-route costs</b>						
<p>In nominal terms, actual en-route costs are +5.7% (+7.6 M€) higher than planned. However, since the actual inflation index is slightly lower than planned (-0.4 p.p.), actual en-route costs are +6.1% (+7.2 M€2009) above plans when expressed in real terms.</p> <p>The higher than planned en-route costs in real terms are driven by NAV Portugal (+7.5%, or +7.6 M€2009), the SAR entities (+5.6%, or +0.2 M€2009) and the MET service provider (+0.4%, or +0.02 M€2009), while the costs for the NSA/EUROCONTROL (-8.0%, or -0.6 M€2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.</p>						
<p>Costs exempt from cost-sharing are reported for a total amount of +3.0 M€2009 comprising +3.9 M€2009 for pension and -0.9 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>						

Year	Difference (%)
2015	1.3%
2016	-1.4%
2017	5.3%
2018	6.1%
2019	0%

Year	Difference (%)
2015	1.8%
2016	13.0%
2017	21.0%
2018	-1.0%
2019	0%

Year	En-route unit cost (actual)	En-route DUC (PP)
2015	32.55	32.39
2016	33.64	29.35
2017	34.08	29.67
2018	30.36	32.55
2019	29.35	29.35

Year	Difference (%)
2015	-0.5%
2016	-12.8%
2017	-12.9%
2018	7.2%
2019	0%

**PORTUGAL: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



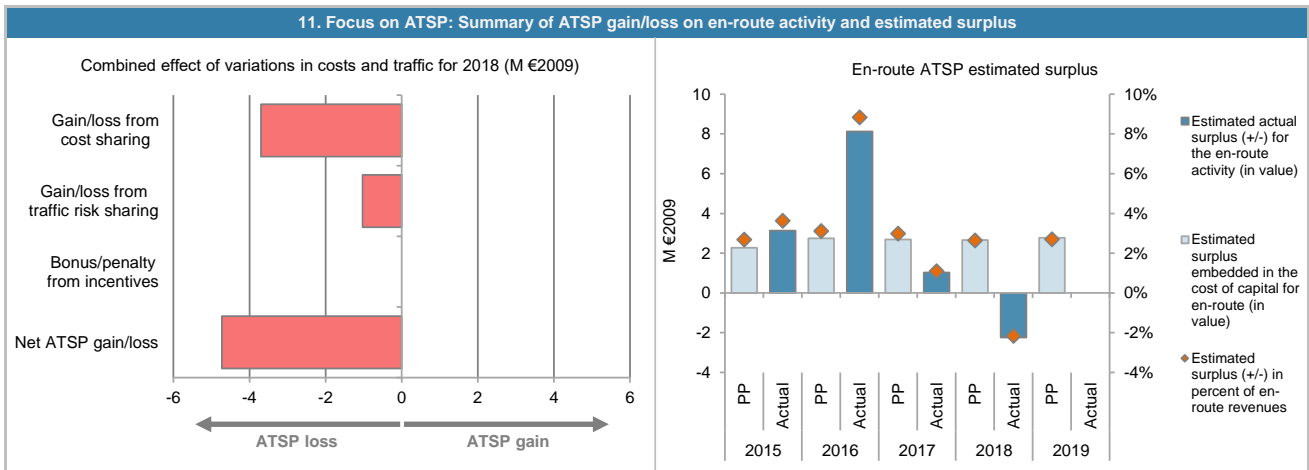
## PORTUGAL: En-route ATSP (NAV Portugal)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	84 614	88 012	89 772	101 050	
Actual costs for the ATSP	85 438	86 201	95 027	108 656	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-825	1 811	-5 256	-7 605	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	3 907	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-825</b>	<b>1 811</b>	<b>-5 256</b>	<b>-3 698</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	1.8%	13.0%	21.0%	-1.0%	
Determined costs for the ATSP (PP) - based on actual inflation	85 450	89 742	91 492	101 037	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>1 517</b>	<b>3 949</b>	<b>4 026</b>	<b>-1 027</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>692</b>	<b>5 760</b>	<b>-1 230</b>	<b>-4 725</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	35 910	43 412	42 420	42 118	43 753
Estimated proportion of financing through equity (in %)	98.3%	98.3%	98.3%	98.3%	98.3%
Estimated proportion of financing through equity (in value)	35 310	42 687	41 711	41 414	43 023
Estimated proportion of financing through debt (in %)	1.7%	1.7%	1.7%	1.7%	1.7%
Estimated proportion of financing through debt (in value)	599	725	708	703	730
Cost of capital pre-tax (in value)	2 277	2 752	2 689	2 670	2 774
Average interest on debt (in %)	0.5%	0.5%	0.5%	0.5%	0.5%
Interest on debt (in value)	3	3	3	3	3
Determined RoE pre-tax rate (in %)	6.4%	6.4%	6.4%	6.4%	6.4%
Estimated surplus embedded in the cost of capital for en-route (in value)	2 274	2 749	2 686	2 667	2 771
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>2 274</b>	<b>2 749</b>	<b>2 686</b>	<b>2 667</b>	<b>2 771</b>
<b>Revenue/costs for the en-route activity</b>	<b>84 614</b>	<b>88 012</b>	<b>89 772</b>	<b>101 050</b>	<b>102 286</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>2.7%</b>	<b>3.1%</b>	<b>3.0%</b>	<b>2.6%</b>	<b>2.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	38 574	37 367	35 653	39 234	
Estimated proportion of financing through equity (in %)	98.3%	98.3%	98.3%	98.3%	
Estimated proportion of financing through equity (in value)	37 930	36 743	35 058	38 579	
Estimated proportion of financing through debt (in %)	1.7%	1.7%	1.7%	1.7%	
Estimated proportion of financing through debt (in value)	644	624	595	655	
Cost of capital pre-tax (in value)	2 446	2 369	2 260	2 487	
Average interest on debt (in %)	0.5%	0.5%	0.5%	0.5%	
Interest on debt (in value)	3	3	3	3	
Determined RoE pre-tax rate (in %)	6.4%	6.4%	6.4%	6.4%	
Estimated surplus embedded in the cost of capital for en-route (in value)	2 443	2 366	2 258	2 484	
Net ATSP gain(+)/loss(-) on en-route activity	692	5 760	-1 230	-4 725	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 134</b>	<b>8 126</b>	<b>1 028</b>	<b>-2 241</b>	
<b>Revenue/costs for the en-route activity</b>	<b>86 130</b>	<b>91 961</b>	<b>93 797</b>	<b>103 930</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.6%</b>	<b>8.8%</b>	<b>1.1%</b>	<b>-2.2%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>8.3%</b>	<b>22.1%</b>	<b>2.9%</b>	<b>-5.8%</b>	

**PORTUGAL: En-route ATSP (NAV Portugal)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 NAV Portugal en-route costs vs. PP**

In 2018, NAV Portugal actual en-route costs are +7.5% (+7.6 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- much higher staff costs (+10.9%, or +9.1 M€2009) mainly due to higher pension costs and extra work carried out by ATCOs to mitigate the impacts of the capacity shortage;
- slightly lower other operating costs (-2.1%, or -0.2 M€2009);
- much lower depreciation costs (-16.7%, or -1.1 M€2009) mainly "due to different investment options and implementation dates"; and,
- lower cost of capital (-6.8%, or -0.2 M€2009) due to a lower total asset base.

**NAV Portugal net gain/loss on en-route activity in 2018**

As shown in box 9, NAV Portugal generated a net loss of -4.7 M€2009 on the en-route activity. This is a combination of two elements:

- a loss of -3.7 M€2009 arising from the cost sharing mechanism; and
- a loss of -1.0 M€2009 arising from the traffic risk sharing mechanism.

The loss from cost sharing mentioned above (-3.7 M€2009) includes amounts reported by NAV Portugal for cost exempt from cost sharing (+3.9 M€2009). Should these costs not be deemed eligible by the European Commission, NAV Portugal would record a net loss of -8.6 M€2009 for the en-route activity in 2018.

According to the additional information to the June 2019 en-route Reporting Tables the incentive mechanism was triggered, with a delay level of 0.64 minute of en-route ATFM delay/flight in 2018 at SW FAB level. However, the application of a possible penalty is still under review by the NSA and the final result will only be available by the 1st of November 2019. See **Note 2** for more details.

**NAV Portugal overall estimated surplus for the en-route activity**

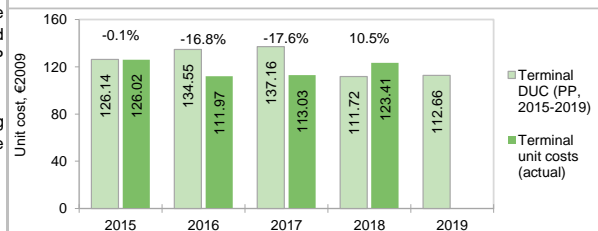
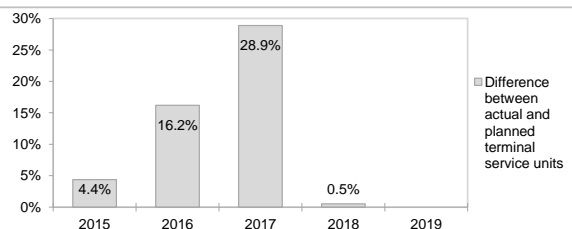
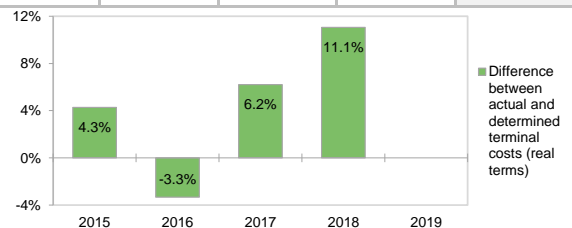
Ex-post, the overall estimated surplus taking into account the net loss from the en-route activity mentioned above (-4.7 M€2009) and the surplus embedded in the actual cost of capital (+2.5 M€2009) amounts to -2.2 M€2009 (2.2% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is negative (-5.8%), which is different from the 6.4% planned in the PP.



## PORTUGAL: Terminal charging zone

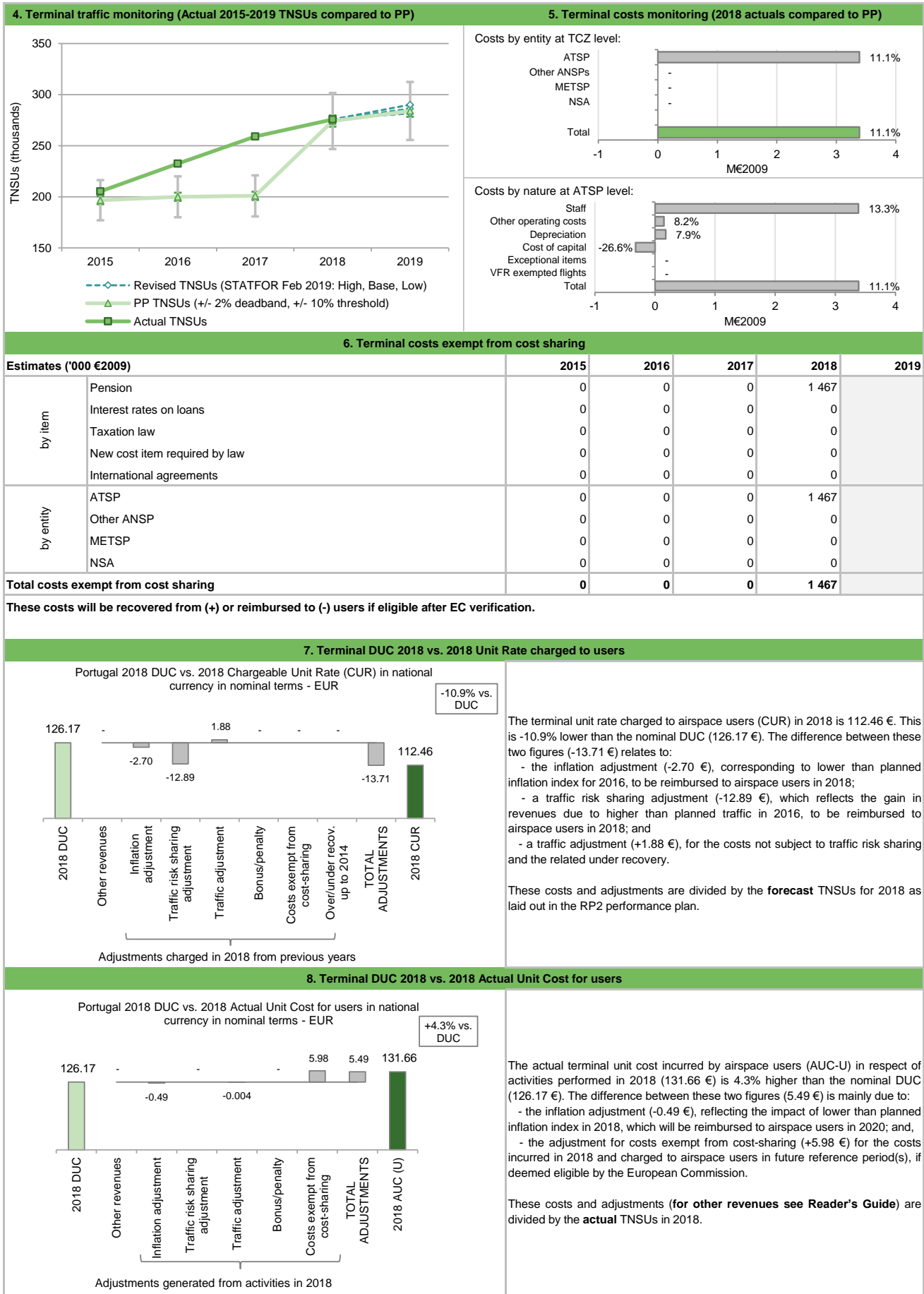
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Portugal TCZ represents 2.8% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes	
ATSP:	NAV Portugal	Airports with fewer than 70,000 IFRs ATMs:		9	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		1	
Number of airports in charging zone in 2018:	10,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Portugal: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	27 415 133	30 183 378	31 371 504	34 595 706	36 709 523
Inflation %	1.2%	1.5%	1.5%	1.6%	1.6%
Inflation index (100 in 2009)	110.5	112.2	113.8	112.9	114.7
Real terminal costs (EUR2009)	24 811 661	26 913 320	27 559 335	30 634 843	31 994 733
Total terminal Service Units	196 700	200 022	200 922	274 200	284 000
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>126.14</b>	<b>134.55</b>	<b>137.16</b>	<b>111.72</b>	<b>112.66</b>
Portugal: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	28 136 876	28 465 925	32 533 176	38 270 404	
Inflation %	0.5%	0.6%	1.6%	1.2%	
Inflation index (100 in 2009)	108.7	109.4	111.2	112.5	
Real terminal costs (EUR2009)	25 873 474	26 019 933	29 269 387	34 022 773	
Total terminal Service Units	205 314	232 390	258 955	275 684	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>126.02</b>	<b>111.97</b>	<b>113.03</b>	<b>123.41</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value 721 744	-1 717 453	1 161 672	3 674 699	
	in % 2.6%	-5.7%	3.7%	10.6%	
Inflation %	in p.p. -0.7 p.p.	-0.9 p.p.	0.1 p.p.	-0.4 p.p.	
Inflation index (100 in 2009)	in p.p. -1.7 p.p.	-2.7 p.p.	-2.7 p.p.	-0.4 p.p.	
Real terminal costs (EUR2009)	in value 1 061 813	-893 387	1 710 052	3 387 930	
	in % 4.3%	-3.3%	6.2%	11.1%	
Total terminal Service Units	in value 8 614	32 368	58 032	1 484	
	in % 4.4%	16.2%	28.9%	0.5%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value -0.12</b>	<b>-22.58</b>	<b>-24.14</b>	<b>11.69</b>	
	<b>in % -0.1%</b>	<b>-16.8%</b>	<b>-17.6%</b>	<b>10.5%</b>	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Portugal Terminal Charging Zone (TCZ) comprising 10 airports: Lisboa, Porto, Faro, Madeira, Porto Santo, Ponta Delgada, Santa Maria, Horta, Flores and Cascais.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (123.41 €2009) is +10.5% higher than planned in the PP (111.72 €2009). This results from the combination of slightly higher than planned TNSUs (+0.5%) and much higher than planned terminal costs in real terms (+11.1%, or +3.4 M€2009). See <b>Note 1</b> at the end of this Report.					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Portugal TCZ. The difference between actual and planned TNSUs (+0.5%) falls inside the ±2% dead band foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues (+0.2 M€2009) is therefore fully retained by the ATSP (NAV Portugal).					
According to STATFOR February 2019 <u>base</u> scenario, the TNSUs for Portugal are expected to fall inside the ±2% dead band foreseen in the traffic risk-sharing mechanism for the remainder of RP2.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are +10.6% (+3.7 M€) higher than planned. However, since the actual inflation index is slightly lower than planned (-0.4 p.p.), actual terminal costs are +11.1% (+3.4 M€2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are entirely driven by NAV Portugal. A detailed analysis at ATSP level is provided in box 12.					
Costs exempt from cost-sharing are reported for a total amount of +1.5 M€2009 corresponding to pensions. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.					



**PORTUGAL: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



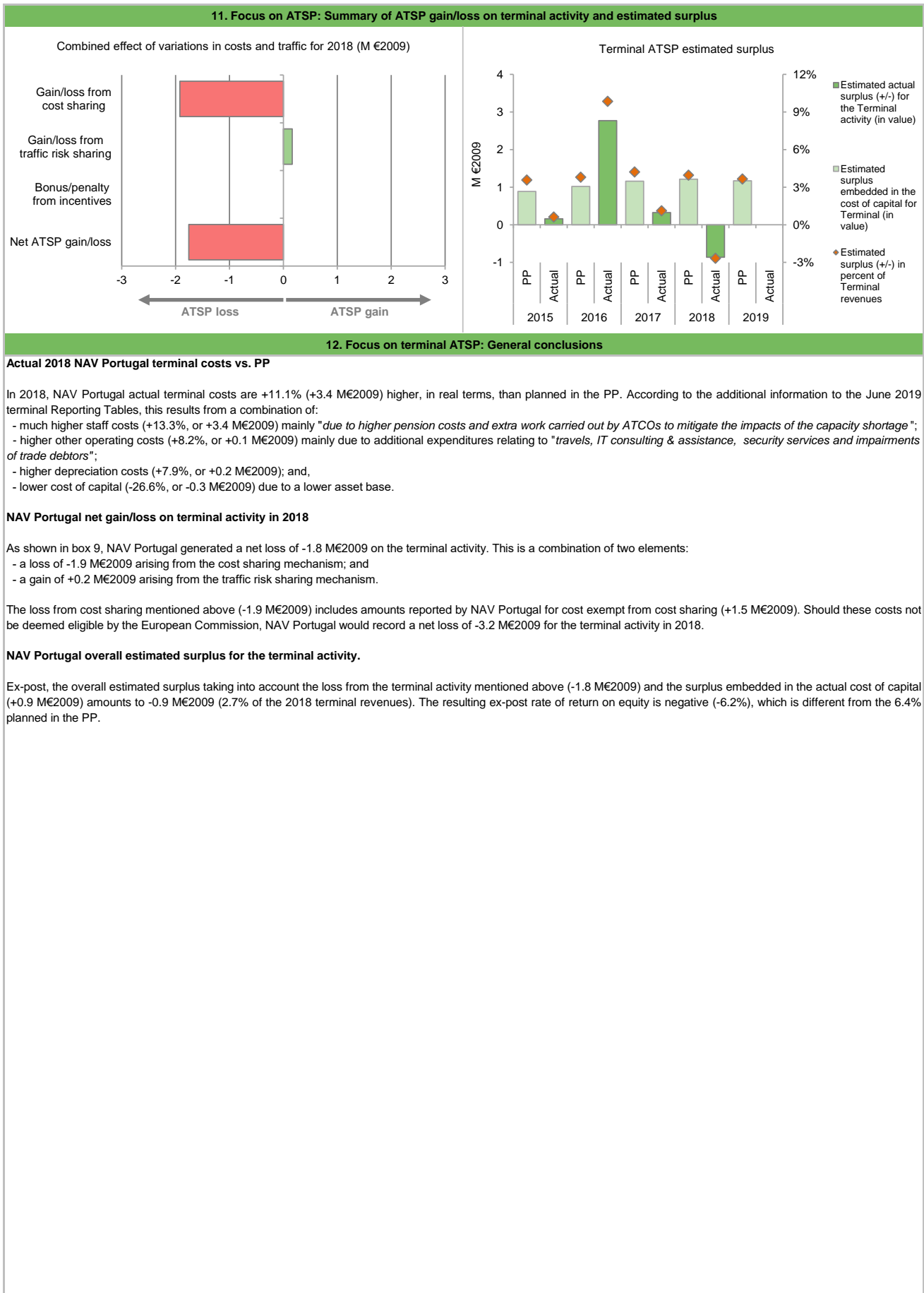
## PORTUGAL: Terminal ATSP (NAV Portugal)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	24 812	26 913	27 559	30 635	
Actual costs for the ATSP	25 873	26 020	29 269	34 023	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-1 062	893	-1 710	-3 388	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	1 467	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-1 062</b>	<b>893</b>	<b>-1 710</b>	<b>-1 921</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	4.4%	16.2%	28.9%	0.5%	
Determined costs for the ATSP (PP) - based on actual inflation	25 052	27 429	28 061	30 591	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>680</b>	<b>1 207</b>	<b>1 235</b>	<b>166</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-382</b>	<b>2 100</b>	<b>-475</b>	<b>-1 756</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	14 035	16 139	18 345	19 201	18 491
Estimated proportion of financing through equity (in %)	98.3%	98.3%	98.3%	98.3%	98.3%
Estimated proportion of financing through equity (in value)	13 791	15 858	18 026	18 867	18 170
Estimated proportion of financing through debt (in %)	1.7%	1.7%	1.7%	1.7%	1.7%
Estimated proportion of financing through debt (in value)	244	280	319	334	321
Cost of capital pre-tax (in value)	889	1 023	1 162	1 217	1 172
Average interest on debt (in %)	0.4%	0.4%	0.4%	0.4%	0.4%
Interest on debt (in value)	1	1	1	1	1
Determined RoE pre-tax rate (in %)	6.4%	6.4%	6.4%	6.4%	6.4%
Estimated surplus embedded in the cost of capital for terminal (in value)	888	1 021	1 161	1 215	1 170
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>888</b>	<b>1 021</b>	<b>1 161</b>	<b>1 215</b>	<b>1 170</b>
<b>Revenue/costs for the terminal activity</b>	<b>24 812</b>	<b>26 913</b>	<b>27 559</b>	<b>30 635</b>	<b>31 995</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>3.6%</b>	<b>3.8%</b>	<b>4.2%</b>	<b>4.0%</b>	<b>3.7%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>	<b>6.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	8 541	10 585	12 607	14 086	
Estimated proportion of financing through equity (in %)	98.3%	98.3%	98.3%	98.3%	
Estimated proportion of financing through equity (in value)	8 393	10 409	12 397	13 851	
Estimated proportion of financing through debt (in %)	1.7%	1.7%	1.7%	1.7%	
Estimated proportion of financing through debt (in value)	148	177	210	235	
Cost of capital pre-tax (in value)	541	671	799	893	
Average interest on debt (in %)	0.4%	0.4%	0.4%	0.4%	
Interest on debt (in value)	1	1	1	1	
Determined RoE pre-tax rate (in %)	6.4%	6.4%	6.4%	6.4%	
Estimated surplus embedded in the cost of capital for terminal (in value)	541	670	798	892	
Net ATSP gain(+)/loss(-) on terminal activity	-382	2 100	-475	-1 756	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>159</b>	<b>2 771</b>	<b>323</b>	<b>-864</b>	
<b>Revenue/costs for the terminal activity</b>	<b>25 492</b>	<b>28 120</b>	<b>28 794</b>	<b>32 267</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>0.6%</b>	<b>9.9%</b>	<b>1.1%</b>	<b>-2.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>1.9%</b>	<b>26.6%</b>	<b>2.6%</b>	<b>-6.2%</b>	

**PORTUGAL: Terminal ATSP (NAV Portugal)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## PORTUGAL: Gate-to-gate

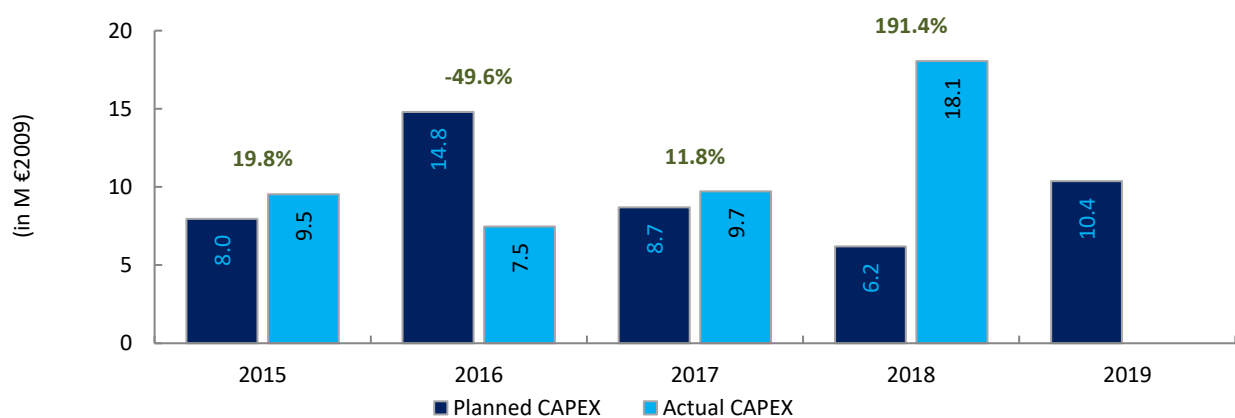
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>Portugal: Data from RP2 Performance Plan</b>																																												
	2015D	2016D	2017D	2018D	2019D																																							
Real en-route costs (EUR2009)	100 758 704	104 424 905	106 399 345	118 261 552	119 678 710																																							
Real terminal costs (EUR2009)	24 811 661	26 913 320	27 559 335	30 634 843	31 994 733																																							
Real gate-to-gate costs (EUR2009)	125 570 365	131 338 226	133 958 680	148 896 395	151 673 443																																							
En-route share (%)	80.2%	79.5%	79.4%	79.4%	78.9%																																							
<b>Portugal: Actual data from Reporting Tables</b>																																												
	2015A	2016A	2017A	2018A	2019A																																							
Real en-route costs (EUR2009)	102 048 433	102 996 411	112 065 407	125 511 103																																								
Real terminal costs (EUR2009)	25 873 474	26 019 933	29 269 387	34 022 773																																								
Real gate-to-gate costs (EUR2009)	127 921 907	129 016 344	141 334 794	159 533 876																																								
En-route share (%)	79.8%	79.8%	79.3%	78.7%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	2015	2016	2017	2018	2019																																							
Real gate-to-gate costs (EUR2009)																																												
in value	2 351 543	-2 321 882	7 376 114	10 637 481																																								
in %	1.9%	-1.8%	5.5%	7.1%																																								
En-route share																																												
in p.p.	-0.5 p.p.	0.3 p.p.	-0.1 p.p.	-0.8 p.p.																																								
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are +7.1% (+10.6 M€2009) higher than planned due to higher than planned en-route costs (+6.1%, or +7.2 M€2009) and terminal costs (+11.1%, or +3.4 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (78.7%) is slightly lower than planned in the PP for 2018 (79.4%).</p> <p>For NAV Portugal, the estimated gate-to-gate economic surplus in 2018 amounts to -3.1 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to -2.3% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>80.2%</td> <td>19.8%</td> </tr> <tr> <td>Actual</td> <td>79.8%</td> <td>20.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>79.5%</td> <td>20.5%</td> </tr> <tr> <td>Actual</td> <td>79.8%</td> <td>20.2%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>79.4%</td> <td>20.6%</td> </tr> <tr> <td>Actual</td> <td>79.3%</td> <td>20.7%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>79.4%</td> <td>20.6%</td> </tr> <tr> <td>Actual</td> <td>78.7%</td> <td>21.3%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>78.9%</td> <td>21.1%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	80.2%	19.8%	Actual	79.8%	20.2%	2016	Determined	79.5%	20.5%	Actual	79.8%	20.2%	2017	Determined	79.4%	20.6%	Actual	79.3%	20.7%	2018	Determined	79.4%	20.6%	Actual	78.7%	21.3%	2019	Determined	78.9%	21.1%	Actual		
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual																																											
<b>3. Technical notes on en-route and terminal information reported by Portugal</b>																																												
<b>Note 1:</b>																																												
<p>Portugal has revised their RP2 en-route cost-efficiency targets for the years 2018 to 2019. The figures shown in this report reflect: i) the initial adopted Performance Plan (EC Decision 2015/348 of 2 March 2015) for the years 2015 and 2017; and ii) the revised Performance Plan (EC Decision 2018/2021 of 17 December 2018) for the years 2018 to 2019. It is also noted that a similar revision was done for the terminal determined unit costs in Portugal terminal charging zone for the period 2018 to 2019.</p>																																												
<b>Note 2:</b>																																												
<p>According to the additional information to the June 2019 en-route Reporting Tables: "the incentive mechanism was triggered. However, the ANSPs made a claim based on a safeguard clause included in the description of the scheme within the SOWEPP. The application of this clause, according to the SOWEPP, requires taking a number of steps including an analysis by the NSAs and a consultation with the airspace users, among other elements. Since there has been no opportunity to take those steps prior to the 1st of June, considering that the claim of the ANSPs was received on the 24th of May, the final decision has been post-pond. However, the final result will be available to report the exact amount of the incentive by the 1st of November deadline."</p>																																												

## PORTUGAL

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: NAV Portugal (Continental)						
FAB: SW FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	8.8	16.6	9.9	7.0	11.9	54.2
Main CAPEX (in nominal M)	8.7	16.3	9.9	7.0	11.8	53.7
Inflation %	1.2%	1.5%	1.5%	1.6%	1.6%	
Inflation index (100 in 2009)	110.5	112.2	113.8	112.9	114.7	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>8.0</b>	<b>14.8</b>	<b>8.7</b>	<b>6.2</b>	<b>10.4</b>	<b>48.0</b>
Main CAPEX (in M €2009)	7.9	14.5	8.7	6.2	10.3	47.6
% Main of Total CAPEX	98.9%	98.2%	100.0%	100.0%	99.2%	99.1%
Real gate-to-gate ANSP costs (in M €2009)	109.4	114.9	117.3	131.7	134.3	607.6
Total CAPEX as % of Real gate-to-gate ANSP costs	7.3%	12.9%	7.4%	4.7%	7.7%	7.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	10.4	8.2	10.8	20.3		
Main CAPEX (in nominal M)	7.9	5.4	6.7	17.7		
Inflation %	0.5%	0.6%	1.6%	1.2%		
Inflation index (100 in 2009)	108.7	109.4	111.2	112.5		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>9.5</b>	<b>7.5</b>	<b>9.7</b>	<b>18.1</b>		
Main CAPEX (in M €2009)	7.3	4.9	6.0	15.8		
% Main of Total CAPEX	76.2%	66.1%	61.8%	87.2%		
Real gate-to-gate ANSP costs (in M €2009)	111.3	112.2	124.3	142.7		
Total CAPEX as % of Real gate-to-gate ANSP costs	8.6%	6.6%	7.8%	12.7%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	1.6	-8.4	0.9	13.3		
Total CAPEX (in M €2009)	1.6	-7.3	1.0	11.9		
<b>Total CAPEX (in %, M €2009)</b>	<b>19.8%</b>	<b>-49.6%</b>	<b>11.8%</b>	<b>191.4%</b>		



# Annual Monitoring Report 2018

## Local level view

### Spain





## SPAIN

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	64	B	C	C	C	B
ENAIRE	93	D	E	D	D	C
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
		RAT application (%)				
		ATM Ground	ATM Overall			
Separation Minima Infringements (SMIs)		100%	88%			
Runway Incursions (RIs)		100%	62%			
ATM Specific Occurrences (ATM-S)			68%			
Source of RAT data:		AESA				
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level		Number of questions answered				
		YES	NO			
Policy and its implementation		9	0			
Legal/Judiciary		6	1			
Occurrence reporting and Investigation		2	0			
<b>TOTAL</b>		<b>17</b>	<b>1</b>			
ENAIRE		Number of questions answered				
		YES	NO			
Policy and its implementation		13	0			
Legal/Judiciary		2	1			
Occurrence reporting and Investigation		6	2			
<b>TOTAL</b>		<b>21</b>	<b>3</b>			
Observations						
One (Safety Policy and Objectives) out of the four reviewed EoSM Components/areas of the State meet the 2019 EoSM target level "C".						
Out of 34 questions in Components 1-4 (not including Component - Safety Culture), three below Level C.						

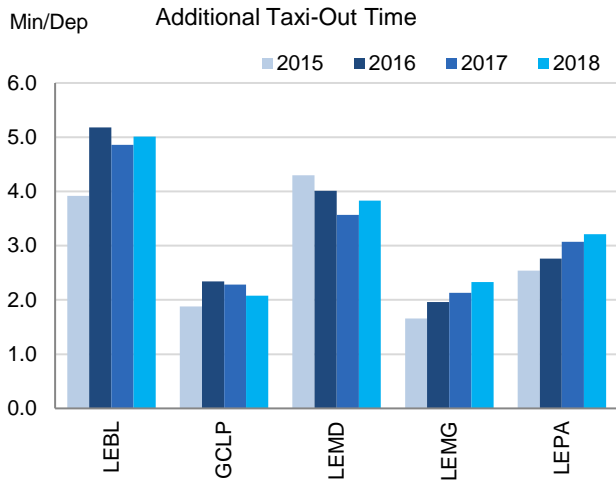
**SPAIN**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

Spain included five airports under RP2 monitoring. All of them have successfully established the airport operator data flow, allowing a correct monitoring of both environment indicators. With a total increase in traffic at these airports around 5% in 2018, traffic increase during RP2 varies from one airport to another, and while Gran Canaria has observed a 32% traffic increase with respect to 2015, Madrid has seen 12%. The environmental indicators at Spanish airports show values in line with the traffic levels at these airports, except for the additional ASMA times in Madrid which are within best-in-class for Europe. In general terms no major changes are observed with respect to last year.

**2. Additional Taxi-Out Time**

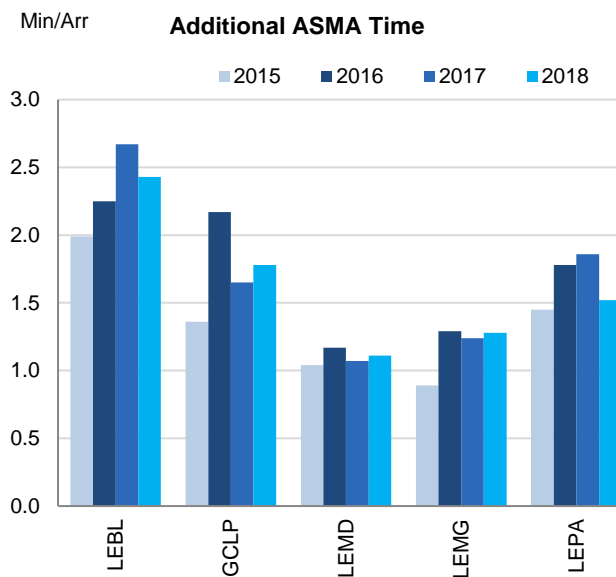


2018 actual figures show an increase in the additional taxi-out time with respect to 2017 in all Spanish airports except Gran Canaria (GCLP). The metric typically rises during high season (summer) except for Gran Canaria and Madrid that has a more stable profile. The SW FAB reports that *in some occasions a few days of specific issues can result in a significant impact on the global results, for example in Barcelona Airport storms or runway limitations.* The increase with respect to 2017 is higher in the second part of the year for Barcelona (LEBL), Malaga (LEMG) and Palma (LEPA). Madrid (LEMD; 2018: 3.83 min/dep.) has additional taxi-out times close to the SES average (3.57 min/dep.) despite being the 6th airport in terms of movements.

Madrid (LEMD; 2018: 3.83 min/dep.) has additional taxi-out times close to the SES average (3.57 min/dep.) despite being the 6th airport in terms of movements. Barcelona (LEBL; 2018: 5.01 min/dep.) has the 5th longest additional taxi-out times in the RP2 airports.

Malaga and Palma show a steady worsening during the RP2 years adding 40 seconds to the additional times in 2015.

**3. Additional ASMA Time**



2018 figures show an increase in the additional time in terminal airspace in Gran Canaria (GCLP), Madrid (LEMD) and Málaga (LEMG). The SW FAB monitoring reports highlights that the additional time in terminal area at national level has decreased by 6% in relation to the value of 2017, and it states that *this improvement is due to the following actions carried out during this period:*

- Implementation of new approach procedures at the Barcelona-El Prat Airport (April 2018), which have made it possible to streamline and optimize air traffic flow, achieving a reduction in additional time in the terminal area of 9% during 2018.
- Implementation of new approach procedures based on satellite navigation at Palma Airport (February 2018) which, together with the optimization of instrumental approach procedures at Palma de Mallorca Airport (June 2017), have led to a reduction of 18% in additional time in terminal area.

In Palma there is a clear reduction of the additional ASMA times (LEPA; 2017: 1.86 min/arr.; 2018: 1.52 min/arr.) driven by the significant improvement during the Summer, when the additional times were up to a minute lower than the previous year. In Barcelona there is also an improvement (LEBL; 2017: 2.67 min/arr.; 2018: 2.43 min/arr.), in this case driven by the difference with the performance during January and February 2017, when additional ASMA times were very high.

#### 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Barcelona	LEBL	3.92	5.18	4.86	5.01		1.99	2.25	2.67	2.43	
Gran Canaria	GCLP	1.88	2.34	2.28	2.08		1.36	2.17	1.65	1.78	
Madrid/ Barajas	LEMD	4.30	4.01	3.57	3.83		1.04	1.17	1.07	1.11	
Málaga	LEMG	1.66	1.96	2.13	2.33		0.89	1.29	1.24	1.28	
Palma de Mallorca	LEPA	2.54	2.76	3.07	3.21		1.45	1.78	1.86	1.52	

SPAIN

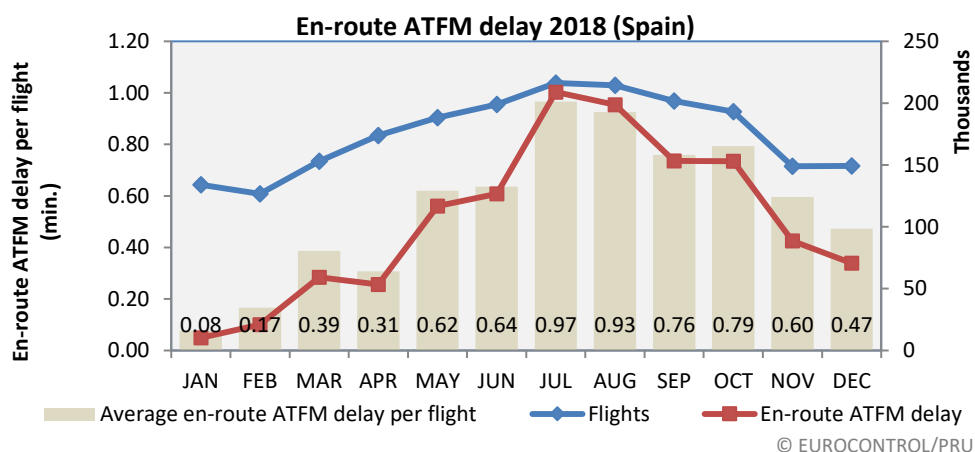
Monitoring of CAPACITY for 2018

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.30	0.29	0.28	0.27	0.27	Actual performance reported here is for all causes of delay and includes NM post operations adjustment.
Deadband +/-	0.00	0.00	0.00	0.00	0.00	
Actual performance	0.33	0.37	0.35	0.60		

National capacity incentive scheme

Not applicable: incentive scheme defined at FAB level.

Observations regarding national capacity performance



En-route ATFM delay per flight (Spain)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.57	0.78	1.93	1.56	0.48	0.41	0.30	0.33	0.37	0.35	0.60

EUROCONTROL 7 year forecast February 2014 – Spain (Continental)											
	2014		2015		2016		2017		2018		2019
	actual		actual		actual		actual		actual		
High	1577		1639		1711		1772		1842		1914
Base	1555	1587	1600	1640	1642	1766	1679	1880	1723	1970	1767
Low	1531		1556		1563		1577		1596		1615

EUROCONTROL 7 year forecast February 2014 – Spain (Canarias)											
	2014		2015		2016		2017		2018		2019
	actual		actual		actual		actual		actual		
High	315		327		337		349		362		374
Base	307	284	312	281	316	310	322	333	328	356	334
Low	298		297		312		299		300		301

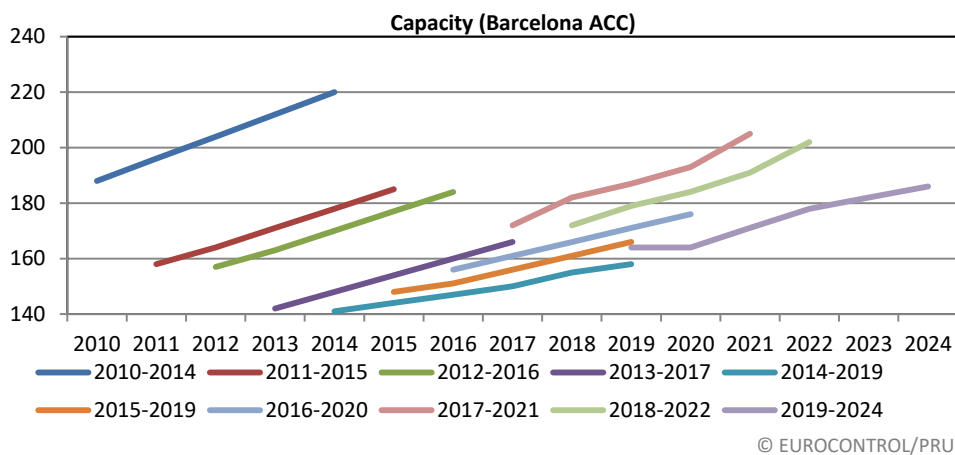
Traffic levels in Spain in 2018 rose 5% on 2017 levels (7% increase in Canarias, 5% in Spain (continental)). This traffic increase meant that Spain, for the fifth year running, handled traffic above the high traffic scenario forecasted by STATFOR back in 2014 when the FAB performance plans and associated capacity plans were being determined.

En route ATFM delays rose by 71% to 0.62 minutes per flight from 0.35 minute per flight in 2017, including 41k minutes of delay subsequently reallocated to France, in accordance with the NM post operations adjustment process, since they related to additional traffic caused by ATC strikes in France.

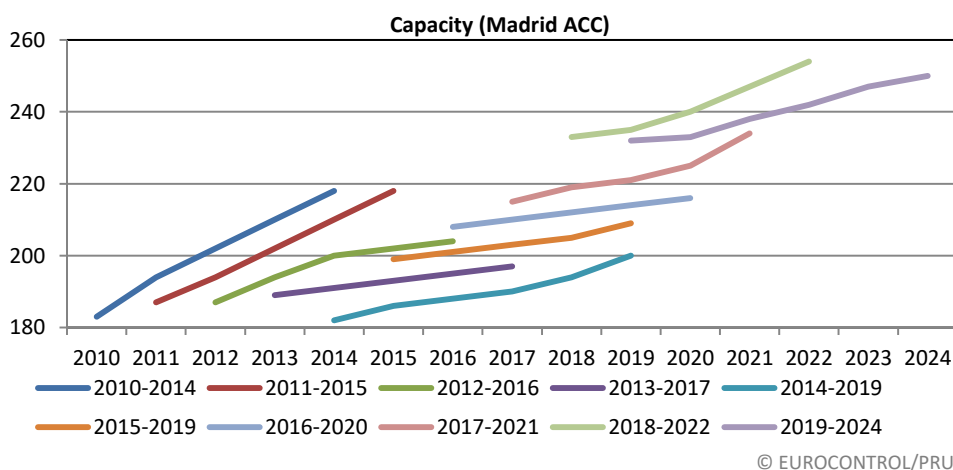
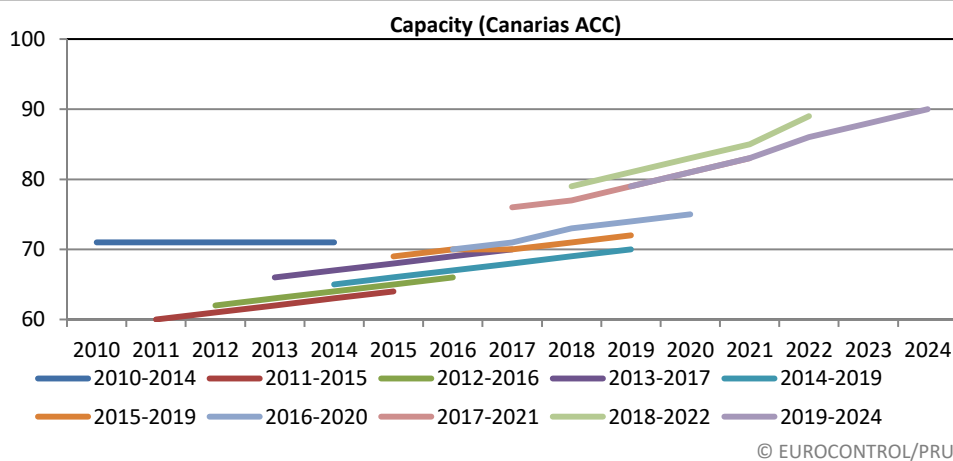
The airspace users commented that Spanish ACCs performed well in general, despite difficulties caused by other ACCs on the southwest axis. However, they also expressed concern about the pace of change in airspace design projects in Spain.

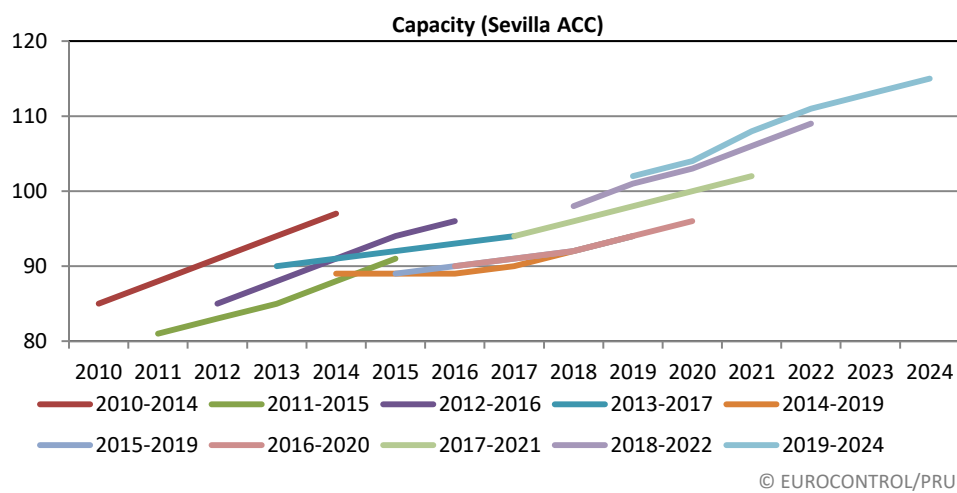
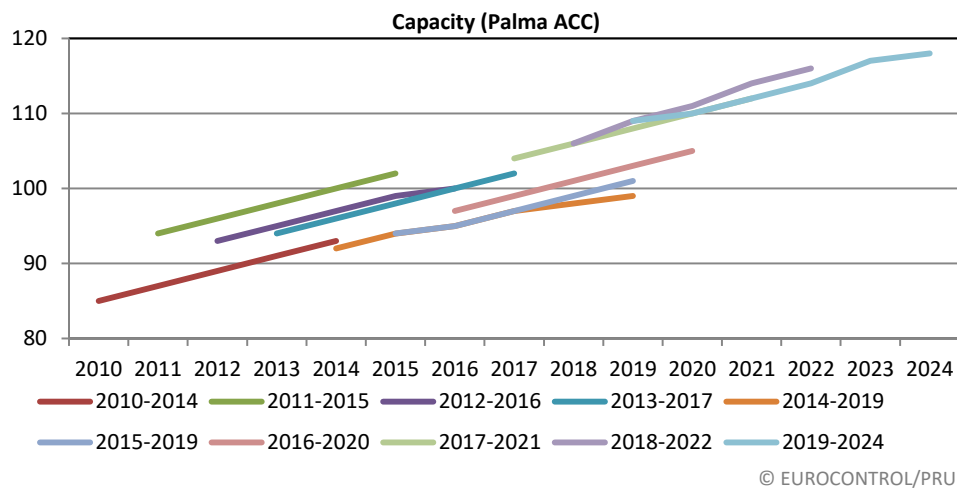
The latest version of the Network Operations Plan, 2019 – 2024, shows the current capacity plans for ACCs in Spain. In general, the Network Manager expects Spanish ACCs to provide capacity performance close to the reference values with the exception of Barcelona ACC, which is expected to generate delays at higher levels than the network capacity requirements for the remainder of RP2 and for the entirety of RP3. The Network Manager notes that the capacity plan for Barcelona ACC is between 8 – 12% lower than the capacity plans presented in NOP 2018-2022 last year. Barcelona ACC plans to deploy the same number of sector hours in 2019 as in 2018.

ENAIRE delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	<b>0.25</b>	<b>0.25</b>	<b>0.25</b>	<b>0.19</b>	N/A	N/A
<b>NOP 2019 - 2024</b>	<b>0.43</b>	<b>0.48</b>	<b>0.36 – 0.46</b>			



Barcelona ACC plans to have less capacity in 2024 than it already had planned for 2010 in the capacity plans from 2010..





**Planning and Effective Use of CDRs**

<b>Spain – Planning via CDRs</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Number of aircraft filing flight plans via CDRs		150272	130248	75404	
Number of aircraft that could have planned via CDRs		231905	230495	239207	
Rate of planning via CDRs		40%	30%	32%	

<b>Spain – Effective Use of CDRs</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Number of aircraft using CDRs		110960	114684	63968	
Number of aircraft that could have used CDRs		231905	230495	239207	
Effective Use of CDRs		30%	20%	27%	

The values calculated for the planning and use of CDRs corresponds to the average value calculated for each CDR, and not from the overall values reported above.

**Observations on Planning and Effective Use of CDRs**

Spain provides values for the rate of planning of CDRs and the effective use of CDRs with the caveat that they are not calculated on the reported figures. Therefore it is impossible to draw any conclusions from these figures.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
42%	47%	52%	50%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
N/A	1%	<1%	<1%	

Share of restricted / segregated time (via UUP process) that was actually used				
2015	2016	2017	2018	2019
N/A	N/A	71%	100%	

The co-location of civil and military operators in the Madrid ACC, Barcelona ACC, Sevilla ACC, Palma ACC and Canarias ACC Ops rooms, ensure the expeditious and efficient real-time airspace coordination. Spain also reports that the implementation of the LARA ASM tool is expected to affect this indicator.

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator.

## SPAIN

## Monitoring of Airports Contribution to CAPACITY for 2018

## 1. Overview

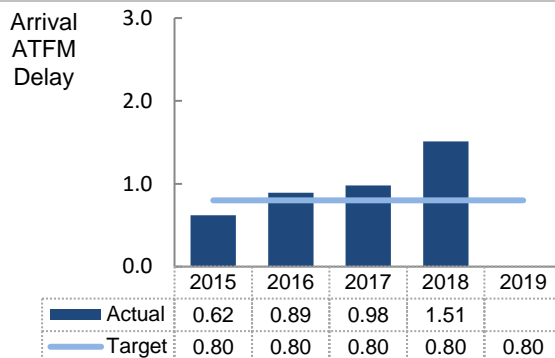
Spain identifies 5 airports as subject to RP2 monitoring, where traffic levels have significantly increased during RP2 (+18.6% with respect to 2015).

In terms of arrival ATFM delays, values are drastically higher than those in the beginning of the reference period reaching now 1.51 min/arr and subsequently exceeding the target (0.80 min/arr.) once more in 2018.

Regarding the adherence to ATFM slots, the performance has also improved in during RP2 (2015:94.5%; 2018:95.2%) and now 4 of the 5 airports surpass the mark of 95%.

The quality of the delay reporting used in the calculation of the ATC pre-departure delay has improved in general, except for Barcelona, where it is not possible to calculate the indicator due to the extensive use of ambiguity codes.

## 2. Arrival ATFM Delay



During 2018, arrival ATFM delays in Spain have significantly increased with respect to the previous year (2017: 0.98 min/arr, 2018: 1.51 min/arr)

This increase is highly driven by the drastic worsening of the delays mainly at Barcelona (LEBL: 2017:1.72 min/arr.; 2018: 2.94 min/arr.), that now has the second highest arrival ATFM delays in the SES area; and at Palma (LEPA: 2017:1.26 min/arr.; 2018: 2.12 min/arr.)

SW FAB monitoring report provides extensive information concerning these delays:

*IFR arrival movements increased in 2018 in all airports and it should be noted the great impact of the delay due to meteorological causes (+87% above 2017 result), which represented 57% of the total delay obtained in 2018.*

*- Barcelona Airport: Barcelona remains as the most constrained airport in our network. The minutes of ATFM arrival delay in 2018 were due to meteorological causes (52.9%), special event (18.2%) mainly due to the transition of BRAIN project implementation, environmental issues (15.0%) which were reduced by -7.3% compared to 2017, aerodrome Capacity (8.3%) also reduced by -34.0% compared to 2017 (until July, part of this delay was assigned to ATC Capacity reason, since August it is already properly attributed), ATC Capacity (4.4%), etc. . Weather delay increased above 99% compared to 2017, due to significant peaks in specific days (the 15 days with the highest delay represent 48% of the total annual delay due to weather conditions). It is expected to reduce the arrival delay minutes in following years by increasing arrival capacity, RNAV procedures in APP, BRAIN consolidation and reinforcement of procedures; system (SACTA) improvements (AMAN 2.0, SID assignment for use in Config East and approach tools to reduce radar separation (RECAT and TBS)).*

*- Palma de Mallorca Airport: ATFM arrival delay minutes were mainly due to Meteorological causes (75.3%), Aerodrome Capacity (14.6%), ATC Capacity (7.8%) and ATC Staffing (2.2%). Weather delay notably increased compared to 2017 (134%), due to significant peaks in specific days (the 15 days with the highest delay represent 70% of the total annual delay due to weather conditions) that were generated during summer with a traffic increase near to 5%. Delays associated to Aerodrome Capacity decreased by -36.3% compared to 2017 (until July, part of this delay was assigned to ATC Capacity reason, since August it is already properly attributed). Planned improvements for next years include a capacity increase in Final APP LEPA with RNAV1 procedures, system (SACTA) improvements (approach tools to reduce radar separation (RECAT and TBS1), AMAN 2.0 and an additional position for rolling management.*

*- Malaga Airport: The minutes of ATFM arrival delay in 2018 were mainly due to meteorological causes (69.5%), Aerodrome Capacity (16.7%), Special Event (5.4%) and ATC Capacity (3.8%). Weather delay notably increased compared to 2017 (816%), with an important peak on October 20, that represent 53% of the total annual delay due to weather conditions. Delays associated to Aerodrome Capacity decreased by -58.5% compared to 2017. Planned improvements include an APP capacity review, the implementation of new RNAV-1 procedures, system (SACTA) improvements (approach tools to reduce radar separation (RECAT and TBS) and AMAN 2.0.*



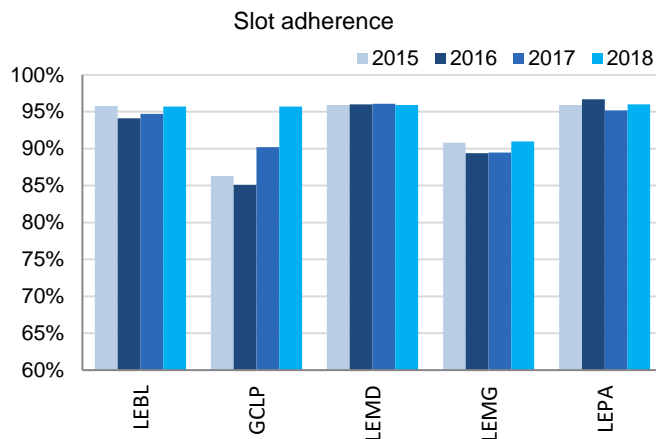
### 3. Arrival ATFM Delay – National Target and Incentive Scheme

The SW FAB performance plan sets a consistent national target on arrival ATFM delay with a breakdown per airport for each of the years of the reference period. The target is constant throughout RP2.

Given the actual performance, the national target is not met in 2018, while the local reference values are met only for Madrid and Gran Canaria.

The SW FAB performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for Spain.

### 4. ATFM Slot Adherence



Adherence to ATFM slots at LEPA, LEBL or LEMD remains of the best-in-class in Europe around 95%. Gran Canaria (GCLP) shows yet another significant improvement in 2018 and joins the best-in-class above 95% compliance. Malaga (LEMG) now reaches the 90% mark.

Taking into account the traffic at these airports, the good ATFM slot adherence in Spain has a very positive impact on the predictability of the network.

### 5. ATC Pre-departure Delay

The Airport Operator Data Flow is established for all Spanish airports subject to RP2 monitoring.

The data quality issue highlighted last year (the high share of delayed flights with no delay code attribution and/or ambiguity delay codes that was putting at risk the calculation of the ATC pre-departure delay) has been corrected in most of the Spanish airports except for Barcelona, where the indicator could not be calculated for 3 months, preventing like this the calculation of the yearly average.

According to available data, the average pre-departure delay due to capacity restrictions at the airport of departure has increased in 2018 only at Madrid, and decreased in Gran Canaria and Palma de Mallorca

*In Barcelona there are no data for the first 3 months but the rest of the year has very high values. In general, this type of delay is more significant during high season when traffic increases, however in Palma it has specifically decreased in summer months (with respect to previous year)*

### 6. Appendix

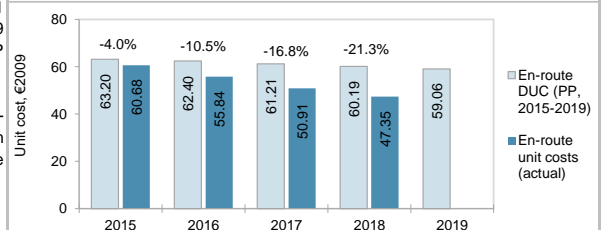
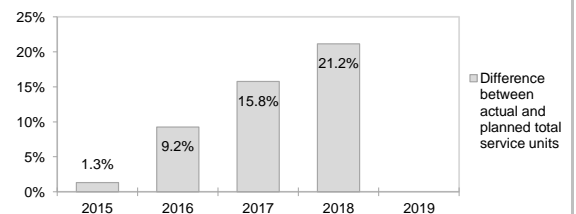
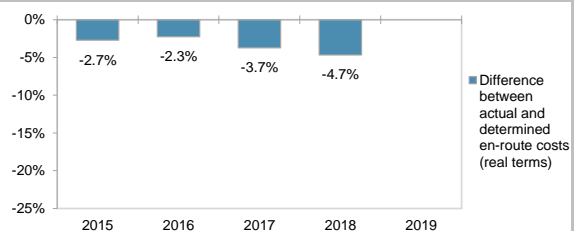
n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Barcelona	LEBL	0.68	1.62	1.72	2.94		95.8%	94.1%	94.7%	95.7%		0.50	0.73	0.79	n/a	
Gran Canaria	GCLP	0.17	0.58	0.55	0.31		86.3%	85.1%	90.2%	95.7%		0.33	0.38	0.38	0.34	
Madrid/ Barajas	LEMD	0.34	0.51	0.62	0.80		95.9%	96.0%	96.1%	95.9%		0.61	0.48	0.57	0.72	
Málaga	LEMG	0.04	0.01	0.15	0.26		90.8%	89.4%	89.5%	91.0%		0.32	0.34	0.50	0.50	
Palma de Mallorca	LEPA	1.69	1.20	1.26	2.12		95.9%	96.7%	95.2%	96.0%		0.23	0.30	0.61	0.46	

## SPAIN CONTINENTAL: En-route charging zone

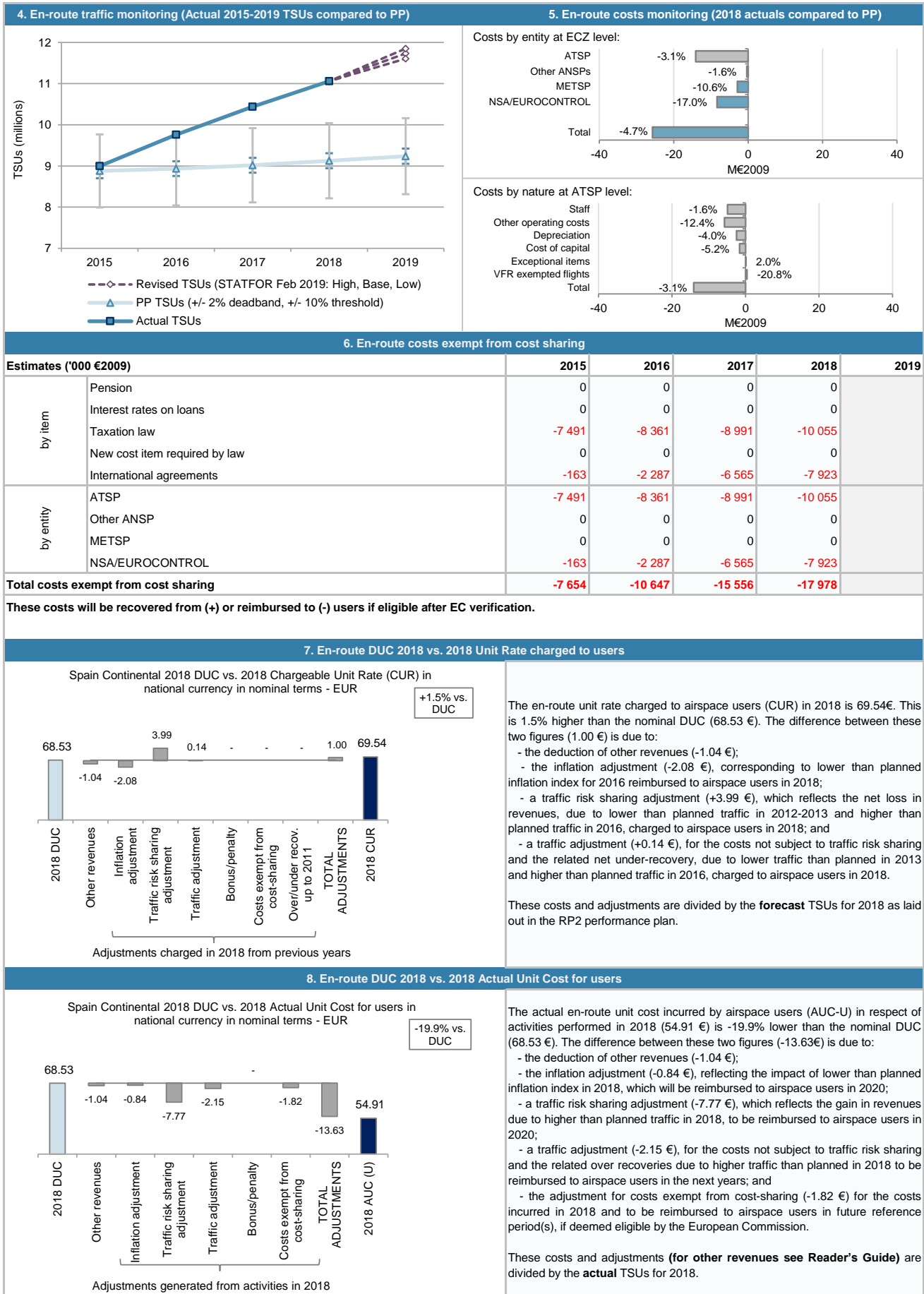
## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· Spain Continental ECZ represents 9.0% of the SES en-route ANS determined costs in 2018						
· ATSP:	ENAIRES					
· FAB:	SW FAB					
· National currency:	EUR					
2. En-route DUC monitoring at Charging Zone level						
Spain Continental: Data from RP2 PP (EC Decision 2015/348 of 2 March 2015)		2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)		620 443 569	622 072 583	622 240 962	625 580 952	627 777 294
Inflation %		0.8%	0.9%	1.0%	1.0%	1.1%
Inflation index (100 in 2009)		110.6	111.6	112.7	113.9	115.1
Real en-route costs (EUR2009)		561 172 369	557 638 172	552 025 959	549 379 889	545 563 910
Total en-route Service Units		8 880 000	8 936 000	9 018 000	9 128 000	9 238 000
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>63.20</b>	<b>62.40</b>	<b>61.21</b>	<b>60.19</b>	<b>59.06</b>
Spain Continental: Actual data from Reporting Tables		2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)		592 195 475	589 472 196	586 391 358	587 504 791	
Inflation %		-0.6%	-0.3%	2.0%	1.7%	
Inflation index (100 in 2009)		108.5	108.1	110.3	112.2	
Real en-route costs (EUR2009)		545 935 983	545 060 616	531 580 286	523 686 966	
Total en-route Service Units		8 997 417	9 761 348	10 440 757	11 058 991	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>60.68</b>	<b>55.84</b>	<b>50.91</b>	<b>47.35</b>	
Difference between Actuals and Planned		2015	2016	2017	2018	2019
En-route costs (nominal EUR)		in value -28 248 094	in value -32 600 387	in value -35 849 604	in value -38 076 161	
		in % -4.6%	in % -5.2%	in % -5.8%	in % -6.1%	
Inflation %		in p.p. -1.4 p.p.	in p.p. -1.2 p.p.	in p.p. 1.0 p.p.	in p.p. 0.7 p.p.	
Inflation index (100 in 2009)		in p.p. -2.1 p.p.	in p.p. -3.4 p.p.	in p.p. -2.4 p.p.	in p.p. -1.7 p.p.	
Real en-route costs (EUR2009)		in value -15 236 386	in value -12 577 556	in value -20 445 673	in value -25 692 923	
		in % -2.7%	in % -2.3%	in % -3.7%	in % -4.7%	
Total en-route Service Units		in value 117 417	in value 825 348	in value 1 422 757	in value 1 930 991	
		in % 1.3%	in % 9.2%	in % 15.8%	in % 21.2%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>		<b>in value -2.52</b>	<b>in value -6.56</b>	<b>in value -10.30</b>	<b>in value -12.83</b>	
		<b>in % -4.0%</b>	<b>in % -10.5%</b>	<b>in % -16.8%</b>	<b>in % -21.3%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (47.35 €2009) is -21.3% lower than planned in the PP (60.19 €2009). This results from the combination of much higher than planned TSUs (+21.2%) and lower than planned en-route costs in real terms (-4.7%, or -25.7 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+21.2%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ENAIRES) retaining an amount of +20.1 M€2009.						
According to STATFOR February 2019 base scenario, the en-route TSUs for Spain Continental are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -6.1% (-38.1 M€) lower than planned. However, since the actual inflation index is also lower than planned (-1.7 p.p.), actual en-route costs are -4.7% (-25.7 M€2009) below plans when expressed in real terms.						
The lower than planned en-route costs in real terms are driven by ENAIRES (-3.1%, or -14.1 M€2009), the other ANSPs (-1.6%, or -0.4 M€2009), the MET service provider (-10.6%, or -2.9 M€2009) and the NSA/EUROCONTROL (-17.0%, or -8.3 M€2009). A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -18.0 M€2009 comprising -10.1 M€2009 for unforeseen changes in national taxation law and -7.9 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						



SPAIN CONTINENTAL: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



## SPAIN CANARIAS: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· Spain Canarias ECZ represents 1.4% of the SES en-route ANS determined costs in 2018						
· ATSP:	ENAIRE					
· FAB:	SW FAB					
· National currency:	EUR					
2. En-route DUC monitoring at Charging Zone level						
Spain Canarias: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D	
En-route costs (nominal EUR)	98 528 223	98 750 683	99 003 882	98 495 359	98 326 935	
Inflation %	0.8%	0.9%	1.0%	1.0%	1.1%	
Inflation index (100 in 2009)	110.6	111.6	112.7	113.9	115.1	
Real en-route costs (EUR2009)	89 115 786	88 522 066	87 832 072	86 497 790	85 450 091	
Total en-route Service Units	1 531 000	1 528 000	1 531 000	1 537 000	1 543 000	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>58.21</b>	<b>57.93</b>	<b>57.37</b>	<b>56.28</b>	<b>55.38</b>	
Spain Canarias: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A	
En-route costs (nominal EUR)	98 587 390	96 004 724	92 194 141	95 754 078		
Inflation %	-0.6%	-0.3%	2.0%	1.7%		
Inflation index (100 in 2009)	108.5	108.1	110.3	112.2		
Real en-route costs (EUR2009)	90 886 212	88 771 607	83 576 586	85 352 772		
Total en-route Service Units	1 402 349	1 484 755	1 602 003	1 788 036		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>64.81</b>	<b>59.79</b>	<b>52.17</b>	<b>47.74</b>		
Difference between Actuals and Planned	2015	2016	2017	2018	2019	
En-route costs (nominal EUR)	in value	59 166	-2 745 959	-6 809 741	-2 741 282	
	in %	0.1%	-2.8%	-6.9%	-2.8%	
Inflation %	in p.p.	-1.4 p.p.	-1.2 p.p.	1.0 p.p.	0.7 p.p.	
Inflation index (100 in 2009)	in p.p.	-2.1 p.p.	-3.4 p.p.	-2.4 p.p.	-1.7 p.p.	
Real en-route costs (EUR2009)	in value	1 770 426	249 541	-4 255 486	-1 145 018	
	in %	2.0%	0.3%	-4.8%	-1.3%	
Total en-route Service Units	in value	-128 651	-43 245	71 003	251 036	
	in %	-8.4%	-2.8%	4.6%	16.3%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>6.60</b>	<b>1.86</b>	<b>-5.20</b>	<b>-8.54</b>	
	<b>in %</b>	<b>11.3%</b>	<b>3.2%</b>	<b>-9.1%</b>	<b>-15.2%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (47.74 €2009) is -15.2% lower than planned in the PP (56.28 €2009). This results from the combination of much higher than planned TSUs (+16.3%) and slightly lower than planned en-route costs in real terms (-1.3%, or -1.1 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+16.3%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ENAIRE) retaining an amount of +3.1 M€2009.						
According to STATFOR February 2019 base forecast scenario, the en-route TSUs for Spain Canarias are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are -2.8% (-2.7 M€) lower than planned. However, since the actual inflation index is also lower than planned (-1.7 p.p.), actual en-route costs are -1.3% (-1.1 M€2009) below plans when expressed in real terms.						
The slightly lower than planned en-route costs in real terms are driven by ENAIRE (-3.6%, or -2.5 M€2009) and the NSA/EUROCONTROL (-13.4%, or -0.4 M€2009), while the costs for the other ANSPs (+14.7%, or +1.3 M€2009) and the MET service provider (+8.5%, or +0.4 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of -1.1 M€2009 comprising -0.8 M€2009 for unforeseen changes in national taxation law and -0.3 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						

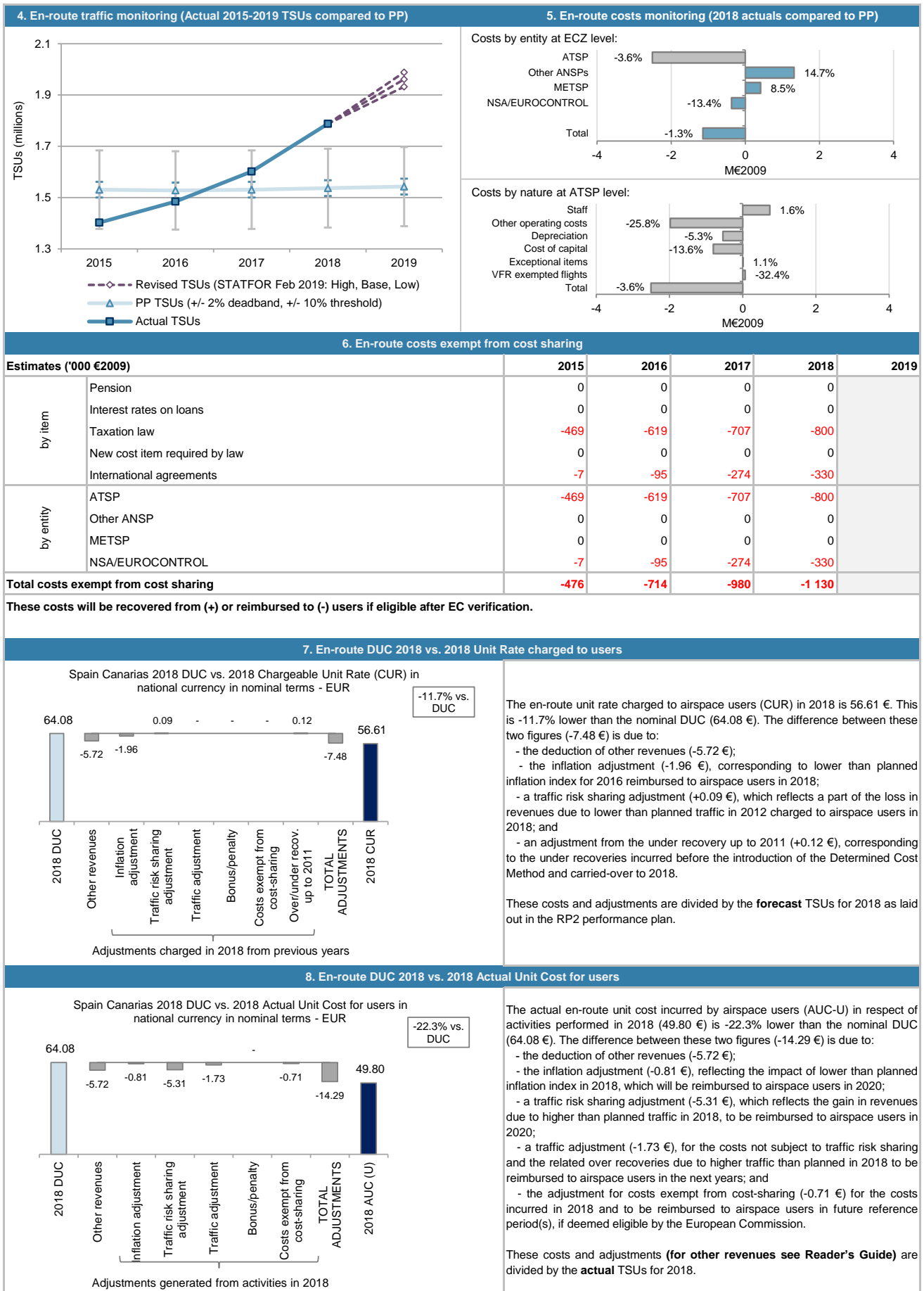
Year	Difference (%)
2015	2.0%
2016	0.3%
2017	-4.8%
2018	-1.3%

Year	Difference (%)
2015	-8.4%
2016	-2.8%
2017	4.6%
2018	16.3%

Year	En-route DUC (PP, 2015-2019)	En-route unit costs (actual)
2015	58.21	64.81
2016	57.93	59.79
2017	57.37	52.17
2018	56.28	47.74
2019	55.38	

**SPAIN CANARIAS: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



## SPAIN: En-route ATSP (ENAIRE)

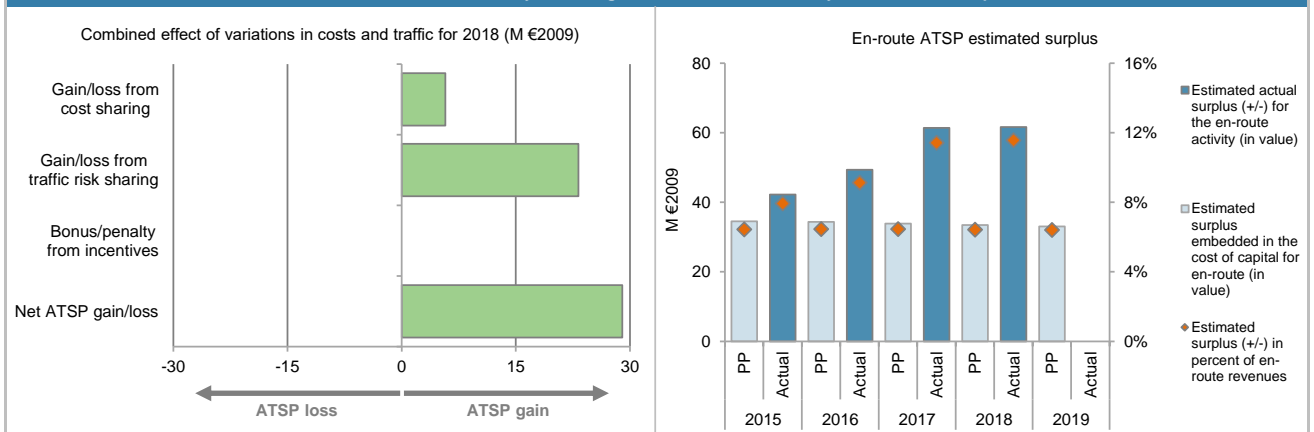
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	536 016	531 160	524 599	520 447	
Actual costs for the ATSP	525 448	524 252	509 809	503 852	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	10 568	6 908	14 789	16 596	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-7 960	-8 979	-9 698	-10 854	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>2 608</b>	<b>-2 071</b>	<b>5 091</b>	<b>5 741</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.1%	7.5%	14.2%	20.5%	
Determined costs for the ATSP (PP) - based on actual inflation	546 337	547 892	536 053	528 260	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>3 344</b>	<b>18 098</b>	<b>22 416</b>	<b>23 243</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>5 952</b>	<b>16 026</b>	<b>27 507</b>	<b>28 985</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	662 856	653 138	639 297	625 967	612 676
Estimated proportion of financing through equity (in %)	76.1%	76.9%	77.8%	78.7%	79.7%
Estimated proportion of financing through equity (in value)	504 175	502 502	497 579	492 931	488 193
Estimated proportion of financing through debt (in %)	23.9%	23.1%	22.2%	21.3%	20.3%
Estimated proportion of financing through debt (in value)	158 680	150 635	141 718	133 036	124 483
Cost of capital pre-tax (in value)	37 615	37 382	36 908	36 455	35 998
Average interest on debt (in %)	1.9%	2.0%	2.1%	2.2%	2.4%
Interest on debt (in value)	3 057	3 049	3 020	2 993	2 964
Determined RoE pre-tax rate (in %)	6.9%	6.8%	6.8%	6.8%	6.8%
Estimated surplus embedded in the cost of capital for en-route (in value)	34 559	34 333	33 887	33 462	33 033
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>34 559</b>	<b>34 333</b>	<b>33 887</b>	<b>33 462</b>	<b>33 033</b>
<b>Revenue/costs for the en-route activity</b>	<b>536 016</b>	<b>531 160</b>	<b>524 599</b>	<b>520 447</b>	<b>515 378</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.4%</b>	<b>6.5%</b>	<b>6.5%</b>	<b>6.4%</b>	<b>6.4%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.9%</b>	<b>6.8%</b>	<b>6.8%</b>	<b>6.8%</b>	<b>6.8%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	683 007	646 922	636 747	591 678	
Estimated proportion of financing through equity (in %)	77.4%	75.4%	78.2%	81.4%	
Estimated proportion of financing through equity (in value)	528 950	487 988	497 656	481 717	
Estimated proportion of financing through debt (in %)	22.6%	24.6%	21.8%	18.6%	
Estimated proportion of financing through debt (in value)	154 057	158 934	139 091	109 961	
Cost of capital pre-tax (in value)	37 613	34 589	34 945	34 060	
Average interest on debt (in %)	0.9%	0.8%	0.8%	1.2%	
Interest on debt (in value)	1 356	1 248	1 053	1 359	
Determined RoE pre-tax rate (in %)	6.9%	6.8%	6.8%	6.8%	
Estimated surplus embedded in the cost of capital for en-route (in value)	36 257	33 341	33 892	32 701	
Net ATSP gain(+)/loss(-) on en-route activity	5 952	16 026	27 507	28 985	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>42 209</b>	<b>49 368</b>	<b>61 399</b>	<b>61 686</b>	
<b>Revenue/costs for the en-route activity</b>	<b>531 400</b>	<b>540 278</b>	<b>537 316</b>	<b>532 837</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>7.9%</b>	<b>9.1%</b>	<b>11.4%</b>	<b>11.6%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>8.0%</b>	<b>10.1%</b>	<b>12.3%</b>	<b>12.8%</b>	

## SPAIN: En-route ATSP (ENAIRES)

## Monitoring of en-route COST-EFFICIENCY for 2018

## 11. Focus on ATSP: Summary of ATSP gain/loss on en-route activity and estimated surplus



## 12. Focus on en-route ATSP: General conclusions

## Actual 2017 ENAIRES en-route costs vs. PP

## SPAIN CONTINENTAL

In 2018, ENAIRES actual en-route costs for Spain Continental, in real terms, are -3.1% (-14.1 M€2009) lower than planned. Based on the June 2019 reporting tables, this difference results from the combination of:

- Lower than planned staff costs in real terms (-1.6%, or -4.9 M€2009), reported to be "partly explained by differences in staff numbers between Plan estimate and reality and besides by the necessary redistribution of ATCOs workforce due to traffic increase from control centers to airports".
  - Lower than planned other operating costs in real terms (-12.4%, or -5.7 M€2009), reported to be "mainly due to the impact of the modification in the VAT legislation that has resulted in lower costs for ENAIRES" and is reported under costs exempt from cost sharing.
  - Lower than planned depreciation costs in real terms (-4.0%, or -2.4 M€2009), reported to be partly due to "the above mentioned effect related to VAT which has also influence on actual depreciation costs".
  - Lower than planned cost of capital in real terms (-5.2%, or -1.6 M€2009), due to lower than planned actual average interest rate on debts (1.2% instead of 2.2%) and also "the above mentioned effect in VAT has also some influence on cost of capita".
- A small deviation is observed for exceptional costs (+2%, or +0.1 M€2009) reported to be due to "the IAS compliance, that will be distributed in 15 years [with effect from] 2008".

## SPAIN CANARIAS

In 2018, ENAIRES actual en-route costs for Spain Canarias, in real terms, are lower than planned (-3.6%, or -2.5 M€2009). According to the information reported in the June 2019 reporting tables, this difference results from the combination of:

- Very close to planned staff costs although slightly higher in real terms (+1.6%, or +0.7 M€2009).
  - Significantly lower than planned other operating costs in real terms (-25.8%, or -2.0 M€2009), "partly explained by the impact of the modification in the indirect taxes legislation (IGIC) that has resulted in lower costs for ENAIRES".
  - Lower than planned depreciation costs in real terms (-5.3%, or -0.5 M€2009). "In 2018 the above mentioned effect related to VAT has also some influence on actual depreciation costs."
  - Lower than planned cost of capital in real terms (-13.6%, or -0.8 M€2009), reflecting both lower than planned asset base (-12.6%, or -12.7 M€2009) and lower actual average interest on debts (1.2%, instead of 2.2%). Finally, "In 2018 the above mentioned effect in VAT has also some influence on cost of capita".
- Small deviation in real terms is observed for exceptional costs (+1.1%, or +0.01 M€2009) reported to be due to "the amount related to the IAS compliance, that will be distributed in 15 years [with effect from] 2008".

## ENAIRES net gain/loss on en-route activity in 2018

As shown in box 9, ENAIRES generated an overall net gain of +29.0 M€2009 from en-route activity in Spain Continental and Spain Canarias en-route charging zones. This is a combination of two separate elements:

- A gain of +5.7 M€2009 arising from the cost-sharing mechanism (+4.0 M€2009 gain for Spain Continental and +1.7 M€2009 gain for Spain Canarias); and,
- a gain of +23.2 M€2009 arising from the traffic risk-sharing mechanism (+20.1 M€2009 gain for Spain Continental and +3.1 M€2009 gain for Spain Canarias).

According to the additional information to the June 2019 en-route Reporting Tables the incentive mechanism was triggered, with a delay level of 0.64 minutes of en-route ATFM delay/flight in 2018 at SW FAB level. However, the application of a possible penalty is still under review by the NSA and the final result will only be available by 1st November 2019 (see also [Note 1](#)).

## ENAIRES overall estimated surplus for the en-route activity

Ex-post, the 2018 overall estimated surplus for en-route, taking into account the net gain from the en-route activity mentioned above (+29.0 M€2009) and the surplus embedded in the actual cost of capital for both Spain-Continental and Spain-Canarias en-route charging zones (+32.7 M€2009), amounts to +61.7 M€2009 (11.6% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 12.8%, which is higher than the 6.8% planned in the PP.

During the 2017 fact-verification, Spain pointed out that, as part of the State charging policy, the unit rates for Spain Canarias are artificially reduced by other revenues, recorded under item 5.4 - National public funding in the en-route reporting tables (Route Table 2 ANSP), which ENAIRES does not receive. These "revenues" (i.e. reductions of the unit rates) are therefore financed by (or reducing) the ENAIRES overall surplus for en-route.

Considering the relevant amount of these "revenues" for 2018 (5.6 M€ in nominal terms or 5.0 M€2009), the overall estimated surplus for en-route would amount to +56.7 M€2009 (10.7% of the 2018 en-route revenues) and the resulting ex-post rate of return on equity is 11.8%.



**SPAIN: Terminal charging zone**

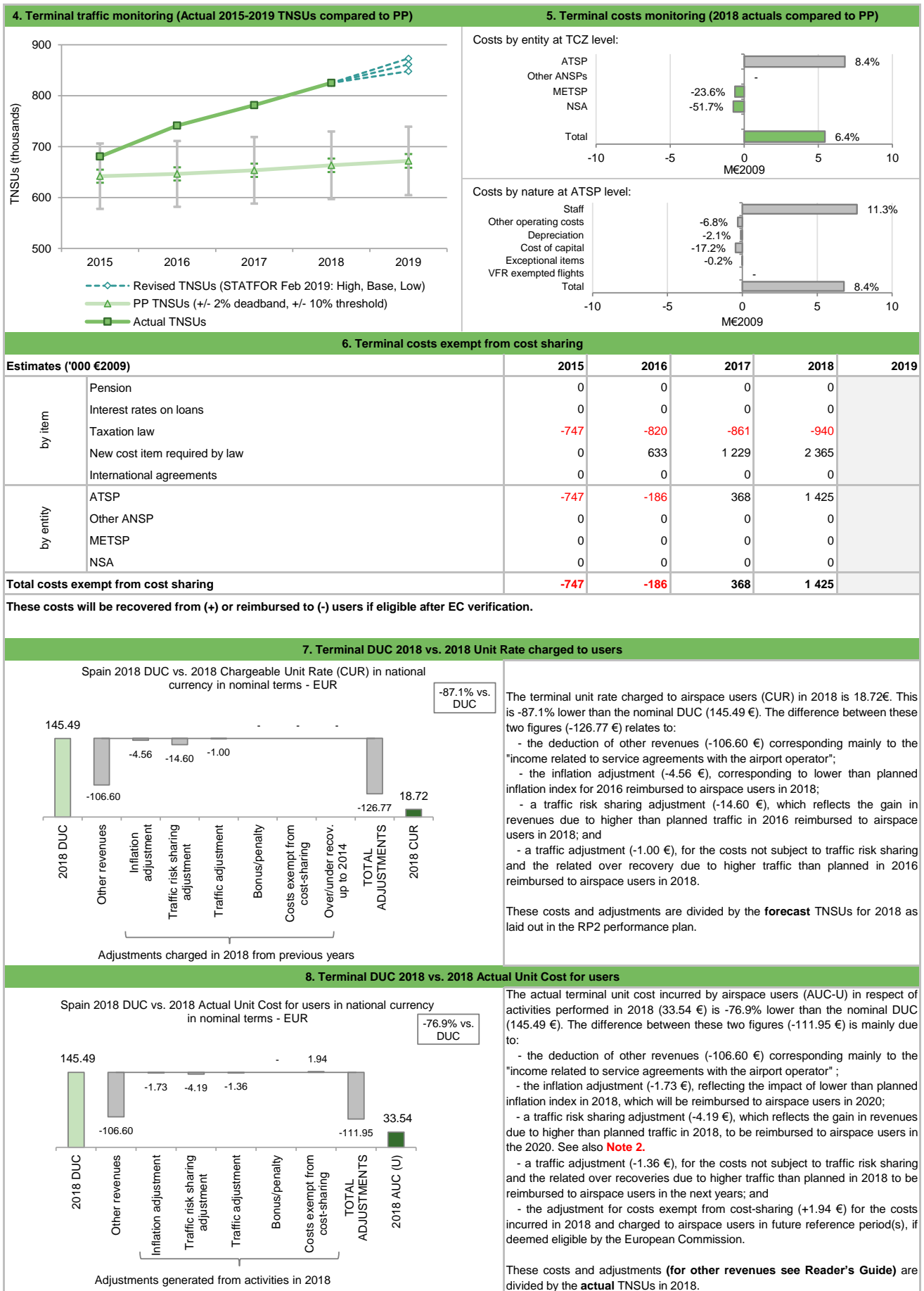
**Monitoring of terminal COST-EFFICIENCY for 2018**

1. Contextual economic information: terminal air navigation services					
· Spain TCZ represents 7.9% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes	
· ATSP: ENAIRE		· Airports with fewer than 70,000 IFRs ATMs:		0	
· National currency: EUR		· Airports with between 70,000 and 225,000 IFRs ATMs:		3	
· Number of airports in charging zone in 2018: 5, of which:		· Airports with more than 225,000 IFRs ATMs:		2	
2. Terminal DUC monitoring at Charging Zone level					
Spain: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	99 791 938	99 110 291	97 634 776	96 511 608	95 268 935
Inflation %	0.8%	0.9%	1.0%	1.0%	1.1%
Inflation index (100 in 2009)	110.6	111.6	112.7	113.9	115.1
Real terminal costs (EUR2009)	90 258 778	88 844 426	86 617 459	84 755 676	82 792 565
Total terminal Service Units	641 951	646 445	653 556	663 359	671 983
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>140.60</b>	<b>137.44</b>	<b>132.53</b>	<b>127.77</b>	<b>123.21</b>
Spain: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	104 648 408	107 715 681	100 333 656	101 185 408	
Inflation %	-0.6%	-0.3%	2.0%	1.7%	
Inflation index (100 in 2009)	108.5	108.1	110.3	112.2	
Real terminal costs (EUR2009)	96 473 772	99 600 245	90 955 285	90 194 123	
Total terminal Service Units	680 549	741 105	781 477	825 264	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>141.76</b>	<b>134.39</b>	<b>116.39</b>	<b>109.29</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	in value 4 856 470	8 605 390	2 698 879	4 673 800	
	in % 4.9%	8.7%	2.8%	4.8%	
Inflation %	in p.p. -1.4 p.p.	-1.2 p.p.	1.0 p.p.	0.7 p.p.	
Inflation index (100 in 2009)	in p.p. -2.1 p.p.	-3.4 p.p.	-2.4 p.p.	-1.7 p.p.	
Real terminal costs (EUR2009)	in value 6 214 994	10 755 819	4 337 826	5 438 447	
	in % 6.9%	12.1%	5.0%	6.4%	
Total terminal Service Units	in value 38 598	94 660	127 921	161 905	
	in % 6.0%	14.6%	19.6%	24.4%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>in value 1.16</b>	<b>-3.04</b>	<b>-16.14</b>	<b>-18.48</b>	
	<b>in % 0.8%</b>	<b>-2.2%</b>	<b>-12.2%</b>	<b>-14.5%</b>	
3. Focus on terminal at State/Charging Zone level					
<p>This analysis focuses on Spain Terminal Charging Zone (TCZ) comprising 5 airports (Barcelona, Gran Canaria, Madrid Barajas, Malaga and Palma de Mallorca), for which the traffic risk sharing applies.</p> <p><b>Terminal unit cost</b>                      In 2018, the actual terminal unit cost in real terms (109.29 €2009) is -14.5% lower than planned in the PP (127.77 €2009). This results from the combination of much higher than planned TNSUs (+24.4%) and higher than planned terminal costs in real terms (+6.4%, or +5.4 ME2009).</p> <p><b>Terminal service units</b>                      The traffic risk sharing mechanism applies in Spain TCZ. The difference between actual and planned TNSUs (+24.4%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (ENAIRE) retaining an amount of +3.6 ME2009. According to STATFOR February 2019 base forecast scenario, the TNSUs for Spain are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2 (2019).</p> <p><b>Terminal costs</b>                      In nominal terms, actual terminal costs are +4.8% (+4.7 M€) higher than planned. However, since the actual inflation is lower than planned (-1.7 p.p.), actual terminal costs are +6.4% (+5.4 ME2009) above plans when expressed in real terms. The higher than planned terminal costs in real terms are driven by ENAIRE (+8.4%, or +6.8 ME2009), while the costs for the MET service provider (-23.6%, or -0.6 ME2009) and the NSA (-51.7%, or -0.7 ME2009) are lower than planned. A detailed analysis at ATSP level is provided in box 12.</p> <p>Costs exempt from cost-sharing are reported for a total amount of +1.4 ME2009 comprising -0.9 ME2009 for unforeseen changes in national taxation law and +2.4 ME2009 for new cost item required by law. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>					



SPAIN: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018



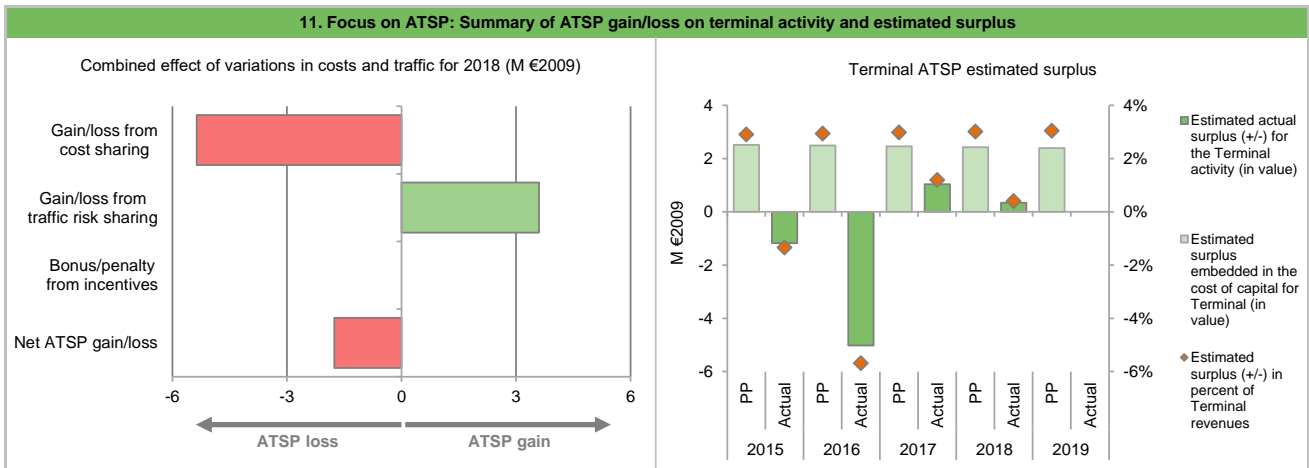
## SPAIN: Terminal ATSP (ENAIRE)

## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	86 182	84 779	82 555	80 710	
Actual costs for the ATSP	92 985	96 876	88 095	87 500	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-6 803	-12 097	-5 540	-6 790	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	-747	-186	368	1 425	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-7 551</b>	<b>-12 284</b>	<b>-5 172</b>	<b>-5 365</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	6.0%	14.6%	19.6%	24.4%	
Determined costs for the ATSP (PP) - based on actual inflation	87 841	87 449	84 358	81 921	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>2 814</b>	<b>3 848</b>	<b>3 712</b>	<b>3 605</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-4 737</b>	<b>-8 436</b>	<b>-1 460</b>	<b>-1 760</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	48 175	47 460	46 439	45 463	44 494
Estimated proportion of financing through equity (in %)	76.1%	76.9%	77.8%	78.7%	79.7%
Estimated proportion of financing through equity (in value)	36 642	36 514	36 145	35 801	35 454
Estimated proportion of financing through debt (in %)	23.9%	23.1%	22.2%	21.3%	20.3%
Estimated proportion of financing through debt (in value)	11 533	10 946	10 295	9 662	9 040
Cost of capital pre-tax (in value)	2 734	2 716	2 681	2 648	2 614
Average interest on debt (in %)	1.9%	2.0%	2.1%	2.2%	2.4%
Interest on debt (in value)	222	222	219	217	215
Determined RoE pre-tax rate (in %)	6.9%	6.8%	6.8%	6.8%	6.8%
Estimated surplus embedded in the cost of capital for terminal (in value)	2 512	2 495	2 462	2 430	2 399
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>2 512</b>	<b>2 495</b>	<b>2 462</b>	<b>2 430</b>	<b>2 399</b>
<b>Revenue/costs for the terminal activity</b>	<b>86 182</b>	<b>84 779</b>	<b>82 555</b>	<b>80 710</b>	<b>78 746</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>2.9%</b>	<b>2.9%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>3.0%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>6.9%</b>	<b>6.8%</b>	<b>6.8%</b>	<b>6.8%</b>	<b>6.8%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	67 014	66 165	46 858	38 074	
Estimated proportion of financing through equity (in %)	77.4%	75.4%	78.2%	81.4%	
Estimated proportion of financing through equity (in value)	51 898	49 910	36 622	30 998	
Estimated proportion of financing through debt (in %)	22.6%	24.6%	21.8%	18.6%	
Estimated proportion of financing through debt (in value)	15 115	16 255	10 236	7 076	
Cost of capital pre-tax (in value)	3 690	3 538	2 572	2 192	
Average interest on debt (in %)	0.9%	0.8%	0.8%	1.2%	
Interest on debt (in value)	133	128	77	87	
Determined RoE pre-tax rate (in %)	6.9%	6.8%	6.8%	6.8%	
Estimated surplus embedded in the cost of capital for terminal (in value)	3 557	3 410	2 494	2 104	
Net ATSP gain(+)/loss(-) on terminal activity	-4 737	-8 436	-1 460	-1 760	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>-1 179</b>	<b>-5 026</b>	<b>1 034</b>	<b>344</b>	
<b>Revenue/costs for the terminal activity</b>	<b>88 249</b>	<b>88 440</b>	<b>86 635</b>	<b>85 740</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>-1.3%</b>	<b>-5.7%</b>	<b>1.2%</b>	<b>0.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>-2.3%</b>	<b>-10.1%</b>	<b>2.8%</b>	<b>1.1%</b>	

**SPAIN: Terminal ATSP (ENAIRES)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 ENAIRES terminal costs vs. PP**

In 2018, ENAIRES actual terminal costs are +8.4% (+6.8 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- much higher staff costs (+11.3%, or +7.7 M€2009) "partly explained by differences in staff numbers between Plan estimate and reality and besides by the necessary redistribution of ATCOs workforce, due to traffic increase, from control centers to airports";
- lower other operating costs (-6.8%, or -0.3 M€2009) "partly due to the impact of the modification in the indirect taxes legislation that has resulted in lower costs for ENAIRES";
- slightly lower depreciation costs (-2.1%, or -0.1 M€2009) partly due to the fact that "in 2018 the above mentioned effect related to VAT has also some influence on actual depreciation costs";
- much lower cost of capital (-17.2%, or -0.5 M€2009) partly due to the fact that, "in 2018 the above mentioned effect in VAT has also some influence on cost of capital costs".
- slightly lower exceptional costs (-0.2%, or -0.001 M€2009);

**ENAIRES net gain/loss on terminal activity in 2018**

As shown in box 9, ENAIRES generated a net loss of -1.8 M€2009 on the terminal activity. This is a combination of two elements:

- a loss of -5.4 M€2009 arising from the cost sharing mechanism; and
- a gain of +3.6 M€2009 arising from the traffic risk sharing mechanism.

The loss from cost sharing mentioned above (-5.4 M€2009) includes amounts reported by ENAIRES for cost exempt from cost sharing (+1.4 M€2009). Should these costs not be deemed eligible by the European Commission, ENAIRES would record a net loss of -3.2 M€2009 for the terminal activity in 2018.

**ENAIRES overall estimated surplus for the terminal activity.**

Ex-post, the overall estimated surplus taking into account the loss from the terminal activity mentioned above (-1.8 M€2009) and the surplus embedded in the actual cost of capital (+2.1 M€2009) amounts to +0.3 M€2009 (0.4% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is 1.1%, which is much lower than the 6.8% planned in the PP.

## SPAIN: Gate-to-gate

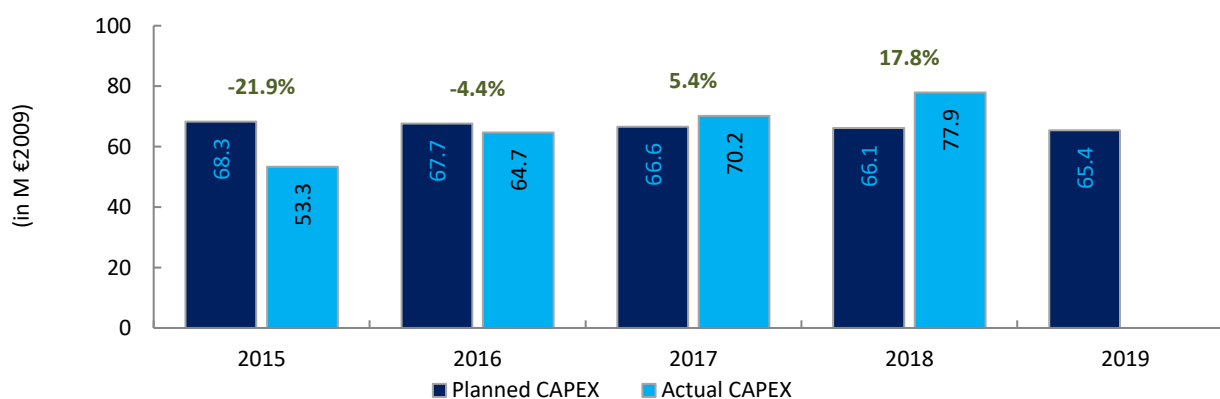
## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																																												
<b>SPAIN: Data from RP2 Performance Plan</b>																																												
	<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																																							
Real en-route costs (EUR2009)	650 288 155	646 160 238	639 858 031	635 877 678	631 014 001																																							
Real terminal costs (EUR2009)	90 258 778	88 844 426	86 617 459	84 755 676	82 792 565																																							
Real gate-to-gate costs (EUR2009)	740 546 933	735 004 664	726 475 490	720 633 354	713 806 566																																							
En-route share (%)	87.8%	87.9%	88.1%	88.2%	88.4%																																							
<b>SPAIN: Actual data from Reporting Tables</b>																																												
	<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																																							
Real en-route costs (EUR2009)	636 822 195	633 832 223	615 156 872	609 039 738																																								
Real terminal costs (EUR2009)	96 473 772	99 600 245	90 955 285	90 194 123																																								
Real gate-to-gate costs (EUR2009)	733 295 967	733 432 468	706 112 158	699 233 860																																								
En-route share (%)	86.8%	86.4%	87.1%	87.1%																																								
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>																																												
	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																																							
Real gate-to-gate costs (EUR2009)	in value	-7 250 966	-1 572 196	-20 363 332	-21 399 494																																							
	in %	-1.0%	-0.2%	-2.8%	-3.0%																																							
En-route share	in p.p.	-1.0 p.p.	-1.5 p.p.	-1.0 p.p.	-1.1%																																							
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																																												
<p>In 2018, actual gate-to-gate ANS costs are -3.0% (-21.4 M€2009) lower than planned due to lower than planned en-route costs (-4.2%, or -26.8 M€2009) for both Spain-Continental (- 25.7 M€2009) and Spain-Canarias (-1.1 M€2009) while terminal costs are higher than planned (+6.4%, or +5.4 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (87.1%) is slightly lower than planned in the PP for 2018 (86.2%).</p> <p>For ENAIRE, the estimated gate-to-gate economic surplus in 2018 amounts to 62.0 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 10.0% of gate-to-gate ANS revenues.</p>																																												
<table border="1"> <caption>Data for Figure 2: Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>87.8%</td> <td>12.2%</td> </tr> <tr> <td>Actual</td> <td>86.8%</td> <td>13.2%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>87.9%</td> <td>12.1%</td> </tr> <tr> <td>Actual</td> <td>86.4%</td> <td>13.6%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>88.1%</td> <td>11.9%</td> </tr> <tr> <td>Actual</td> <td>87.1%</td> <td>12.9%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>88.2%</td> <td>11.8%</td> </tr> <tr> <td>Actual</td> <td>87.1%</td> <td>12.9%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>88.4%</td> <td>11.6%</td> </tr> <tr> <td>Actual</td> <td>-</td> <td>-</td> </tr> </tbody> </table>						Year	Type	En-route (%)	Terminal (%)	2015	Determined	87.8%	12.2%	Actual	86.8%	13.2%	2016	Determined	87.9%	12.1%	Actual	86.4%	13.6%	2017	Determined	88.1%	11.9%	Actual	87.1%	12.9%	2018	Determined	88.2%	11.8%	Actual	87.1%	12.9%	2019	Determined	88.4%	11.6%	Actual	-	-
Year	Type	En-route (%)	Terminal (%)																																									
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	Actual	-	-																																									
<b>3. Technical notes on en-route and terminal information reported by SPAIN</b>																																												
<b>Note 1: Incentive scheme for en-route capacity</b>																																												
<p>The incentive mechanism was triggered.</p> <p>However, it is understood that the ANSPs made a claim based on a safeguard clause included in the description of the scheme within the SWPP.</p> <p>The application of this clause, according to the SWPP, requires taking a number of steps including an analysis by the NSAs and a consultation with the airspace users, among other elements. Since there has been no opportunity to take those steps prior to the 1st of June, considering that the claim of the ANSPs was received on the 24th of May, the final decision has been postponed. However, the final result should be available to report the exact amount of the incentive by the 1st of November deadline. This will have an impact on the surplus calculated in Box 10 and actual unit cost for users presented in Box 8.</p>																																												
<b>Note 2: Traffic Risk Sharing adjustment for 2018 for terminal</b>																																												
<p>Traffic Risk Sharing adjustment, i.e. additional revenues due to higher than planned traffic in 2018 (to be reimbursed to airspace users in 2020), has been calculated only for a portion of 2018 terminal determined costs (18.8%), which according to Spain represents the final approach costs that are charged to airspace users (and are not financed through the income related to the service agreement with the airport operator).</p>																																												

## SPAIN

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: ENAIRE						
FAB: SW FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	75.5	75.5	75.1	75.3	75.2	376.6
Main CAPEX (in nominal M)	49.8	49.8	49.6	50.0	50.0	249.2
Inflation %	0.8%	0.9%	1.0%	1.0%	1.1%	
Inflation index (100 in 2009)	110.6	111.6	112.7	113.9	115.1	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>68.3</b>	<b>67.7</b>	<b>66.6</b>	<b>66.1</b>	<b>65.4</b>	<b>334.1</b>
Main CAPEX (in M €2009)	45.0	44.6	44.0	43.9	43.5	221.0
% Main of Total CAPEX	65.9%	66.0%	66.1%	66.3%	66.5%	66.1%
Real gate-to-gate ANSP costs (in M €2009)	622.2	615.9	607.2	601.2	594.1	3 040.6
Total CAPEX as % of Real gate-to-gate ANSP costs	11.0%	11.0%	11.0%	11.0%	11.0%	11.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	57.9	69.9	77.4	87.4		
Main CAPEX (in nominal M)	37.2	45.4	52.5	58.1		
Inflation %	-0.6%	-0.3%	2.0%	1.7%		
Inflation index (100 in 2009)	108.5	108.1	110.3	112.2		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>53.3</b>	<b>64.7</b>	<b>70.2</b>	<b>77.9</b>		
Main CAPEX (in M €2009)	34.3	41.9	47.6	51.8		
% Main of Total CAPEX	64.3%	64.9%	67.8%	66.5%		
Real gate-to-gate ANSP costs (in M €2009)	618.4	621.1	597.9	591.4		
Total CAPEX as % of Real gate-to-gate ANSP costs	8.6%	10.4%	11.7%	13.2%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-17.7	-5.5	2.4	12.1		
Total CAPEX (in M €2009)	-15.0	-3.0	3.6	11.8		
<b>Total CAPEX (in %, M €2009)</b>	<b>-21.9%</b>	<b>-4.4%</b>	<b>5.4%</b>	<b>17.8%</b>		



Note: According to Spain, the CAPEX results from 2016 onwards are accounted without taxes, as a consequence of the application of a Regulation from the Spanish State. In order to obtain a correct comparison between results and planned figures, it is necessary to use the Performance Plan investment figures without taxes, which is 63.4 M€ (nominal terms) in 2018 (instead of 75.3 M€ with taxes). This shows that actual result in nominal terms (87.4 M€) is higher than planned by +24.0 M€ instead of +12.1 M€.

In the period 2015-2018, the real investment has been 10% above the planned one (taking into account the figures without taxes for 2016, 2017 and 2018).



# **Annual Monitoring Report 2018**

Local level view  
UK IRELAND FAB





## UK-IRELAND FAB

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management							
			2015 Value	2016 Value	2017 Value	2018 Value	2019 Target
Union-wide targets	at State level	For all MOs					C
	at ANSP level	For Safety Culture MO					C
		For all other MOs					D
FAB level	States / Regulatory authorities	For all MOs	B	B	B	C	
	ANSPs	For Safety Culture MO	D	D	D	D	
	ANSPs	For all other MOs	C	D	D	D	
Application of the severity classification of the Risk Analysis Tool (RAT)							
Ground Score			2015 Value	2016 Value	2017 Target	2018 Value	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%		100%
	Runway Incursions (RIs)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	100%	100%	
	Runway Incursions (RIs)		100%	100%	100%	100%	
Overall Score			2015 Value	2016 Value	2017 Target	2018 Target	2019 Target
Union-wide targets	Separation Minima Infringements (SMIs)				>= 80%	>= 80%	>= 80%
	Runway Incursions (RIs)				>= 80%	>= 80%	>= 80%
	ATM Specific occurrences (ATM-S)				>= 80%		100%
FAB level	Separation Minima Infringements (SMIs)		100%	100%	100%	100%	
	Runway Incursions (RIs)		100%	100%	100%	100%	
	ATM Specific occurrences (ATM-S)		100%	100%	100%	100%	

Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)

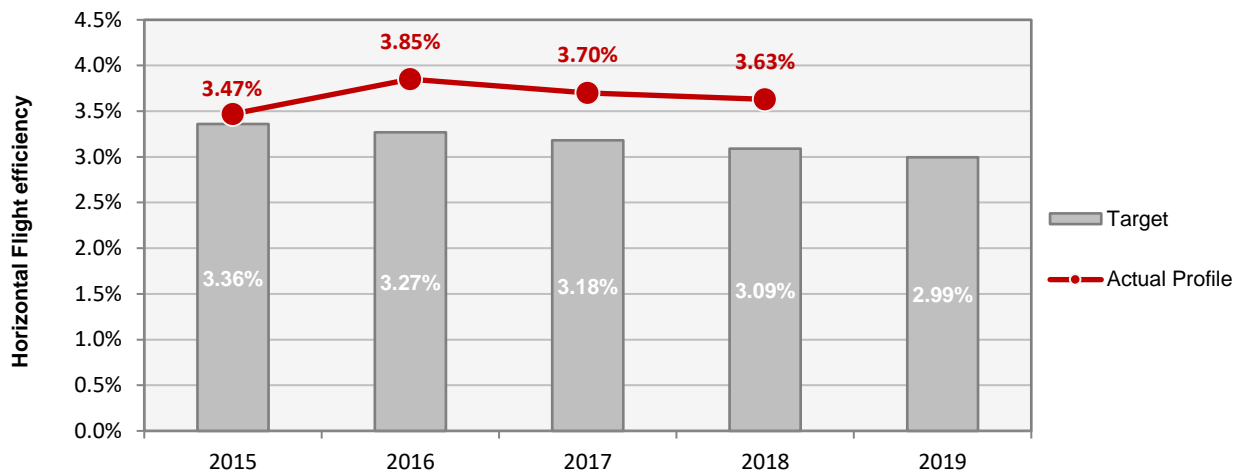
#### Observations

The lowest level in each EoSM Components/areas of the States is Level "C" which is at the 2019 EoSM target level. All components have, therefore, achieve the target level

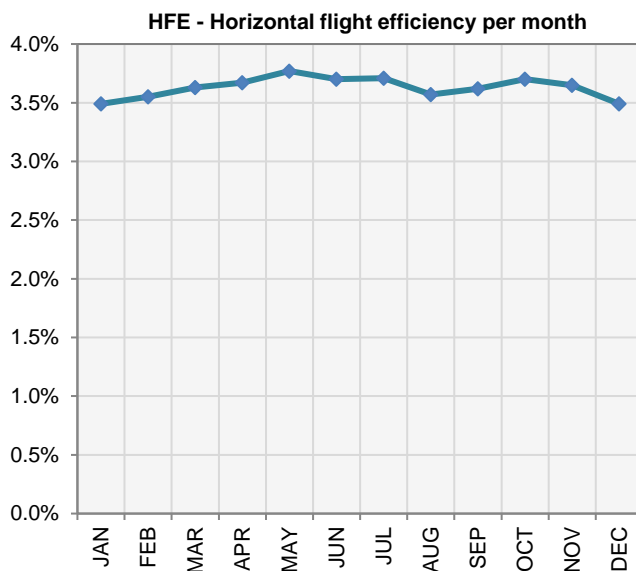
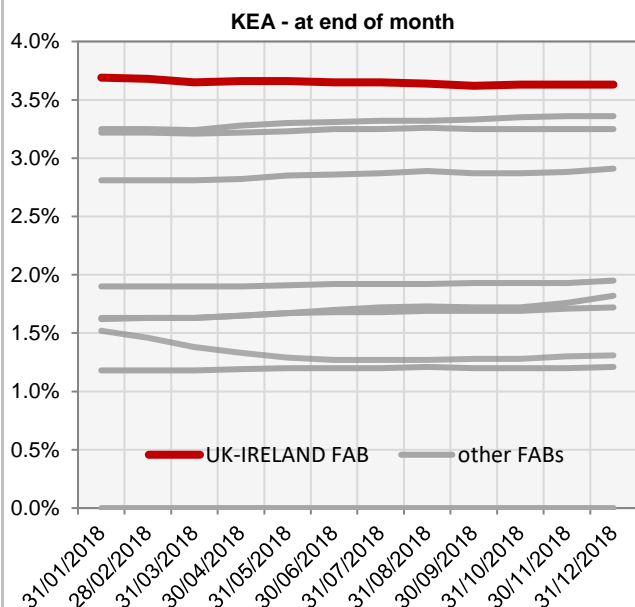
UK-IRELAND FAB

Monitoring of ENVIRONMENT for 2018

KEA					
	2015	2016	2017	2018	2019
FAB Target	3.36%	3.27%	3.18%	3.09%	2.99%
Actual performance	3.47%	3.85%	3.70%	3.63%	



Monthly KEA and HFE evolution in 2018												
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
KEA (at end of month)	3.69%	3.68%	3.65%	3.66%	3.66%	3.65%	3.65%	3.64%	3.62%	3.63%	3.63%	3.63%
HFE	3.49%	3.55%	3.63%	3.67%	3.77%	3.70%	3.71%	3.57%	3.62%	3.70%	3.65%	3.49%



HFE refers to the ratio of flown distance and achieved distance over all (portions of) trajectories in the month, while KEA is the ratio over a one year rolling window, excluding the ten best and ten worst days. The rolling window stops at the last day of the month.

**UK-IRELAND FAB****Monitoring of ENVIRONMENT for 2018****Corrective measures applied, as reported by the FAB**

Given the broader approach to environmental efficiency taken by the UK - covering both horizontal and vertical, and terminal and en route - the UK has applied financial incentives to the 3Di measure of flight efficiency. NERL's performance in 2018 remains within the deadband.

Given the broader approach to environmental efficiency taken by the UK - covering both horizontal and vertical, and terminal and en route - the UK has applied financial incentives to the 3Di measure of flight efficiency. We have therefore not proposed any specific corrective measures in respect of KEA. It is noted that NERL 3Di performance in 2018 remains within the deadband.

**Observations****NM evaluation:**

There are no major projects that will lead to the achievement of the network RP2 target.

**NM proposed measures:**

Cross-border FRA projects implementation must be considered for the entire UK/IE FAB.

In addition to consider cross-border operations with neighbouring FABs (FABEC, DK/SWE FAB and NEFAB).

The BOREALIS project will fully deliver after RP2.

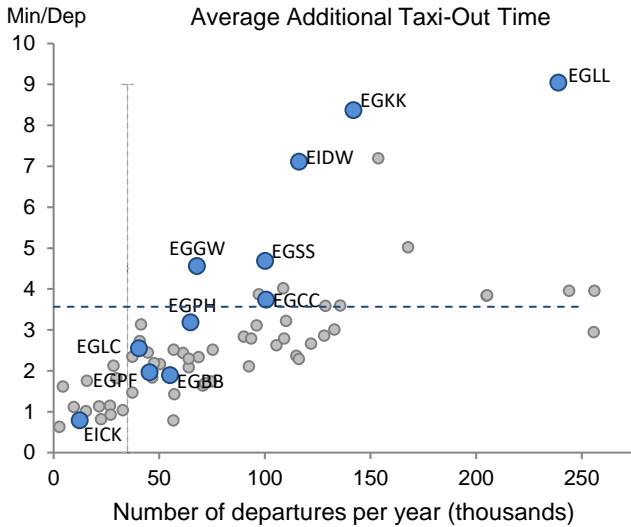
UK-IRELAND FAB

Monitoring of Airports Contribution to ENVIRONMENT for 2018

1. Overview

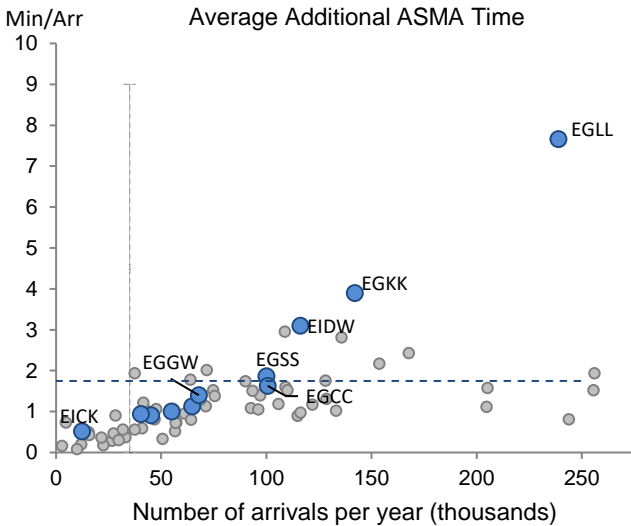
UK-Ireland FAB identifies 12 airports as subject to RP2 monitoring. Most of them have correctly established the Airport Data Flow, and only Shannon (EINN) is not providing the required data yet. While the high level of capacity utilisation at some of these airports is recognised, the level of inefficiencies across UK-Ireland FAB negatively impacts the ANS contribution to the KPA Environment.

2. Additional Taxi-Out Time



In general the airports in the UK-Ireland FAB sit in the higher part of the scatter plot that relate the performance regarding additional taxi-out time to the traffic levels for all airports in RP2. Heathrow, Gatwick and Dublin show additional taxi-times that almost double the values of other airports in the network.

3. Additional ASMA Time



Regarding additional time in terminal airspace, the airports within UK-Ireland FAB show a performance commensurate with their levels of traffic with the exception of London Gatwick (EGKK), London Heathrow (EGLL) and to some extent Dublin (EIDW). Additional ASMA time at Heathrow is more than 4 times the RP2 average (1.75 min/arr.).

## UK-IRELAND FAB

## Monitoring of CAPACITY for 2018

Minutes of ATFM en-route delay						
	2015	2016	2017	2018	2019	Observations
FAB Reference Value	0.25	0.26	0.26	0.26	0.26	
FAB Target	0.25	0.26	0.26	0.26	0.26	
Actual performance	0.08	0.30	0.16	0.28		

## UK-IRL FAB assessment of capacity performance

## Ireland

The average en-route delay per flight in Ireland was 0.00.

## UK

For all en-route delay causes (C1), 37% was due to ATC Capacity, 28% was due to Special Event, 26% was due to Weather, 8% was due to ATC Staffing and the remaining delay was due to the remaining en-route causes.

A proportion of the Special Event delay regulation was applied as a result of the ExCDS transitions (TLOS 2-5). While the overall actual outturn delay for ExCDS transitions was less than expected, TLOS 5 incurred more delay than anticipated as it took place during summer. The impact of regulating during summer had a higher impact on the resulting delay than at other times of the year.

Compared to 2017, the delays experienced during 2018 due to all en route causes was 75% greater than the previous year. ATC Capacity delays increased by 68%, Weather delays increased by 25% and ATC Staffing delays decreased by 26%. The CAA and NERL are continuing to work together to understand the causes and possible mitigating actions regarding the increase in delay, especially in regards to ATC Capacity delays.

## Monitoring process for capacity performance

NSAs monitor ANSP capacity performance on a quarterly basis.

NERL is required under its licence to provide the CAA with an operational report on a quarterly basis, setting out its performance. The CAA uses this report, along with the Service and Investment Plan (submitted on a twice yearly basis) and the Annual Business Report (submitted once a year), to monitor NERL's capacity performance across the year and remain aware if there are any performance issues that may mean the targets may risk not being met.

Actual performance is validated through the PRU dashboard and ANSP engagement with the Network Manager. We note the delay allocation procedure that has been implemented by the Network Manager to consider cases where delay may have been misallocated, and which appears to have stakeholder support.

## Application of Corrective Measures for Capacity

## Ireland

No corrective measures have been required.

## UK

NERL has incurred a penalty of £264,109 for its 2018 capacity performance (against the C2 metric). This will be reflected in an adjustment to the 2020 unit rate.

## Capacity Planning

UK Ireland FAB capacity reference values are based on the capacity plans of the ANSPs. Those reference values have been adopted as the UK-Ireland FAB targets, meaning that capacity planning and performance values are consistent.

## Assessment of capacity performance

Following a good en route capacity performance in 2017, UK IRL FAB did not achieve the required level of en route capacity performance to be consistent with the union-wide target of 0.5 minutes average ATFM delay per flight. The UK IRL FAB target was 0.26 minutes per flight, whereas the actual result was 0.28 minutes for all causes of delay.

Traffic levels increased by less than 1% and, as for four out of the last five years, remain above the high traffic scenario forecasted by STATFOR in 2014 when the FAB performance plans and associated capacity plans were being developed.

EUROCONTROL 7 year forecast February 2014 – UK IRL FAB											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
<b>High</b>	2298		2362		2439		2502		2573		2645
<b>Base</b>	2275	<b>2299</b>	2327	<b>2358</b>	2373	<b>2488</b>	2410	<b>2576</b>	2454	<b>2596</b>	2500
<b>Low</b>	2250		2279		2296		2311		2331		2351

The latest version of the Network Operations Plan 2019 – 2024 contains a prediction of the expected delays for UK IRL FAB for the remainder of RP2 and for RP3. The Network Manager expects UK IRL FAB to provide sufficient capacity to contribute to the union-wide target for the remainder of RP2 and for the entirety of RP3.

UK IRL FAB delay forecast							
		2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>		<b>0.16</b>	<b>0.16</b>	<b>0.13</b>	<b>0.12</b>	N/A	N/A
<b>NOP 2019 - 2024</b>		<b>0.14</b>	<b>0.21</b>	<b>0.15 – 0.23</b>			

### En route Capacity Incentive Scheme

The UK Ireland FAB applied a common FAB wide en route capacity incentive scheme (C2), described in Chapter 4 of the UK Ireland FAB performance plan, submitted in July 2015.

The UK has implemented further incentive schemes for NATS related to en route capacity (C3 & C4). These are described in Chapter 4 of the UK Ireland FAB performance plan for RP2, submitted in June 2014. The results of these additional incentive schemes are presented in the UK specific section following.

### Result of FAB Capacity Incentive Scheme

The incentive mechanism provided that no bonus will be payable to either NERL or the IAA for a relevant year unless the FAB target for that year has been met and similarly no penalty will be payable unless the FAB target for that year has been missed. Based on 2018 actuals no FAB bonus or penalty is payable for this year.

#### Ireland

2018 performance was 0.0 mins/flight. Overall FAB performance does not allow for a bonus to be granted for 2018.

#### UK

2018 C2 target 0.18 mins/flight.

2018 C2 performance was 0.208 mins/flight. C2 penalty for 2018 is 0.04% (£264,109) of ANSP en route revenue, out of a possible maximum penalty of 0.25% of ANSP en route revenue

### Update on Military dimension of the plan

No new information was provided on how civil military coordination and cooperation is expected to provide additional capacity for general air traffic.

### Observations on Military dimension of the plan

Nil

### Application of FUA

#### UK

The UK applies the FUA concept through a Joint and Integrated (J&I) (civil/military) infrastructure across all levels of Airspace Management (ASM), from governance to post operational analysis. At the strategic level the FUA concept and regulations are incorporated into UK ASM policy (CAP 740) that has been developed and administered by the CAA with input from the MoD and NERL. In 2018 this policy was updated to formally set out the governance and obligations of the J&I concept within this policy. The nature of the J&I's collaborative approach enables the needs of all airspace users to be considered across all levels of ASM promoting efficient airspace use. In line with this approach, regulatory oversight of UK ASM is conducted by civil and military employees within the CAA, focusing on Strategic ASM management. At the pre-tactical level this approach is replicated within the Airspace Management Cell (AMC). The cell includes both a civilian and military airspace manager, who combined are responsible for the pre-tactical coordination and management of UK airspace. To enable this the AMC are authorised to make decisions on the daily airspace configuration, utilising a collaborative decision-making process considering individual user airspace requirements. In the event that a satisfactory resolution cannot be achieved at the pre-tactical level the decision is referred to the CAA. The tactical application of ASM is conducted in real-time between civil and military Air Traffic Management and Battlespace Management supervisors. Changes to the real-time airspace configuration are then promulgated by the AMC, enabling the AMC to consider if the change should be managed in the pre-tactical phase of ASM. Post operational use of AMC Managed Areas (AMAs) is monitored monthly by the AMC to establish how the airspace was utilised; supporting analysis of pre-tactical and tactical ASM efficiency. These figures are then reviewed by the CAA from a strategic perspective to drive continuous improvement in the overarching application of the FUA concept. Noting the drive for greater efficiency 2018 saw the continued expansion of use of the ASM tool LARA, enhancing both pre-tactical and tactical decision making. As advised within last year's report, 2018 also saw the conclusion of trial activity; the result of which supported the continued expansion of LARA connectivity to both the Irish Aviation Authority and selected remote UK Danger Areas, this expansion is expected to be completed by the end of 2019. Significantly during 2018 an overarching Airspace Modernisation Strategy (CAP1711) was released with the intent on setting out a coordinated UK Airspace Modernisation policy. This policy set out a road map, detailing the Ends, Ways and Means of achieving its goals by 2024. At the heart of this strategy is effective ASM and the application of the FUA concept utilising the J&I approach. At the FAB level, the UK and Ireland established an ASM Operations Group (FAB ASM OG) in 2015 which reports to the State High Level Airspace Policy Body (HLAPB). This enables cross border ASM initiatives to be agreed and developed as well as being a forum to resolve issues at the operational level.

### Observations of the Application of FUA

The PRB notes the updated information from the UK on how the UK and the UK IRL FAB consider the needs of both civil and military airspace users in managing their airspace.

**UK-IRELAND FAB**

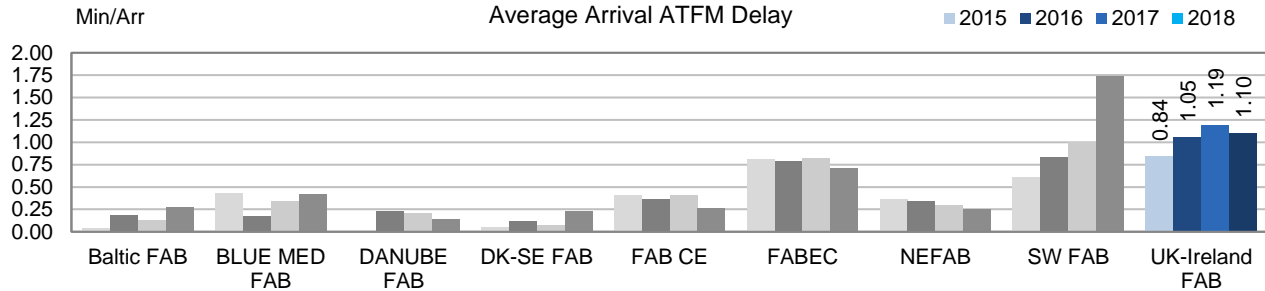
**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

Average arrival ATFM delays at UK-Ireland FAB have slightly improved in 2018 but still exceed the European average of 0.78 min/arr.

Next to FABEC and SW FAB, UK-Ireland FAB performance influences the European average significantly, representing more than 15% of all arrival ATFM delay in the SES area in line with its traffic share.

**2. Arrival ATFM Delay**



Across Europe, UK-Ireland FAB achieves the second worst performance in terms of arrival ATFM delay (i.e. 1.10 min/arr.) after SW FAB, although there has been a slight improvement with respect to 2017. The performance is highly driven by London airports, with Heathrow and Gatwick in the top 5 most contributing airports to total arrival ATFM delays in the SES area.

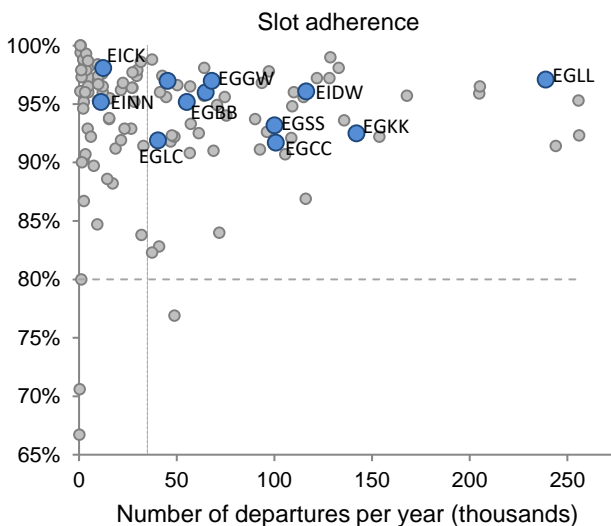
**3. Arrival ATFM Delay – National Targets and Incentive Schemes**

The UK-Ireland FAB performance plan establishes a national target on arrival ATFM delay for the United Kingdom and Ireland. The targets are consistent with the observed historic performance/performance at the beginning of the reference period. The United Kingdom established a stepwise decreasing target to induce high performance vis-à-vis the expected traffic growth. Ireland works with a stepwise increasing target to balance limitations due to the absence of airport infrastructure related enhancements with the expected traffic growth.

In 2018 both United Kingdom and Ireland miss their targets on arrival ATFM delay.

The UK-Ireland FAB performance plan presents no incentive scheme for the national target on arrival ATFM delay.

**4. ATFM Slot Adherence**



Airports in the UK-Ireland FAB show very good performance regarding the adherence to ATFM slots, with values above 90% compliance. 8 of the 12 airports in UK-Ireland FAB show best-in-class adherence above the 95% mark.

**5. ATC Pre-departure Delay**

The Airport Operator Data Flow is implemented at 11 of the 12 airports subject to RP2 monitoring in the UK-Ireland FAB. However the number of delayed flights with no attributed delay causes, and/or the use of ambiguity codes vary widely. Accordingly in some cases the indicator is not representative and is disregarded (i.e. n/a label in the table in the appendix).



# Annual Monitoring Report 2018

## Local level view

### Ireland



## IRELAND

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	86	C	D	D	C	C
IAA	92	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
				RAT application (%)		
				ATM Ground	ATM Overall	
Separation Minima Infringements (SMIs)				100%	100%	
Runway Incursions (RIs)				n/a	100%	
ATM Specific Occurrences (ATM-S)					100%	
<b>Source of RAT data:</b>				IAA		
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
<b>State level</b>				Number of questions answered		
				YES	NO	
Policy and its implementation				9	0	
Legal/Judiciary				7	0	
Occurrence reporting and Investigation				2	0	
<b>TOTAL</b>				<b>18</b>	<b>0</b>	
<b>IAA</b>				Number of questions answered		
				YES	NO	
Policy and its implementation				13	0	
Legal/Judiciary				2	1	
Occurrence reporting and Investigation				7	1	
<b>TOTAL</b>				<b>22</b>	<b>2</b>	
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

**IRELAND**

**Monitoring of Airports Contribution to ENVIRONMENT for 2018**

**1. Overview**

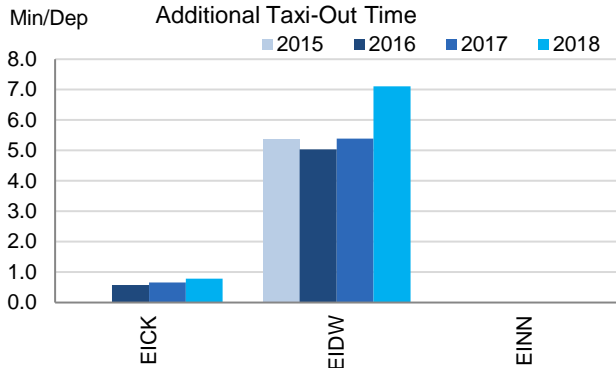
Ireland includes 3 airports under RP2 monitoring. Shannon is the only remaining airport that has not implemented the Airport Operator Data Flow required for the monitoring.

Ireland shall empower the airport reporting entity at Shannon (EINN) to establish the Airport Operator Data Flow to allow for the monitoring of all Irish airports in the UK-Ireland FAB Performance Plan.

Traffic at these Irish airports has moderately increased during RP2 (+17% with respect to 2015).

The environmental performance at Dublin has significantly worsened in 2018, resulting in the 4th highest additional taxi-out times in the SES area and the 3rd highest additional ASMA times.

**2. Additional Taxi-Out Time**



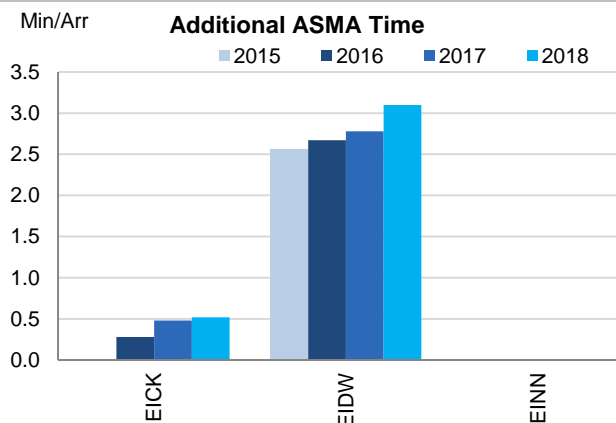
Taxi-out times at Dublin have significantly increased in 2018 (EIDW; 2017: 5.39 min/dep.; 2018: 7.11 min/dep.), with additional taxi-out times above 7 minutes from April to October.

Irish NSA acknowledges the increase of the taxi-out times at Dublin and it reports *this is largely due to the inefficient and complex taxiway layout at the airport. It should be noted that traffic at Dublin Airport increased by 4.5% in 2018, compared to the previous year.*

*Taxi out times at Dublin airport are a result of infrastructure deficiencies at the aerodrome. Dublin airport is a single runway operation, currently operating at full capacity during peak periods. The design of the taxiway, apron and stand infrastructure is such there are a number of constraints which can cause taxi-out times to increase. The aerodrome manoeuvring area is populated with several bottlenecks which restrict the service providers ability to deal efficiently with departure peaks. In order to safely operate the infrastructure, it is necessary to apply several airport restrictions on entry and exit to taxiways and the runway. These restrictions which are outside the control of the IAA significantly contribute to taxi-out times and delays. In addition, with Dublin airport operating at full capacity for extended periods, the lack of a second runway and the lack of rapid exit taxiways on the existing runway (noting the importance of preventing runway incursions) may contribute to the additional taxi-out times.*

The UK-Ireland FAB monitoring report also considers that *Additional Taxi-Out Time is not a useful metric for ANSP performance as there are too many contributing variables outside of the control of the ANSP.*

**3. Additional ASMA Time**



Dublin has also observed an increase of the additional time in the terminal airspace (EIDW; 2017: 2.78 min/arr.; 2018: 3.10 min/arr.), mainly resulting from the increase in the first half of 2018 with respect to 2017.

There is no significant change in the performance at Cork (EICK).

UK-Ireland FAB reports that *any arrival congestion at EIDW is a result of the airport operating at or close to capacity for long periods of the day, the infrastructure deficiencies at the aerodrome (lack of rapid exit taxiways, bottlenecks at runway threshold) as well as potentially inefficient slot allocation (not optimised to reduce arrival congestion) and weather related factors.*

*The additional time in terminal airspace is generally attributable to the flights following the "Point Merge" legs in part or in full. However the Point Merge has been demonstrated to have considerable benefits to the Airspace Users in reduced fuel consumption and to the environment in lowering Co2 emissions around terminal areas, and maximising runway throughput compared to vertical holding. These benefits outweigh any impact on ASMA Time. As congestion levels at Dublin airport increase in the construction phase of a second runway and improvements to existing infrastructure, it is likely that ASMA times will further increase until the new runway is fully operational.*

#### 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Cork	EICK	n/a	0.58	0.66	0.79		n/a	0.28	0.48	0.52	
Dublin	EIDW	5.39	5.03	5.39	7.11		2.56	2.67	2.78	3.10	
Shannon	EINN	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	

**IRELAND**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.13	0.13	0.14	0.14	0.14	
Deadband +/-	0.00	0.00	0.00	0.00	0.00	
Actual performance	0.00	0.00	0.00	0.00		

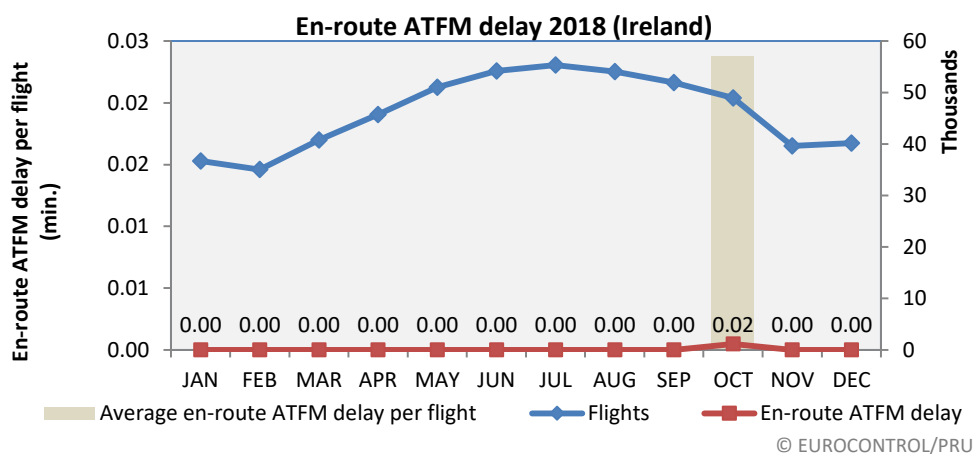
**National capacity incentive scheme**

Ireland does not receive a bonus since the overall FAB target was not met in 2018.

**Compliance issues relating to national capacity incentive scheme**

Nil

**Observations regarding national capacity performance**



En-route ATFM delay per flight (Ireland)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

EUROCONTROL 7 year forecast February 2014 – Ireland											
	2014		2015		2016		2017		2018		2019
		actual		actual		actual		actual		actual	
High	538		557		573		589		607		624
Base	534	537	552	566	564	610	576	621	589	635	602
Low	528		540		547		553		560		568

Ireland continues to demonstrate excellent en route capacity performance. The achievement of zero delay provided a positive contribution to network performance. The high performance of the IAA is recognised since traffic levels in Ireland have consistently been above the high traffic scenario predicted by STATFOR and available when the FAB performance plans and associated capacity plans were being determined. It is noted that the Network Manager does not expect capacity problems in Ireland for the remainder of RP2, or for the entirety of RP3.

Ireland delay forecast						
	2019	2020	2021	2022	2023	2024
NOP 2018 - 2022	0.01	0.01	0.01	0.01	N/A	N/A
NOP 2019 - 2024	0.01	0.01	0.01			

**Planning and Effective Use of CDRs**

Ireland did not provide any data since there are no CDRs in Ireland.

**Observations on Planning and Effective Use of CDRs**

The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations become more widespread though the network.

**Effective booking procedures**

Ireland did not provide any information on this indicator.

**Observations on Effective booking procedures**

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**IRELAND**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

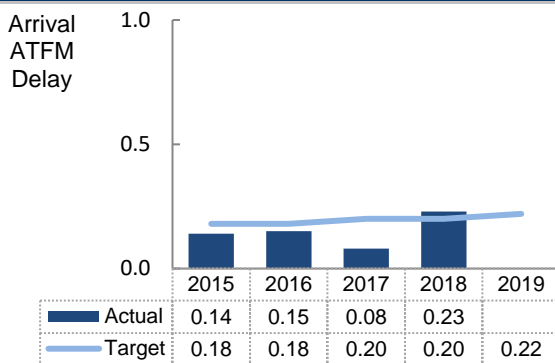
Ireland identifies 3 airports as subject to RP2, where traffic levels have significantly increased during RP2 (+16.7% with respect to 2015).

In terms of arrival ATFM delays, values are drastically higher than those in the beginning of the reference period (+65.0% in 2018 with respect to 2015) and at the same time ATFM slot adherence has slightly deteriorated (2015:96.9%; 2018:96.2%), although all 3 airports still show best-in-class performance with a compliance above 95%.

The national target on arrival ATFM delay is missed by the Irish airports for the first time in RP2.

The Airport Operator Data Flow, necessary for the calculation of the ATC pre-departure delay indicator, is at the time being implemented at 2 airports in Ireland (EIDW and EICK). Nonetheless, the high share of unexplained delay prevents the monitoring of the indicator at Cork (EICK).

**2. Arrival ATFM Delay**



During 2018, arrival ATFM delays in Ireland have significantly increased with respect to the previous year (2017: 0.08 min/arr, 2018: 0.23 min/arr)

In fact this performance is directly associated to the constraints at Dublin (EIDW) as Cork (EICK) and Shannon (EINN) do not register any arrival ATFM delays.

The delays at Dublin are attributed mainly to aerodrome capacity (48%) and weather (47%). The distribution of these delays along the year is strange as the busiest months (July and August) there are practically no delays registered. In April all delays are attributed to weather while in May almost all delays are attributed to aerodrome capacity.

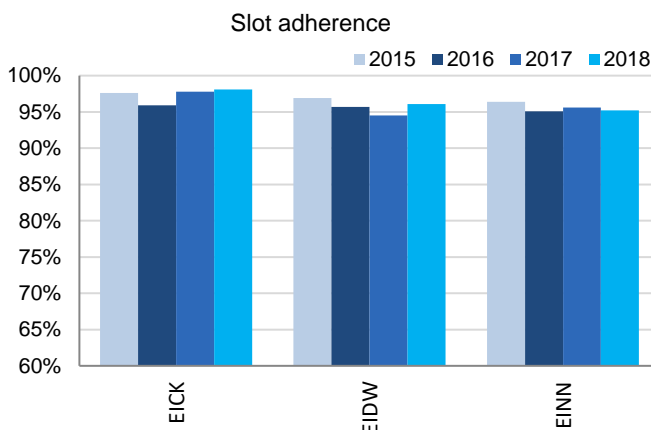
UK-Ireland FAB, in their monitoring report, explain that *ATFM arrival delay has increased mainly because of bad weather conditions and also because of the growth in traffic in already constrained periods without any significant enhancements in airport infrastructure. This has led to higher congestion, particularly during adverse weather conditions (e.g. low visibility, snow, high winds, etc.).*

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

Ireland established a national target on arrival ATFM delay for 2018 of 0.20 min/arr. with a breakdown for Dublin. The target is missed at national level and the actual performance at Dublin (EIDW) also misses its reference value (EIDW: 2018: PP= 0.20 min/arr. vs Actual= 0.27 min/arr.)

The UK-Ireland FAB performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for Ireland.

**4. ATFM Slot Adherence**



The performance regarding ATFM slot adherence at the 3 Irish airports under RP2 monitoring is consistently around the 95% threshold, which marks best-in-class performance.



## 5. ATC Pre-departure Delay

The ATC pre-departure delay at Dublin has considerably increased in 2018. According to UK-Ireland FAB's monitoring report this is *mainly due to Dublin airport operating at full capacity for long periods throughout the day*.

In line with the reporting observed last year, the high share of pre-departure delay attributed to ambiguity codes does not allow for the calculation of the indicator at Cork (EICK). At Dublin this share is lower, but the share of ambiguity delay codes is still high and it risks the calculation of the ATC pre-departure delay indicator in the future.

The Airport Operator Data Flow, required for the monitoring of the ATC pre-departure delay, is not established for Shannon.

Ireland shall encourage the implementation of the Airport Operator Data Flow in Shannon and a proper reporting of the pre-departure delays through this data flow at all airports.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Cork	EICK	0.00	0.00	0.00	0.00		97.6%	95.9%	97.8%	98.1%		n/a	n/a	n/a	n/a	
Dublin	EIDW	0.17	0.19	0.10	0.27		96.9%	95.7%	94.5%	96.1%		0.53	0.66	0.38	0.70	
Shannon	EINN	0.00	0.00	0.00	0.00		96.4%	95.1%	95.6%	95.2%		n/a	n/a	n/a	n/a	

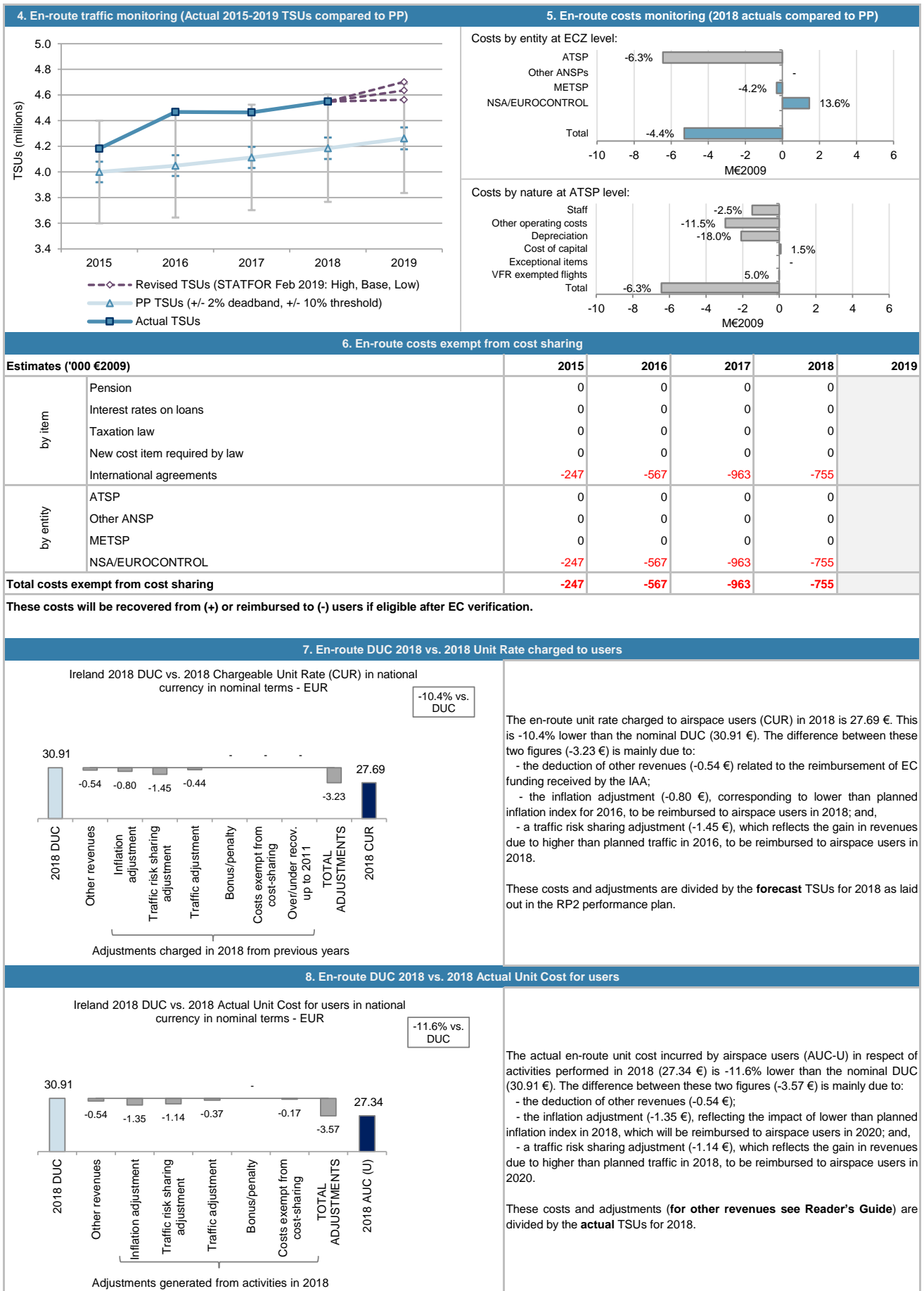
## IRELAND: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services					
· Ireland ECZ represents 2.0% of the SES en-route ANS determined costs in 2018					
· ATSP:	IAA				
· FAB:	UK-Ireland FAB				
· National currency:	EUR				
2. En-route DUC monitoring at Charging Zone level					
Ireland: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)	2015D	2016D	2017D	2018D	2019D
En-route costs (nominal EUR)	118 046 200	121 386 700	125 595 100	129 364 400	130 778 800
Inflation %	1.1%	1.2%	1.4%	1.7%	1.7%
Inflation index (100 in 2009)	103.7	105.0	106.4	108.2	110.1
Real en-route costs (EUR2009)	113 811 728	115 644 664	118 001 964	119 511 684	118 798 780
Total en-route Service Units	4 000 000	4 049 624	4 113 288	4 184 878	4 262 135
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>28.45</b>	<b>28.56</b>	<b>28.69</b>	<b>28.56</b>	<b>27.87</b>
Ireland: Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
En-route costs (nominal EUR)	106 657 766	108 543 638	113 784 000	117 767 000	
Inflation %	0.0%	-0.2%	0.3%	0.7%	
Inflation index (100 in 2009)	102.3	102.1	102.4	103.1	
Real en-route costs (EUR2009)	104 273 918	106 330 301	111 130 414	114 220 979	
Total en-route Service Units	4 182 450	4 467 595	4 465 253	4 549 883	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>24.93</b>	<b>23.80</b>	<b>24.89</b>	<b>25.10</b>	
Difference between Actuals and Planned	2015	2016	2017	2018	2019
En-route costs (nominal EUR)					
in value	-11 388 434	-12 843 062	-11 811 100	-11 597 400	
in %	-9.6%	-10.6%	-9.4%	-9.0%	
Inflation %					
in p.p.	-1.1 p.p.	-1.4 p.p.	-1.1 p.p.	-1.0 p.p.	
Inflation index (100 in 2009)					
in p.p.	-1.4 p.p.	-2.9 p.p.	-4.0 p.p.	-5.1 p.p.	
Real en-route costs (EUR2009)					
in value	-9 537 810	-9 314 363	-6 871 550	-5 290 705	
in %	-8.4%	-8.1%	-5.8%	-4.4%	
Total en-route Service Units					
in value	182 450	417 971	351 965	365 005	
in %	4.6%	10.3%	8.6%	8.7%	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>					
in value	<b>-3.52</b>	<b>-4.76</b>	<b>-3.80</b>	<b>-3.45</b>	
in %	<b>-12.4%</b>	<b>-16.7%</b>	<b>-13.2%</b>	<b>-12.1%</b>	
3. Focus on en-route at State/Charging Zone level					
<p><b>En-route unit cost</b></p> <p>In 2018, the actual en-route unit cost in real terms (25.10 €2009) is -12.1% lower than planned in the PP (28.56 €2009). This results from the combination of higher than planned TSUs (+8.7%) and lower than planned en-route costs in real terms (-4.4%, or -5.3 M€2009).</p> <p><b>En-route service units</b></p> <p>The difference between actual and planned TSUs (+8.7%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (IAA) retaining an amount of +4.3 M€2009.</p> <p>According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for Ireland are expected to largely exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.</p> <p><b>En-route costs</b></p> <p>In nominal terms, actual en-route costs are -9.0% (-11.6 M€) lower than planned. However, since the actual inflation index is also lower than planned (-5.1 p.p.), actual en-route costs are -4.4% (-5.3 M€2009) below plans when expressed in real terms.</p> <p>The lower than planned en-route costs in real terms are driven by IAA (-6.3%, or -6.4 M€2009) and the MET service provider (-4.2%, or -0.3 M€2009), while the costs for the NSA/EUROCONTROL (+13.6%, or +1.5 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.</p> <p>Costs exempt from cost-sharing are reported for a total amount of -0.8 M€2009 corresponding to the variation in EUROCONTROL costs. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed allowed by the European Commission.</p>					
<p>The figure consists of three bar charts. The top chart shows the 'Difference between actual and determined en-route costs (real terms)' in percentage, with values: -8.4% (2015), -8.1% (2016), -5.8% (2017), -4.4% (2018). The middle chart shows the 'Difference between actual and planned total service units' in percentage, with values: 4.6% (2015), 10.3% (2016), 8.6% (2017), 8.7% (2018). The bottom chart shows 'Unit cost, €2009' for 'En-route DUC (PP, 2015-2019)' and 'En-route unit costs (actual)'. The planned values are 28.45, 28.56, 28.69, 28.56, and 27.87 for years 2015-2019 respectively. The actual values are 24.93, 23.80, 24.89, 25.10, and 27.87 for years 2015-2019 respectively. The percentage differences are -12.4%, -16.7%, -13.2%, -12.1%, and 0% for years 2015-2019 respectively.</p>					

**IRELAND: En-route charging zone**

**Monitoring of en-route COST-EFFICIENCY for 2018**



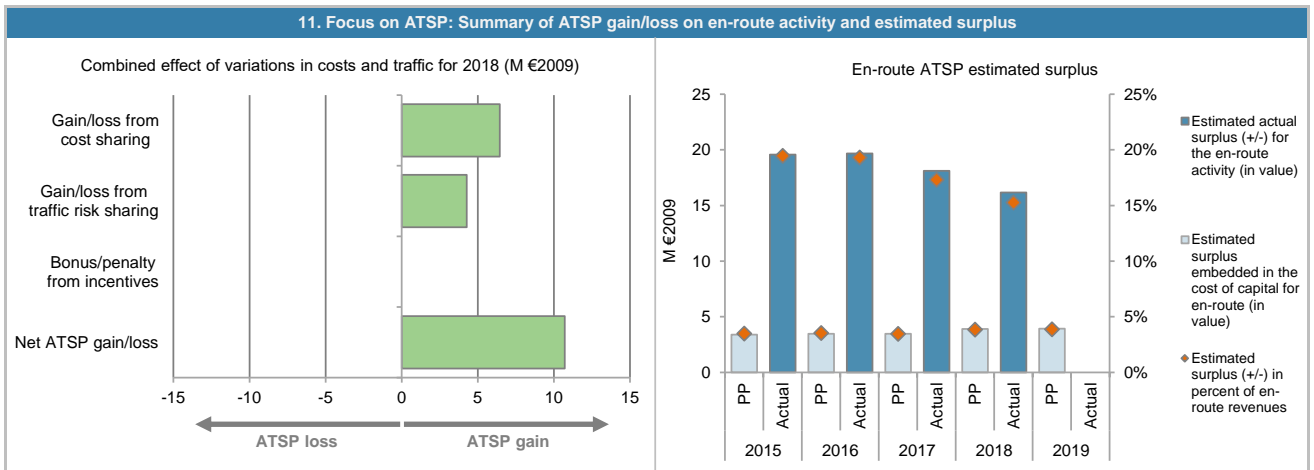
## IRELAND: En-route ATSP (IAA)

## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	96 844	97 378	99 417	101 495	
Actual costs for the ATSP	87 495	88 091	92 092	95 053	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	9 349	9 287	7 325	6 442	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>9 349</b>	<b>9 287</b>	<b>7 325</b>	<b>6 442</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	4.6%	10.3%	8.6%	8.7%	
Determined costs for the ATSP (PP) - based on actual inflation	98 202	100 129	103 346	106 555	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>2 719</b>	<b>4 406</b>	<b>4 100</b>	<b>4 280</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>1 014</b>	<b>0</b>	<b>1 087</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>13 081</b>	<b>13 693</b>	<b>12 512</b>	<b>10 722</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	63 266	64 174	63 062	69 602	69 651
Estimated proportion of financing through equity (in %)	50.1%	49.9%	49.7%	49.4%	49.5%
Estimated proportion of financing through equity (in value)	31 674	32 047	31 358	34 418	34 444
Estimated proportion of financing through debt (in %)	49.9%	50.1%	50.3%	50.6%	50.5%
Estimated proportion of financing through debt (in value)	31 592	32 126	31 704	35 184	35 207
Cost of capital pre-tax (in value)	4 492	4 621	4 667	5 359	5 363
Average interest on debt (in %)	3.5%	3.6%	3.8%	4.1%	4.1%
Interest on debt (in value)	1 106	1 157	1 205	1 443	1 443
Determined RoE pre-tax rate (in %)	10.7%	10.8%	11.0%	11.4%	11.4%
Estimated surplus embedded in the cost of capital for en-route (in value)	3 386	3 464	3 462	3 917	3 920
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>3 386</b>	<b>3 464</b>	<b>3 462</b>	<b>3 917</b>	<b>3 920</b>
<b>Revenue/costs for the en-route activity</b>	<b>96 844</b>	<b>97 378</b>	<b>99 417</b>	<b>101 495</b>	<b>101 272</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>3.5%</b>	<b>3.6%</b>	<b>3.5%</b>	<b>3.9%</b>	<b>3.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.7%</b>	<b>10.8%</b>	<b>11.0%</b>	<b>11.4%</b>	<b>11.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	60 751	55 239	50 816	47 787	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	60 751	55 239	50 816	47 787	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	6 494	5 971	5 610	5 438	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	10.7%	10.8%	11.0%	11.4%	
Estimated surplus embedded in the cost of capital for en-route (in value)	6 494	5 971	5 610	5 438	
Net ATSP gain(+)/loss(-) on en-route activity	13 081	13 693	12 512	10 722	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>19 575</b>	<b>19 664</b>	<b>18 122</b>	<b>16 160</b>	
<b>Revenue/costs for the en-route activity</b>	<b>100 576</b>	<b>101 784</b>	<b>104 604</b>	<b>105 775</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>19.5%</b>	<b>19.3%</b>	<b>17.3%</b>	<b>15.3%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>32.2%</b>	<b>35.6%</b>	<b>35.7%</b>	<b>33.8%</b>	

**IRELAND: En-route ATSP (IAA)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 IAA en-route costs vs. PP**

In 2018, IAA actual en-route costs are -6.3% (-6.4 M€2009) lower, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- lower staff costs (-2.5%, or -1.5 M€2009) mainly "due to higher than expected departures, retirements and recruitment occurring later than anticipated";
- lower other operating costs (-11.5%, or -2.9 M€2009) mainly "due to decreases across a range of technical and administrative expenses";
- lower depreciation costs (-18.0%, or -2.1 M€2009) due to scheduling differences in the implementation of some projects; and,
- slightly higher cost of capital (+1.5%, or +0.08 M€2009) resulting from the combined effect of lower than planned actual asset base and higher than planned average rate of cost of capital. Concerning the latter, it is noted that the higher than planned weighted average rate of cost of capital results from a different gearing between equity and debt compared to the plan (actual capital entirely financed through equity, whereas the share of financing through debt was planned in the PP).

**IAA net gain/loss on en-route activity in 2018**

As shown in box 9, IAA generated a net gain of +10.7 M€2009 on the en-route activity. This is a combination of two elements:

- a gain of +6.4 M€2009 arising from the cost sharing mechanism; and,
- a gain of +4.3 M€2009 arising from the traffic risk sharing mechanism.

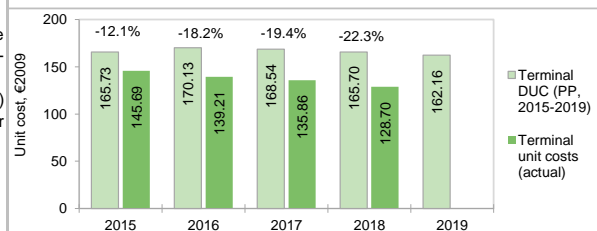
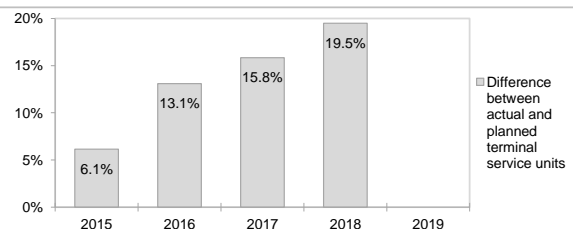
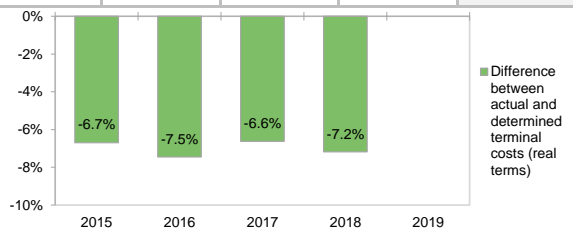
**IAA overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+10.7 M€2009) and the surplus embedded in the actual cost of capital (+5.4 M€2009) amounts to +16.2 M€2009 (15.3% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 33.8%, which is much higher than the 11.4% planned in the PP.

## IRELAND: Terminal charging zone

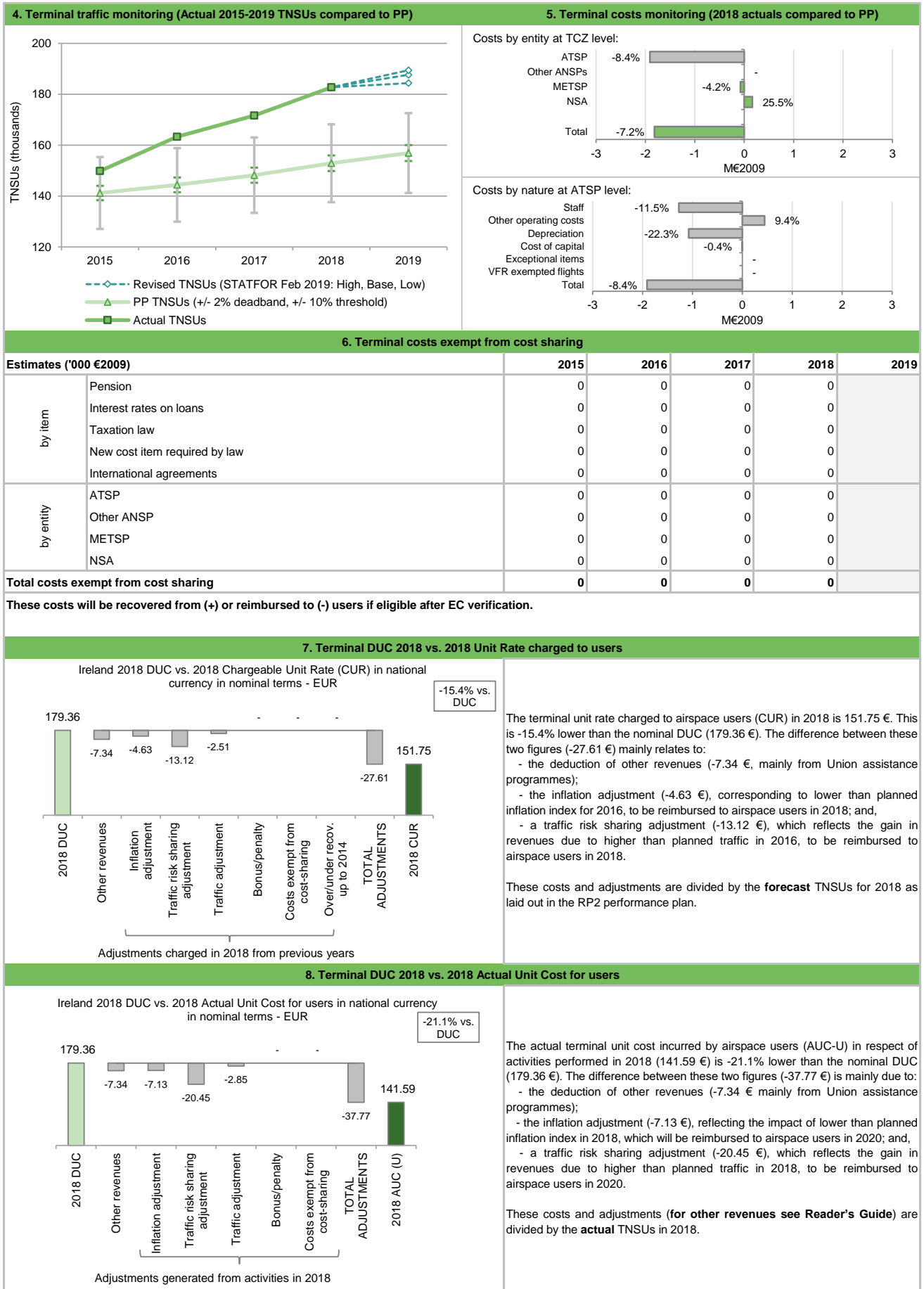
## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services					
Ireland TCZ represents 2.4% of the SES terminal ANS determined costs in 2018		Is this TCZ applying traffic risk sharing?		Yes	
ATSP:	IAA	Airports with fewer than 70,000 IFRs ATMs:		2	
National currency:	EUR	Airports with between 70,000 and 225,000 IFRs ATMs:		1	
Number of airports in charging zone in 2018:	3,	of which:		Airports with more than 225,000 IFRs ATMs: 0	
2. Terminal DUC monitoring at Charging Zone level					
Ireland: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Terminal costs (nominal EUR)	24 272 300	25 787 100	26 584 700	27 424 700	28 007 800
Inflation %	1.1%	1.2%	1.4%	1.7%	1.7%
Inflation index (100 in 2009)	103.7	105.0	106.4	108.2	110.1
Real terminal costs (EUR2009)	23 401 621	24 567 276	24 977 462	25 335 966	25 442 140
Total terminal Service Units	141 200	144 400	148 200	152 900	156 900
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>165.73</b>	<b>170.13</b>	<b>168.54</b>	<b>165.70</b>	<b>162.16</b>
Ireland: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Terminal costs (nominal EUR)	22 332 565	23 207 720	23 880 000	24 245 000	
Inflation %	0.0%	-0.2%	0.3%	0.7%	
Inflation index (100 in 2009)	102.3	102.1	102.4	103.1	
Real terminal costs (EUR2009)	21 833 422	22 734 486	23 323 088	23 514 971	
Total terminal Service Units	149 863	163 305	171 665	182 711	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>145.69</b>	<b>139.21</b>	<b>135.86</b>	<b>128.70</b>	
Difference between Actuals and Planned					
	2015	2016	2017	2018	2019
Terminal costs (nominal EUR)	-1 939 735	-2 579 380	-2 704 700	-3 179 700	
	in %				
	-8.0%	-10.0%	-10.2%	-11.6%	
Inflation %	-1.1 p.p.	-1.4 p.p.	-1.1 p.p.	-1.0 p.p.	
Inflation index (100 in 2009)	-1.4 p.p.	-2.9 p.p.	-4.0 p.p.	-5.1 p.p.	
Real terminal costs (EUR2009)	-1 568 198	-1 832 789	-1 654 373	-1 820 995	
	in %				
	-6.7%	-7.5%	-6.6%	-7.2%	
Total terminal Service Units	8 663	18 905	23 465	29 811	
	in %				
	6.1%	13.1%	15.8%	19.5%	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>-20.04</b>	<b>-30.92</b>	<b>-32.67</b>	<b>-37.00</b>	
	in %				
	-12.1%	-18.2%	-19.4%	-22.3%	
3. Focus on terminal at State/Charging Zone level					
This analysis focuses on Ireland Terminal Charging Zone (TCZ) comprising Dublin, Cork and Shannon airports.					
<b>Terminal unit cost</b>					
In 2018, the actual terminal unit cost in real terms (128.70 €2009) is -22.3% lower than planned in the PP (165.70 €2009). This results from the combination of much higher than planned TNSUs (+19.5%) and lower than planned terminal costs in real terms (-7.2%, or -1.8 M€2009).					
<b>Terminal service units</b>					
The traffic risk sharing mechanism applies in Ireland TCZ. The difference between actual and planned TNSUs (+19.5%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (IAA) retaining an amount of +1.1 M€2009. According to STATFOR February 2019 base scenario, the TNSUs for Ireland are expected to largely exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.					
<b>Terminal costs</b>					
In nominal terms, actual terminal costs are -11.6% (-3.2 M€) lower than planned. However, since the actual inflation index is also lower than planned (-5.1 p.p.), actual terminal costs are -7.2% (-1.8 M€2009) below plans when expressed in real terms. The lower than planned terminal costs in real terms are driven by IAA (-8.4%, or -1.9 M€2009) and the MET service provider (-4.2%, or -0.1 M€2009), while the costs for the NSA (+25.5%, or +0.2 M€2009) are higher than planned. A detailed analysis at ATSP level is provided in box 12.					
There are no costs exempt from cost-sharing reported.					



**IRELAND: Terminal charging zone**

**Monitoring of terminal COST-EFFICIENCY for 2018**



## IRELAND: Terminal ATSP (IAA)

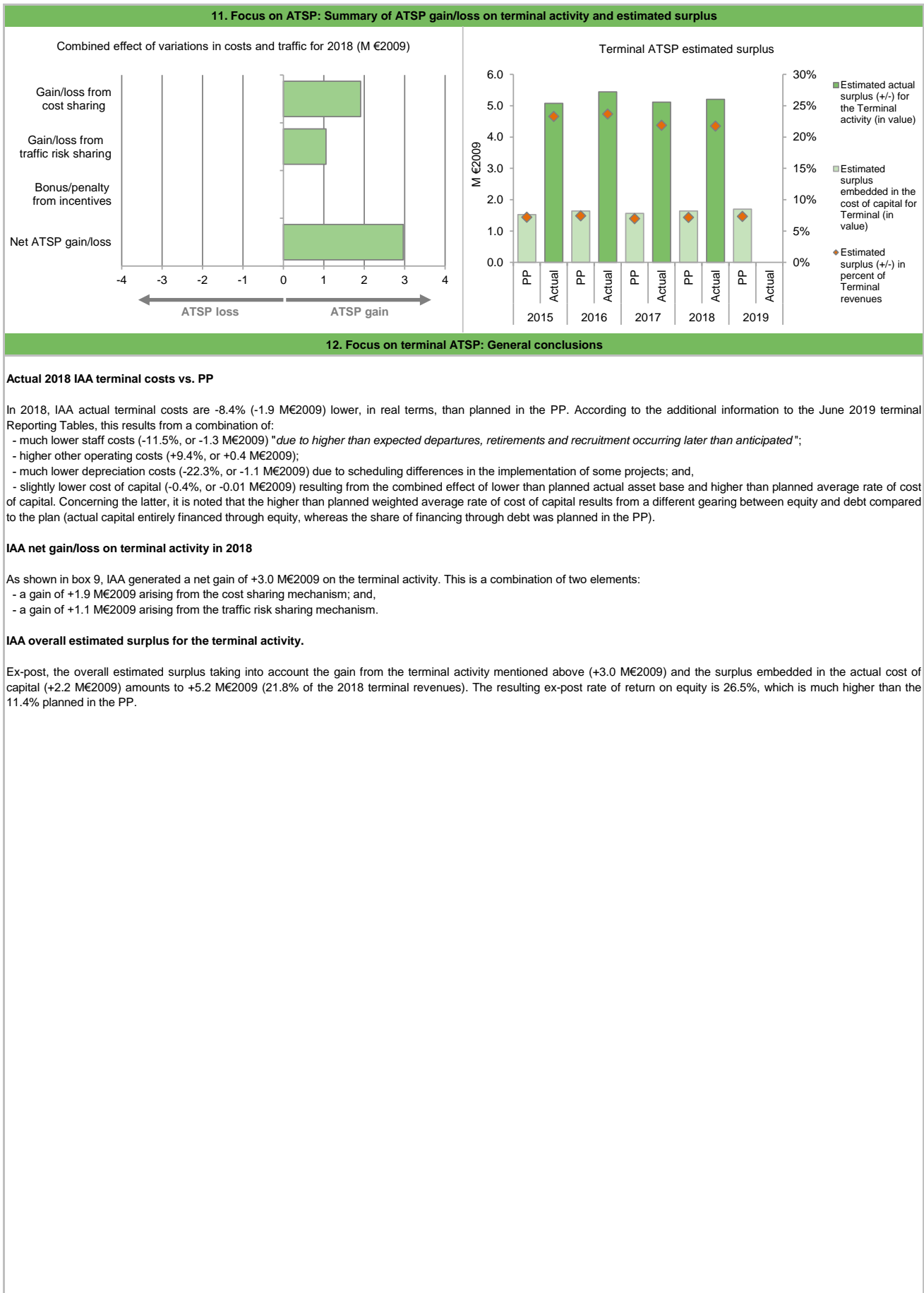
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	21 113	21 994	22 350	22 866	
Actual costs for the ATSP	19 584	20 241	20 710	20 956	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	1 529	1 752	1 639	1 910	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>1 529</b>	<b>1 752</b>	<b>1 639</b>	<b>1 910</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	6.1%	13.1%	15.8%	19.5%	
Determined costs for the ATSP (PP) - based on actual inflation	21 409	22 615	23 233	24 006	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>694</b>	<b>995</b>	<b>1 022</b>	<b>1 056</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>2 223</b>	<b>2 748</b>	<b>2 662</b>	<b>2 966</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	28 500	30 343	28 431	29 203	30 204
Estimated proportion of financing through equity (in %)	50.0%	50.0%	49.7%	49.3%	49.3%
Estimated proportion of financing through equity (in value)	14 246	15 168	14 135	14 407	14 896
Estimated proportion of financing through debt (in %)	50.0%	50.0%	50.3%	50.7%	50.7%
Estimated proportion of financing through debt (in value)	14 253	15 176	14 296	14 796	15 308
Cost of capital pre-tax (in value)	2 023	2 184	2 104	2 249	2 326
Average interest on debt (in %)	3.5%	3.6%	3.8%	4.1%	4.1%
Interest on debt (in value)	499	546	543	607	628
Determined RoE pre-tax rate (in %)	10.7%	10.8%	11.0%	11.4%	11.4%
Estimated surplus embedded in the cost of capital for terminal (in value)	1 524	1 638	1 560	1 642	1 698
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>1 524</b>	<b>1 638</b>	<b>1 560</b>	<b>1 642</b>	<b>1 698</b>
<b>Revenue/costs for the terminal activity</b>	<b>21 113</b>	<b>21 994</b>	<b>22 350</b>	<b>22 866</b>	<b>23 111</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>7.2%</b>	<b>7.4%</b>	<b>7.0%</b>	<b>7.2%</b>	<b>7.3%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.7%</b>	<b>10.8%</b>	<b>11.0%</b>	<b>11.4%</b>	<b>11.4%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	26 685	24 950	22 241	19 653	
Estimated proportion of financing through equity (in %)	100.0%	100.0%	100.0%	100.0%	
Estimated proportion of financing through equity (in value)	26 685	24 950	22 241	19 653	
Estimated proportion of financing through debt (in %)	0.0%	0.0%	0.0%	0.0%	
Estimated proportion of financing through debt (in value)	0	0	0	0	
Cost of capital pre-tax (in value)	2 855	2 695	2 455	2 240	
Average interest on debt (in %)	0.0%	0.0%	0.0%	0.0%	
Interest on debt (in value)	0	0	0	0	
Determined RoE pre-tax rate (in %)	10.7%	10.8%	11.0%	11.4%	
Estimated surplus embedded in the cost of capital for terminal (in value)	2 855	2 695	2 455	2 240	
Net ATSP gain(+)/loss(-) on terminal activity	2 223	2 748	2 662	2 966	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>5 078</b>	<b>5 442</b>	<b>5 117</b>	<b>5 207</b>	
<b>Revenue/costs for the terminal activity</b>	<b>21 807</b>	<b>22 989</b>	<b>23 372</b>	<b>23 923</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>23.3%</b>	<b>23.7%</b>	<b>21.9%</b>	<b>21.8%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>19.0%</b>	<b>21.8%</b>	<b>23.0%</b>	<b>26.5%</b>	



**IRELAND: Terminal ATSP (IAA)**

**Monitoring of terminal COST-EFFICIENCY for 2018**



**IRELAND: Gate-to-gate**

**Monitoring of gate-to-gate COST-EFFICIENCY for 2018**

1. Monitoring of gate-to-gate ANS costs					
Ireland: Data from RP2 Performance Plan					
	2015D	2016D	2017D	2018D	2019D
Real en-route costs (EUR2009)	113 811 728	115 644 664	118 001 964	119 511 684	118 798 780
Real terminal costs (EUR2009)	23 401 621	24 567 276	24 977 462	25 335 966	25 442 140
Real gate-to-gate costs (EUR2009)	137 213 349	140 211 940	142 979 426	144 847 650	144 240 920
En-route share (%)	82.9%	82.5%	82.5%	82.5%	82.4%
Ireland: Actual data from Reporting Tables					
	2015A	2016A	2017A	2018A	2019A
Real en-route costs (EUR2009)	104 273 918	106 330 301	111 130 414	114 220 979	
Real terminal costs (EUR2009)	21 833 422	22 734 486	23 323 088	23 514 971	
Real gate-to-gate costs (EUR2009)	126 107 341	129 064 787	134 453 503	137 735 950	
En-route share (%)	82.7%	82.4%	82.7%	82.9%	
Difference between Actuals and Planned (Actuals vs. PP)					
	2015	2016	2017	2018	2019
Real gate-to-gate costs (EUR2009)					
in value	-11 106 008	-11 147 153	-8 525 923	-7 111 700	
in %	-8.1%	-8.0%	-6.0%	-4.9%	
En-route share					
in p.p.	-0.3 p.p.	-0.1 p.p.	0.1 p.p.	0.4 p.p.	

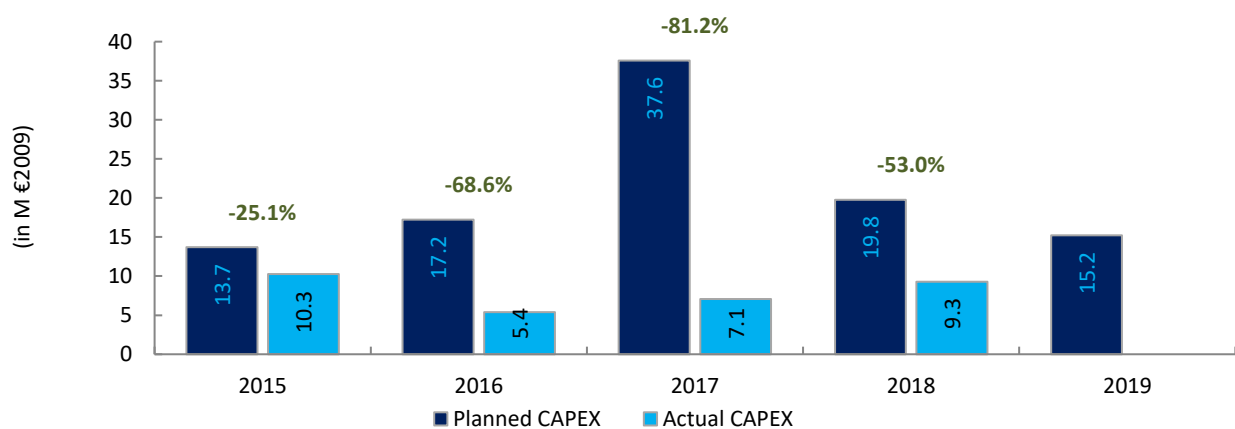
2. Share of en-route and terminal in gate-to-gate actual costs (2018)																																								
<p>In 2018, actual gate-to-gate ANS costs are -4.9% (-7.1 M€2009) lower than planned due to lower than planned en-route costs (-4.4%, or -5.3 M€2009) and terminal costs (-7.2%, or -1.8 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (82.9%) is in line with that planned in the PP for 2018 (82.5%).</p> <p>For IAA, the estimated gate-to-gate economic surplus in 2018 amounts to 21.4 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 16.5% of gate-to-gate ANS revenues.</p>	<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Type</th> <th>En-route (%)</th> <th>Terminal (%)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2015</td> <td>Determined</td> <td>82.9%</td> <td>17.1%</td> </tr> <tr> <td>Actual</td> <td>82.7%</td> <td>17.3%</td> </tr> <tr> <td rowspan="2">2016</td> <td>Determined</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td>Actual</td> <td>82.4%</td> <td>17.6%</td> </tr> <tr> <td rowspan="2">2017</td> <td>Determined</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td>Actual</td> <td>82.7%</td> <td>17.3%</td> </tr> <tr> <td rowspan="2">2018</td> <td>Determined</td> <td>82.5%</td> <td>17.5%</td> </tr> <tr> <td>Actual</td> <td>82.9%</td> <td>17.1%</td> </tr> <tr> <td rowspan="2">2019</td> <td>Determined</td> <td>82.4%</td> <td>17.6%</td> </tr> <tr> <td>Actual</td> <td></td> <td></td> </tr> </tbody> </table>	Year	Type	En-route (%)	Terminal (%)	2015	Determined	82.9%	17.1%	Actual	82.7%	17.3%	2016	Determined	82.5%	17.5%	Actual	82.4%	17.6%	2017	Determined	82.5%	17.5%	Actual	82.7%	17.3%	2018	Determined	82.5%	17.5%	Actual	82.9%	17.1%	2019	Determined	82.4%	17.6%	Actual		
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	Actual																																							

**3. Technical notes on en-route and terminal information reported by Ireland**

## IRELAND

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: IAA						
FAB: UK-Ireland FAB						
Currency: EUR						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	14.2	18.1	40.0	21.4	16.8	110.4
Main CAPEX (in nominal M)	8.1	11.5	37.6	21.0	15.8	93.8
Inflation %	1.1%	1.2%	1.4%	1.7%	1.7%	
Inflation index (100 in 2009)	103.7	105.0	106.4	108.2	110.1	
Exchange rate 2009	1	1	1	1	1	
<b>Total CAPEX (in M €2009)</b>	<b>13.7</b>	<b>17.2</b>	<b>37.6</b>	<b>19.8</b>	<b>15.2</b>	<b>103.4</b>
Main CAPEX (in M €2009)	7.8	10.9	35.3	19.4	14.3	87.7
% Main of Total CAPEX	56.8%	63.4%	94.0%	98.0%	94.1%	84.8%
Real gate-to-gate ANSP costs (in M €2009)	118.0	119.4	121.8	124.4	124.4	607.8
Total CAPEX as % of Real gate-to-gate ANSP costs	11.6%	14.4%	30.9%	15.9%	12.2%	17.0%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	10.5	5.5	7.2	9.6		
Main CAPEX (in nominal M)	7.9	3.3	3.9	7.0		
Inflation %	0.0%	-0.2%	0.3%	0.7%		
Inflation index (100 in 2009)	102.3	102.1	102.4	103.1		
Exchange rate 2009	1	1	1	1		
<b>Total CAPEX (in M €2009)</b>	<b>10.3</b>	<b>5.4</b>	<b>7.1</b>	<b>9.3</b>		
Main CAPEX (in M €2009)	7.7	3.3	3.8	6.7		
% Main of Total CAPEX	75.6%	60.6%	53.3%	72.8%		
Real gate-to-gate ANSP costs (in M €2009)	107.1	108.3	112.8	116.0		
Total CAPEX as % of Real gate-to-gate ANSP costs	9.6%	5.0%	6.3%	8.0%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-3.7	-12.6	-32.7	-11.8		
Total CAPEX (in M €2009)	-3.4	-11.8	-30.5	-10.5		
<b>Total CAPEX (in %, M €2009)</b>	<b>-25.1%</b>	<b>-68.6%</b>	<b>-81.2%</b>	<b>-53.0%</b>		





# Annual Monitoring Report 2018

Local level view  
United Kingdom



## UNITED KINGDOM

## Monitoring of SAFETY for 2018

Effectiveness of Safety Management						
	Score	Safety Policy and Objectives	Safety Risk Management	Safety Assurance	Safety Promotion	Safety Culture
State level	88	C	C	D	D	E
NATS NERL	87	D	D	D	D	D
Note: For State level Safety Assurance does not include Q3.8 and Safety Culture is self-assessed. ANSP results are verified by the State.						
Application of the severity classification of the Risk Analysis Tool (RAT)						
			RAT application (%)			
			ATM Ground	ATM Overall		
Separation Minima Infringements (SMIs)			100%	100%		
Runway Incursions (RIs)			100%	100%		
ATM Specific Occurrences (ATM-S)				100%		
Source of RAT data:			UK CAA			
Note: The No of reported occurrences applicable to the RP2 Scope for the RAT application (AA-A to C and airports above 70k ATM movements)						
Just culture						
State level			Number of questions answered			
			YES	NO		
Policy and its implementation			9	0		
Legal/Judiciary			7	0		
Occurrence reporting and Investigation			2	0		
<b>TOTAL</b>			<b>18</b>	<b>0</b>		
NATS NERL			Number of questions answered			
			YES	NO		
Policy and its implementation			12	1		
Legal/Judiciary			3	0		
Occurrence reporting and Investigation			7	1		
<b>TOTAL</b>			<b>22</b>	<b>2</b>		
Observations						
All four reviewed EoSM Components/areas of the State meet the target level "C"						

## UNITED KINGDOM

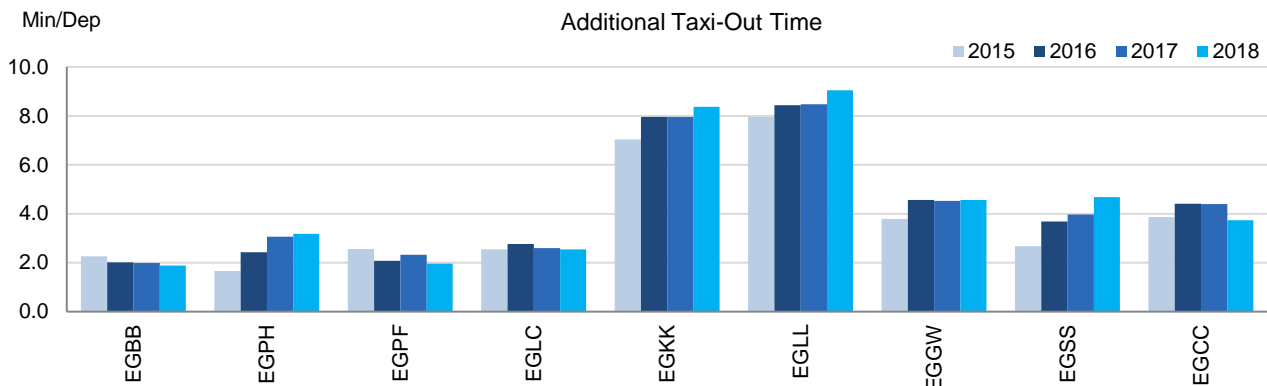
## Monitoring of Airports Contribution to ENVIRONMENT for 2018

## 1. Overview

There are nine airports in the United Kingdom subject to RP2 monitoring and all of them have at this point implemented the Airport Operator Data Flow that allows for the correct monitoring. The evolution of traffic at these airports during RP2 varies from one airport to another, with Stansted showing a 19% increase with respect to 2015 while at Heathrow there has been almost no change or at London City there is a decrease in traffic of 4% with respect to 2015.

The performance shown is directly related at some airports to the airport capacity/utilisation objectives, that are prioritised over other operational measures such as taxi-out time and time in the terminal area.

## 2. Additional Taxi-Out Time



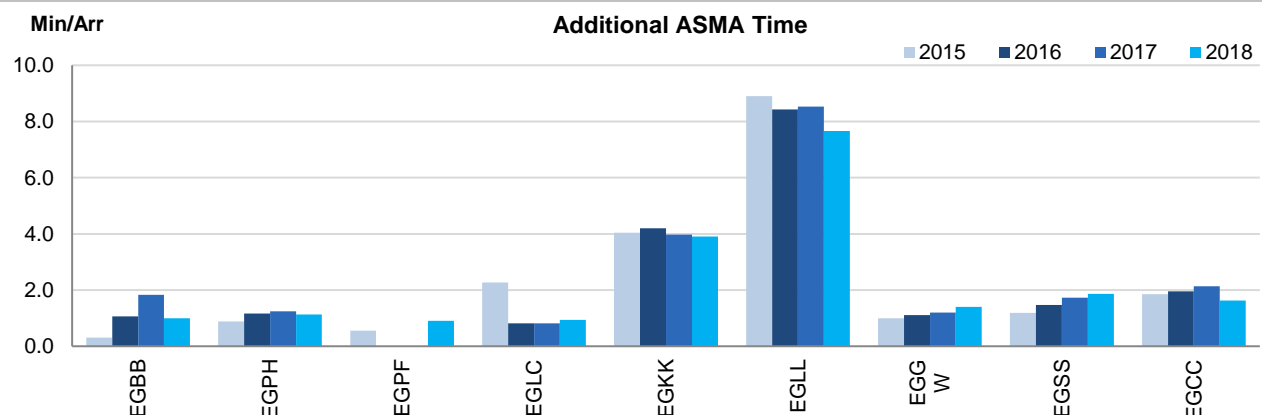
There is little variation in the additional taxi-out times at most UK airports with respect to 2017. The only noticeable changes are the increase observed at Gatwick (EGKK; 2017: 7.95 min/dep.; 2018: 8.37 min/dep.), Heathrow (EGLL; 2017: 8.47 min/dep.; 2018: 9.04 min/dep.) and Stansted (EGSS; 2017: 3.97 min/dep.; 2018: 4.68 min/dep.); and the improvement at Manchester (EGCC; 2017: 4.39 min/dep.; 2018: 3.74 min/dep.), despite the works on the taxiway system carried out at this airport.

Heathrow and Gatwick stand out once more with the highest times of SES airports in RP2 and up to almost 5 minutes above the RP2 average (3.57 min/dep.); and Stansted (EGSS), Luton (EGGW) and Edinburgh (EGPH) show also higher additional taxi-out times than similar airports in terms of movements.

Additional TXOT at Gatwick and Stansted are significantly worse during the summer months, especially in Gatwick, when these can reach up to 11 minutes in August.

UK-Ireland FAB's monitoring report notes that *taxi out time is affected by a number of factors. Where airport operators have capacity and utilisation performance objectives, the ANSP may be required to prioritise these over other operational measures like taxi out time. Taxi out times have remained broadly level or improved, compared to last year.*

## 3. Additional ASMA Time



The most significant in terms of additional time in the terminal airspace was the reduction observed in 2018 at Birmingham (EGBB; 2017: 1.83 min/arr.; 2018: 1.00 min/arr.), Heathrow (EGLL; 2017: 8.53 min/arr.; 2018: 7.63 min/arr.) and Manchester (EGCC; 2017: 2.14 min/arr.; 2018: 1.63 min/arr.)

Although Heathrow remains (followed by Gatwick) the airport in Europe with the longest additional ASMA times, the implementation in March 2018 of the enhanced Time Based Separations (eTBS) using the RECAT-EU had a clear impact improving the additional ASMA times notably from May to October, with up to 2 minutes reduction with respect to the previous year.

In the same way as with the additional TXOT, additional times in the terminal area around Gatwick are much higher in Summer.



#### 4. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Additional taxi-out time					Additional ASMA time				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Birmingham	EGBB	2.26	2.01	1.99	1.89		0.31	1.06	1.83	1.00	
Edinburgh	EGPH	1.66	2.43	3.06	3.18		0.88	1.17	1.24	1.13	
Glasgow	EGPF	2.56	2.08	2.32	1.96		0.56	n/a	n/a	0.91	
London/ City	EGLC	2.55	2.77	2.59	2.55		2.27	0.81	0.82	0.94	
London/ Gatwick	EGKK	7.03	7.96	7.95	8.37		4.04	4.20	3.97	3.90	
London/ Heathrow	EGLL	7.96	8.44	8.47	9.04		8.90	8.43	8.53	7.66	
London/ Luton	EGGW	3.79	4.56	4.53	4.56		1.00	1.11	1.20	1.40	
London/ Stansted	EGSS	2.67	3.68	3.97	4.68		1.19	1.47	1.73	1.86	
Manchester	EGCC	3.87	4.41	4.39	3.74		1.85	1.95	2.14	1.63	

**UNITED KINGDOM**

**Monitoring of CAPACITY for 2018**

En route Capacity incentive scheme						
	2015	2016	2017	2018	2019	Observations
National Capacity target	0.22	0.23	0.23	0.23	0.23	Exclusive use of CRSTMP codes means that the PRB is unable to independently validate the results for incentive purposes. Actual performance reported here is for all causes of delay.
Deadband +/-	0.00	0.00	0.00	0.00	0.00	
Actual performance	0.08	0.31	0.16	0.28		

**National capacity incentive scheme**

UK National en route incentive scheme (C2)  
 C2: UK target for en route capacity 0.18 minutes per flight (CRSTMP reasons) for 2018. C2: Penalty threshold 0.20 minutes per flight, bonus threshold 0.14 minute per flight.  
 Result: 2018 C2 performance was 0.208 mins/flight. C2 penalty is 0.04% (£264,109) of ANSP en route revenue, out of a possible maximum penalty of 0.25% of ANSP en route revenue.

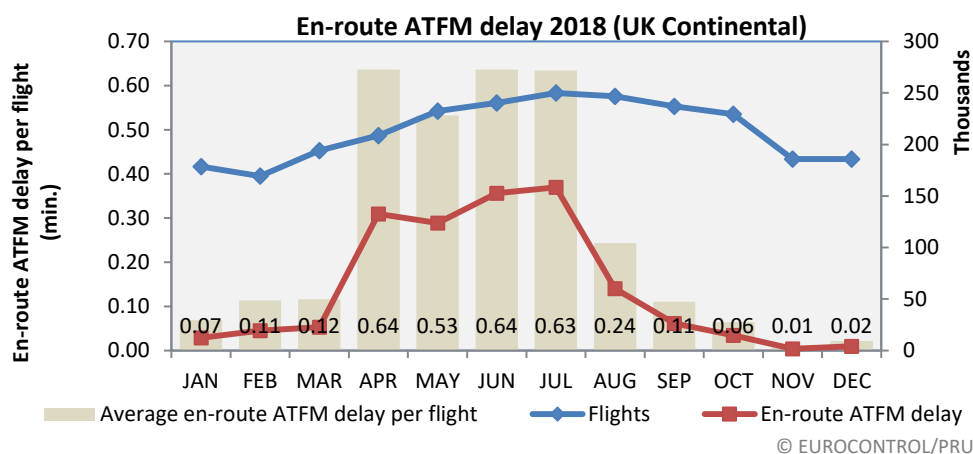
**Additional national capacity incentive schemes**

The UK IRL FAB performance plan also contains details of two further capacity related incentive schemes in the United Kingdom: C3 - related to high impact of long and early delays; C4 - related to days with severe disruption (penalty only).

C3: The United Kingdom report the achievement of a value of 17,05, within the deadband of 16.0 – 27.0, which means that neither a bonus or penalty is due.

No penalty was incurred because of severe disruption in accordance with the C4 incentive scheme.

**Observations regarding national capacity incentive scheme**



En-route ATFM delay per flight (United Kingdom)										
2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
0.54	0.17	0.15	0.19	0.07	0.13	0.06	0.08	0.31	0.16	0.28

EUROCONTROL 7 year forecast February 2014 – United Kingdom						
	2014	2015	2016	2017	2018	2019
	actual	actual	actual	actual	actual	
High	2265	2329	2405	2468	2537	2608
Base	2242	2269	2294	2322	2339	2449
					2534	2420
Low	2218	2248	2265	2279	2298	2318
					2558	2465

Traffic growth in the UK was marginal for 2018, at less than 1%, but, as for four out of the last five years, remained above the high traffic scenario forecasted by STATFOR in 2014 when the FAB performance plans and associated capacity plans were developed.

As stated in the FAB report, 37% of delays were attributed to ATC capacity, 28% to 'Special event', 26% to adverse weather and 8% to ATC staffing.

The Network Manager calculates that more than 200k minutes of delay were due to the EXCDS project, which introduced electronic flight progress strip capability into the London TC approach and en route operations. This delay was attributed to 'Special Event'.

The latest version of the Network operations Plan 2019-2024 contains capacity plans for the UK ACCs. The Network Manager predicts no capacity issues in the UK for the remainder of RP2 and for the entirety of RP3.

NATS delay forecast						
	2019	2020	2021	2022	2023	2024
<b>NOP 2018 - 2022</b>	0.16	0.16	0.13	0.12	N/A	N/A
<b>NOP 2019 - 2024</b>	0.14	0.21	0.15 – 0.24			

### Planning and Effective Use of CDRs

The United Kingdom did not provide any data on this indicator reporting that the Network Manager holds the data.

### Observations on Planning and Effective Use of CDRs

It is noted that the United Kingdom like many other States, does not monitor the planning and effective use of CDRs. The PRB has previously suggested that the use of such indicators should be reviewed in light of the increasing irrelevance as Free Route Airspace operations becomes more widespread through the network.

### Effective booking procedures

Share of restricted / segregated time that was actually used				
2015	2016	2017	2018	2019
38%	39%	32%	34%	

Share of restricted / segregated time released with 3 hours' notice				
2015	2016	2017	2018	2019
7%	9%	9%	6%	

### Observations on Effective booking procedures

The PRB is not aware of any performance related benefits from monitoring this specific indicator and is unaware of any national efforts to change the value of the indicator.

**UNITED KINGDOM**

**Monitoring of Airports Contribution to CAPACITY for 2018**

**1. Overview**

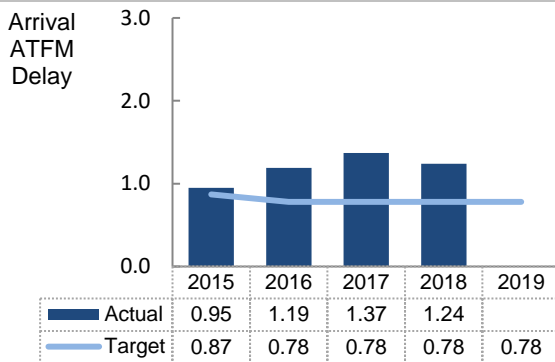
The United Kingdom identifies 9 airports as subject to RP2 monitoring, where traffic levels have significantly increased during RP2 (+8.2% with respect to 2015).

In terms of arrival ATFM delays, values are significantly higher than those in the beginning of the reference period (+30.9% in 2018 with respect to 2015). On the positive side, ATFM slot adherence has improved by 4 points (2015:90.7%; 2018:94.7%) getting closer to the mark of best-in-class performance of 95% compliance.

The established national target on arrival ATFM delay has been missed every year of RP2.

The analysis of ATC pre-departure delay at three airports is still not possible due to data quality issues.

**2. Arrival ATFM Delay**



During 2018, arrival ATFM delays in United Kingdom have slightly decreased with respect to the previous year (2017: 1.37 min/arr, 2018: 1.24 min/arr)

This improvement can be observed in all British airports subject to monitoring except for Stansted, where delays have increased (EGSS: 2017: 0.93 min/arr; 2018: 1.25 min/arr.)

64% of the arrival ATFM delays in UK are attributed to weather and 31% are attributed to aerodrome capacity issues, mainly at Gatwick (EGKK, where it is the main reason), Stansted (EGSS) and London Heathrow (EGLL only the last three months of the year, before almost no aerodrome capacity related delays were registered).

Delays at Heathrow, after a significant reduction in the Summer months compared to 2017, have drastically increased in the last three months with the appearance of the aerodrome capacity delays, reaching almost 4.5 min/arr. in December. Closure of some runway exits due to work in progress during that same period might be associated to these delays, but not confirmed.

Arrival ATFM delay per flight at Gatwick is the third highest in the SES area.

**3. Arrival ATFM Delay – National Target and Incentive Scheme**

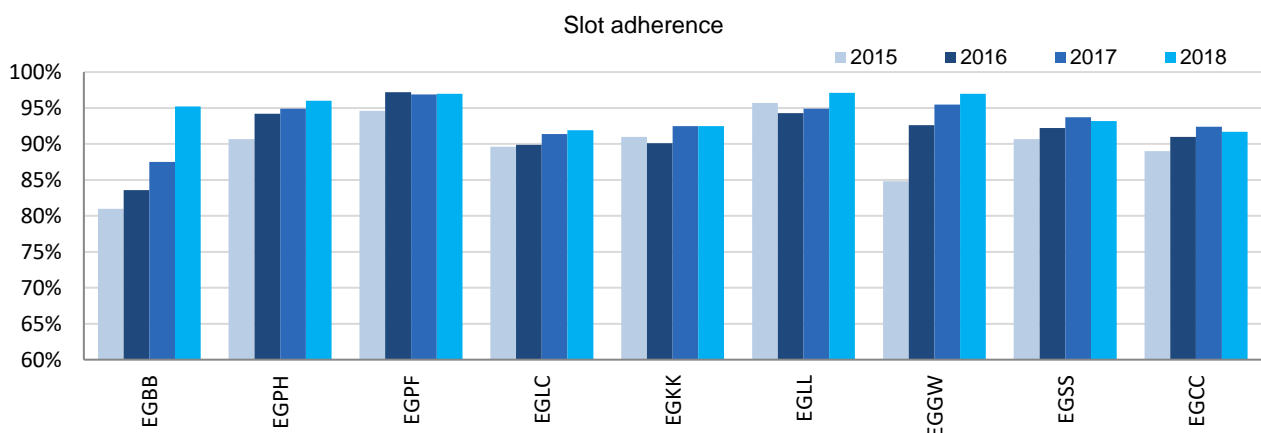
The UK-Ireland FAB PP establishes a national target on arrival ATFM delay for the United Kingdom with a breakdown per airport.

Despite the slight improvement, the national target is missed for the fourth year in a row (2018: PP= 0.78 min/arr. vs Actual= 1.24 min/arr.).

Heathrow (EGLL), Manchester (EGCC), London City (EGLC), Glasgow (EGPF) and Edinburgh (EGPH) meet their PP's reference value. Gatwick (EGKK), which performance has significantly improved in 2018, still exceeds its reference value by a factor of 4.7, with 2.71 min/arr.

The UK-Ireland FAB performance plan presents no (capacity) incentive scheme for the national target on arrival ATFM delay for The United Kingdom.

**4. ATFM Slot Adherence**



Overall adherence to ATFM slots in the UK has increased over RP2, and currently all of them surpass the 90% compliance.

## 5. ATC Pre-departure Delay

The Airport Operator Data Flow required for the monitoring of the ATC pre-departure delay is now finally established for all British airports under RP2 after the implementation at London City (EGLC) in 2018.

At Heathrow (EGLL) and Manchester (EGCC) the quality of the pre-departure delay reporting does not allow for the calculation of this indicator, due to a high share of unreported delay and/or associated to ambiguity codes. Attention should be paid to the quality of the reporting by the airports on a monthly basis, as the share of unidentified delay is putting at risk the calculation of the indicator at some airports.

Regarding the observed performance, the most significant evolution is observed at Stansted, where ATC pre-departure delay, in line with the capacity issues identified, is steadily increasing since the beginning of RP2 and now is the 4th highest in the SES area.

## 6. Appendix

n/a: airport operator data flow not established, or more than two months of missing / non-validated data

Airport Name	ICAO Code	Avg arrival ATFM delay					Slot adherence					ATC pre-departure delay				
		2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Birmingham	EGBB	0.00	0.06	0.23	0.08		81.0%	83.6%	87.5%	95.2%		0.19	0.23	0.30	0.25	
Edinburgh	EGPH	0.00	0.02	0.00	0.07		90.7%	94.2%	94.9%	96.0%		0.20	0.24	0.33	0.34	
Glasgow	EGPF	0.02	0.00	0.04	0.00		94.6%	97.2%	96.9%	97.0%		n/a	n/a	n/a	0.13	
London/ City	EGLC	0.97	1.77	1.57	1.25		89.6%	89.9%	91.4%	91.9%		n/a	n/a	n/a	0.35	
London/ Gatwick	EGKK	1.03	2.41	3.18	2.71		91.0%	90.1%	92.5%	92.5%		0.74	1.21	n/a	0.94	
London/ Heathrow	EGLL	2.12	1.86	1.92	1.84		95.7%	94.3%	94.9%	97.1%		n/a	n/a	n/a	n/a	
London/ Luton	EGGW	0.28	0.83	0.55	0.55		84.8%	92.6%	95.5%	97.0%		n/a	n/a	n/a	0.37	
London/ Stansted	EGSS	0.34	0.81	0.93	1.25		90.7%	92.2%	93.7%	93.2%		0.56	0.99	1.13	1.33	
Manchester	EGCC	0.25	0.10	0.52	0.14		89.0%	91.0%	92.4%	91.7%		0.69	0.68	0.94	n/a	

## UNITED KINGDOM: En-route charging zone

## Monitoring of en-route COST-EFFICIENCY for 2018

1. Contextual economic information: en-route air navigation services						
· United Kingdom ECZ represents 10.0% of the SES en-route ANS determined costs in 2018						
· ATSP: NATS						
· FAB: UK-Ireland FAB						
· National currency: GBP Exchange rate 2009: 1 EUR = 0.890647 GBP						
2. En-route DUC monitoring at Charging Zone level						
United Kingdom: Data from RP2 Performance Plan (EC Decision 2015/348 of 2 March 2015)						
	2015D	2016D	2017D	2018D	2019D	
En-route costs (nominal GBP)	686 348 218	687 119 724	690 004 230	682 569 359	673 089 111	
Inflation %	1.9%	1.9%	2.0%	2.0%	2.0%	
Inflation index (100 in 2009)	118.2	120.5	122.9	125.3	127.8	
Real en-route costs (GBP2009)	580 582 809	570 397 867	561 561 156	544 617 914	526 523 219	
Total en-route Service Units	10 244 000	10 435 000	10 583 000	10 758 000	10 940 000	
<b>Real en-route unit cost per Service Unit (GBP2009)</b>	<b>56.68</b>	<b>54.66</b>	<b>53.06</b>	<b>50.62</b>	<b>48.13</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>63.63</b>	<b>61.37</b>	<b>59.58</b>	<b>56.84</b>	<b>54.04</b>	
United Kingdom: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
En-route costs (nominal GBP)	657 371 514	666 364 998	660 595 580	694 359 079		
Inflation %	0.0%	0.7%	2.7%	2.5%		
Inflation index (100 in 2009)	115.6	116.4	119.6	122.5		
Real en-route costs (GBP2009)	568 620 282	572 392 813	552 518 998	566 593 782		
Total en-route Service Units	10 153 900	10 874 798	11 767 621	12 194 153		
<b>Real en-route unit cost per Service Unit (GBP2009)</b>	<b>56.00</b>	<b>52.63</b>	<b>46.95</b>	<b>46.46</b>		
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>62.88</b>	<b>59.10</b>	<b>52.72</b>	<b>52.17</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
En-route costs (nominal GBP)	in value	-28 976 704	-20 754 726	-29 408 650	11 789 720	
	in %	-4.2%	-3.0%	-4.3%	1.7%	
Inflation %	in p.p.	-1.9 p.p.	-1.2 p.p.	0.7 p.p.	0.5 p.p.	
	in p.p.	-2.6 p.p.	-4.0 p.p.	-3.3 p.p.	-2.8 p.p.	
Real en-route costs (GBP2009)	in value	-11 962 527	1 994 945	-9 042 158	21 975 868	
	in %	-2.1%	0.3%	-1.6%	4.0%	
Total en-route Service Units	in value	-90 100	439 798	1 184 621	1 436 153	
	in %	-0.9%	4.2%	11.2%	13.3%	
<b>Real en-route unit cost per Service Unit (GBP2009)</b>	<b>in value</b>	<b>-0.68</b>	<b>-2.03</b>	<b>-6.11</b>	<b>-4.16</b>	
	<b>in %</b>	<b>-1.2%</b>	<b>-3.7%</b>	<b>-11.5%</b>	<b>-8.2%</b>	
<b>Real en-route unit cost per Service Unit (EUR2009)</b>	<b>in value</b>	<b>-0.76</b>	<b>-2.28</b>	<b>-6.86</b>	<b>-4.67</b>	
	<b>in %</b>	<b>-1.2%</b>	<b>-3.7%</b>	<b>-11.5%</b>	<b>-8.2%</b>	
3. Focus on en-route at State/Charging Zone level						
<b>En-route unit cost</b>						
In 2018, the actual en-route unit cost in real terms (46.46 GBP2009 or 52.17 €2009) is -8.2% lower than planned in the PP (50.62 GBP2009 or 56.84 €2009). This results from the combination of much higher than planned TSUs (+13.3%) and higher than planned en-route costs in real terms (+4.0%, or +24.7 M€2009).						
<b>En-route service units</b>						
The difference between actual and planned TSUs (+13.3%) exceeds the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional en-route revenues is therefore shared between the ATSP and the airspace users, with the ATSP (NATS) retaining an amount of +23.8 M€2009.						
According to STATFOR February 2019 <u>base</u> scenario, the en-route TSUs for United Kingdom are expected to exceed the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.						
<b>En-route costs</b>						
In nominal terms, actual en-route costs are +1.7% (+11.8 MGBP) higher than planned. However, since the actual inflation index is lower than planned (-2.8 p.p.), actual en-route costs are +4.0% (+22.0 MGBP2009 or +24.7 M€2009) above plans when expressed in real terms.						
The higher than planned en-route costs in real terms are driven by NATS (+4.6%, or +24.3 M€2009), the MET service provider (+0.7%, or +0.2 M€2009) and the NSA/EUROCONTROL (+0.4%, or +0.2 M€2009). A detailed analysis at ATSP level is provided in box 12.						
Costs exempt from cost-sharing are reported for a total amount of +10.8 M€2009 comprising +11.2 M€2009 for pension, -0.04 M€2009 for new cost item required by law and -0.3 M€2009 for the variation in EUROCONTROL costs. These costs will be eligible for carry-over (charged to airspace users) to the following reference period(s), if deemed allowed by the European Commission.						

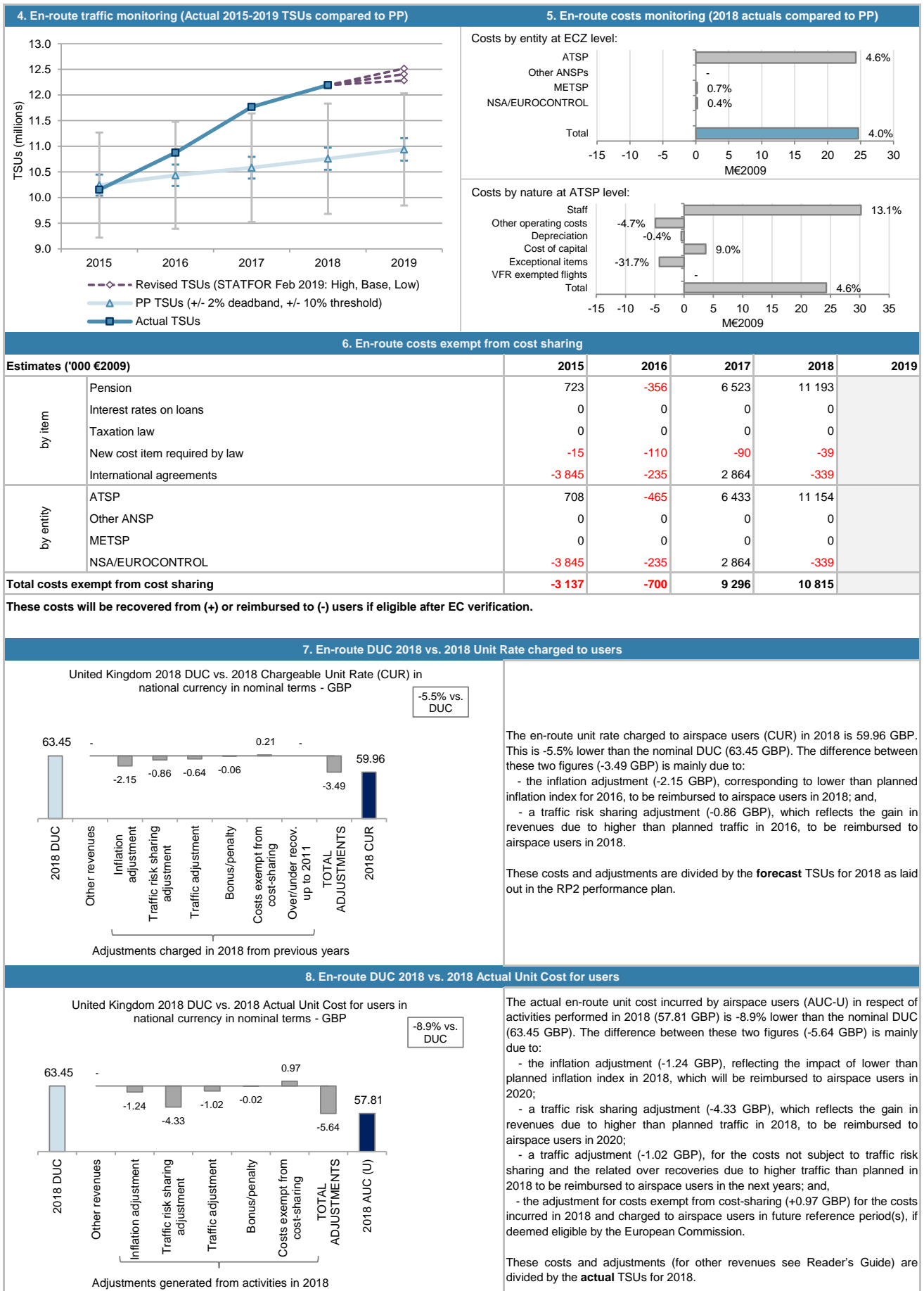
Year	Difference (%)
2015	-2.1%
2016	0.3%
2017	-1.6%
2018	4.0%

Year	Difference (%)
2015	-0.9%
2016	4.2%
2017	11.2%
2018	13.3%

Year	En-route DUC (PP) (€2009)	En-route unit costs (actual) (€2009)
2015	63.63	62.88
2016	61.37	59.10
2017	59.58	52.72
2018	56.84	52.17
2019	54.04	54.04

UNITED KINGDOM: En-route charging zone

Monitoring of en-route COST-EFFICIENCY for 2018



## UNITED KINGDOM: En-route ATSP (NATS)

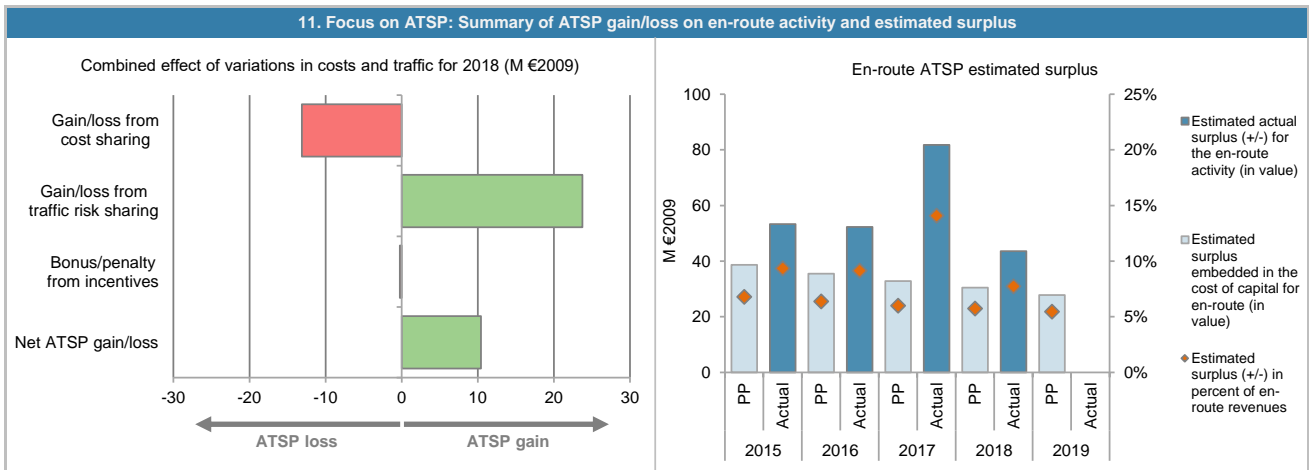
## Monitoring of en-route COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on en-route activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	568 718	556 914	547 025	528 185	
Actual costs for the ATSP	556 567	556 642	533 276	552 454	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	12 151	272	13 748	-24 269	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	708	-465	6 433	11 154	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>12 859</b>	<b>-193</b>	<b>20 181</b>	<b>-13 115</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	-0.9%	4.2%	11.2%	13.3%	
Determined costs for the ATSP (PP) - based on actual inflation	581 552	576 269	562 177	540 168	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>-5 115</b>	<b>15 354</b>	<b>24 736</b>	<b>23 767</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>4 565</b>	<b>-614</b>	<b>2 384</b>	<b>-242</b>	
<b>Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)</b>	<b>12 309</b>	<b>14 547</b>	<b>47 301</b>	<b>10 410</b>	
10. Focus on ATSP: En-route ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	885 353	814 071	751 630	697 425	637 957
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.0%	40.0%	40.0%
Estimated proportion of financing through equity (in value)	354 451	325 913	300 915	279 214	255 406
Estimated proportion of financing through debt (in %)	60.0%	60.0%	60.0%	60.0%	60.0%
Estimated proportion of financing through debt (in value)	530 902	488 158	450 715	418 211	382 551
Cost of capital pre-tax (in value)	51 908	47 728	44 068	40 890	37 403
Average interest on debt (in %)	2.5%	2.5%	2.5%	2.5%	2.5%
Interest on debt (in value)	13 273	12 204	11 268	10 455	9 564
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	10.9%
Estimated surplus embedded in the cost of capital for en-route (in value)	38 635	35 525	32 800	30 434	27 839
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>38 635</b>	<b>35 525</b>	<b>32 800</b>	<b>30 434</b>	<b>27 839</b>
<b>Revenue/costs for the en-route activity</b>	<b>568 718</b>	<b>556 914</b>	<b>547 025</b>	<b>528 185</b>	<b>508 537</b>
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>6.8%</b>	<b>6.4%</b>	<b>6.0%</b>	<b>5.8%</b>	<b>5.5%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	940 369	865 853	791 273	760 799	
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.0%	40.0%	
Estimated proportion of financing through equity (in value)	376 148	346 341	316 509	304 320	
Estimated proportion of financing through debt (in %)	60.0%	60.0%	60.0%	60.0%	
Estimated proportion of financing through debt (in value)	564 221	519 512	474 764	456 480	
Cost of capital pre-tax (in value)	55 106	50 739	46 369	44 583	
Average interest on debt (in %)	2.5%	2.5%	2.5%	2.5%	
Interest on debt (in value)	14 106	12 988	11 869	11 412	
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	
Estimated surplus embedded in the cost of capital for en-route (in value)	41 000	37 751	34 500	33 171	
Net ATSP gain(+)/loss(-) on en-route activity	12 309	14 547	47 301	10 410	
<b>Overall estimated surplus (+/-) for the en-route activity</b>	<b>53 309</b>	<b>52 298</b>	<b>81 801</b>	<b>43 581</b>	
<b>Revenue/costs for the en-route activity</b>	<b>568 876</b>	<b>571 189</b>	<b>580 578</b>	<b>562 864</b>	
<b>Estimated surplus (+/-) in percent of en-route revenues</b>	<b>9.4%</b>	<b>9.2%</b>	<b>14.1%</b>	<b>7.7%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>14.2%</b>	<b>15.1%</b>	<b>25.8%</b>	<b>14.3%</b>	



**UNITED KINGDOM: En-route ATSP (NATS)**

**Monitoring of en-route COST-EFFICIENCY for 2018**



**12. Focus on en-route ATSP: General conclusions**

**Actual 2018 NATS en-route costs vs. PP**

In 2018, NATS actual en-route costs are +4.6% (+24.3 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 en-route Reporting Tables, this results from a combination of:

- much higher staff costs (+13.1%, or +30.2 M€2009) mainly due to "more operations staff required due to higher levels of traffic and higher levels of ATCO trainees recruitment together with more staff/hours required for SESAR systems implementations";
- lower other operating costs (-4.7%, or -4.9 M€2009) due to some cost savings measures;
- slightly lower depreciation costs (-0.4%, or -0.5 M€2009) due to "timing differences on SESAR deployment projects";
- higher cost of capital (+9.0%, or +3.7 M€2009) due to a higher asset base; and,
- much lower exceptional costs (-31.7%, or -4.2 M€2009) as "redundancy numbers and costs were lower than planned".

**NATS net gain/loss on en-route activity in 2018**

As shown in box 9, NATS generated a net gain of +10.4 M€2009 on the en-route activity. This is a combination of three elements:

- a loss of -13.1 M€2009 arising from the cost sharing mechanism;
- a gain of +23.8 M€2009 arising from the traffic risk sharing mechanism; and
- a loss of -0.2 M€2009 (or -0.26 MGBP in nominal terms), corresponding to a penalty as part of the en-route capacity target incentive mechanism. This amount corresponds to 0.04% of NATS en-route revenues (based on the ATSP chargeable unit rate in 2018 times the actual TSUs). The inclusion of this penalty in the chargeable cost base will be examined by the European Commission.

The loss from cost sharing mentioned above (-13.1 M€2009) includes amounts reported by NATS for cost exempt from cost sharing (+11.2 M€2009). Should these costs not be deemed eligible by the European Commission, NATS would record a net loss of -0.7 M€2009 for the en-route activity in 2018.

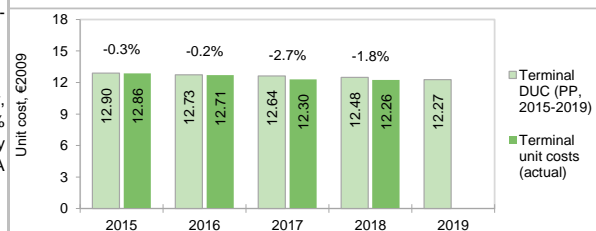
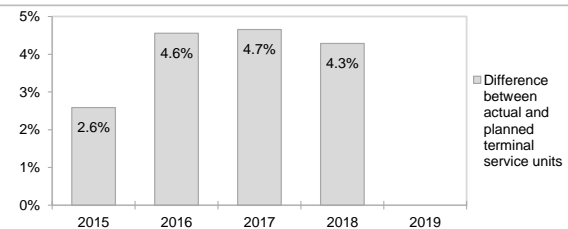
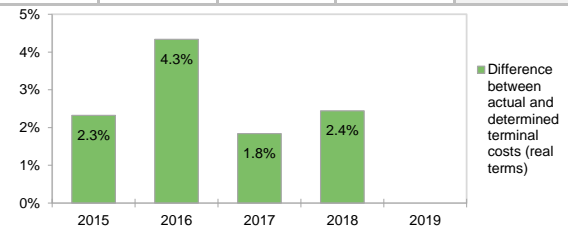
**NATS overall estimated surplus for the en-route activity**

Ex-post, the overall estimated surplus taking into account the net gain from the en-route activity mentioned above (+10.4 M€2009) and the surplus embedded in the actual cost of capital (+33.2 M€2009) amounts to +43.6 M€2009 (7.7% of the 2018 en-route revenues). The resulting ex-post rate of return on equity is 14.3%, which is higher than the 10.9% planned in the PP.

## UK - ZONE C: Terminal charging zone

## Monitoring of terminal COST-EFFICIENCY for 2018

1. Contextual economic information: terminal air navigation services						
· UK - Zone C TCZ represents 1.1% of the SES terminal ANS determined costs in 2018		· Is this TCZ applying traffic risk sharing?		Yes		
· ATSP: NATS		· Airports with fewer than 70,000 IFRs ATMs:		0		
· National currency: GBP		· Airports with between 70,000 and 225,000 IFRs ATMs:		3		
· Number of airports in charging zone in 2018: 5, of which:		· Airports with more than 225,000 IFRs ATMs:		2		
2. Terminal DUC monitoring at Charging Zone level						
UK - Zone C: Data from RP2 Performance Plan						
	2015D	2016D	2017D	2018D	2019D	
Terminal costs (nominal GBP)	12 011 867	12 371 198	12 749 490	13 092 087	13 398 855	
Inflation %	1.9%	1.9%	2.0%	2.0%	2.0%	
Inflation index (100 in 2009)	118.2	120.5	122.9	125.3	127.8	
Real terminal costs (GBP2009)	10 160 853	10 269 688	10 376 195	10 446 096	10 481 239	
Total terminal Service Units	884 691	905 513	921 933	940 093	958 830	
<b>Real terminal unit cost per Service Unit (GBP2009)</b>	<b>11.49</b>	<b>11.34</b>	<b>11.25</b>	<b>11.11</b>	<b>10.93</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>12.90</b>	<b>12.73</b>	<b>12.64</b>	<b>12.48</b>	<b>12.27</b>	
UK - Zone C: Actual data from Reporting Tables						
	2015A	2016A	2017A	2018A	2019A	
Terminal costs (nominal GBP)	12 019 496	12 474 203	12 634 000	13 114 833		
Inflation %	0.0%	0.7%	2.7%	2.5%		
Inflation index (100 in 2009)	115.6	116.4	119.6	122.5		
Real terminal costs (GBP2009)	10 396 753	10 715 065	10 567 017	10 701 643		
Total terminal Service Units	907 600	946 771	964 876	980 375		
<b>Real terminal unit cost per Service Unit (GBP2009)</b>	<b>11.46</b>	<b>11.32</b>	<b>10.95</b>	<b>10.92</b>		
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	<b>12.86</b>	<b>12.71</b>	<b>12.30</b>	<b>12.26</b>		
Difference between Actuals and Planned						
	2015	2016	2017	2018	2019	
Terminal costs (nominal GBP)	in value	7 629	103 005	-115 490	22 745	
	in %	0.1%	0.8%	-0.9%	0.2%	
Inflation %	in p.p.	-1.9 p.p.	-1.2 p.p.	0.7 p.p.	0.5 p.p.	
Inflation index (100 in 2009)	in p.p.	-2.6 p.p.	-4.0 p.p.	-3.3 p.p.	-2.8 p.p.	
Real terminal costs (GBP2009)	in value	235 900	445 377	190 823	255 546	
	in %	2.3%	4.3%	1.8%	2.4%	
Total terminal Service Units	in value	22 909	41 258	42 943	40 282	
	in %	2.6%	4.6%	4.7%	4.3%	
<b>Real terminal unit cost per Service Unit (GBP2009)</b>	in value	<b>-0.03</b>	<b>-0.02</b>	<b>-0.30</b>	<b>-0.20</b>	
	in %	<b>-0.3%</b>	<b>-0.2%</b>	<b>-2.7%</b>	<b>-1.8%</b>	
<b>Real terminal unit cost per Service Unit (EUR2009)</b>	in value	<b>-0.03</b>	<b>-0.03</b>	<b>-0.34</b>	<b>-0.22</b>	
	in %	<b>-0.3%</b>	<b>-0.2%</b>	<b>-2.7%</b>	<b>-1.8%</b>	
3. Focus on terminal at State/Charging Zone level						
<p>This analysis focuses on UK Terminal Charging Zone C (TCZ C), which corresponds to the London approach services provided at the five London airports (Heathrow, Gatwick, Stansted, Luton and London City). These airports are common to TCZ B, for which UK has to submit information to the European Commission on a confidential basis. The monitoring of TCZ B is therefore excluded from this report. Additional information on the particularities of the UK TCZs are presented at the end of this report (see technical <a href="#">Note 1</a>).</p>						
<p><b>Terminal unit cost</b></p> <p>In 2018, the actual terminal unit cost in real terms (10.92 GBP2009 or 12.26 €2009) is -1.8% lower than planned in the PP (11.11 GBP2009 or 12.48 €2009). This results from the combination of higher than planned TNSUs (+4.3%) and slightly higher than planned terminal costs in real terms (+2.4%, or +0.3 M€2009).</p>						
<p><b>Terminal service units</b></p> <p>The traffic risk sharing mechanism applies in UK - Zone C TCZ. The difference between actual and planned TNSUs (+4.3%) falls outside the ±2% dead band, but does not exceed the ±10% threshold foreseen in the traffic risk sharing mechanism. The resulting gain of additional terminal revenues is therefore shared between the ATSP and the airspace users, with the ATSP (NATS) retaining an amount of +0.3 M€2009.</p> <p>According to STATFOR February 2019 <a href="#">base</a> scenario, the TNSUs for UK - Zone C are expected to exceed the ±2% dead band but stay within the ±10% threshold foreseen in the traffic risk-sharing mechanism for the remainder of RP2.</p>						
<p><b>Terminal costs</b></p> <p>In nominal terms, actual terminal costs are +0.2% (+0.02 MGBP) higher than planned. However, since the actual inflation index is lower than planned (-2.8 p.p.), actual terminal costs are +2.4% (+0.3 MGBP2009 or +0.3 M€2009) above plans when expressed in real terms. The slightly higher than planned terminal costs in real terms are driven by NATS (+2.4%, or +0.3 M€2009). A detailed analysis at ATSP level is provided in box 12.</p> <p>There are no costs exempt from cost-sharing reported.</p>						



UK - ZONE C: Terminal charging zone

Monitoring of terminal COST-EFFICIENCY for 2018

#### 4. Terminal traffic monitoring (Actual 2015-2019 TNSUs compared to PP)

#### 5. Terminal costs monitoring (2018 actuals compared to PP)

Costs by entity at TCZ level:

ATSP	2.4%
Other ANSPs	-
METSP	-
NSA	-
Total	2.4%

Costs by nature at ATSP level:

Staff	12.1%
Other operating costs	-4.1%
Depreciation	-2.9%
Cost of capital	-13.1%
Exceptional items	-
VFR exempted flights	-
Total	2.4%

#### 6. Terminal costs exempt from cost sharing

Estimates ('000 €2009)		2015	2016	2017	2018	2019
by item	Pension	0	0	0	0	
	Interest rates on loans	0	0	0	0	
	Taxation law	0	0	0	0	
	New cost item required by law	0	0	0	0	
	International agreements	0	0	0	0	
by entity	ATSP	0	0	0	0	
	Other ANSP	0	0	0	0	
	METSP	0	0	0	0	
	NSA	0	0	0	0	
<b>Total costs exempt from cost sharing</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	

These costs will be recovered from (+) or reimbursed to (-) users if eligible after EC verification.

#### 7. Terminal DUC 2018 vs. 2018 Unit Rate charged to users

UK - Zone C 2018 DUC vs. 2018 Chargeable Unit Rate (CUR) in national currency in nominal terms - GBP

The terminal unit rate charged to airspace users (CUR) in 2018 is 13.25 GBP. This is -4.9% lower than the nominal DUC (13.93 GBP). The difference between these two figures (-0.68 GBP) mainly relates to:

- the inflation adjustment (-0.44 GBP), corresponding to lower than planned inflation index for 2016, to be reimbursed to airspace users in 2018; and,
- a traffic risk sharing adjustment (-0.24 GBP), which reflects the gain in revenues due to higher than planned traffic in 2016, to be reimbursed to airspace users in 2018.

These costs and adjustments are divided by the **forecast** TNSUs for 2018 as laid out in the RP2 performance plan.

#### 8. Terminal DUC 2018 vs. 2018 Actual Unit Cost for users

UK - Zone C 2018 DUC vs. 2018 Actual Unit Cost for users in national currency in nominal terms - GBP

The actual terminal unit cost incurred by airspace users (AUC-U) in respect of activities performed in 2018 (13.42 GBP) is -3.7% lower than the nominal DUC (13.93 GBP). The difference between these two figures (-0.51 GBP) is mainly due to:

- the inflation adjustment (-0.30 GBP), reflecting the impact of lower than planned inflation index in 2018, which will be reimbursed to airspace users in 2020; and
- a traffic risk sharing adjustment (-0.21 GBP), which reflects the gain in revenues due to higher than planned traffic in 2018, to be reimbursed to airspace users in 2020.

These costs and adjustments (for other revenues see Reader's Guide) are divided by the **actual** TNSUs in 2018.

## UNITED KINGDOM: Terminal ATSP (NATS)

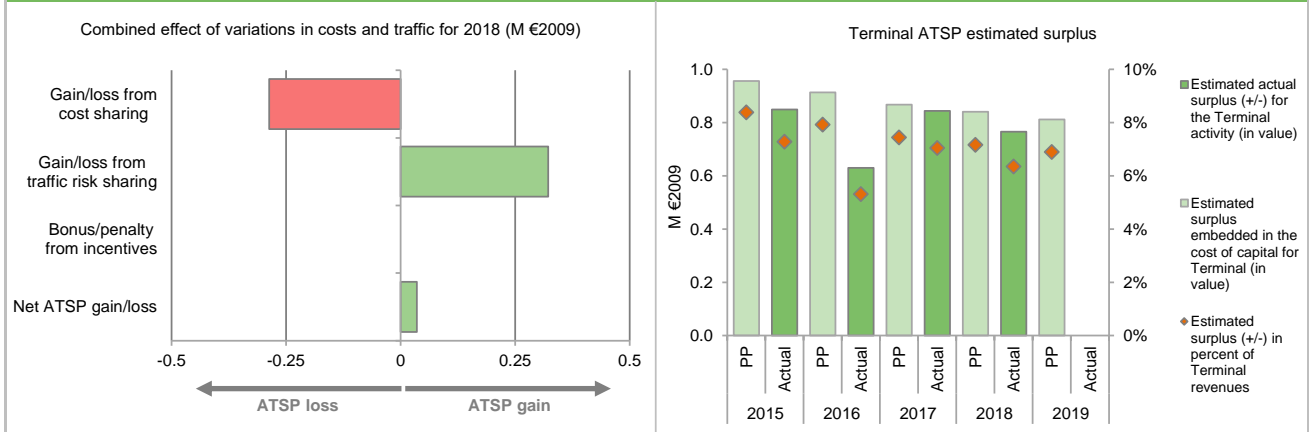
## Monitoring of terminal COST-EFFICIENCY for 2018

9. Focus on ATSP: Net ATSP gain/loss on terminal ANS activity					
Cost sharing ('000 €2009)	2015	2016	2017	2018	2019
Determined costs for the ATSP (PP) - based on planned inflation	11 408	11 531	11 650	11 729	
Actual costs for the ATSP	11 673	12 031	11 864	12 016	
Difference in costs: gain (+)/Loss (-) retained/borne by the ATSP	-265	-500	-214	-287	
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	0	0	0	0	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of cost sharing</b>	<b>-265</b>	<b>-500</b>	<b>-214</b>	<b>-287</b>	
Traffic risk sharing ('000 €2009)	2015	2016	2017	2018	2019
Difference in total service units (actual vs PP) %	2.6%	4.6%	4.7%	4.3%	
Determined costs for the ATSP (PP) - based on actual inflation	11 666	11 931	11 973	11 995	
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of traffic risk sharing</b>	<b>254</b>	<b>330</b>	<b>335</b>	<b>322</b>	
Incentives ('000 €2009)	2015	2016	2017	2018	2019
<b>Gain (+)/Loss (-) to be retained by the ATSP in respect of incentives (bonus/penalty)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>Net ATSP gain(+)/loss(-) on terminal activity ('000 €2009)</b>	<b>-11</b>	<b>-170</b>	<b>121</b>	<b>35</b>	
10. Focus on ATSP: Terminal ATSP estimated surplus *					
* This calculation of the economic surplus retained by the ATSP is based on the determined RoE and on the information provided in the Reporting Tables. This is different from the accounting profit/loss reported in the P&L accounts of the ATSP.					
ATSP estimated surplus ('000 €2009) from RP2 Performance Plan	2015P	2016P	2017P	2018P	2019P
Total asset base	21 911	20 928	19 885	19 265	18 591
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.0%	40.0%	40.0%
Estimated proportion of financing through equity (in value)	8 772	8 379	7 961	7 713	7 443
Estimated proportion of financing through debt (in %)	60.0%	60.0%	60.0%	60.0%	60.0%
Estimated proportion of financing through debt (in value)	13 139	12 550	11 924	11 552	11 148
Cost of capital pre-tax (in value)	1 285	1 227	1 166	1 130	1 090
Average interest on debt (in %)	2.5%	2.5%	2.5%	2.5%	2.5%
Interest on debt (in value)	328	314	298	289	279
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	10.9%
Estimated surplus embedded in the cost of capital for terminal (in value)	956	913	868	841	811
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>956</b>	<b>913</b>	<b>868</b>	<b>841</b>	<b>811</b>
<b>Revenue/costs for the terminal activity</b>	<b>11 408</b>	<b>11 531</b>	<b>11 650</b>	<b>11 729</b>	<b>11 768</b>
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>8.4%</b>	<b>7.9%</b>	<b>7.4%</b>	<b>7.2%</b>	<b>6.9%</b>
<b>Estimated ex-ante RoE pre-tax rate (in %)</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>	<b>10.9%</b>
ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A
Total asset base	19 730	18 349	16 571	16 746	
Estimated proportion of financing through equity (in %)	40.0%	40.0%	40.1%	40.0%	
Estimated proportion of financing through equity (in value)	7 892	7 340	6 639	6 699	
Estimated proportion of financing through debt (in %)	60.0%	60.0%	59.9%	60.0%	
Estimated proportion of financing through debt (in value)	11 838	11 009	9 932	10 048	
Cost of capital pre-tax (in value)	1 156	1 075	972	981	
Average interest on debt (in %)	2.5%	2.5%	2.5%	2.5%	
Interest on debt (in value)	296	275	248	251	
Determined RoE pre-tax rate (in %)	10.9%	10.9%	10.9%	10.9%	
Estimated surplus embedded in the cost of capital for terminal (in value)	860	800	724	730	
Net ATSP gain(+)/loss(-) on terminal activity	-11	-170	121	35	
<b>Overall estimated surplus (+/-) for the terminal activity</b>	<b>849</b>	<b>630</b>	<b>844</b>	<b>765</b>	
<b>Revenue/costs for the terminal activity</b>	<b>11 662</b>	<b>11 861</b>	<b>11 985</b>	<b>12 051</b>	
<b>Estimated surplus (+/-) in percent of terminal revenues</b>	<b>7.3%</b>	<b>5.3%</b>	<b>7.0%</b>	<b>6.4%</b>	
<b>Estimated ex-post RoE pre-tax rate (in %)</b>	<b>10.8%</b>	<b>8.6%</b>	<b>12.7%</b>	<b>11.4%</b>	

**UNITED KINGDOM: Terminal ATSP (NATS)**

**Monitoring of terminal COST-EFFICIENCY for 2018**

**11. Focus on ATSP: Summary of ATSP gain/loss on terminal activity and estimated surplus**



**12. Focus on terminal ATSP: General conclusions**

**Actual 2018 NATS terminal costs vs. PP**

In 2018, NATS actual terminal costs are +2.4% (+0.3 M€2009) higher, in real terms, than planned in the PP. According to the additional information to the June 2019 terminal Reporting Tables, this results from a combination of:

- higher staff costs (+12.1%, or +0.6 M€2009) mainly due to additional staff;
- lower other operating costs (-4.1%, or -0.1 M€2009);
- lower depreciation costs (-2.9%, or -0.1 M€2009) due to "timing of SESAR projects (phased introduction of EXCDS)"; and,
- lower cost of capital (-13.1%, or -0.1 M€2009) due to a lower asset base.

**NATS net gain/loss on terminal activity in 2018**

As shown in box 9, NATS generated a net gain of +0.04 M€2009 on the terminal activity. This is a combination of two elements:

- a loss of -0.3 M€2009 arising from the cost sharing mechanism; and
- a gain of +0.3 M€2009 arising from the traffic risk sharing mechanism.

**NATS overall estimated surplus for the terminal activity**

Ex-post, the overall estimated surplus taking into account the gain from the terminal activity mentioned above (+0.04 M€2009) and the surplus embedded in the actual cost of capital (+0.7 M€2009) amounts to +0.8 M€2009 (6.4% of the 2018 terminal revenues). The resulting ex-post rate of return on equity is 11.4%, which is slightly higher than the 10.9% planned in the PP.

## UNITED KINGDOM: Gate-to-gate

## Monitoring of gate-to-gate COST-EFFICIENCY for 2018

1. Monitoring of gate-to-gate ANS costs																							
<b>United Kingdom: Data from RP2 Performance Plan</b>		<b>2015D</b>	<b>2016D</b>	<b>2017D</b>	<b>2018D</b>	<b>2019D</b>																	
Real en-route costs (EUR2009)		651 866 349	640 430 909	630 509 232	611 485 711	591 169 362																	
Real terminal costs (EUR2009)		11 408 395	11 530 593	11 650 176	11 728 661	11 768 119																	
Real gate-to-gate costs (EUR2009)		663 274 745	651 961 502	642 159 408	623 214 372	602 937 480																	
En-route share (%)		98.3%	98.2%	98.2%	98.1%	98.0%																	
<b>United Kingdom: Actual data from Reporting Tables</b>		<b>2015A</b>	<b>2016A</b>	<b>2017A</b>	<b>2018A</b>	<b>2019A</b>																	
Real en-route costs (EUR2009)		638 435 072	642 670 792	620 356 884	636 159 761																		
Real terminal costs (EUR2009)		11 673 259	12 030 653	11 864 428	12 015 583																		
Real gate-to-gate costs (EUR2009)		650 108 331	654 701 445	632 221 312	648 175 343																		
En-route share (%)		98.2%	98.2%	98.1%	98.1%																		
<b>Difference between Actuals and Planned (Actuals vs. PP)</b>		<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>																	
Real gate-to-gate costs (EUR2009)	in value	-13 166 414	2 739 943	-9 938 096	24 960 971																		
	in %	-2.0%	0.4%	-1.5%	4.0%																		
En-route share	in p.p.	-0.1 p.p.	-0.1 p.p.	-0.1 p.p.	0.0 p.p.																		
<b>2. Share of en-route and terminal in gate-to-gate actual costs (2018)</b>																							
<p>As noted in the introduction of the terminal analysis (see box 3), only TCZ C is included in this report since the actual data relating to TCZ B (airports where terminal ANS are provided on a contractual basis) has to be provided to the European Commission on a confidential basis. Therefore, the gate-to-gate results shown in this page only reflect the aggregate view of UK en-route and London Approach services, not the results of terminal ANS services provided at the nine airports comprised in TCZ B.</p> <p>In 2018, actual gate-to-gate ANS costs are +4.0% (+25.0 M€2009) higher than planned due to higher than planned en-route costs (+4.0%, or +24.7 M€2009) and terminal costs (+2.4%, or +0.3 M€2009).</p> <p>The actual share of en-route in gate-to-gate ANS costs (98.1%) is in line with that planned in the PP for 2018 (98.1%).</p> <p>For NATS, the estimated gate-to-gate economic surplus in 2018 amounts to 44.3 M€2009 (see boxes 10 for the detailed analysis at charging zone level), corresponding to 7.7% of gate-to-gate ANS revenues.</p>																							
<table border="1"> <caption>Share of en-route and terminal in gate-to-gate actual costs (2018)</caption> <thead> <tr> <th>Year</th> <th>Determined (%)</th> <th>Actual (%)</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>98.3%</td> <td>98.2%</td> </tr> <tr> <td>2016</td> <td>98.2%</td> <td>98.2%</td> </tr> <tr> <td>2017</td> <td>98.2%</td> <td>98.1%</td> </tr> <tr> <td>2018</td> <td>98.1%</td> <td>98.1%</td> </tr> <tr> <td>2019</td> <td>98.0%</td> <td>98.0%</td> </tr> </tbody> </table>						Year	Determined (%)	Actual (%)	2015	98.3%	98.2%	2016	98.2%	98.2%	2017	98.2%	98.1%	2018	98.1%	98.1%	2019	98.0%	98.0%
Year	Determined (%)	Actual (%)																					
2015	98.3%	98.2%																					
2016	98.2%	98.2%																					
2017	98.2%	98.1%																					
2018	98.1%	98.1%																					
2019	98.0%	98.0%																					
<b>3. Technical notes on en-route and terminal information reported by United Kingdom</b>																							
<b>Note 1:</b>																							
Information relating to UK TCZ B has to be provided to the European Commission on a confidential basis (nine airports – airports where terminal ANS are provided on a contractual basis) and is not part of this Monitoring Report.																							
UK TCZ C (London Approach) is not directly comparable with other TCZs since the service provided is of a hybrid nature, making the transition between en-route and terminal services for the five London Airports (which are also part of TCZ B).																							

## UNITED KINGDOM

## Monitoring of CAPEX for 2018

Contextual Information						
ANSP: NATS (Continental)						
FAB: UK-Ireland FAB						
Currency: GBP						
Data from RP2 National Performance Plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in nominal M)	136.5	134.9	118.1	109.4	101.6	600.5
Main CAPEX (in nominal M)	122.7	123.5	107.6	98.8	87.3	540.0
Inflation %	1.9%	1.9%	2.0%	2.0%	2.0%	
Inflation index (100 in 2009)	118.2	120.5	122.9	125.3	127.8	
Exchange rate 2009	0.890647	0.890647	0.890647	0.890647	0.890647	
<b>Total CAPEX (in M €2009)</b>	<b>129.7</b>	<b>125.7</b>	<b>107.9</b>	<b>98.0</b>	<b>89.2</b>	<b>550.5</b>
Main CAPEX (in M €2009)	116.6	115.1	98.3	88.5	76.7	495.2
% Main of Total CAPEX	89.9%	91.6%	91.1%	90.3%	86.0%	90.0%
Real gate-to-gate ANSP costs (in M €2009)	580.1	568.4	558.7	539.9	520.3	2 767.5
Total CAPEX as % of Real gate-to-gate ANSP costs	22.4%	22.1%	19.3%	18.2%	17.2%	19.9%
Actual data from FAB Monitoring Report	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in nominal M)	132.8	146.7	176.5	149.3		
Main CAPEX (in nominal M)	116.1	138.2	160.6	129.0		
Inflation %	0.0%	0.7%	2.7%	2.5%		
Inflation index (100 in 2009)	115.6	116.4	119.6	122.5		
Exchange rate 2009	0.890647	0.890647	0.890647	0.890647		
<b>Total CAPEX (in M €2009)</b>	<b>129.0</b>	<b>141.5</b>	<b>165.7</b>	<b>136.8</b>		
Main CAPEX (in M €2009)	112.7	133.3	150.8	118.2		
% Main of Total CAPEX	87.4%	94.2%	91.0%	86.4%		
Real gate-to-gate ANSP costs (in M €2009)	568.2	568.7	545.1	564.5		
Total CAPEX as % of Real gate-to-gate ANSP costs	22.7%	24.9%	30.4%	24.2%		
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in nominal M)	-3.7	11.8	58.4	39.9		
Total CAPEX (in M €2009)	-0.7	15.8	57.8	38.7		
<b>Total CAPEX (in %, M €2009)</b>	<b>-0.5%</b>	<b>12.5%</b>	<b>53.6%</b>	<b>39.5%</b>		

