Annual Monitoring Report 2017

Union-wide view

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1 Introduction and Context

1.1 About this document

1.1.1 This report provides analysis of the performance achieved by FABs/States/NM of the Single European Sky (SES), covering the third year (2017) of the second Reference Period (RP2), which runs for five years from 2015 to 2019.

1.1.2 The report consists of two parts:

- The Union-wide view of the performance monitoring of 2017,
- The Local level view; as defined in the Commission Implementing Regulation (EU) No 390/2013 [Ref.i] (the "Performance Regulation") to be FAB, State or Airport level-views.

1.1.3 The factual analysis for 2017 refers to performance in the airspace shown in Figure 1, which is the geographical scope of the Union-wide targets for RP2.

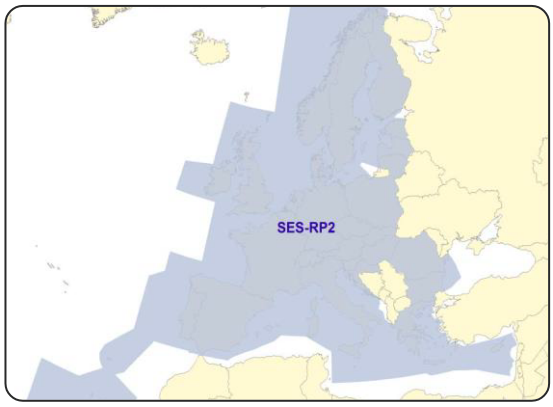


Figure 1: RP2 Geographical scope

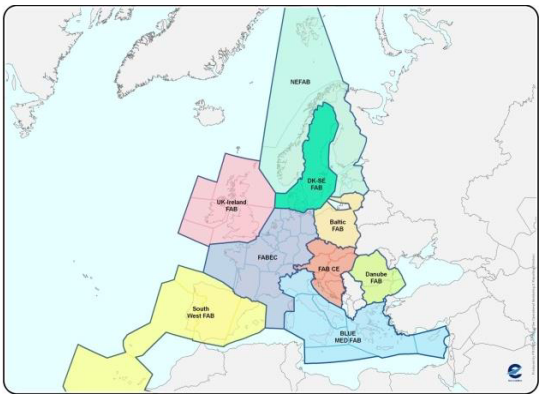


Figure 2: Functional Airspace Blocks

1.1.4 The geographical scope covers the airspace controlled by the RP2 SES States in the ICAO EUR and AFI regions at the start of the reference period. Therefore, it includes the airspace of nine FABs controlled by the 28 EU Member States, the airspace controlled by Norway and Switzerland in the ICAO EUR region, as well as the Canaries FIR (Spain), Bodø FIR (Norway) and NOTA/SOTA (UK-IRE).

1.1.5 The Union-wide view provides a summary of European Air Navigation Services (ANS) performance achieved for 2017 in the four Key Performance Areas (KPA); namely safety, environment, capacity and cost-efficiency.

1.1.6 The local level view part of this report provides details of performance at local level as defined in the Performance Regulation, i.e. at FAB, State or Airport level depending on the Performance Indicator.

1.1.7 Table 1 below provides an overview of the Performance Indicators (PIs) applicable for RP2 (2015-2019) as set out in the Performance Regulation. The PIs with Union-wide and/or local targets in RP2 are referred to as the Key Performance Indicators (KPIs) and are shown in blue in Table 1.

1.1.8 This report refers to, and uses data from, the Member States subject to the provisions of the SES Performance Scheme. It also uses data supplied by EUROCONTROL.

1.1.9 The data used in this report are published on the ESSKY website or via the Performance

Dashboard, which is hosted by EUROCONTROL. The Dashboard provides reports and ANS performance data for all participants subject to the SES Performance Scheme, and can be accessed at http://www.eurocontrol.int/prudata/dashboard

(= Target = Monitoring)	Union-wide	FAB	National
Safety KPIs (blue) & PIs			
Effectiveness of Safety Management (EoSM)	=	=	
Application of severity classification scheme (RAT methodology)	=	=	
Just Culture (JC)		=	
Application of automatic data recording			
Level of occurrence reporting			
Separation Minima Infringements (SMI)			
Runway Incursions (RI)			
ATM-Specific Occurrences (ATM-S)			
Airspace Infringements (AI)			
Environment KPIs (blue) & PIs			
Average horizontal en-route flight efficiency (actual trajectory)	=	=	
Average horizontal en-route flight efficiency (flight plan trajectory)	=		
Effectiveness of booking procedures for FUA			
Rate of planning of conditional routes (CDRs)			
Effective use of conditional routes (CDRs)			
The additional time in taxi-out phase			
The additional time in terminal airspace (ASMA)			
Capacity KPIs (blue) & PIs			
Average minutes of en-route ATFM delay attributable to ANS	=	=	
Average minutes of arrival ATFM delay attributable to terminal ANS			=
The adherence to ATFM slots			
The average minutes of ATC pre-departure delay.			
Cost-efficiency KPIs (blue) & PIs			
Average Determined Unit Cost (DUC) for en-route ANS	=		=
Average Determined Unit Cost (DUC) for terminal ANS			=
Costs of EUROCONTROL			

Table 1: RP2 Performance indicators

1.2 The SES Performance Scheme

1.2.1 RP2 is regulated by Article 11 of Regulation (EC) No 549/2004 (the Framework Regulation) [Ref. ii], and its supporting Implementing Regulation (EU) No 390/2013 (the Performance Regulation) [Ref.i]. In addition, for the purposes of financial review, the States are regulated by Articles 12, 14, 15 and 16 of Regulation (EC) 550/2004 (the Service Provision Regulation) [Ref. iii] and its supporting Implementing Regulation (EU) No 391/2013 (the Charging Scheme Regulation) [Ref. iv].

1.2.2 ANS performance targets are set under the SES Performance Scheme at Union-wide and/or at local (national or FAB) levels.

1.2.3 The Union-wide targets for RP2 are contained in Commission Implementing Decision (EU) 132/2014 of 11 March 2014 setting the Union-wide performance targets for the air traffic management network and alert thresholds for the second reference period 2015-19 [Ref. v].

1.2.4 Local targets for each KPI, and for each year of RP2, were defined by the NSA in the

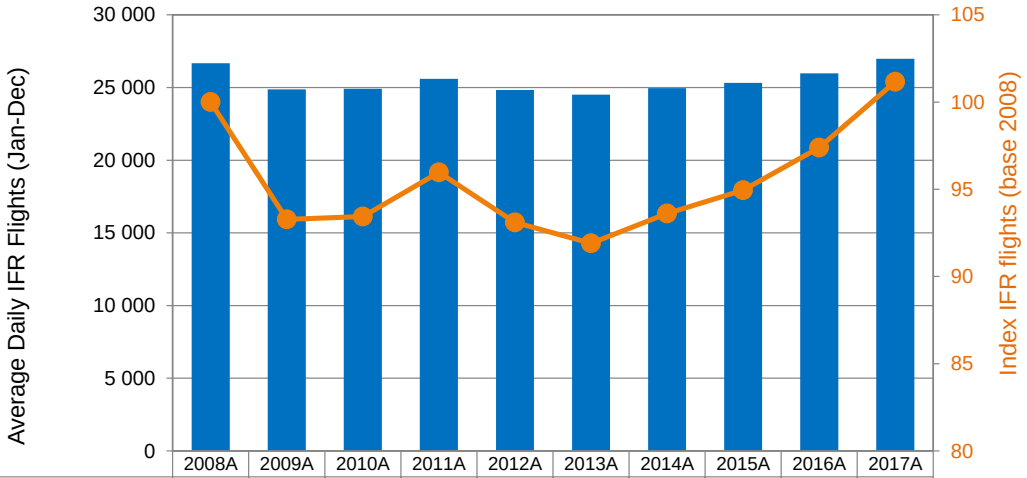
Performance Plan of each FAB at the start of the RP. Local targets must be consistent with the Union-wide targets. The Performance Plans may also include additional PI and associated targets set by the NSA.

1.2.5 The National Supervisory Authorities (NSA) report on their monitoring of Performance Plans accepted by the Commission. The Commission issues decisions on consistency and inconsistency of the performance targets of the plans submitted through various legal instruments that are used for the assessment of the NSAs monitoring reports.

1.3 Air Traffic in 2017

1.3.1 IFR traffic (Average daily IFR flights in the SES RP2 area) increased for the fourth year in a row in 2017 (+3.9% vs. 2016), taking the number of flights past the previously highest level in 2008, as shown in Figure 3.

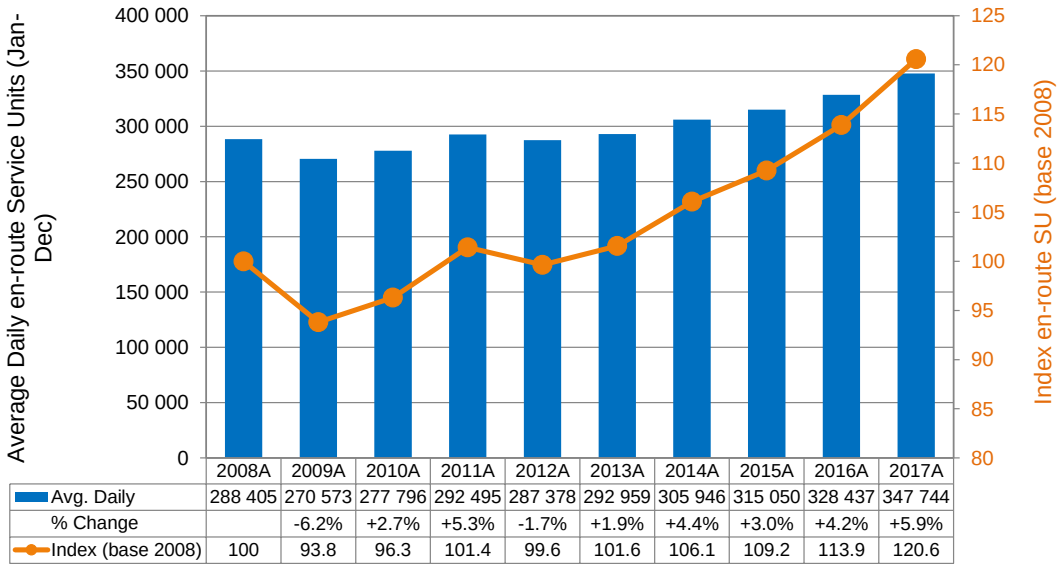
1.3.2 The Union-wide average masks variations in terms of traffic growth between FABs. As was the case in 2016, the highest growth was observed for SW FAB (+7.0% vs. 2016), followed by Baltic FAB (+5.8%), Danube FAB (+5.4%), and Blue Med FAB (+5.1%).



	2008A	2009A	2010A	2011A	2012A	2013A	2014A	2015A	2016A	2017A
Average Daily IFR Flights	26 668	24 874	24 918	25 595	24 827	24 508	24 966	25 321	25 972	26 980
% Change		-6.7%	+0.2%	+2.7%	-3.0%	-1.3%	+1.9%	+1.4%	+2.6%	+3.9%
Index (base 2008)	100	93.3	93.4	96.0	93.1	91.9	93.6	95.0	97.4	101.2

Figure 3: Traffic 2008-2017 (SES RP2 area)

1.3.3 Average daily en-route Service Units (TSUs) in the RP2 area continued to grow faster than flights in 2017 (+5.9% vs. 2016, +20.6% vs. 2008), as shown in Figure 4. En-route service units grow faster than IFR flights due to longer and heavier flights on average.



	2008A	2009A	2010A	2011A	2012A	2013A	2014A	2015A	2016A	2017A
Avg. Daily	288 405	270 573	277 796	292 495	287 378	292 959	305 946	315 050	328 437	347 744
% Change		-6.2%	+2.7%	+5.3%	-1.7%	+1.9%	+4.4%	+3.0%	+4.2%	+5.9%
Index (base 2008)	100	93.8	96.3	101.4	99.6	101.6	106.1	109.2	113.9	120.6

Figure 4: En-route service units 2008-2017 (SES RP2 area)

1.4 Union-wide Performance in 2017

1.4.1 Table 2 shows the Union-wide targets for RP2 which, as mentioned earlier, were set by Commission Implementing Decision 132/2014 [Ref.v] for the KPIs.

KPI			2015	2016	2017	2018	2019
SAFETY							
Level of Effectiveness of Safety Management (EoSM)	**State Level**						C
	Safety Culture MO						C
	all other MOs						D
Application of the RAT (Risk Analysis Tool) methodology	**SMIs**	**Ground**			≥ 80%		100%
		Overall			≥ 80%	≥ 80%	≥ 80%
	RIs	**Ground**			≥ 80%		100%
		Overall			≥ 80%	≥ 80%	≥ 80%
	ATM-S	**Ground**			≥ 80%		100%
		Overall			≥ 80%		100%
ENVIRONMENT[1]							
KEP (horizontal en-route flight efficiency – planned route)			*4.78%*	*4.61%*	*4.44%*	*4.27%*	4.10%
KEA (horizontal en-route flight efficiency – flown route)			*2.96%*	*2.87%*	*2.78%*	*2.69%*	2.60%
CAPACITY							
Average en-route air traffic flow management (ATFM) delay per flight (Minutes)			0.5	0.5	0.5	0.5	0.5
COST-EFFICIENCY							
Average Union-wide determined unit cost for en-route air navigation services (Real terms €$_{2009}$)			56.64	54.95	52.98	51.00	49.10

Table 2: Union-wide Targets for RP2

1.4.2 **Safety**: As shown in Table 2, RP2 Safety targets for the application of RAT were only set for 2017, 2018 and 2019. For EoSM targets were only set for 2019.

1.4.3 Table 3 shows the performance achieved at Union-wide level against these targets in 2017

[1] Targets for KEA and KEP are for 2019 only. Nevertheless, indicative target values have been provided for the intermediate years (shown in grey/white).

for Environment, Capacity and Cost-efficiency KPA.

KPI (UNION-WIDE)	2017		
	EU TARGET	PERFORMANCE	Actual vs target
ENVIRONMENT[1]			
KEP (horizontal en-route flight efficiency – planned route)	*4.44%*	4.73%	✘
KEA (horizontal en-route flight efficiency – flown route)	*2.78%*	2.81%	✘
CAPACITY			
Average en-route air traffic flow management (ATFM) delay per flight (Minutes)	0.5	0.94	✘
COST-EFFICIENCY			
Average Union-wide determined unit cost for en-route air navigation services (Real terms €$_{2009}$)	52.98	47.32	✓

Table 3: Actual performance at Union-level (2017)

1.4.4 **Environment**: Despite an improvement compared to 2016, the Union-wide targets for KEP and KEA were not met in 2017. The performance improvement in 2017 with respect to 2016 was 0.18 percentage points (pp) for KEP (from 4.91% to 4.73%) and 0.015 pp for KEA (from 2.96% to 2.81%).

1.4.5 **Capacity**: Average en-route ATFM delay per flight continued to increase from 0.91 minutes in 2016 to 0.94 minutes in 2017. As was the case in the previous two years, the Union-wide target for en-route ATFM delay (0.5 minutes per flight) was not met in 2017.

1.4.6 **Cost-efficiency**: At Union-wide level, the actual en-route unit cost (47.32€$_{2009}$) was -10.7% lower than the en-route Union-wide target and -9.8% lower than the aggregated Performance Plans Determined Unit Cost (52.47€$_{2009}$). Actual en-route costs were -2.6% (-161.8 M€$_{2009}$) lower than the Determined Costs (6 164.5 M€$_{2009}$), while the Total Service Units (TSUs) were +8.0% higher than planned. As far as terminal cost-efficiency is concerned, the Union-wide actual terminal unit cost (157.92€$_{2009}$) was -4.7% lower than planned in the RP2 Performance Plans. This results from the combination of higher-than-planned Terminal Navigation Service Units (TNSUs) (+7.2%) and higher-than-planned terminal costs (+2.1%, or +22.1 M€$_{2009}$).

1.5 Local level Performance in 2017

1.5.1 The summary information shown below relates to ANNEX 1 Section two of Regulation 390/2013, i.e. local target setting and performance monitoring at local level.

1.5.2 **Safety**: The Safety targets for RP2 were only set for 2019.

1.5.3 **Environment**: Targets for 2017 have been met by two of the nine FABs, namely DK-SE FAB and SW FAB. All but Danube FAB showed an improvement compared to 2016.

2017	ENTITY	REFERENCE VALUE	PERFORMANCE	Actual vs. target
KEA (horizontal en-route flight efficiency – flown route)	Baltic	1.44%	1.63%	✗
	Blue Med	2.62%	2.82%	✗
	Danube	1.46%	1.62%	✗
	DK-SE	1.20%	1.18%	✓
	FAB CE	1.90%	1.91%	✗
	FABEC	3.14%	3.23%	✗
	NEFAB	1.29%	1.58%	✗
	SW FAB	3.57%	3.25%	✓
	UK-IRE	3.18%	3.70%	✗

Table 4: FAB-level view of Environment KPA (2017)

1.5.4 **Capacity**: With the exception of FABEC and SW FAB, all FABs achieved or surpassed their targets in 2017.

2017	ENTITY	REF. VALUE	PP TARGET	PERFORMANCE	
En-route ATFM delay Avg. en-route air traffic flow management (ATFM) delay per flight (minutes)	Baltic	0.21	0.21	0.10	✓
	Blue Med	0.18	0.37	0.23	✓
	Danube	0.04	0.03	0.01	✓
	DK-SE	0.10	0.10	0.02	✓
	FAB CE	0.29	0.28	0.18	✓
	FABEC	0.42	0.42	1.15	✗
	NEFAB	0.13	0.13	0.02	✓
	SW FAB	0.31	0.31	0.40	✗
	UK-IRE	0.26	0.26	0.16	✓

Table 5: FAB-level view of Capacity KPA (2017)

1.5.5 Further detail of the performance at local level is provided in Table 6 below which shows the performance at State level within each FAB for the Environment and Capacity targets indicated in their Performance Plans.

FAB	State	KEA	En-route delay			Arrival delay		
		Actual	Target	Actual		Target	Actual	
Baltic	Lithuania	1.81%	0.03	0.00	✓	0.00	0.00	✓
	Poland	1.61%	0.23	0.11	✓	0.04	0.14	✗
Blue Med	Cyprus	4.07%	1.50	1.11	✓	n/a	0.93	
	Greece	2.06%	1.00	0.21	✓	0.10	0.65	✗
	Italy	3.10%	0.11	0.01	✓	0.41	0.22	✓
	Malta	1.15%	0.02	0.00	✓	0.10	0.01	✓
Danube	Bulgaria	1.78%	0.05	0.00	✓	0.00	0.00	✓
	Romania	1.49%	0.00	0.01	✗	0.00	0.31	✗
DK-SE	Denmark	1.10%	N/A	0.00		0.11	0.03	✓
	Sweden	1.21%	N/A	0.03		0.35	0.12	✓
FAB CE	Austria	2.19%	0.20	0.20	✓	1.28	0.81	✓
	Croatia	1.51%	0.21	0.12	✓	0.05	0.00	✓
	Czech Rep.	2.29%	0.09	0.05	✓	0.35	0.07	✓
	Hungary	1.38%	0.05	0.01	✓	0.05	0.03	✓
	Slovakia	2.15%	0.10	0.03	✓	0.00	0.00	✓
	Slovenia	1.69%	0.22	0.00	✓	0.00	0.00	✓

FAB	State	KEA	En-route delay			Arrival delay		
		Actual	Target	Actual		Target	Actual	
FABEC	Belgium	3.84%	N/A	0.59		n/a	0.60	
	France	3.35%	0.40	0.97	✗	0.60	0.48	✓
	Germany	2.81%	N/A	0.76		0.65	0.44	✓
	Luxembourg			0.00		0.48	0.05	✓
	Netherlands	3.04%	N/A	0.30		2.00	3.21	✗
	Switzerland	4.41%	0.22	0.21	✓	n/a	1.33	
NEFAB	Estonia	1.36%	0.12	0.02	✓	0.00	0.00	✓
	Finland	0.89%	0.08	0.00	✓	0.14	0.26	✗
	Latvia	1.27%	0.04	0.00	✓	0.04	0.00	✓
	Norway	1.95%	0.08	0.02	✓	0.60	0.38	✓
SW FAB	Portugal	1.60%	0.14	0.19	✗	0.60	1.08	✗
	Spain	3.72%	0.28	0.35	✓	0.80	0.98	✗
UK-IRE	Ireland	1.35%	0.14	0.00	✓	0.20	0.08	✓
	UK	4.14%	0.23	0.16	✓	0.78	1.37	✗

Table 6: State-level view of Environment and Capacity KPA (2017)

1.5.6 **Cost-efficiency**: The performance and charging schemes have been designed to ensure that the cost-efficiency targets are directly used in the calculation of en-route and terminal unit rates together with adjustments related to the various features of the scheme (such as inflation, traffic risk, cost risk, incentives, etc.).

1.5.7 Table 7 (for en-route) and Table 8 (for terminal) identify whether the actual unit cost is lower or higher than the determined unit cost (DUC) set in the Performance Plan, as well as the drivers for this evolution in terms of cost and traffic.

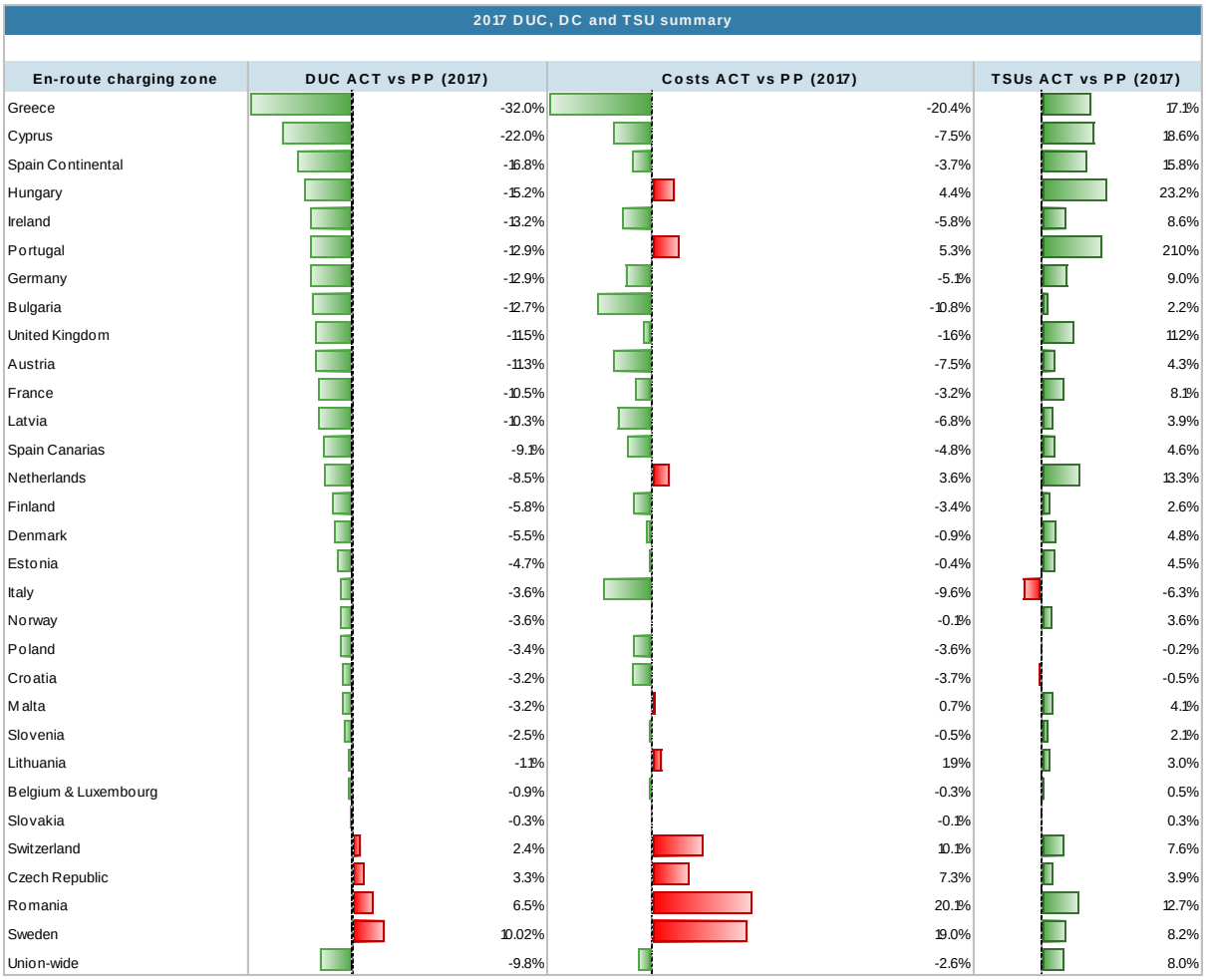


Table 7: Actual vs. Determined en-route Unit Costs in 2017

1.5.8 Due to the design of the scheme, NSAs have not reported any corrective measures per se in respect of cost-efficiency but in some cases States report the drivers behind a deviation and actions to improve cost-efficiency at local level. Details of these can be found in the Charging Zone view for each SES State.

1.5.9 Particular attention is given to States that have significantly increased their costs compared to their determined costs: Romania, Sweden and Switzerland for en-route; Switzerland, Sweden, Romania and Germany (in absolute terms) for terminal. See more details in Paragraphs 5.5.4 (for en-route) and 5.12.4 (for terminal).

1.5.10 In addition to the regulated cost-efficiency KPIs of the Performance Regulation, this report also examines the Actual Unit Cost for airspace Users (also referred to as the “true cost for users”), presented in section 5.8 (for en-route) and in section 5.14 (for terminal). This gives a better reflection of the cost-efficiency performance from an airspace user’s point of view, since it reflects the adjustments relating to 2017 activities that will be charged or reimbursed to users in future years. Note that the “true cost” for users is different from the cost charged during the year due to the adjustments foreseen in the performance scheme and SES Charging Regulation.

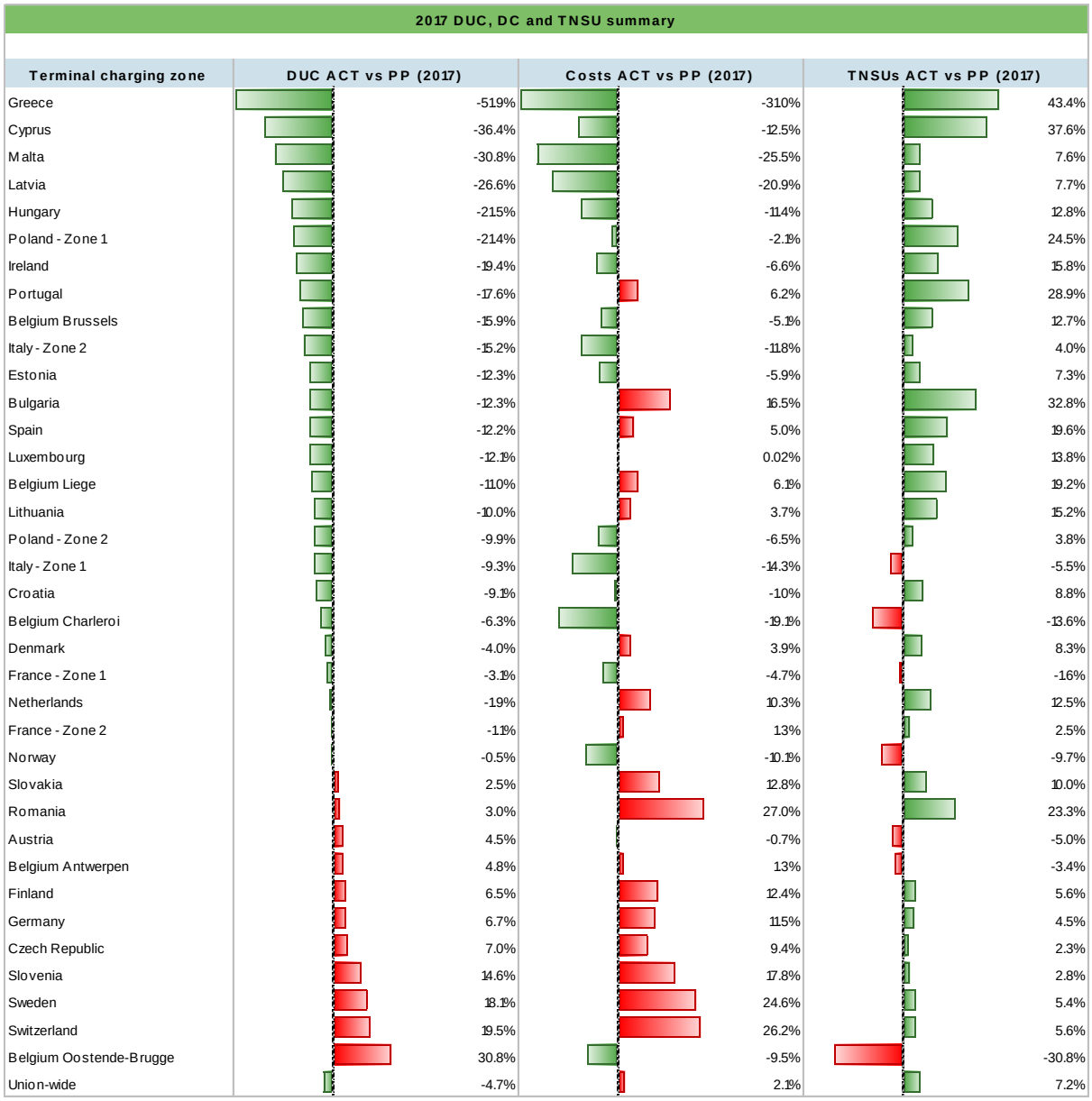


Table 8: Actual vs. Determined terminal Unit Costs in 2017

2 Safety

2.1 Presentation of the Safety PIs and KPIs

2.1.1 In RP2, there are Union-wide targets for the following Safety KPIs (SKPIs):

- SKPI1: the **Effectiveness of Safety Management** (EoSM);
- SKPI2: **the application of the severity classification based on the Risk Analysis Tool** (RAT) **methodology**.

2.1.2 The EoSM SKPI shows, at a State level, the capability of authorities to manage the State Safety Programme (SSP) whenever it is in place and, at a service provision level, the service provider's capability to manage an effective Safety Management System (SMS). The application of the severity classification based on the RAT methodology SKPI aims at measuring to what extent the RAT methodology has been applied to assign severity levels to reported ATM incidents by the ANSPs and the Member States. The level of Just Culture SPI aims at measuring the level of presence and corresponding level of absence of just culture at State and at ANSP level. The main objective of the indicator is to identify possible obstacles and impediments to the application of just culture at State and ANSP level.

2.1.3 In addition, the regulation introduces three additional Safety Performance Indicators (SPIs) without targets and for monitoring purposes. These are as follows:

- SPI1: The application by the air navigation service providers of automated safety data recording systems where available, which shall include, as a minimum monitoring of separation minima infringements and runway incursions. (This PI aims at measuring if ANSPs use these tools in a just culture environment to improve the information and analysis by the organisations' SMS).
- SPI2: The reporting by the Member States and air navigation service providers on the level of occurrence reporting, on an annual basis, aiming at measuring the level of reporting and addressing the issue of improvement of reporting culture; and
- SPI3: The number of, as a minimum, separation minima infringements, runway incursions, airspace infringements, and ATM-specific occurrences at all air traffic services units.

2.1.4 The overview of all S(K)PIs used in RP2 are presented in Table 1. Their associated targets are shown in Table 2 above.

2.2 Accidents and Serious Incidents with ANS Contribution

2.2.1 The data presented in this section relates to accidents and serious incidents.

2.2.2 Figure 5 shows the number of accidents and serious incidents between 2009 and 2017, (defined by ICAO Annex 13 and assigned to an occurrence by a European Accident Investigation Authority) that are related to the provision of ANS, alongside a rate calculated using the number of flight hours performed within the EU. In the nine-year period analysed, it is worth noting that most of the ANS-related accidents reported in the figure were non-fatal, being the last fatal accident observed in 2012 (with 2 accidents that year), and that no fatal accident with ANS contribution is registered in the analysed period, which makes them rare (definitions of ANS-related and ANS-contribution and detailed scope of analysis are available in the EASA report).

2.2.3 The figure shows a decreasing trend in the number of serious incidents since 2010, with some

fluctuations in recent years around stabilised figures, whereas the number of accidents has remained approximately static from 2010 with a decreasing trend from 2014 to reach a minimum last year.

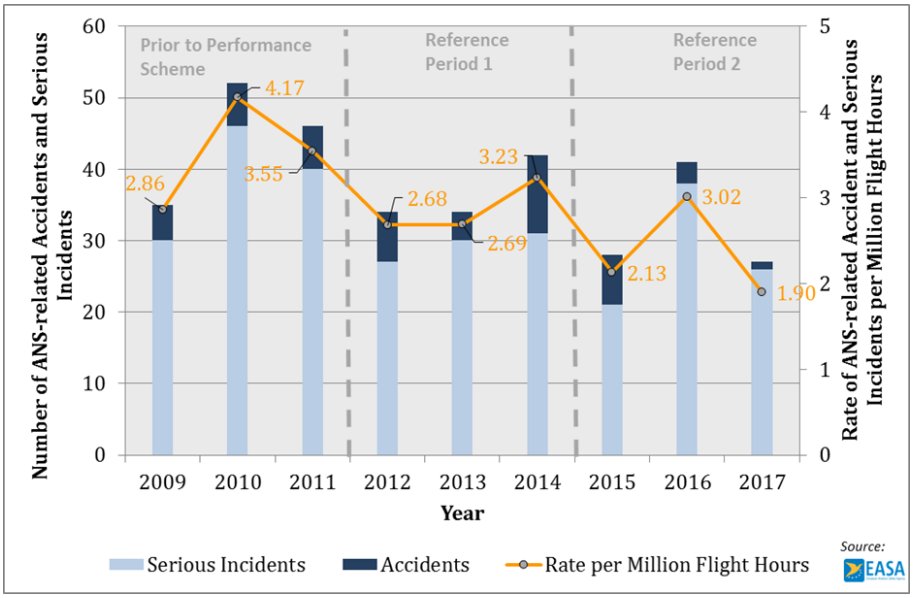


Figure 5: ANS related accidents and serious incidents (2009-2017)

2.2.4 Figure 6 shows accidents and serious incidents with ANS contribution identified in their investigation. It is worth noting that the accidents shown in the graph were all non-fatal in the nine-year period analysed. In 2017, there was no accident with ANS contribution. The rate of ANS-contribution accidents and serious incidents has fluctuated in the analysed period, mainly due to the lower number of occurrences, achieving a minimum in 2017. These preliminary figures for 2017 suggest overall a better safety level than average previous eight (8) years. All in all, this suggests that the ANS sector is adequately managing its safety risks that directly relate to the air navigation services provided.

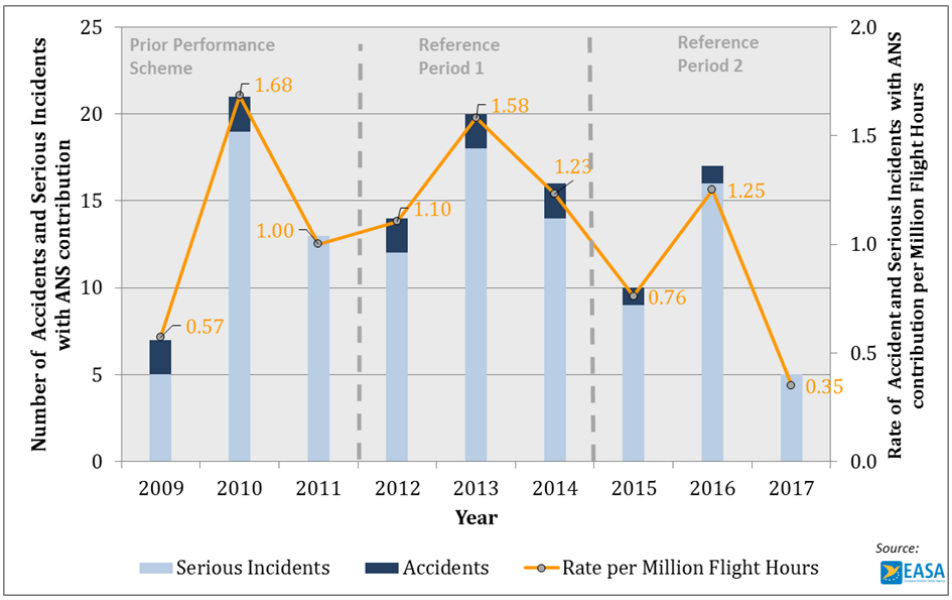


Figure 6: ANS contribution accidents and serious incidents (2009-2017)

2.2.5 More detailed analysis of ANS accidents and serious incidents are available in the EASA report.

2.3 Effectiveness of Safety Management

2.3.1 All 30 States and 31 ANSPs, including MUAC, filled in the questionnaires used for the measurement of the EoSM SKPI in accordance with AMC/GM for the Implementation and Measurement of Safety Key Performance Indicators (EASA Decision 2011/017R, amended by ED Decision 2014/035/R and ED Decision 2015/028/R). In accordance with the AMC, the responses of all States have been verified by EASA standardisation team while the responses of the ANSPs have been verified by the State Competent Authorities.

2.3.2 The following paragraphs summarise the analysis of the EoSM results provided by the States and ANSPs. Note that the EoSM scores provided by States were subject to EASA review using the data from the standardisation audits and the follow up of the corrective measures. Results of this verification exercise on State level can be found in the PRB Annual Monitoring Report Local-level view.

2.3.3 Figure 7 and Figure 8 show the EoSM results of States and ANSP respectively in 2017.

2.3.4 The lowest EoSM Score provided by the individual States in 2017 is 46 with three (3) of the States scoring below 50, as opposed to 6 States in 2016, and the highest EoSM score at State level in 2017 is 88 (Figure 7). The average EoSM score has increased from 56 in 2015 and 60 in 2016, to 63.2 in 2017, which shows an increasing improvement throughout RP2. These values are not directly comparable with RP1 values as there was no verification of the self-assessed score in RP1. From the start of RP2, EASA has verified all self-assessed scores including levels D and E with the exception of the questions Q3.8 (Safety Assurance), Q5.1 and Q5.2 (Safety Culture), all of them related to the existence and measurement of a safety culture. This means that State responses were adjusted (if necessary) after EASA verification.

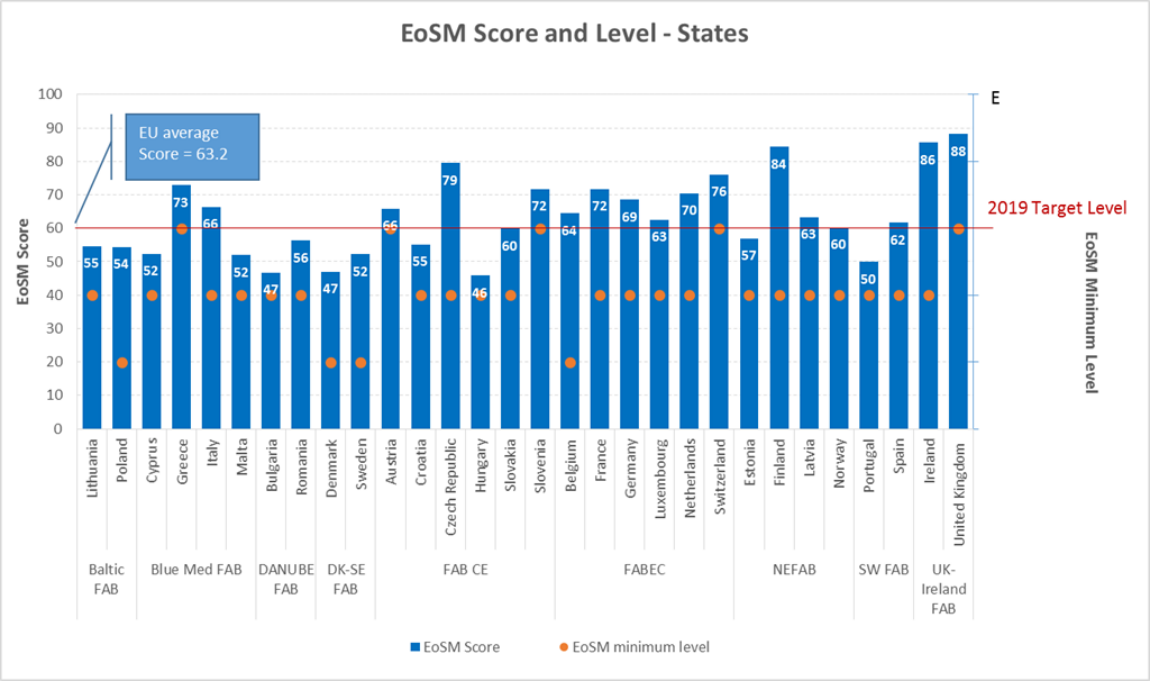


Figure 7: 2017 Effectiveness of Safety Management for States

2.3.5 As it is important to look at the results of EoSM both in terms of EoSM overall Maturity Score and in terms of Maturity Level, and as the RP2 has introduced targets to be achieved by 2019 on EoSM Level, Figure 7 on the second axis shows EoSM Minimum Level achieved by each State (EoSM scores (blue bars) vs. EoSM minimum Maturity Level achieved (on the second axis – black dots)).

2.3.6 Despite the improvement on the EoSM overall score in 2017, Figure 7 supports the

observation that some core elements of the safety oversight system still need improvements in many States. These elements are closely monitored by EASA as part of its obligations.

2.3.7 Analysis of the overall EoSM Minimum Maturity Level Achieved further shows that five (5) States out of 30 are already at Level C (Figure 7), the same number of States that achieved the target level in 2016. Four States have a Level A. When excluding Component 5 – *Safety Culture*, which was not verified, there are 21 States out of 30, 70%, below 2019 RP2 target level C.

2.3.8 Figure 8 shows the EoSM results of ANSPs in 2017. The figure depicts the EoSM overall Maturity Score (blue bars), the minimum Maturity Level (on the second axis – orange dots for the Safety Culture component and purple triangle for all other management objectives) achieved by at ANSP level. The RP2 has introduced targets to be achieved by ANSPs by 2019 on different management objectives of EoSM: to achieve at least minimum level D for Safety Policy and Objectives, Safety Risk Management, Safety Assurance, and Safety Promotion (depicted as a blue line in the graph) and at least level C for Safety Culture (depicted as red line), as per Commission Implementing Decision (EU) 2015/19.

2.3.9 The minimum effectiveness score by an individual ANSPs in 2017 is 45 with only one (1) ANSP scoring below 50, which has, however, improved significantly from 2016. The maximum effectiveness score at ANSP level in 2017 is 93, with eight (8) ANSPs above 90. The average score value achieved by all ANSPs increased from 79 in 2015, and 80 in 2016 to 82.1 in 2017, showing an increasing improvement throughout RP2.

2.3.10 The analysis of the overall EoSM Minimum Maturity Level Achieved by ANSPs shows that all ANSPs are already at Level C or above for Safety Culture, which is the 2019 target Level, and that 19 ANSPs out of 31, approximately 61%, have already achieved the 2019 EoSM target, i.e. level D, for all other MOs (the four EoSM Components other than Safety Culture). When looking at the evolution of performance from 2016 to 2017, it is worth noting that the number of ANSPs that have achieved the target for all other MOs increased from 17 to 19.

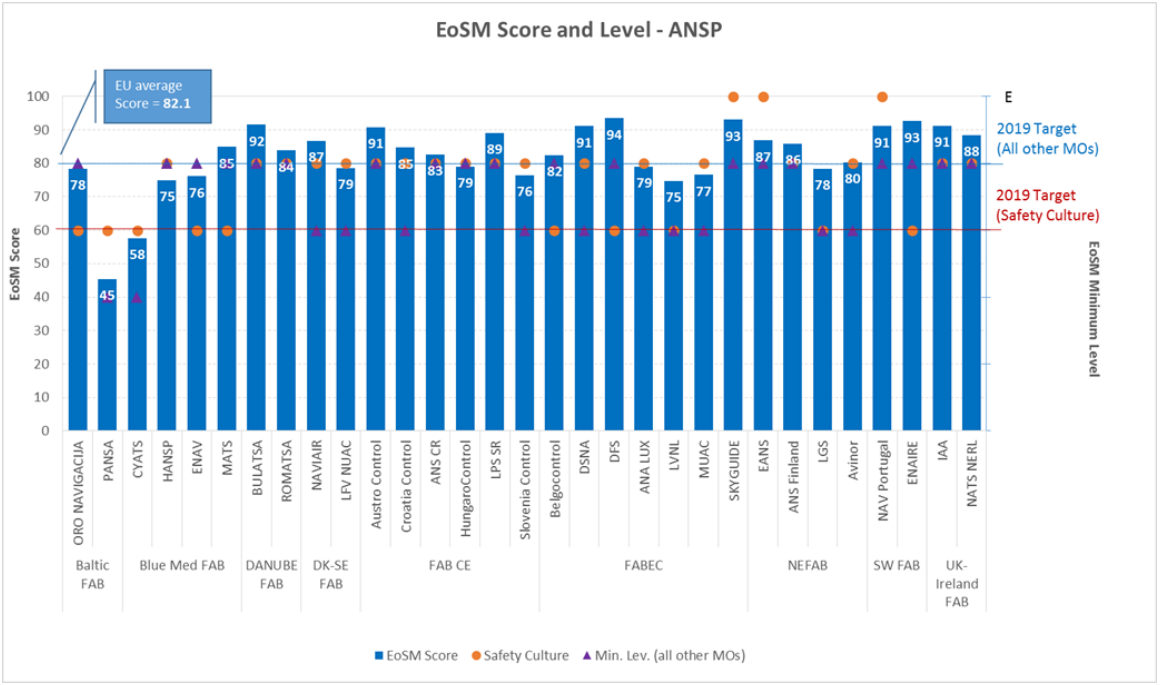


Figure 8: 2017 Effectiveness of Safety Management for ANSPs

2.3.11 More detailed results of EASA EoSM review for each State are available in the EASA report.

2.4 Application of RAT Methodology

2.4.1 In accordance with Commission Regulation (EU) No 390/2013, States are required to report the proportion of SMIs, RIs and ATM-S for which the severity classification was assessed using the RAT methodology.

2.4.2 In the first year of RP2 monitoring, the AST reporting mechanism is still used as the main vehicle for reporting the application of severity classification using the RAT methodology.

2.4.3 In RP2 several changes have been introduced to the monitoring of the application of the RAT methodology for deriving the severity for the reported occurrences: the RAT methodology is only mandatory for deriving the severity of A, B and C reported SMIs and RIs, and AA, A, B and C severity for ATM-S and Regulation (EU) No. 390/2013 (hence, including the use of the RAT Methodology) may not be applicable at airports and traffic units with less than 70,000 IFR movements per year.

2.4.4 From the Union-wide perspective, and taking all occurrences reported collectively into account, targets for 2017 as per Commission Implementing Decision (EU) 2015/19, were achieved for its application to all required occurrences, i.e. SMIs, RIs, and ATM-S. The situation in 2017 has improved in comparison with 2016.

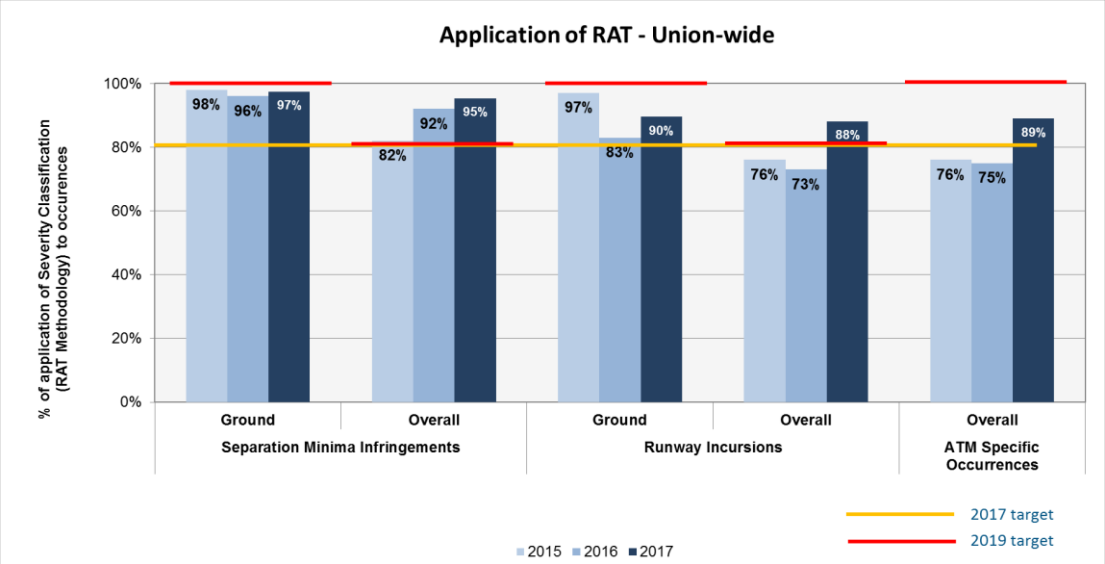


Figure 9: 2017 severity assessment using RAT methodology (Union-wide)

2.4.5 It is observed that, at the Union level, the number of SMI, RI and ATM-s occurrences that required the application of RAT have increased in both elements where RAT is applied, ground and overall. The SMI Overall and RI Overall applied by NSAs achieved the target set by 2019, whilst the RAT applicability to the RI Ground and ATM-S Overall applied by ANSPs need the most improvement to achieve the target in 2019, but the trend is positive. However, it is worth noting that a reduced number of ANSPs/NSAs have not achieved the 2017 target.

2.4.6 More detailed results of the RAT methodology application at State level are available in the EASA safety report.

2.5 Other Safety Performance Indicators

2.5.1 Other safety indicators are monitored, among which is highlighted the number of occurrences reported. The most informative information that can be derived from this safety PI is linked to the evolution of the metrics across years. However, any trend should be read carefully and

not correlate immediately with greater or lower levels of safety of the services as there are additional factors that may influence its evolution, e.g., the level of traffic, improvement/deterioration in the reporting culture, or change of interpretation of occurrence definitions or applicability within the Performance Scheme.

2.5.2 Table 9 lists the evolution of the total number of occurrences at union-wide level. It shows different trends in 2017 with respect to 2016: while the number of SMIs and ATM-s occurrences have increased by 2% and 4%, respectively (in 2016 both showed decreasing trend), the reported number of RIs and AIs occurrences have both decreased by 14% and 5%, respectively (in 2016 both shown increasing trend).

TYPE OF OCCURRENCE		2015	2016	2017	VARIATION 2016-2017
Reported occurrences Union-wide	SMI	2,290	2,231	2,284	↑ 2 %
	RI	1,024	1,099	940	↓ -14%
	AI	4,041	4,838	4,620	↓ -5%
	ATM-S	15,111	14,089	14,664	↑ 4 %

Table 9: Union-wide number of high and low severity reported occurrences

2.5.3 With regard the use of automated safety occurrences recording systems, nine (9) States have reported that their ANSPs were using some type these tools in 2017. Out of these States, eight (8) of them collect information about SMIs, whilst one (1) collects information on both SMIs and RIs. Two States (Bulgaria and Ireland) have reported that their ANSPs are testing such a system and implementation will be effective in the next years. This limited implementation does not include a harmonised definition of the events that trigger the capture of occurrences, as it may serve to different purposes for each ANSP.

2.5.4 Additional indicators and analysis are available in the EASA safety report.

3 Environment

3.1 Presentation of the Environment PIs and KPIs

3.1.1 The Performance Regulation 390/2013 [Ref. iv] defines two KPIs for horizontal en-route flight efficiency at Union-wide level:

- **KEA:** The average horizontal en-route flight efficiency of the actual trajectory (flown route), and;
- **KEP**: The average horizontal en-route flight efficiency of the last filed flight plan trajectory (planned route).

3.1.2 For local target-setting and performance monitoring, only the KEA is defined as a KPI for horizontal flight efficiency at FAB level.

3.1.3 The Performance Regulation defines a number of performance indicators (PI) related to the booking procedures for flexible use airspace (FUA) and the planning and use of Conditional Routes (CDRs) which are monitored at EU-wide and national level.

3.1.4 The Performance Regulation further defines a number of performance indicators (PI) related to the operational performance at and around airports, to be monitored at both European and local levels (i.e. national level with a breakdown at airport level). From this group, the following PIs are monitored at local level:

- additional time in the taxi-out phase;
- additional time in the terminal airspace.

Environment KPIs (blue) & PIs	EU-wide	FAB	National
KEA - horizontal en-route flight efficiency (flown route)	✓	✓	
KEP - horizontal en-route flight efficiency (last filed flight plan)	✓		
Effectiveness of booking procedures for FUA	🔍		🔍
Rate of planning of conditional routes (CDRs)	🔍		🔍
Effective use of conditional routes (CDRs)	🔍		🔍
The additional time in taxi-out phase			🔍
The additional time in terminal airspace (ASMA)			🔍

Table 10: RP2 - Environment KPIs & PIs

3.1.5 Table 10 lists all Environment KPIs and PIs and is extracted from the overview of all (K)PIs used in RP2, provided in Table 1. Their associated targets are shown in Table 2.

3.2 Horizontal En-route Flight Efficiency

3.2.1 Table 11 lists the planned route (KEP) and flown route (KEA) results for the Network Manager (NM) (Union-wide level).

AREA	INDICATOR		2015	2016	2017	2018	2019
SES RP2	KEP	Target	4.78%	4.61%	4.44%	4.27%	4.10%
		Actual	4.84%	4.91%	4.73%	---	---
	KEA	Target	2.96%	2.87%	2.78%	2.69%	2.60%
		Actual	2.80%	2.96%	2.81%	---	---

Table 11: KEP & KEA Performance at Union-wide level

3.2.2 At Union-wide level, both KEP and KEA performance improved in 2017. The improvement in KEA of 0.15 percentage points has been coupled with an improvement for KEP of 0.18 percentage points, albeit not enough to meet the indicative reference value for the SES area in 2017.

3.2.3 Although neither of the indicative target values have been met (the KEP has been missed by 0.29 percentage points, while the KEA by 0.03 percentage points), in both cases, the gap between target and actual values has been reduced. In fact, the gap between the target and the actual value for 2017 for KEA was one third of the same gap for 2016.

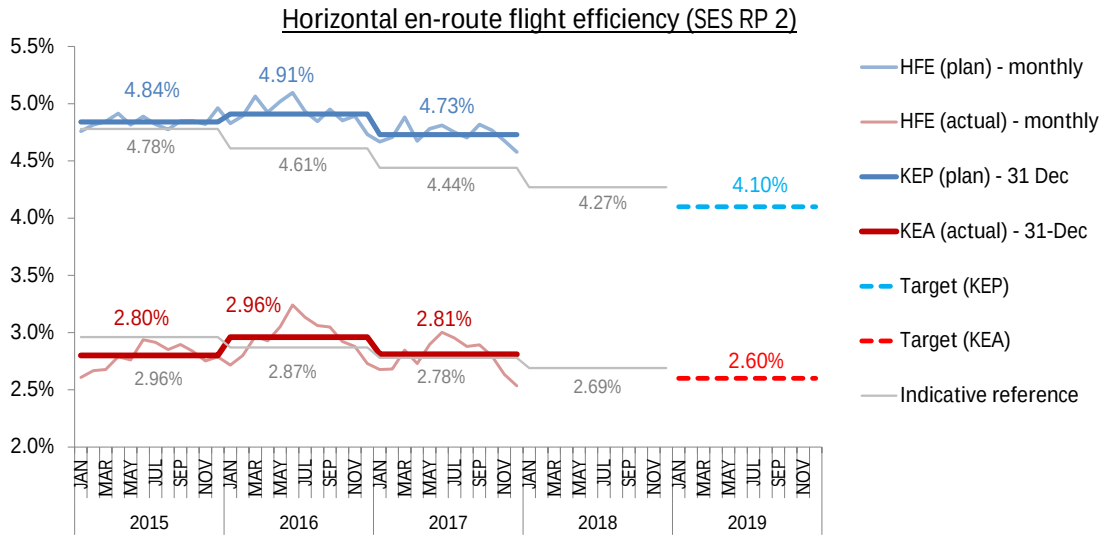


Figure 10: Evolution of Horizontal En-Route Flight Efficiency indicators

3.2.4 The measurement of KEP and KEA includes the interface component, which is the additional distance due to entry and exit points. As highlighted by the NM in the European Route Network Improvement Plan (ERNIP), it requires and will require particular attention. Details per FAB are provided in the remarks in the local level view part of the 2017 Annual Monitoring Report.

3.2.5 Two of the nine FABs, namely DK-SE FAB and SW FAB, which had already met their targets in 2015 and 2016, met the targets for 2017. Eight of the nine FABs have registered an improvement in performance with respect to 2016.

3.2.6 For seven of the FABs the annual improvement was more than the planned annual improvement, resulting in a reduction of the gap between target and actual values with respect to the previous year.

3.2.7 Table 12 provides the performance achieved by the different FABs and NM (SES Area) as measured by the KEA indicator.

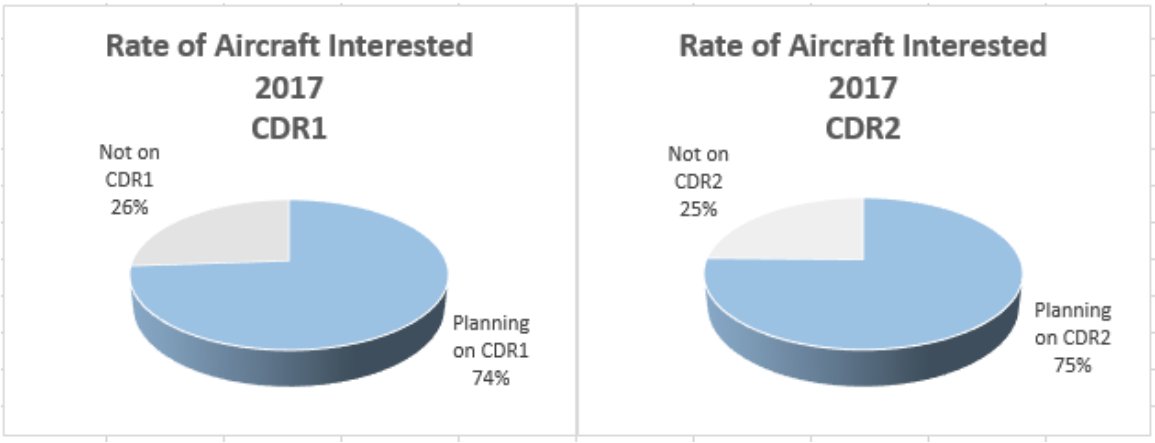
FAB	2012	IMPROVEMENT 2012-2019		2015	2016	2017	2018	2019
Baltic	1.61%	0.25%	Target	1.50%	1.47%	1.44%	1.40%	1.36%
			Actual	1.60%	1.68%	1.63%	---	---
Blue Med	3.02%	0.57%	Target	2.78%	2.70%	2.62%	2.54%	2.45%
			Actual	2.80%	3.17%	2.82%	---	---
Danube	1.69%	0.32%	Target	1.55%	1.50%	1.46%	1.41%	1.37%
			Actual	1.26%	1.60%	1.62%	---	---
DK-SE	1.20%	0.01%	Target	1.20%	1.20%	1.20%	1.20%	1.19%
			Actual	1.18%	1.20%	1.18%	---	---
FAB-CE	2.13%	0.32%	Target	1.99%	1.94%	1.90%	1.85%	1.81%
			Actual	1.91%	1.97%	1.91%	---	---
FABEC	3.56%	0.60%	Target	3.30%	3.22%	3.14%	3.05%	2.96%
			Actual	3.34%	3.40%	3.23%	---	---
NEFAB	1.44%	0.22%	Target	1.35%	1.32%	1.29%	1.26%	1.22%
			Actual	1.40%	1.72%	1.58%	---	---
SW FAB	4.27%	0.99%	Target	3.85%	3.71%	3.57%	3.43%	3.28%
			Actual	3.39%	3.49%	3.25%	---	---
UK-IRE	3.64%	0.65%	Target	3.36%	3.27%	3.18%	3.09%	2.99%
			Actual	3.47%	3.85%	3.70%	---	---
SES area			Target	2.96%	2.87%	2.78%	2.69%	2.60%
			Actual	2.80%	2.96%	2.81%	---	---

Table 12: KEA (flown route) - Performance by FAB

3.3 Effective Use of Conditional Routes

3.3.1 Stakeholders are invited to provide data on Effective Use of Conditional Routes via the template supplied as part of the Annual Monitoring Report process. For 2017, only one State out of the 28 subject to RP2 monitoring provided the relevant data.

3.3.2 At the 20th meeting of the Network Operations Team (NETOPS) 28/2 – 1/3 2018, the Network Manager, as part of the report from the Airspace Management Sub-group (ASM-SG/58), presented the following information about the proportion of flight planning to use conditional routes (CDRs) as the Rate of Aircraft Interested (RAI) below.



Category One - Permanently Plannable CDR - CDR1 routes are available for flight planning during times published in the relevant national Aeronautical Information Publication (AIP)

Category Two - Non-Permanently Plannable CDR - CDR2 routes may be available for flight planning. Flights may only be planned on a CDR2 in accordance with conditions published daily in the Conditional Route Availability Message

Figure 11: Planning of Conditional Routes (CDRs)

3.3.3 The Network Manager also reported, in ASM-SG/58, the proportion of flights that actually used CDRs as the Rate of Actual Use (RAU) below.

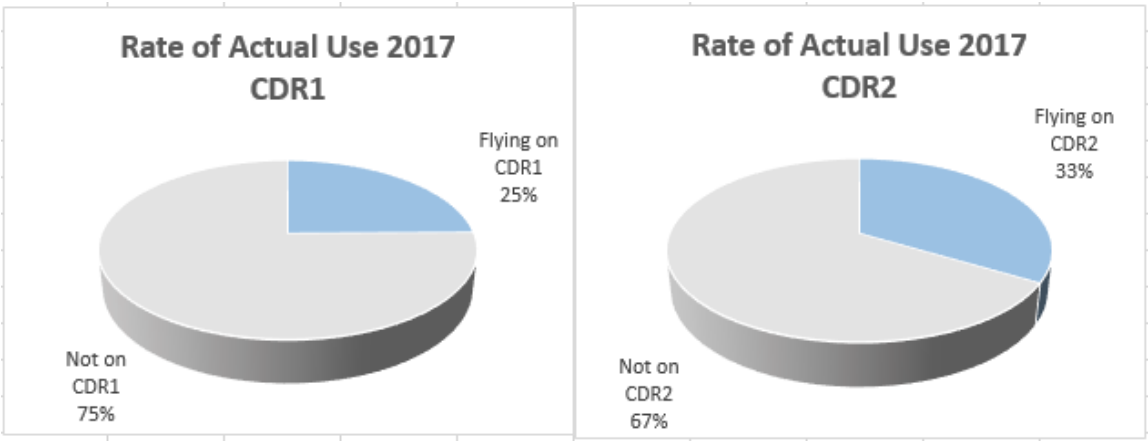


Figure 12: Actual Use of Conditional Routes

3.3.4 The above performance indicators are consistent with the RAI and RAU indicators used in previous years (2012-2016) in the SES Performance Scheme, where the PRB has used the figures provided to the NETOPS forum. The evolution of the RAI and RAU indicators during RP2 is shown in Table 13 below.

	2015	2016	2017
RAI CDR1	75.3%	71.5%	74%
RAI CDR2	73.3%	75.7%	75%
RAU CDR1	60.8%	33.8%	25%
RAU CDR2	51.0%	39.4%	33%

Table 13: Evolution of RAI and RAU indicators during the RP2 period

3.3.5 A significant disparity is observed with the information provided in the Network Manager Annual Report 2017 [Ref.vi] where CDR-RAI is reported as 41.8% (25.8% in 2016) and CDR-RAU is reported as 23.1% (12% in 2016). It should be noted that, within these figures no distinction is made between CDR1 and CDR2.

3.3.6 The NM reports on the implementation in 2017 of a new method to calculate the CDR-RAI and CDR-RAU indicators, *"to align it with the methodology in place for Free Route Airspace*". The NM also reports that, due to the changes, no comparison is possible with the previous years' results. The PRB has not received any request, justification or documentation regarding the change in methodology for the indicators.

3.3.7 The Network Manager reported in 2016 that the expansion of Free Route Airspace was making CDRs increasingly redundant. In the Network Operations Report 2017 25/04/2018, the Network Manager refers to the evolution of RAI and RAU and the tendency to use less and less CDRs. The NM even states "Therefore the NM objectives of increasing availability (RAI) and use (RAU) of CDRs by 5% between 2015-2019 became obsolete."

3.3.8 No stakeholder has provided any information on how this benefits performance, or on any operational steps taken to change the value of this indicator. In the PRB Annual Monitoring Reports 2014 - 2016 the PRB recommended that this indicator should be reviewed in terms of effectiveness in reporting on ANS performance.

3.4 Effective Booking Procedures

3.4.1 The local level view part of this report presents information for each State on Effective booking procedures.

3.4.2 The value for the indicator showing the actual use of reserved/segregated airspace compared to the amount of time it was booked, ranges from 100% to 27%. Fourteen States report higher values than in 2016, while seven report lower values. One State reported for the first time, one State did not report in 2017 although it did report in 2016. In total, five States did not provide any information.

3.4.3 No stakeholder has provided any information on how this indicator impacts ANS performance. In addition, no stakeholder has provided any information on operational steps taken to change the value of the local indicator. One State (Norway) reported that the indicator rose from 54% in 2016 to 55% in 2017 due to revised military booking procedures and focus on effective use of airspace, but did not detail any operational steps that could be beneficial to other stakeholders.

3.4.4 The value of the indicator showing the share of restricted/segregated airspace that was not required and was released with at least 3 hours' notice ranges from <1% to 17%. One State provided information unsuitable for analysis. Ten States did not provide any information on this indicator; two States reported on this for the first time. Eight States reported no change from 2016, while three States reported a decrease in the value compared to 2016; four States reported an increase in the value compared to 2016.

3.4.5 Article 3(c) of the Flexible Use of Airspace Regulation (EC Regulation 2150/2005 [Ref. vii]) states that the airspace reservation for exclusive or specific use of categories of users shall be of a temporary nature, applied only during limited periods based on actual use and released as soon as the activity having caused its establishment ceases.

3.4.6 Since it is mandatory to cancel airspace reservations as soon as the activity causing its establishment ceases, military (and civil) stakeholders are obliged to notify airspace users about the release of the airspace, to free up capacity and provide more route options.

3.4.7 Instead of monitoring an arbitrary value (3 hours), it would be more effective to monitor the civil-military coordination process within the State to ensure that the legal obligations under the FUA Regulation are being fulfilled.

3.5 Civil-Military Dimension of the Plan

3.5.1 Article 11.3.(f) of the Performance Regulation 390/2013 mandates Performance Plans to include a description of the civil-military dimension of the plan describing the performance of flexible use of airspace (FUA) application in order to increase capacity with due regard to military mission effectiveness.

3.5.2 The FAB monitoring templates requested FABs and States to provide information on how capacity was increased through cooperation and coordination between civil and military stakeholders.

3.5.3 Similar to 2016, although several FABs and States reported on existing civil-military arrangements, States providing information on how civil-military cooperation and coordination has actually increased capacity is the exception rather than the rule.

3.6 Application of the Flexible Use of Airspace (FUA)

3.6.1 Annex V paragraph 1.1(j) of the Performance Regulation requires NSAs to provide 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.

3.6.2 Paragraph 1.2 of the same Regulation requires NSAs to submit their yearly survey on the application of the FUA concept.

3.6.3 The FAB monitoring template requested FABs and States to provide information on how the States review their application of FUA to ensure they are providing the optimum benefit for airspace users.

3.6.4 Again, as for the years before, the absence of information from Member States about how they review the effectiveness of applying the FUA concept to provide the optimum benefit for both civil and military airspace users has to be highlighted.

3.6.5 The reporting by the States on this subject is inconsistent and varied and the annual review processes on the application of FUA by the States appears to be absent in general.

3.7 Additional Time in Taxi-out Phase and Terminal Airspace (ASMA)

Airport Operator Data Flow

3.7.1 The transition from RP1 to RP2 resulted an increase in the number of airports subject to the Performance Regulation 390/2013 from 77 to 173 in 2015 and then to 174 in 2016, including the alignment of airports subject to the performance and Charging Regulations.

3.7.2 This poses a data quality assurance problem: 1.) there has been a number of airports subject to RP1 that have not established full compliance with the reporting requirements under RP1, and 2.) the integration of additional airports subject to RP2. Consequently, the operational data flow for performance monitoring at airports is not yet fully implemented.

3.7.3 To cope with the number of airports and ensure quality of the reporting, technical processes and organisational measures have been established and are maintained by the Performance Review Unit (PRU). The PRU is in contact with the identified reporting entities to establish the data flow and ensure compliance with the associated data specification. In case of major non-compliance or non-responsiveness by the identified reporting entity, the PRU liaises with the respective authorities.

3.7.4 While the reporting situation is steadily improving, it must be noted that for some of the airports included with RP2 Performance Plans, the level of knowledge about the allocation and the resulting reporting requirements is low. Work is ongoing to iteratively establish and implement the regular data reporting for these airports and respective results will be available in the following years.

3.7.5 The status of the implementation of the airport operator data flow[2] can be derived from Table 14, which summarises the reporting situation at the end of 2017. For the computation of additional taxi-out time, data is available for 62 of the 174 airports (35.6%). For the calculation of additional ASMA time, the share is slightly higher with 37.4% (65 airports).

Monitoring at Union-wide and National level

3.7.6 Given the incomplete status of the airport data collection, it was not possible to calculate at Union-wide level the indicator for the average additional time in the taxi-out phase and terminal airspace.

3.7.7 At national level, results are only published if all airports are considered valid. In 2017, this was the case for 12 States for additional taxi-out time and for ASMA additional time. Conceptually, the national average will be strongly driven by the achieved performance at the major airport(s) in a specific State.

3.7.8 In 2017, the highest additional taxi-out times were observed at London Heathrow airport (8.47 minutes per departure), followed by London Gatwick (7.95 min), Rome Fiumicino (6.13 min), and Dublin (5.39 min).

3.7.9 The highest average additional times in the terminal airspace (ASMA) in 2017 were observed at London Heathrow (8.53 minutes per arrival), followed by London Gatwick (3.97 min), Lisbon (2.92 min) and Dublin (2.78 min).

3.7.10 Table 14 provides an overview of additional taxi-out and ASMA time at national level in 2017. More information at airport level is available in the local level view part of the Annual Monitoring report or on the dashboard at http://www.eurocontrol.int/prudata/dashboard. A table showing the evolution of additional taxi-out time and ASMA time over the RP2 period is included in the Annexes to this document.

[2] Operational ANS performance data at airport level is published (i.e. airports with valid data) if the data provider successfully established the compliance with the airport operator data flow and not more than 2 months of data are missing per year.

FAB	State	# airports	Additional taxi-out time			Additional ASMA time		
			Min per departure	Valid airports	% valid	Min per arrival	Valid airports	Valid data (%)
Baltic	Lithuania	4		0			0	0.0%
	Poland	15		1	6.7%		1	6.7%
Blue Med	Cyprus	2		0			0	0.0%
	Greece	1	**1.89**	1	100%	**0.88**	1	100%
	Italy	5	**4.01**	5	100%	**1.12**	5	100%
	Malta	1	**1.75**	1	100%	**0.79**	1	100%
Danube	Bulgaria	1	**2.03**	1	100%	**0.38**	1	100%
	Romania	2		0			1	50.0%
DK-SE	Denmark	1	**1.91**	1	100%	**2.11**	1	100%
	Sweden	1	**2.11**	1	100%	**1.2**	1	100%
FAB CE	Austria	6		1	16.7%		1	16.7%
	Croatia	1		0			0	0.0%
	Czech Rep.	4		1	25.0%		1	25.0%
	Hungary	1	**1.29**	1	100%	**1.43**	1	100%
	Slovakia	1		0		**0.32**	1	100%
	Slovenia	3		1	33.3%		1	33.3%
FABEC	Belgium	5		2	40.0%		2	40.0%
	France	60		5	8.3%		5	8.3%
	Germany	16		14	87.5%		14	87.5%
	Luxembourg	1	**2.25**	1	100%	**0.82**	1	100%
	Netherlands	4		1	25.0%		1	25.0%
	Switzerland	2	**3.38**	2	100%	**2.34**	2	100%
NEFAB	Estonia	2		1	50.0%		1	50.0%
	Finland	1	**2.86**	1	100%	**1.08**	1	100%
	Latvia	3		1	33.3%		1	33.3%
	Norway	4		1	25.0%		3	75.0%
SW FAB	Portugal	10		2	20.0%		2	20.0%
	Spain	5	**3.53**	5	100%	**1.73**	5	100%
UK-IRE	Ireland	3		2	66.7%		2	66.7%
	UK	9	**5.59**	9	100%		8	88.9%
Union-wide		**174**		**62**	**35.6%**		**65**	**37.4%**

Table 14: Additional Taxi-Out time & Additional ASMA time - (2017) National Level

4 Capacity

4.1 Presentation of the Capacity PIs and KPIs

4.1.1 The KPI used for Union-wide en-route capacity is the average minutes of en-route ATFM delay per flight attributable to ANS.

4.1.2 As far as local target setting is concerned, the Performance Regulation 390/2013 defines two KPIs, namely:

- average minutes of en-route ATFM delay per flight at FAB level, with a breakdown monitored for reasons of transparency at the most appropriate level; and
- average minutes of arrival ATFM delay per flight attributable to terminal and airport ANS and caused by landing restrictions at the destination airport. In this case, it is at national level, with a breakdown at airport level for monitoring purposes.

4.1.3 The Performance Regulation 390/2013 also defines a number of Performance Indicators (PI) related to the operational performance of ANS at and around airports, monitored at both European and local levels (i.e. national level with a breakdown at airport level).

- the arrival ATFM delay is monitored at national level;
- the adherence to ATFM slots;
- the average minutes of ATC pre-departure delay.

4.1.4 The European Commission did not accept the capacity targets for Blue Med FAB by end-2017 since the targets were not consistent with the Union-wide targets for en-route capacity.

Capacity KPIs (blue) & PIs	Union-wide	FAB	National
Average minutes of en-route ATFM delay attributable to ANS			
Average minutes of arrival ATFM delay attributable to terminal ANS			
The adherence to ATFM slots			
The average minutes of ATC pre-departure delay.			

Table 15: RP2 - Capacity KPIs & PIs

4.2 En-route ATFM Delays: Union-wide

4.2.1 Figure 13 shows the average en-route ATFM delay by cause for the RP2 area, between 2008 and 2017, according to the delay-cause attribution provided by the NM.

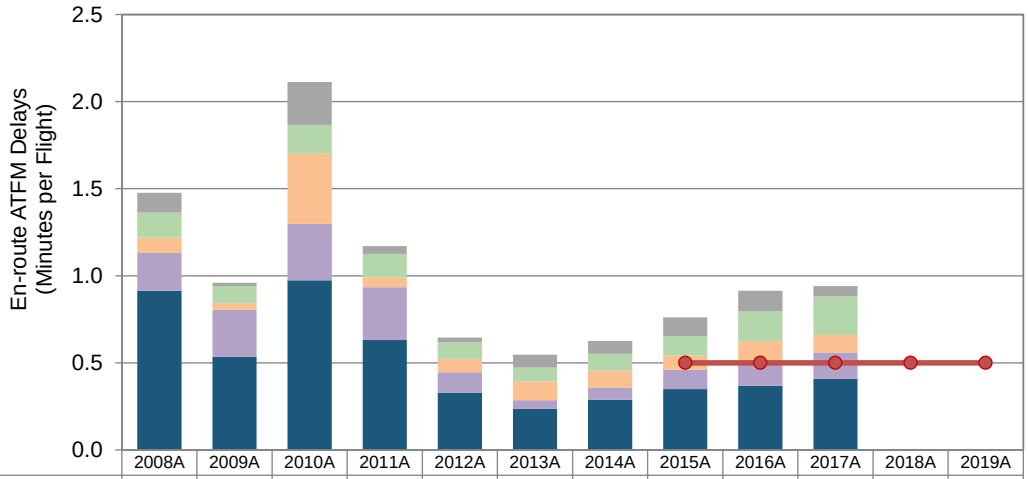
4.2.2 The Union-wide en-route capacity target for RP2 is 0.5 min. per flight (RP2 area, all delay reasons, all years during RP2).

4.2.3 In 2017, the Union-wide target was not achieved, similarly to 2015 and 2016 as shown in Table 16 below. For 2017, the average en-route ATFM delay was 0.94 min. per flight.

4.2.4 The cost to airspace users of this **additional** delay (0.44 min. per flight) is estimated at 420 M€ (0.44 x 9.8M (annual number of flights)) x €100 [Ref.viii].

4.2.5 The NM Annual Report 2017 on NM Performance in RP2 states: *"The main cause in 2017 for en-route ATFM delay was capacity and staffing. The significant traffic increase and staffing issues caused continuous delays for Karlsruhe, Marseille, Brest, Bordeaux, Maastricht and*

Nicosia ACCs. Weekends remain an issue as a lower demand triggers delays higher than weekdays, due to traffic pattern and ATCOs unavailability." The NM Annual Report also highlights an increase in en-route delay attributed to adverse weather as contributing to the fact that the en-route target of 0.5 minutes of average en-route ATFM delay per flight was not achieved.



	2008A	2009A	2010A	2011A	2012A	2013A	2014A	2015A	2016A	2017A	2018A	2019A
Other	0.11	0.02	0.25	0.04	0.03	0.07	0.07	0.11	0.12	0.06		
Weather	0.14	0.10	0.17	0.14	0.10	0.08	0.10	0.11	0.17	0.22		
ATC Other	0.09	0.04	0.40	0.06	0.08	0.11	0.10	0.08	0.12	0.10		
Staffing	0.22	0.27	0.32	0.30	0.12	0.05	0.07	0.11	0.13	0.15		
Capacity	0.91	0.54	0.97	0.63	0.33	0.24	0.29	0.35	0.37	0.41		
NPP Total ER ATFM Delay								0.50	0.50	0.50	0.50	0.50
Total	1.48	0.96	2.11	1.17	0.65	0.55	0.63	0.76	0.91	0.94		

Figure 13: Average en-route ATFM Delay in RP1 and RP2

4.2.6 Further details of major capacity constraints are provided in the local level view part of this 2017 Annual Monitoring Report.

4.2.7 The latest version of the Network Operations plan 2018-2019/22 April 2019 edition, approved by the Network Management Board, contains a prediction of the expected delay in light of the latest capacity plans proposed by ANSPs and the expected traffic. The network en-route delay forecast, for all causes of delay, for 2018 is 1.05 minutes per flight and for 2019 is 1.01 minutes per flight.

4.2.8 It is therefore evident that the capacity plans contained within the NOP are inconsistent with the required en-route capacity target of 0.5 minutes per flight for each year of RP2.

	2015	2016	2017	2018	2019
Union-wide target	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
Actual performance	**0.76**	**0.91**	**0.94**		
Difference	**+0.26**	**+0.41**	**+0.44**		
Performance vs target	✘	✘	✘		

Table 16: En-route ATFM Delay Performance at Union-wide level

4.3 En-route ATFM Delays: Local level (FAB)

4.3.1 The local (FAB) targets for en-route capacity are as adopted in the relevant FAB Performance Plans. Each FAB was provided with a reference value (that would ensure consistency with the Union-wide target), for each year of RP2, as published in the Network Operations Plan

(NOP).

4.3.2 Seven of the nine FABs achieved their en-route capacity targets. Indeed six of these FABs provided a positive contribution to network performance by achieving a more stringent capacity performance than their respective reference values. Blue Med FAB adopted capacity targets for RP2 that were not consistent with its respective annual reference values; therefore, despite achieving their local target, it does not provide the required performance to be consistent with the Union-wide target.

FAB	Reference Value	FAB Target	Actual Performance	Performance vs target
Baltic	0.21	0.21	0.10	✓
Blue Med	0.18	0.37[3]	0.23	✓
Danube	0.04	0.03	0.01	✓
DK-SE	0.10	0.10	0.02	✓
FAB CE	0.29	0.28	0.18	✓
FABEC	0.42	0.42	1.15	✗
NEFAB	0.13	0.13	0.02	✓
SW FAB	0.31	0.31	0.40	✗
UK-IRE	0.26	0.26	0.16	✓

Table 17: En-route ATFM Delay Performance by FAB (2017)

4.3.3 Two FABs achieved neither their FAB targets nor their respective reference values: FABEC and SW FAB. Traffic levels for FABEC were within the High traffic scenario predicted by STATFOR in advance of RP2 (as they have been for each year of RP2 to date), whereas traffic levels for SW FAB were above the High traffic scenario predicted by STATFOR in February 2014 (as they have been for each year of RP2 to date).

FAB	2015	2016	2017
Baltic	✓	✗	✓
Blue Med[3]	✗	✓	✓
Danube	✓	✓	✓
DK-SE	✓	✓	✓
FAB CE	✓	✓	✓
FABEC	✗	✗	✗
NEFAB	✓	✓	✓
SW FAB	✗	✗	✗
UK-IRE	✓	✗	✓

Table 18: Achievement of en-route capacity target during RP2 by FAB

[3] It should be noted that the Blue Med FAB targets for RP2 have not been accepted by the European Commission.

4.3.4 The local level view part of this report presents analysis of individual FAB performance and further analysis of capacity performance at State level.

4.4 En-route Capacity Incentive Schemes

4.4.1 The general observations made in the previous Annual Monitoring Reports for the years 2015 and 2016 concerning the compliance of the individual incentive schemes still apply.

4.4.2 The annual monitoring reports received from each FAB contained information on the results of the relevant incentive schemes applied during 2017. There is no change to any incentive scheme from 2016. [*Including Cyprus, which has failed to provide information on the financial incentive scheme it introduced, without notice, in 2016. In 2015, when DCAC failed to achieve the national target, Cyprus applied a non-financial incentive scheme without providing details*.]

4.4.3 States report that, during 2017, 16 ANSPs achieved performance levels which resulted in an aggregated additional payment equivalent of more than €10 million [*ANS CR; ANS Finland; Bulatsa; CroatiaControl, DCAC, EANS; ENAV; Hungarocontrol; IAA; LGS; LPS SR; NATS; Avinor; Oro Navigacija; PANSA & Slovenia Control*].

4.4.4 States report that four ANSPs achieved performance levels that result in aggregated financial penalties equivalent to €9.4 million [*Belgocontrol, DFS, DSNA & EUROCONTROL (MUAC)*].

4.4.5 States report that eight ANSPs achieved capacity performance within a dead-band of neither penalty nor bonus [*Austrocontrol; ENAIRE; LFV; LVNL; Naviair; Nav Portugal; Romatsa and Skyguide*]. The remaining two ANSPs were not subject to an incentive scheme [*MATS, HANSA*].

4.4.6 The local level view part of this report contains further information and analysis for each en-route capacity incentive scheme applied during 2017.

4.5 Positive Contribution to Network Performance

4.5.1 Table 17 shows that seven of the nine FABs surpassed the en-route capacity targets provided in their respective RP2 FAB Performance Plan for 2017: Baltic FAB; Blue Med FAB (although their target was inconsistent with Union-wide target); Danube FAB; DK-SE FAB; FAB CE; NEFAB, and UK-IRE FAB.

4.5.2 The positive contribution made by these FABs has provided a significant impact to the Union-wide en-route capacity performance and to airspace users in general.

4.5.3 Table 19 below shows what the (hypothetical) Union-wide capacity performance would have looked like in 2017, if the seven FABs had simply met their respective targets. The values for the delay benefit comparison are:

- for FABs that did not achieve their target: the actual delay; or
- for FABs that did provide sufficient capacity: the target from the respective Performance Plan.

FAB	Annual traffic (thousands)	Value for delay (min/flight)	Calculated Delay (000 min)	Union-wide delay
Baltic	889	0.21 (target)	186.69	
Blue Med	2 485	0.37 (target)	919.45	
Danube	951	0.03 (target)	28.53	
DK-SE	1 061	0.10 (target)	10.61	
FAB CE	2 153	0.28 (target)	602.84	
FABEC	6 048	1.14 (actual)	6 894.72	
NEFAB	1 031	0.13 (target)	134.03	
SW FAB	2 059	0.41 (actual)	844.19	
UK-IRE FAB	2 576	0.26 (target)	669.76	
SES Area	9 850		10 290.82	1.04

Table 19: Calculation of positive contribution by FABs to union-wide performance

4.5.4 If the FABs that exhibited a capacity performance surpassing their FAB target had simply achieved their FAB target, the Union-wide en-route capacity performance would have been 1.04 minutes average delay per flight, instead of 0.94 minutes.

4.5.5 The additional delay of 0.1 minutes per flight represents an additional cost for airspace users of approximately 98M € (0.1 x 9.8M (annual number of flights) x €100).

4.6 Arrival ATFM Delay – National Target Setting and Actual Performance

4.6.1 In 2017, the Union-wide average for arrival ATFM delay (all delay causes) continued to increase from 0.67 minutes per arrival in 2016 to 0.74 minutes in 2017.

4.6.2 The increase in average airport arrival ATFM delay in 2017 was due to an increase in weather and capacity-attributed airport ATFM delays.

Airport arrival ATFM delay per arrival	2015	2016	2017	2018	2019
Actual performance	**0.64**	**0.67**	**0.74**		
# airports	173	174	174		

Table 20: Airport arrival ATFM delay - Union-wide level

4.6.3 The majority of States established a national target on arrival ATFM delay in their RP2 Performance Plans. The targets were required to be consistent with the historic performance at national level considering a movement-related weighting for the respective airports included in the performance scheme.

4.6.4 Table 21 shows the performance observed in 2017 (all delay-causes), in terms of achieving the national targets and associated breakdowns. Cases for which no national target (all causes) have been established, or where the actual observed performance exceeds the established target, are highlighted. The evolution of arrival ATFM delay is shown in the tables in the Annexes to this report.

4.6.5 A number of SES States have augmented the national target on arrival ATFM delay with a respective 'CRSTMP target'[4]. The latter is an instrument for the application of the incentive

[4] ATFM delay to which a flight is subjected is defined to have as cause the most penalizing ATFM regulation. Causes related to air traffic service provision and/or special activities comprise: C – ATC Capacity, R – ATC Routing, S – ATC Staffing, T – Equipment (ATC), M – military activity, and P – special event. Under the Charging Regulation, IR391/2013, States may exclude specific delay causes for the application of the respective incentive scheme.

scheme and regulated under the Charging Regulation 391/2013.

FAB	State	Airport arrival ATFM delay per arrival (2017)			
		National Target	Actual (all causes)		
Baltic	Lithuania	0.00	0.00	✓	
	Poland	0.04	0.14	✗	*Some delays at Warsaw due to high traffic growth*
Blue Med	Cyprus	none	0.93		*No national target specified*
	Greece	0.10	0.65	✗	*Capacity-related delays at Athens airport*
	Italy	0.41	0.22	✓	
	Malta	0.10	0.01	✓	
Danube	Bulgaria	0.00	0.00	✓	
	Romania	0.00	0.31	✗	*Some capacity-related delays at Bucharest/ Otopeni*
DK-SE	Denmark	0.11	0.03	✓	
	Sweden	0.35	0.12	✓	
FAB CE	Austria	1.28	0.81	✓	
	Croatia	0.05	0.00	✓	
	Czech Rep.	0.35	0.07	✓	
	Hungary	0.05	0.03	✓	
	Slovakia	0.00	0.00	✓	
	Slovenia	0.00	0.00	✓	
FABEC	Belgium	none	0.60		*No national target specified*
	France	0.60	0.48	✓	
	Germany	0.65	0.44	✓	
	Luxembourg	0.48	0.05	✓	
	Netherlands	2.00	3.21	✗	*Weather and capacity-related delays at Amsterdam*
	Switzerland	2.18	1.33	✓	
NEFAB	Estonia	0.00	0.00	✓	
	Finland	0.14	0.26	✗	*Weather-related delays at Helsinki airport*
	Latvia	0.04	0.00	✓	
	Norway	0.60	0.38	✓	
SW FAB	Portugal	0.60	1.08	✗	*Capacity-related delays due to strong growth*
	Spain	0.80	0.98	✗	*Capacity-related delays due to strong growth*
UK-IRE	Ireland	0.20	0.08	✓	
	UK	0.78	1.37	✗	*Weather-(LHR) and capacity- (LGW) related*

Table 21: Arrival ATFM Delay - Targets and Observed Performance (2017)

4.7 Incentive Schemes on National Target on Arrival ATFM Delay

4.7.1 As part of the RP2 Performance Plan assessment, compliance issues with respect to the establishment of a national target on arrival ATFM delay and a respective incentive scheme were identified. As concerns the performance monitoring, States commented on the identified issues with no final decision by the European Commission. The general comments made in

the previous Annual Monitoring Reports for the year 2015 and 2016 concerning the compliance of the individual incentive schemes still apply.

4.7.2 This results in a mix of the application of the national target (e.g. some States not having established a target, or the target is based on a subset of airports, an alternate of complimentary target on a subset of delay causes is established, no / limited breakdown to local airport level) and the associated incentive scheme.

4.7.3 The Local level view part of this Monitoring Report identifies for each SES Member State whether a national target has been established, with the associated breakdown to the respective airport, and to what extent an incentive scheme has been established and applied.

4.8 Adherence to ATFM Slots and Pre-departure Delay

4.8.1 Table 22 shows the ATFM slot adherence and the ATC pre-departure delay at national level in 2017. A set of tables is included in the Annexes to this report showing the evolution of ATFM slot adherence and ATC pre-departure delay over the RP2 period.

FAB	State	# airports	ATFM slot adherence	ATC pre-departure delay		
			% of regulated flights departing within the 15 min ATFM window	Min per departure	Valid airports	Valid data (%)
Baltic	Lithuania	4	**92.3%**		0	0.0%
	Poland	15	**95.5%**		1	6.7%
Blue Med	Cyprus	2	**82.5%**		0	0.0%
	Greece	1	**91.2%**	0.67	1	100%
	Italy	5	**94.1%**	1.20	5	100%
	Malta	1	**95.5%**	0.17	1	100%
Danube	Bulgaria	1	**99.0%**	0.08	1	100%
	Romania	2	**91.6%**		0	0.0%
DK-SE	Denmark	1	**98.2%**	0.09	1	100%
	Sweden	1	**97.5%**	0.12	1	100%
FAB CE	Austria	6	**94.3%**		1	16.7%
	Croatia	1	**88.7%**		0	0.0%
	Czech Rep.	4	**94.5%**		1	25.0%
	Hungary	1	**93.1%**	0.25	1	100%
	Slovakia	1	**97.6%**		0	0.0%
	Slovenia	3	**94.7%**		1	33.3%
FABEC	Belgium	5	**94.8%**		2	40.0%
	France	60	**85.9%**		2	3.3%
	Germany	16	**93.5%**		9	56.3%
	Luxembourg	1	**82.6%**	0.04	1	100%
	Netherlands	4	**88.6%**		0	0.0%
	Switzerland	2	**93.4%**	0.70	2	100%
NEFAB	Estonia	2	**55.3%**		1	50.0%
	Finland	1	**91.2%**	0.34	1	100%
	Latvia	3	**95.8%**		1	33.3%
	Norway	4	**98.1%**	0.09	4	100%
SW FAB	Portugal	10	**91.8%**		2	20.0%
	Spain	5	**94.2%**	0.61	5	100%
UK-IRE	Ireland	3	**94.8%**		1	33.3%
	UK	9	**93.5%**		4	44.4%

FAB	State	# airports	ATFM slot adherence	ATC pre-departure delay		
			% of regulated flights departing within the 15 min ATFM window	Min per departure	Valid airports	Valid data (%)
Union-wide		**174**			**50**	**28.7%**

Table 22: ATFM Slot Adherence & ATC Pre-Departure Delay (2017) National Level

4.8.2 In 2017, the level of ATFM slot adherence was above 90% in 24 of the 30 States. Five States had an ATFM slot adherence between 80% and 90% and only Estonia showed a surprisingly low level of 55.3%. According to NEFAB monitoring report, the sharp drop in slot adherence at Tallinn was due to large-scale construction work at Tallinn airport.

4.8.3 As was the case in previous years of RP2, the reporting of average ATC pre-departure delay was limited due to ongoing data issues (transition issues, data quality, etc.), particularly at smaller airports. At national level, results are only published if all airports are considered valid. As a result, the indicator could only be computed for 12 of the 30 States in 2017. Overall, there was no substantial ATC-related pre-departure delay across Europe in 2017.

5 Cost-efficiency

En-Route ANS Cost-efficiency

5.1 Summary of the en-route Cost-efficiency targets and data for RP1

5.1.1 The key finalised data for RP1 (2012-2014) are shown in Table 23. It summarises data related to the Union-wide targets for RP1 as set in Commission Decision 2011/121/EU of 21 February 2011 [Ref. ix], data from adopted National Performance Plans, and actual data taken from the annual NSA Monitoring Reports and the June 2015 Reporting Tables. This information covers the 29 States that were part of the SES Performance Scheme in RP1 (i.e. it excludes Croatia which is now included in RP2).

5.1.2 Using the KPI defined in the performance Regulation, Table 23 shows that in RP1:

(i) Compared to the adopted Performance Plans, actual performance at Union-wide level was better than the Determined Unit Rate (DUR) target in 2014 (54.15 €$_{2009}$ compared to 54.84 €$_{2009}$) and was also better than the intermediate value in 2013, (though worse than the 2012 intermediate value).

(ii) Compared to the Union-wide target, actual performance was worse than the 2014 target (54.15 €$_{2009}$ compared to the target of 53.92 €$_{2009}$) and was also worse than the intermediate values in 2013 and 2012.

(iii) In terms of traffic, SUs increased over RP1 (+1.5% p.a. between 2011 and 2014) but were below the levels planned in each year.

	SES States - Data as per EC Decision on Union-wide targets for RP1	2012P	2013P	2014P
En-route	Real en-route costs (determined costs 2012-2014) - (in EUR2009)	6 296 297 788	6 234 893 556	6 179 610 754
	Total en-route Service Units	108 776 000	111 605 000	114 610 000
	Real en-route unit costs per Service Units - (in EUR2009)	**57.88**	**55.87**	**53.92**
	SES States - Data from RP1 national performance plans	**2012P**	**2013P**	**2014P**
	Real en-route costs (determined costs 2012-2014) - (in EUR2009)	6 258 122 341	6 318 609 442	6 304 761 101
	Total en-route Service Units	108 359 738	111 461 030	114 964 695
	Real en-route unit costs per Service Units - (in EUR2009)	**57.75**	**56.69**	**54.84**
	SES States - Actual data from June 2015 Reporting Tables	**2012A**	**2013A**	**2014A**
	Real en-route costs - (in EUR2009)	6 047 812 097	5 947 919 729	5 947 263 158
	Total en-route Service Units	103 501 763	105 171 670	109 836 771
	Real en-route unit costs per Service Units - (in EUR2009)	**58.43**	**56.55**	**54.15**

Table 23: Summary of RP1 en-route cost-efficiency targets (2012-2014)

5.2 Presentation of the RP2 en-route Cost-efficiency KPI and targets

5.2.1 Commission Decision 2014/132 [Ref.v] 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, as shown in Table 24, 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.

COST-EFFICIENCY UNION-WIDE TARGETS	2015	2016	2017	2018	2019
Real en-route Determined Unit Costs (in €$_{2009}$)	56.64	54.95	52.98	51.00	49.10

Table 24: En-route cost-efficiency targets for RP2 (EC Decision)

5.2.2 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 in Table 25. It results in an average DUC decrease of -3.4% p.a. between 2014 (starting point based on the RP1 Determined Costs (DCs) for 2014 i.e. 58.09 €$_{2009}$) and 2019.

5.2.3 Table 25 also shows that the aggregation of the local cost-efficiency targets reported in the RP2 Performance Plans (PPs) are lower than the Union-wide targets in 2015 (-2.3%), 2016 (-2.0%), 2017 (-1.0%), 2018 (-0.7%) and 2019 (-0.3%).

COST-EFFICIENCY DATA FROM PERFORMANCE PLANS	2015P	2016P	2017P	2018P	2019P
Real en-route Determined Unit Costs (in €$_{2009}$)	55.33	53.86	52.47	50.65	48.94
Difference between Determined Unit Costs and EC Decision on Union-wide targets	-2.3%	-2.0%	-1.0%	-0.7%	-0.3%

Table 25: En-route cost-efficiency targets for RP2 as per aggregation of adopted national targets (SES level)

5.2.4 Important note: In 2016, Malta, Poland and Bulgaria requested the Commission to revise their RP2 en-route cost-efficiency targets for the years 2017 to 2019. The figures for these three States show the amended Performance Plan (Commission Decision (EU) 2017/2376 of 15 December 2017 [Ref. x]). In 2017, Romania, Portugal and Denmark submitted a request to the European Commission to revise their RP2 en-route cost-efficiency target DUC for the years 2018 to 2019. Denmark, subsequently withdrew the request. Pending the approval from the European Commission, the figures shown in this report for Romania and Portugal reflect the adopted Performance Plan (EC Decision 2015/348 of 2 March 2015 [Ref. xi]).

5.3 Actual 2017 Unit Cost vs. DUC in Adopted Performance Plans

5.3.1 In order to ensure consistency with Commission Decision 2014/132/EU [Ref. v] setting Union-wide targets for RP2 as well as with the DCs provided in the adopted PPs and to allow consolidation at Union-wide level, actual costs are expressed in real terms (€$_{2009}$ prices).

5.3.2 It should be noted that the actual costs for 2016 presented in this Monitoring Report differ from the figures published in the 2016 Monitoring Report, mainly because France updated the actual costs with significantly lower costs of capital for 2016 in the November 2017 submission of en-route and terminal reporting tables. Consequently, this affects the monitoring results of 2016, and the respective numbers are updated in this report.

5.3.3 Figure 14 summarises the situation in 2017. It shows that the Union-wide actual en-route unit cost (47.32 €$_{2009}$) was -9.8% lower than planned in the RP2 PPs (52.47 €$_{2009}$). This is because in 2017 actual en-route costs were -2.6% (-161.8 M€$_{2009}$) lower than the DCs reported in the PPs (6 164.5 M€$_{2009}$), while the actual number of Total Service Units (TSUs) was +8.0% higher than planned. In addition, the Union-wide actual en-route unit cost (47.32 €$_{2009}$) was -10.7% lower than the Union-wide target for 2017 (52.98 €$_{2009}$) which was adopted by the Commission in 2014 (see Table 24).

Actual unit cost vs. DUC in adopted Performance Plans						
SES States - Data from RP2 Performance Plans		**2015D**	**2016D**	**2017D**	**2018D**	**2019D**
En-route costs (EUR2009)		6 235 113 277	6 195 878 072	6 164 525 008	6 110 343 143	6 018 185 578
Total en-route Service Units		112 687 532	115 027 116	117 494 197	120 642 948	122 962 099
Real en-route unit costs per Service Unit (EUR2009)		**55.33**	**53.86**	**52.47**	**50.65**	**48.94**
SES States - Actual data from Reporting Tables		**2015A**	**2016A**	**2017A**	**2018A**	**2019A**
En-route costs (EUR2009)		6 079 182 146	6 060 358 280	6 002 695 473		
Total en-route Service Units		114 994 014	120 135 471	126 856 192		
Real en-route unit costs per Service Unit (EUR2009)		**52.87**	**50.45**	**47.32**		
Difference between Actuals and Planned (Actuals vs. PP)		**2015**	**2016**	**2017**	**2018**	**2019**
Real en-route costs (EUR2009)	in value	-155 931 130	-135 519 792	-161 829 535		
	in %	-2.5%	-2.2%	-2.6%		
Total en-route Service Units	in value	2 306 482	5 108 355	9 361 996		
	in %	2.0%	4.4%	8.0%		
Real en-route unit costs per Service Unit (EUR2009)	**in value**	**-2.47**	**-3.42**	**-5.15**		
	in %	**-4.5%**	**-6.3%**	**-9.8%**		

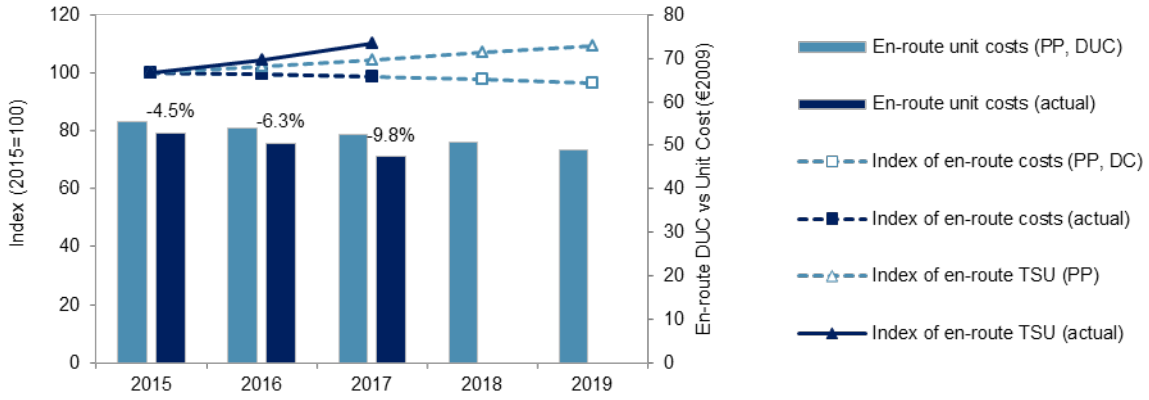


Figure 14: En-route unit cost (actual vs. Performance Plans)

5.3.4 The overall average variation of en-route unit cost observed at Union-wide level (-9.8%) masks different situations across the 30 en-route CZs as shown in Figure 15.

5.3.5 In 2017, the actual en-route unit cost was lower than planned for 26 CZs. For 18 of these CZs, this reflects the combination of lower actual costs with higher traffic volumes than expected.

5.3.6 In contrast, the 2017 actual en-route unit cost was higher than the DUC provided in the RP2 PPs for four CZs (Sweden +10.0%, Romania +6.5%, Czech Republic +3.3% and Switzerland +2.4%). For these four States, the higher-than-expected actual traffic compared to the planned was not enough to compensate the significant deviation on the en-route actual costs versus planned (Sweden +19.0%, Romania +20.1%, Czech Republic +7.3% and Switzerland +10.1%).

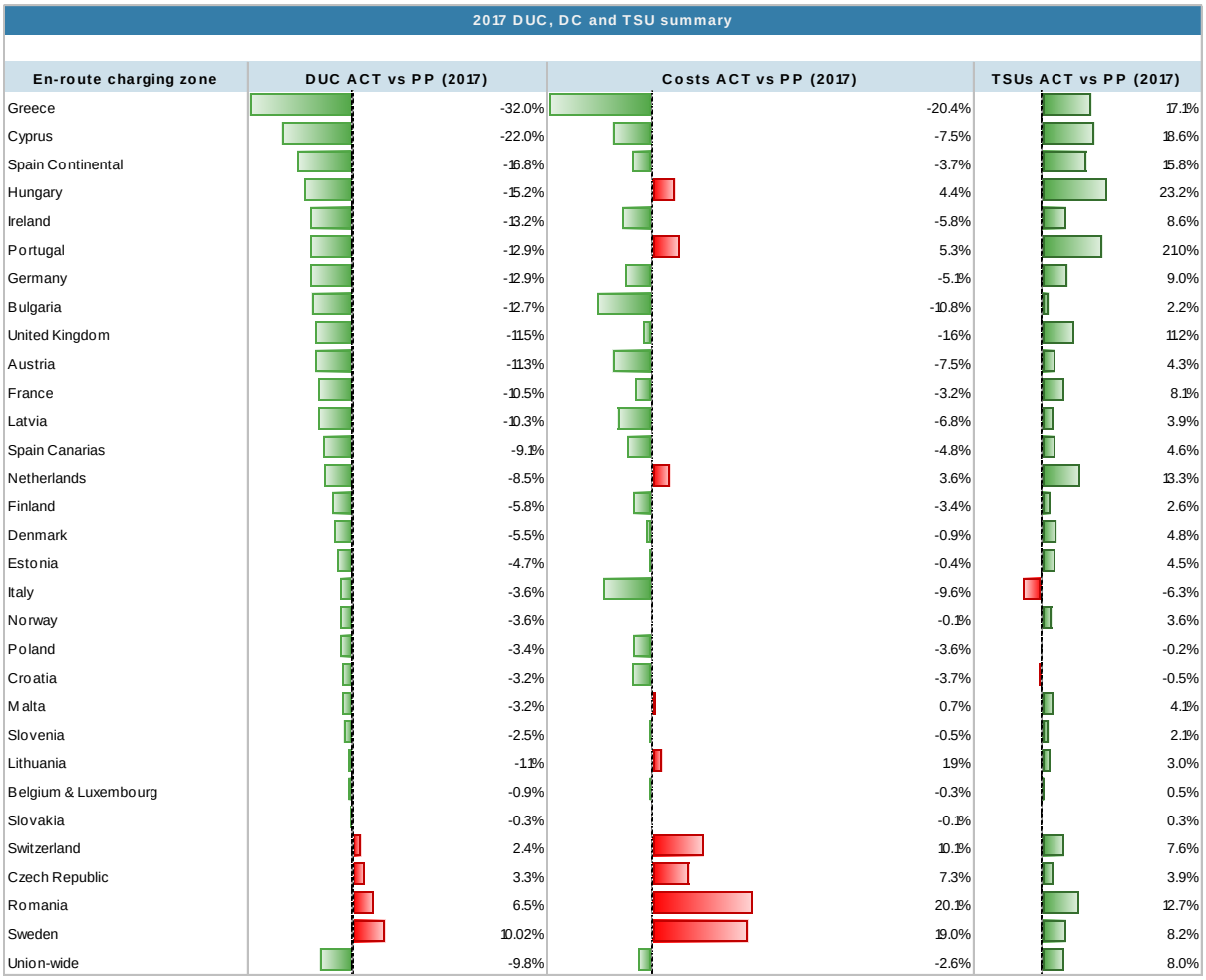


Figure 15: 2017 actual unit cost vs. PP by charging zone

5.3.7 Figure 15 shows that actual traffic was higher than planned for 27 CZs and only lower for Italy (-6.3%), and slightly below for Croatia (-0.5%) and Poland (-0.2%). From these 27 CZs, the 2017 actual en-route unit costs were lower than the DUC reported in the PPs for 23 CZs. 18 of these CZs achieved lower costs than planned and five were able to contain any increases in costs to less than the increase in revenue due to higher traffic. For example, although the actual traffic in Hungary was +23.2% higher than planned, actual costs were +4.4% above planned, leading to an actual unit cost -15.2% lower than planned.

5.3.8 The three States with lower traffic than planned (Italy, Poland and Croatia) managed to reduce their costs by more than the decrease in planned revenue related to traffic, so that the actual unit costs were lower than planned.

5.3.9 More details on the deviation between the DUC and actual en-route unit cost for 2017 at CZ level are available in the local level view part of the 2017 Annual Monitoring Report.

5.4 Actual 2017 Traffic vs. TSUs in Adopted Performance Plans (PPs)

5.4.1 In 2017, Union-wide actual Total Service Units (TSUs) were +8.0% higher than planned in the adopted PPs (i.e. still within the ±10% alert threshold at system level).

5.4.2 At State level, as shown in Figure 15, all States remained above the -10% threshold, while eight CZs experienced a traffic increase above the +10% threshold: Hungary (+23.2%), Portugal (+21.0%), Cyprus (+18.6%), Greece (+17.1%), Spain Continental (+15.8%), the Netherlands (+13.3%), Romania (+12.7%) and the United Kingdom (+11.2%). Two of these

States (Romania and Portugal) submitted a request in 2017 to the European Commission to revise their RP2 en-route cost-efficiency targets for the years 2018 and 2019 (see note at 5.2.4 above).

5.4.3 For the years 2018 and 2019, as shown in Figure 16 below, the STATFOR February 2018 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 2018 forecasts materialise, the traffic will be substantially higher than planned for the rest of RP2. For 2018 and 2019, the traffic is expected to greatly exceed the ±2% dead-band foreseen in the traffic risk-sharing mechanism. In the high case scenario, it would exceed the 10% threshold for both years.

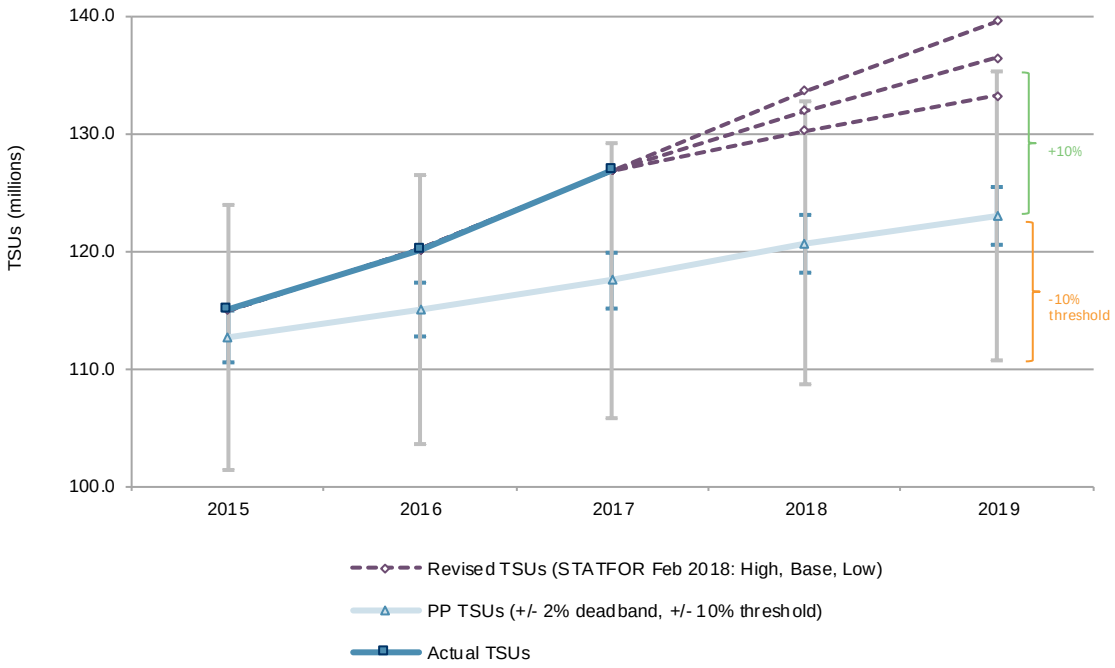


Figure 16: En-route traffic monitoring (Actual 2017 TSUs compared to PPs, SES level)

5.4.4 The traffic risk-sharing arrangements provided in the Charging Regulation [Ref. iv] foresee that ATSPs' additional (or lost) revenue (in respect of DCs) due to the difference between the actual and the planned TSUs are shared with airspace users (see Figure 17) as follows:

(i) For a difference in TSUs falling within the dead-band of ± 2%, the additional (or lost) revenue in respect of ATSP DCs is fully retained (or borne) by the ATSP concerned;

(ii) For a difference in TSUs falling outside the threshold of ± 10%, the additional (or lost) revenue in respect of ATSP DCs is fully reimbursed (or charged) to the airspace users;

(iii) For a difference in TSUs falling between the dead-band of ± 2% and the threshold of ±10%, the additional (or lost) revenue in respect of ATSP DCs is shared between the ATSPs (30%) and the airspace users (70%).

5.4.5 The DCs of the other entities such as NSAs, EUROCONTROL and MET Service Providers (which represent some 10% of the total DCs at Union-wide level) are not subject to traffic risk-sharing and are fully reimbursed (or charged) to the airspace users, irrespective of traffic evolution.

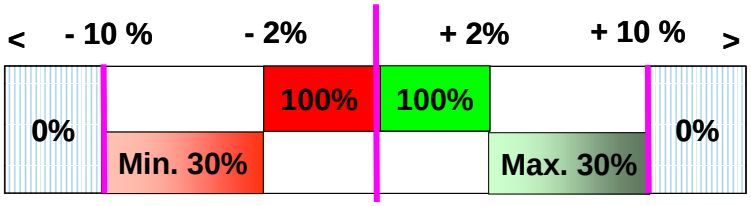


Figure 17: Traffic risk-sharing mechanism for the ATSPs

5.4.6 As a result, the additional revenues (477.2 M€$_{2009}$) arising from the deviation between actual and planned traffic in 2017 are shared between States/ANSPs and airspace users.

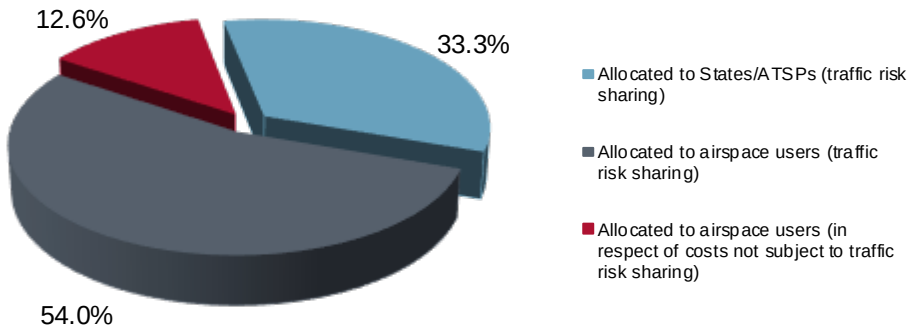


Figure 18: Outcome of the 2017 traffic risk-sharing mechanism

5.4.7 In accordance with the traffic risk-sharing mechanism, Figure 18 shows that 33.3% of the additional revenues are retained by States/ATSPs (159.1 M€$_{2009}$, comprising 154.6 M€$_{2009}$ for the main ATSPs and 4.5 M€$_{2009}$ for the other ATSPs).

5.4.8 Figure 18 also shows that, in total, 66.6% of the additional revenues are distributed to airspace users, i.e. 54.0% relating to costs subject to traffic risk-sharing (257.9 M€$_{2009}$) and 12.6% relating to costs not subject to traffic risk-sharing (60.2 M€$_{2009}$) as described in paragraph 5.4.5.

5.4.9 It must be noted that this situation is significantly different from the situation in RP1 when actual traffic was consistently lower than planned in the PPs (see Table 23 above).

5.5 Actual 2017 En-route Costs vs. Costs in Adopted PPs

5.5.1 At Union-wide level, actual 2017 en-route costs were -161.8 M€$_{2009}$ (i.e. -2.6%) lower than the DCs provided in the RP2 PPs.

5.5.2 Figure 19 provides a breakdown of this variation for each entity considered in the en-route CZs (main ATSPs[5] other ANSPs, the MET service providers and the NSAs/EUROCONTROL).

[5] For the purposes of this analysis, the main ATSPs' actual costs are aggregated from the monitoring reports produced at CZ level. For a few ATSPs, the analysis at State level is adjusted to take into account reporting issues or special circumstances. These adjustments are systematically explained in the local level view part of this 2017 Annual Monitoring Report.

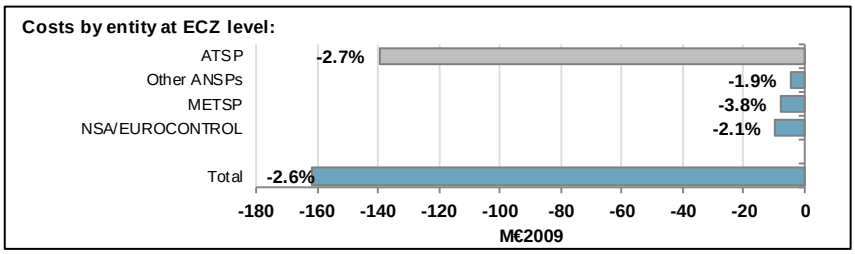


Figure 19: 2017 actual en-route costs compared to PPs by entity (SES level)

5.5.3 As shown in Figure 19, actual en-route costs in 2017 were lower than planned for the main ATSPs (-2.7% or -139.5 M€$_{2009}$), the NSA/EUROCONTROL (-2.1% or -9.7 €$_{2009}$) the MET service providers (-3.8% or -7.9 M€$_{2009}$) and for the other ANSPs (-1.9% or -4.6 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 (-2.6% or -161.8 M€$_{2009}$) is due to the main ATSPs (i.e. the main designated ATSP subject to traffic risk-sharing arrangements).

5.5.4 Figure 20 presents for each en-route CZ the variation between actual costs and determined costs in 2017.

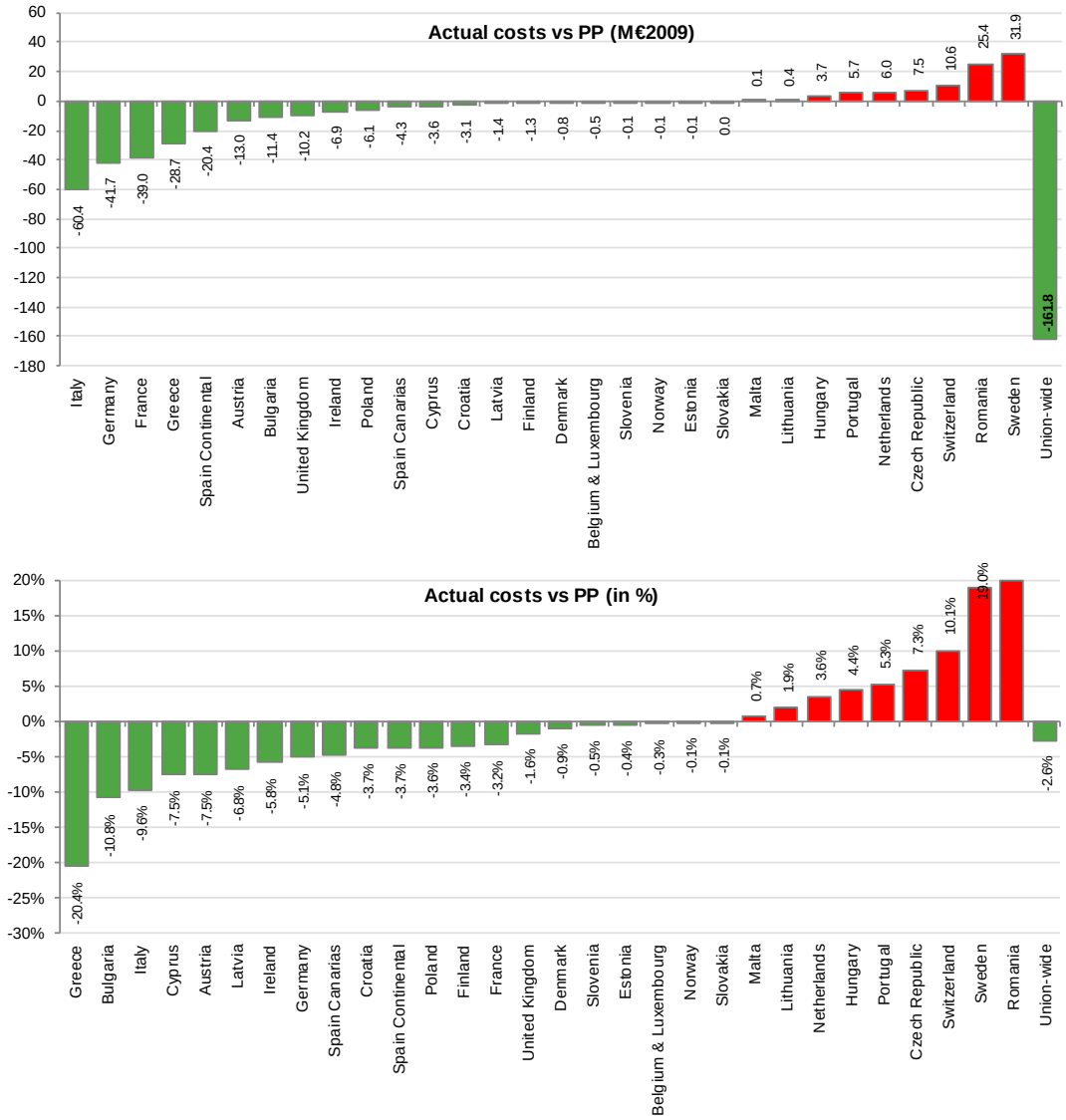


Figure 20: 2017 actual en-route costs compared to PPs by CZs (SES level)

5.5.5 As shown on Figure 20, actual costs were higher than planned for nine CZs. Three of these

states had an observed deviation above 10.0%:

- Romania with +20.1% or +25.4 M€$_{2009}$, where the ATSP ROMATSA (+21.2% or +25.0 M€$_{2009}$) is the major contributor to the observed difference. The higher than planned en-route costs in real terms were mainly driven by a much higher actual staff cost (+20.4%, or +17.0 M€$_{2009}$) and a significant amount of exceptional costs (+ 12.5 M€$_{2009}$), when no exceptional costs were planned in the PP. No drivers underlying the deviation between planned and actual costs for 2017, outlined above, are provided in the additional information to June 2018 en-route reporting tables or the DANUBE FAB 2017 Monitoring Report. However it should be noted that this difference is also strongly driven by the fact that the actual inflation index is significantly lower than planned (-13.4 p.p.). In nominal terms, the en-route costs are +8.1% higher than planned. It must be noted than in 2017, Romania submitted a request to the European Commission to revise their RP2 en-route cost-efficiency targets and terminal DUC for the years 2018 to 2019.
- Sweden with +19.0% or +31.9 M€$_{2009}$. The higher than planned en-route costs in real terms were mainly driven by higher actual costs for the main ATSP - LFV (+19.3%, or +26.3 M€$_{2009}$) and for the other ANSPs (+44.2%, or +3.3 M€$_{2009}$). The main driver for the higher actual costs for LFV were the higher than planned staff costs (+31.0%, or +28.7 M€$_{2009}$), mainly due to higher pension costs driven by a lower discount rate than assumed in the PP. The difference between the actual and planned pension costs is reported as costs exempt from cost-sharing; and,
- Switzerland with +10.1%, or +10.6 M€$_{2009}$, primarily due to the higher than planned en-route costs in real terms for the ATSP Skyguide (+12.2%, or +10.7 M€$_{2009}$). The main drivers to the observed difference for Skyguide were significantly higher actual staff (+13.3%, or +9.3 M€$_{2009}$) and higher other operating costs (+30.1% or +1.6 M€$_{2009}$). As indicated in the additional information to the June 2018 en-route reporting tables, the staff costs deviation is mainly explained by higher pension costs: "*For Swiss regulatory reasons, extraordinary actions had to be taken in connection with the financing of the Skyguide's occupational pension provision: Skyguide was compelled to conduct a restructuring of its skycare company pension scheme which resulted in a sizeable actuarial shortfall. To off-set part of this underfunding, the company invested in skycare"*. The related deviation of the operating costs is due to the use of external expertise and services instead of internal production and higher bad debt arriving from several airlines that had financial difficulties as a result of the decision of the Enlarged Committee for Route Charges to write-off the open debts of US and Canadian Military flights. As a result, Skyguide booked a write-off in 2017, which was reflected in the other operating costs.

5.5.6 Figure 20 shows that actual costs were lower than planned for 21 CZs. Three of these states had an observed deviation below -9.0%:

- Greece with -20.4% or -28.7 M€$_{2009}$, HCAA (-22.3% or -27.7 M€$_{2009}$) being the major contributor to the observed difference. According to the additional information to the June 2018 en-route reporting tables, this results from the combination of:
  (a) lower staff costs (-10.1%, or -9.8 M€$_{2009}$), reflecting "*lower payments of overtimes and benefits*"; in this respect, it should be noted that the "*staff costs of 32 ab initio ATCOs, recruited in November 2017, are not included in the actual cost*"; and
  (b) significantly lower other operating costs (-64.4%, or -12.2 M€$_{2009}$), resulting from "*less payments in 2017 due to newly established procedures for HCAA, resulting from the State accounting policies*"'. It is also noted "*relevant significant increase in operating costs is going to be reflected in the 2019 in relation to unpaid obligations of 2017*".

- Bulgaria with -10.8% or -11.4 M€$_{2009}$. The lower than planned en-route costs in real terms are mainly driven by reductions for the ATSP BULATSA (-11.1%, or -11.0 M€$_{2009}$). According to the additional information to the June 2018 en-route reporting tables, this results from a combination of:

  (a) lower staff costs (-6.9%, or -4.5 M€$_{2009}$), mainly driven by the fact some of the ATCOs initially recruited to be employed in ACC were finally employed at a TWR working position and this "*resulted in underspending of en-route staff costs versus the plan*". Additionally "*lower social security costs, since there were no changes in the maximum social security income as well as in the social security rate as planned*";

  (b) much lower other operating costs (-31.4%, or -4.1 M€$_{2009}$), primarily explained by lower costs for materials (i.e. power supply, heating and spare parts) and lower costs for external services; and

  (c) lower depreciation costs (-23.8%, or -2.7 M€$_{2009}$), mainly resulting from delays in the investment programme, in particular during 2015 and 2016. Based on the information provided in the DANUBE FAB Monitoring Report 2017, the actual CAPEX for 2017 in nominal terms is -4.5% lower than planned in PP.

- Italy with -9.6% or -60.4 M€$_{2009}$. The lower than planned en-route costs in real terms were mainly driven by lower actual costs for the main ATSP ENAV (-9.4%, or -49.4 M€$_{2009}$). According to the additional information to the June 2018 en-route Reporting Tables, this results from a combination of:

  (a) lower staff costs (-5.1%, or -14.5 M€$_{2009}$) resulting from the combination of management actions put in place in 2015 and 2016, the positive effect of which continued in 2017, and further extraordinary actions put in place in 2017. The latter specifically refer to: i) a reduction in the group headcount, which has contributed to the decrease of fixed remuneration; ii) an increase in the variable component of remuneration on account of overtime on the operating line linked to increased ATCO personnel training for the implementation of the free route platform; iii) a reduction of social security costs; and iv) a minor use of incentives paid to employees and executives who left in 2017;

  (b) significantly lower other operating costs (-19.9%, or -17.2 M€$_{2009}$), primarily driven by "*lower purchasing costs due to more effective spare parts management; optimisation of maintenance costs; reduction in telecommunications, utilities and insurance costs*";

  (c) lower depreciation costs (-13.3%, or -13.0 M€$_{2009}$), mainly driven by the reduction of costs obtained from the suppliers, in particular for implementation of activities and equipment for air traffic control, already observed in 2016; and

  (d) lower cost of capital (-8.7%, or -4.7 M€$_{2009}$) resulting from the combined effect of lower than planned actual asset base and higher than planned average rate of cost of capital. For the latter it is noted that although the average interest rate on debts is lower than planned, due to a different gearing between equity and debt compared to the plan (increased proportion of financing through equity), the average rate of cost of capital is higher than planned.

5.5.7 Figure 21 shows that the drivers for the main ATSPs' lower actual en-route costs in 2017(-139.5 M€$_{2009}$) were lower other operating costs (-7.9% or -71.2 M€$_{2009}$), lower depreciation costs (-6.5% or -47.8€$_{2009}$) and lower staff costs (-0.5% or -17.4 M€$_{2009}$).

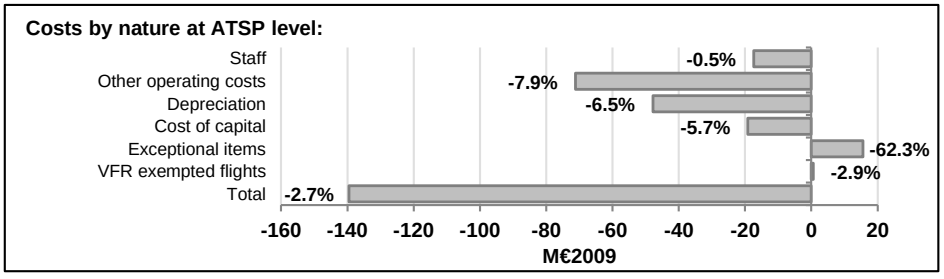


Figure 21: 2017 actual en-route costs compared to PPs by nature (SES level)

5.5.8 A large proportion of the -71.2 M€$_{2009}$ deviation observed for the lower other operating costs than planned is due to four States:

- DFS (Germany) with -24.4%, or -18.7 M€$_{2009}$, as indicated in the Additional Information to the June 2018 en-route Reporting Tables, *"compared to the performance plan, there are lower costs for consulting fees and travel expenses. Maintenance costs for buildings and technical systems also decreased, as well as costs for electricity and heating. In addition, there is the effect of the low inflation of the past years";*
- ENAV (Italy) with -19.9%, or -17.2 M€$_{2009}$, as indicated above;
- HCAA (Greece) with -64.4%, or -12.2 M€$_{2009}$ as indicated above; and
- NERL (United Kingdom) with -11.1% or -11.8 M€$_{2009}$, mainly due to cost savings and rebates on business rates.

5.5.9 Depreciation costs are also significantly lower than planned (-6.5% or -47.8€$_{2009}$). 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 (see point 5.16.2). The postponement of capital expenditures (CAPEX) that 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 should not be the case in RP2 where traffic is higher than planned.

5.5.10 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.

5.5.11 The cost-sharing mechanism in the SES Regulations provides that the difference between the DCs set in the adopted PPs and the actual costs for the year shall be borne (in case of higher costs) or retained (in case of lower costs) by the States/ATSPs, except for the costs exempt from this mechanism (see Figure 22).

5.5.12 The costs exempt from cost-sharing are taken into account in the calculation of the ATSP net gain for the 2017 en-route activity which is presented in Section 5.6. This monitoring report takes into account the States' submissions on costs exempt from cost-sharing as reported in the June 2018 reporting tables for the purposes of en-route charges. These amounts, to be recovered from (+) or reimbursed to (-) users, will be eligible for carry-over to the following reference period(s), if allowed by the Commission.

En-route costs exempted from cost sharing				
Estimates ('000 €2009)		2015	2016	2017
by item	Pension	33 714	21 478	48 124
	Interest rates on loans	-2 253	-3 860	-5 168
	Taxation law	-9 717	-10 861	-11 816
	New cost item required by law	526	3 536	7 513
	International agreements	-5 985	-5 735	-19 342
by entity	ATSP	22 197	7 684	38 176
	Other ANSP	-80	1 990	2 535
	MET SP	-11	-39	-46
	NSA/EUROCONTROL	-5 833	-7 085	-21 443
Total costs exempted from cost sharing		16 272	2 550	19 222

Figure 22: En-route costs exempted from cost-sharing (SES level)

5.5.13 Figure 22 above shows that overall, the net amount of en-route costs exempt from cost-sharing in 2017 is +19.2 M€$_{2009}$. The costs exempt from cost-sharing reported by main ATSPs

amount to +38.2 M€$_{2009}$. This figure is significantly impacted by the following combined effects: Sweden's main ATSP cost exempt from cost-sharing (+28.2 M€$_{2009}$) and Norway's (+11.3 M€$_{2009}$), both related to pension costs and French ATSP (-14.9 M€$_{2009}$), related to pensions (-9.8 M€$_{2009}$) and interest rates on loans (-5.0 M€$_{2009}$). Figure 22 also indicates that costs exempt from cost-sharing are negative (indicating reimbursement to the users) for the MET service providers (-0.05 M€$_{2009}$) and the NSAs/EUROCONTROL (-21.4 M€$_{2009}$).

5.6 ATSP Net Gain for the 2017 En-route Activity

5.6.1 The analysis of the overall economic surplus generated from the en-route activity by an ATSP can be broken down in two main elements:

- the net ATSP gain/loss on en-route activity;
- the estimated surplus (return on equity) already embedded in the cost of capital charged to airspace users through the DCs.

5.6.2 This section focuses on the first element, the net ATSP gain/loss on en-route activity, which results from the combination of the traffic risk-sharing, the cost-sharing and the incentives on capacity and environment performance during the year. An analysis of the overall economic surplus, including the estimated surplus embedded in the cost of capital is provided in Section 5.7.

5.6.3 The (main) en-route ATSP is the most significant contributor to a State's en-route costs (86% of the total actual cost base, on average) and is the main entity subject to the costs and traffic risk-sharing mechanisms. The analysis of the net ATSP gain/loss focuses on the ATSP en-route activity for 2017. It considers neither the cash flow position nor the liquidity balance at the end of the year as both are impacted by the charging mechanism whereby the eligible under-recoveries (for traffic, etc.) are to be recovered in year N+2 or later.

5.6.4 The analysis of the main ATSPs' results in 2017 shows that, at Union-wide level, a net gain of 335.3 M€$_{2009}$ was generated on the en-route activity (see Figure 23). This result is due to the combination of three distinct elements:

- a gain resulting from the cost-sharing mechanism of +177.7 M€$_{2009}$, corresponding to the difference between actual 2017 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 +154.6 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% and +8.0% in 2015, 2016 and 2017 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€$_{2009}$ and +154.6 M€$_{2009}$ in 2017 i.e. an almost fivefold increase from 2015; and
- a net gain resulting from the financial incentive mechanism relating to capacity performance amounting to +3.0 M€$_{2009}$ (see paragraph 5.6.5 below for details).

Focus on the main ATSPs: Net ATSP gain/loss on en-route activity			
Cost sharing ('000 €2009)	**2015**	**2016**	**2017**
Determined costs for the main ATSPs (PP) - based on planned inflation	5 289 228	5 225 457	5 249 455
Actual costs for the main ATSPs	5 147 242	5 093 510	5 109 912
Difference in costs: gain (+)/Loss (-) retained/borne by the main ATSPs	141 986	131 946	139 542
Amounts excluded from cost sharing to be recovered from (+) or reimbursed to (-) users	22 197	7 684	38 176
Gain (+)/Loss (-) to be retained by the main ATSPs in respect of cost sharing	**164 182**	**139 630**	**177 718**
Traffic risk sharing ('000 €2009)	**2015**	**2016**	**2017**
Difference in total service units (actual vs PP) %	2.0%	4.4%	8.0%
Determined costs for the main ATSPs (PP) - based on actual inflation	5 319 561	5 314 633	5 316 694
Gain (+)/Loss (-) to be retained by the main ATSPs in respect of traffic risk sharing	**31 689**	**97 558**	**154 580**
Incentives ('000 €2009)	**2015**	**2016**	**2017**
Gain (+)/Loss (-) to be retained by the main ATSPs in respect of incentives (bonus/penalty)	**9 686**	**3 158**	**2 961**
Net ATSP gain(+)/loss(-) on en-route activity ('000 €2009)	**205 558**	**240 346**	**335 260**

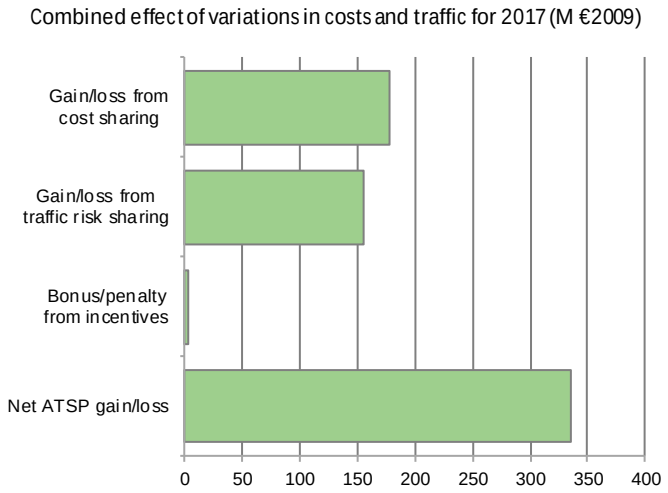


Figure 23: Net gain/loss on 2017 en-route activity for the (main) ATSPs (SES level)

5.6.5 The bonus, in respect of capacity and environment incentives (+3.0 M€$_{2009}$ shown in Figure 23), reflects the fact that:

- for 11 en-route main ATSPs, the actual capacity performance in 2017 remains within the dead-band of the incentive mechanism, there are therefore no bonuses or penalties for these CZs;
- in a majority of cases, the amount of bonus or penalty in respect of capacity incentives is significantly lower than 1% of en-route revenues;
- 16 en-route main ATSPs were in a position to generate bonuses, for a total amount of 10.7 M€$_{2009}$; and
- three en-route main ATSPs (DSNA, Belgocontrol, and DFS) reported penalties (-7.8 M€$_{2009}$ in total).

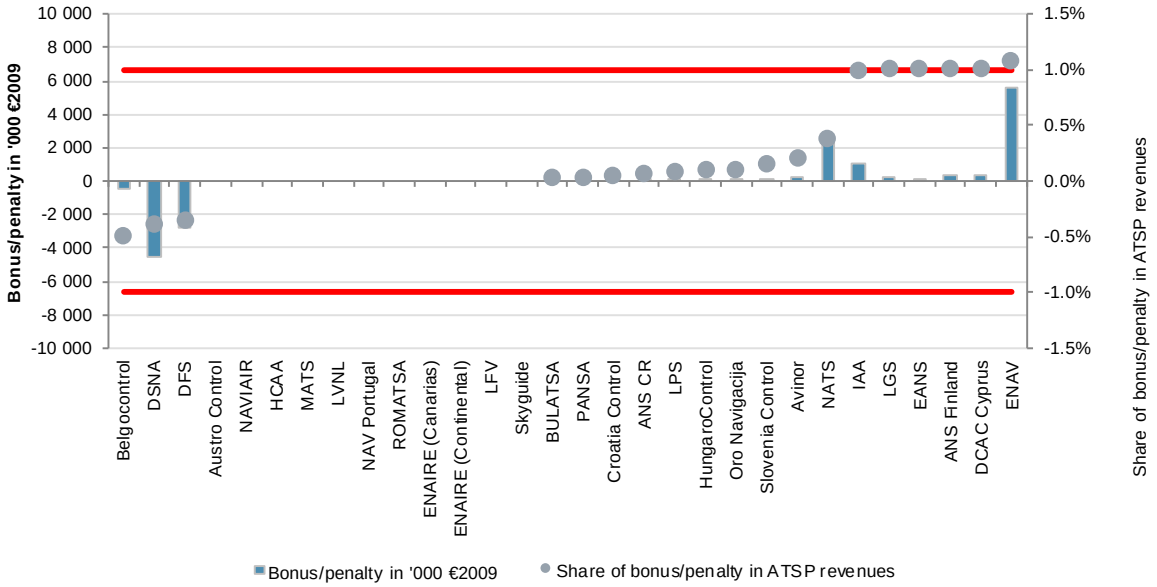


Figure 24: En-route gain(+)/loss(-) to be retained by the main ATSPs in respect of incentives

5.6.6 Figure 24 shows the situation for each main ATSP. It also shows the amount of bonuses that are above or equal to 1% of the en-route revenues (based on the ATSP chargeable unit rate in 2017 times the actual TSUs) for six ANSPs: ENAV 1.1%, EANS 1.0%, DCAC Cyprus 1.0%, LGS 1.0%, IAA 1.0% and Finavia 1.0%.

5.6.7 The inclusion of these bonuses in the chargeable cost bases is being assessed by the European Commission.

5.7 ATSPs 2017 Overall En-route Economic Surplus vs. Performance Plans

5.7.1 This analysis estimates the "overall economic surplus", comprising the net ATSP gain/loss on en-route activity (see section 5.6), and the surplus embedded in the cost of capital (return on equity (RoE). The estimated economic surplus is a useful tool to monitor the financial strength of the ATSPs. Detailed information on the methodology used to compute the estimated economic surplus is available in the Reader's Guide included in the accompanying local level view part of this report.

5.7.2 The concept of estimated economic surplus is different from the net accounting profit disclosed by the ATSPs in their financial statements. The latter includes revenues and costs relating to the provision of terminal ANS and 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, and is therefore not comparable with the notion of economic surplus.

5.7.3 Consequently, it is important to stress that the overall economic surplus expressed as a percentage of the en-route revenues[6] is not directly comparable to the profit margin that would be calculated from ATSPs' financial statements.

5.7.4 Based on the information reported by the States, the overall estimated en-route surplus embedded in the determined cost of capital is estimated at 258.8 M€$_{2009}$ for the 29 main ATSPs (see column 2017D in Figure 25). This figure is based on a planned asset base amounting to some 6 132 M€$_{2009}$, of which 58.6% is financed through equity at an average

6 In the context of this analysis the calculation of the revenues is the sum of the net ATSP gain/loss on en-route activity and the actual costs of the ATSP, as reflected in Figure 23.

(pre-tax) RoE rate of 7.2%.

5.7.5 The actual estimated surplus for the en-route activity in 2017 amounts to 611.9 M€$_{2009}$ (see column 2017A in Figure 25). This figure comprises the surplus embedded in the actual cost of capital (276.6 M€$_{2009}$) and the net gain/loss generated in respect of the en-route activity in 2017 (335.3 M€$_{2009}$, see Figure 23).

5.7.6 The estimated surplus at Union-wide level represents 11.2% of 2017 en-route revenues, which is higher than planned in the PPs (4.9%). This corresponds to a (weighted average) ex-post actual RoE of 15.9%, which is also higher than planned in the PPs (7.2%).

5.7.7 The actual estimated surplus includes the amounts reported for costs exempt from cost-sharing for main ATSPs (i.e. 38.2 M€$_{2009}$) in 2017 (as discussed in paragraph 5.5.13). 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 2017 would be lower (i.e. 573.7 M€$_{2009}$, compared to 611.9 M€$_{2009}$).

Focus on the main ATSPs: En-route ATSP estimated surplus *

* This calculation of the economic surplus retained by the main 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 account of the

ATSP estimated surplus ('000 €2009) from RP2 Performance Plans	2015D	2016D	2017D
Total asset base	6 321 739	6 208 733	6 132 025
Estimated proportion of financing through equity (in %)	55.9%	57.2%	58.6%
Estimated proportion of financing through equity (in value)	3 534 295	3 551 321	3 595 444
Estimated proportion of financing through debt (in %)	44.1%	42.8%	41.4%
Estimated proportion of financing through debt (in value)	2 787 444	2 657 412	2 536 581
Cost of capital pre-tax (in value)	330 739	328 002	336 148
Average interest on debt (in %)	3.1%	3.1%	3.0%
Interest on debt (in value)	86 205	81 236	77 349
Determined RoE pre-tax rate (in %)	6.9%	6.9%	7.2%
Estimated surplus embedded in the cost of capital for en-route (in value)	244 534	246 767	258 799
Overall estimated surplus (+/-) for the en-route activity	**244 534**	**246 767**	**258 799**
Revenue/costs for the en-route activity	**5 289 228**	**5 225 457**	**5 249 455**
Estimated surplus (+/-) in percent of en-route revenues	**4.6%**	**4.7%**	**4.9%**
Estimated ex-post RoE pre-tax rate (in %)	**6.9%**	**6.9%**	**7.2%**

ATSP estimated surplus ('000 €2009) based on actual data from Reporting Tables	2015A	2016A	2017A
Total asset base	6 356 267	6 338 468	6 049 465
Estimated proportion of financing through equity (in %)	58.5%	58.4%	63.6%
Estimated proportion of financing through equity (in value)	3 718 580	3 703 737	3 848 177
Estimated proportion of financing through debt (in %)	41.5%	41.6%	36.4%
Estimated proportion of financing through debt (in value)	2 637 687	2 634 731	2 201 288
Cost of capital pre-tax (in value)	333 180	325 105	316 958
Average interest on debt (in %)	2.7%	2.5%	1.8%
Interest on debt (in value)	72 290	66 744	40 360
Determined RoE pre-tax rate (in %)	7.0%	7.0%	7.2%
Estimated surplus embedded in the cost of capital for en-route (in value)	260 890	258 362	276 598
Net ATSP gain(+)/loss(-) on en-route activity	205 558	240 346	335 260
Overall estimated surplus (+/-) for the en-route activity	**466 448**	**498 708**	**611 858**
Revenue/costs for the en-route activity	**5 352 800**	**5 333 857**	**5 445 172**
Estimated surplus (+/-) in percent of en-route revenues	**8.7%**	**9.3%**	**11.2%**
Estimated ex-post RoE pre-tax rate (in %)	**12.5%**	**13.5%**	**15.9%**

Figure 25: Estimated surplus for en-route activity for the (main) ATSPs at Union-wide level

5.7.8 The overall estimated surplus at Union-wide level (611.9 M€$_{2009}$, or 11.2% of en-route revenues) masks different situations amongst the 29 main en-route ATSPs. Figure 26 shows that in 2017, 24 ATSPs have increased their estimated surplus (as a proportion of revenues) compared to the amounts embedded in the determined cost of capital.

5.7.9 Figure 26 also shows that two main ATSPs (ROMATSA and Skyguide) have incurred losses and show a negative actual estimated surplus on their en-route activity in 2017:

- for ROMATSA (Romania, -4.3% of en-route revenues compared to +7.8% as planned in the PP), this is mainly due to a loss of -18.3 M€$_{2009,}$ arising from the cost-sharing mechanism since ROMATSA had substantially higher costs, in real terms, than planned (+21.2% or +25 M€$_{2009,}$), offset slightly by +6.7 M€$_{2009}$ reported for costs exempt and partially compensated by the gain of +5.4 M€$_{2009}$ arising from the traffic risk-sharing mechanism; and
- for Skyguide (Switzerland, -7.0% of en-route revenues compared to +2.0% as planned in the PP), this is mainly due to a loss of -11.3 M€$_{2009}$ arising from the cost-sharing mechanism since Skyguide had substantially higher costs than planned (+12.2%).

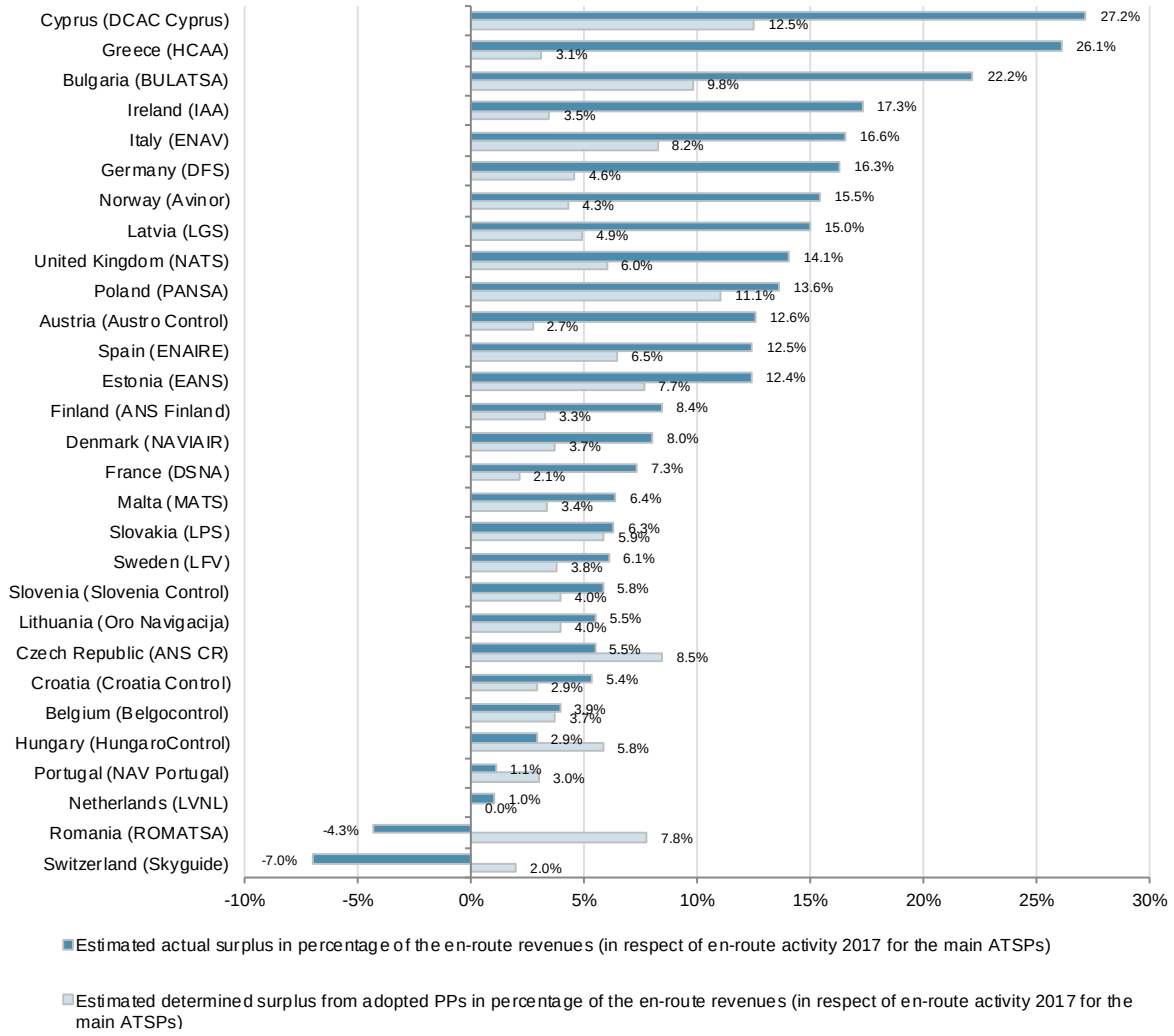


Figure 26: Estimated surplus for the 2017 en-route activity for the main ATSPs

5.7.10 Figure 26 shows that for ten ATSPs, the estimated surplus in 2017 represented more than 10% of their en-route revenues while for three ANSPs it exceeded 20%:

- for DCAC Cyprus (27.2% compared to 12.5% as planned in the PP), the main driver for the actual estimated surplus is the net gain of +5.2 M€$_{2009}$ arising from the cost-sharing mechanism. Meanwhile, the actual estimated surplus embedded in the cost of capital (+2.7 M€$_{2009}$) was -37.5% lower than planned due to much lower than planned total asset base;

- for HCAA (Greece, 26.1% compared to 3.1% as planned in the PP), the actual estimated surplus is mainly due to the combination of a net gain of +27.7 M€$_{2009}$ arising from the cost-sharing mechanism, since HCAA achieved substantially lower costs than planned (-22.3%) and the gain of 5.7 M€$_{2009}$ arising from the traffic risk-sharing mechanism. Meanwhile, the actual estimated surplus embedded in the cost of capital (+0.5 M€$_{2009}$) was significantly lower than planned due to an extraordinary lower actual total asset base (5.9 M€$_{2009}$) compared with the planned in the PP (43.7 M€$_{2009}$), i.e. -86.4%;
- for BULATSA (Bulgaria, 22.2% compared to 9.8% as planned in the PP), this is mainly due to a gain of +10.5 M€$_{2009}$ arising from the cost-sharing mechanism since BULATSA achieved substantially lower cost than planned (-11.1%). It must be noted than in 2016 Bulgaria revised their RP2 en-route cost-efficiency targets for the years 2017 to 2019.

5.7.11 More details on the main ATSPs' economic surplus, for each State, are available in the local level view part of this 2017 Annual Monitoring Report.

5.8 Union-wide 2017 Actual Costs and Cost for Users

This Section presents the actual en-route cost for airspace users in respect of ANS activities in 2017 (also referred to as the "true cost for users"). Note that the "true cost" for users is different from the cost **charged** during the year due to the adjustments foreseen in the performance scheme and SES Charging Regulation.

5.8.1 In this context, the "true costs" are a better reflection of the cost-efficiency performance from an airspace user's point of view. This section attempts to quantify the "true costs" in respect of ANS activities carried out in 2017 which comprise:

- the amounts that have already been charged to the users through the 2017 unit rates; and
- the different adjustments relating to 2017 activities which will be charged or reimbursed to users in future years.

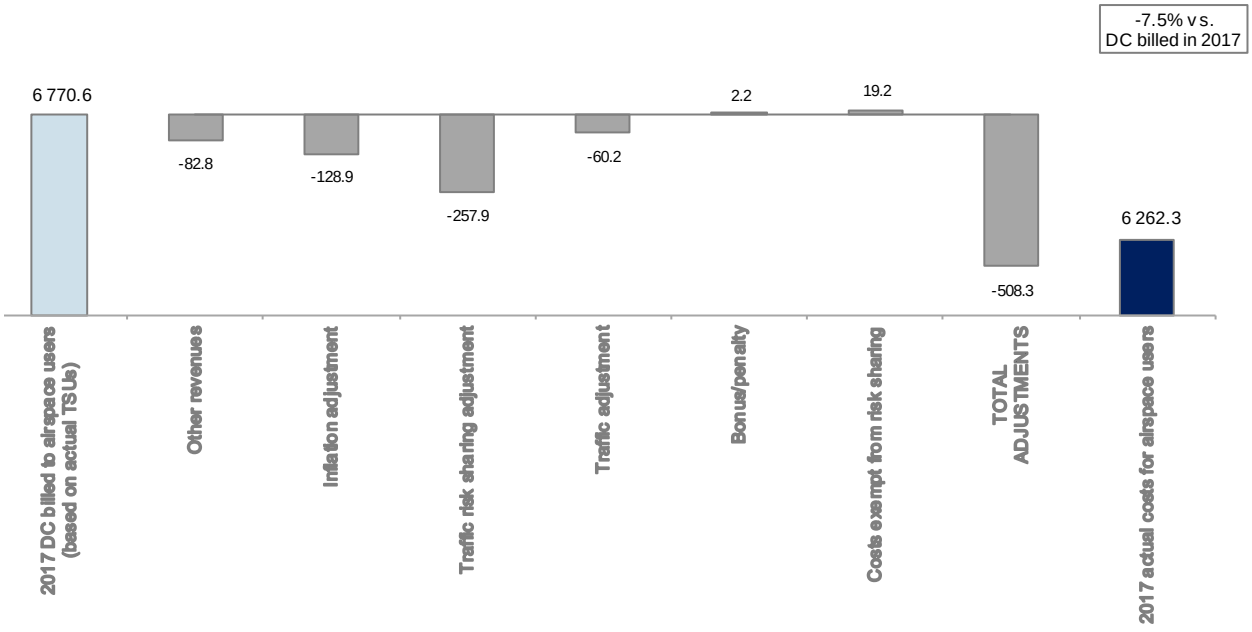


Figure 27: Actual costs for users in respect of the 2017 en-route activity (in M€$_{2009}$)

5.8.2 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.

5.8.3 Figure 27 shows that the actual costs incurred by airspace users in respect of activities performed in 2017 (6 262.3 M€$_{2009}$) were -7.5% (-508.3 M€$_{2009}$) lower than the DCs billed based on actual TSUs (6 770.6 M€$_{2009}$).

5.8.4 The first factor contributing to the observed difference is the deduction of -82.8 M€$_{2009}$ of other revenues. In a majority of en-route CZs, either no other revenues or small amounts of other revenues were deducted from the determined costs. However, a few CZs have reported material levels of other revenues contributing to an impact at a Union-wide level. This is especially the case for:

- Spain Continental and Spain Canarias (-44.6 M€$_{2009}$) mainly due to national public funding and commercial revenues as well as income deriving *"from the excess in the provision for responsibilities related to staff payments (partly regarding ATCOs staff)*";
- Croatia (-9.4 M€$_{2009}$) corresponding to the revenues from service provision in the airspace of Bosnia and Herzegovina; and
- France (-8.0 M€$_{2009}$) reflecting reimbursements from the SESAR Joint Undertaking, revenues from commercial activities, the co-financing of Coflight by ENAV and Skyguide and reimbursements of EC grants.

5.8.5 For a majority of CZs (Belgium-Luxembourg, Norway and Poland being the only exceptions), the actual inflation index in 2017 was lower than planned in the PPs. The overall net effect of inflation adjustments at CZ level is a forthcoming reimbursement (-128.9 M€$_{2009}$) to airspace users.

5.8.6 At Union-wide level, TSUs were +8.0% higher than planned. For 25 CZs, the difference between actual and planned TSUs fell outside the ±2% dead-band of the traffic risk-sharing mechanism. The net effect of these deviations between actual and planned TSUs is a forthcoming reimbursement (-257.9 M€$_{2009}$) to airspace users.

5.8.7 Since, at a Union-wide level, traffic was higher than planned, the traffic adjustments relating to costs not subject to traffic risk-sharing also resulted in a forthcoming reimbursement (-60.2 M€$_{2009}$) to airspace users.

5.8.8 In total, 16 CZs reported bonuses in respect of en-route capacity and environment incentives, while Germany, France, Netherlands and Belgium/Luxembourg are the only CZs that reported penalties (for the Netherlands, the penalty is related to MUAC only). At a system level, the overall result of these incentive mechanisms amounts to a bonus of +2.2 M€$_{2009}$ to be charged to airspace users, if deemed eligible after assessment by the EC. This amount differs from the +3.0 M€$_{2009}$ shown in the Figure 23 as it is calculated at State level and not only for the main ATSPs as it is done in the Figure 23.

5.8.9 Finally, a net amount of +19.2 M€$_{2009}$ has been reported as costs exempt from cost-sharing at Union-wide level. It is important to note that at CZ level, costs exempt from cost-sharing are amounts to be reimbursed to airspace users in the majority of cases. However, Sweden (+28.2 M€$_{2009}$) and Norway (+11.3 M€$_{2009}$) reported exceptionally high amounts to be charged to airspace users, both related to pension costs for its main ATSP which outweighs the negative amounts reported by the majority of CZs. These costs will be eligible for carry-over (charged/reimbursed to airspace users) to the following reference period(s), if deemed eligible

by the EC. The +19.2 M€$_{2009}$ amount differs from the +38.2 M€$_{2009}$ of Figure 23 as in this case it is calculated at State level and not only for the main ATSPs as is done in Figure 23.

Terminal ANS Cost-efficiency

5.9 Presentation of the Terminal Cost-efficiency KPI

5.9.1 Although there are no Union-wide cost-efficiency targets for terminal ANS, 2017 is the third year in which terminal ANS cost-efficiency performance has been monitored according to the requirements of Article 18 of the Performance Regulation [Ref. i].

5.9.2 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.

5.9.3 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.

5.9.4 The two TCZs reported by UK have been excluded from this analysis for the following reasons:

- information relating to UK TCZ B (nine airports) has been 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).

5.9.5 It should be noted that the 2017 cost-efficiency monitoring analysis for UK TCZ C is available in the accompanying CZ view shown in the local level view part of the 2017 Annual Monitoring Report.

5.9.6 Table 26 presents the aggregation of the terminal DUCs reported by the States (excluding UK) for all years of RP2.

COST-EFFICIENCY DATA FROM PERFORMANCE PLANS	2015P	2016P	2017P	2018P	2019P
Real terminal Determined Unit Costs (in €$_{2009}$)	180.83	174.35	165.78	161.29	157.33

Table 26: Terminal DUCs for RP2 as per aggregation of PPs (SES level)

5.9.7 Important note: 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 [Ref. x]). 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. The Netherlands requested this as well, but only for 2018. Pending the approval from the European Commission, the figures shown in this report for Romania, Portugal and the Netherlands reflect the adopted Performance Plan.

5.10 Actual 2017 Unit Cost vs. DUC in Adopted Performance Plans

5.10.1 In order to ensure consistency with the DCs provided in the adopted PPs and to allow

consolidation at Union-wide level, actual costs are expressed in real terms (€$_{2009}$ prices).

5.10.2 Figure 28 shows that, in 2017, the Union-wide actual terminal unit cost (157.92 €$_{2009}$) was some -4.7% lower than planned in the RP2 PPs. This variation results from the combination of higher than planned TNSUs (+7.2%) and higher than planned terminal costs (+2.1%, or +22.1 M€$_{2009}$).

5.10.3 It should be noted that is the first time, taking in to account RP1 and RP2, that the total terminal ANS actual costs were higher than planned (+2.1% or +22.1 M€$_{2009}$). 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 +18.6 M€$_{2009}$ and Switzerland with +16.2 M€$_{2009}$). Details on the main drivers are provided in point 5.12.5.

Actual unit cost vs. DUC in adopted Performance Plans						
SES States - Data from RP2 Performance Plans		**2015D**	**2016D**	**2017D**	**2018D**	**2019D**
Terminal costs (EUR2009)		1 117 713 492	1 103 962 617	1 066 100 758	1 058 073 714	1 052 864 252
Total terminal Service Units		6 181 013	6 331 707	6 430 770	6 559 914	6 692 224
Real terminal unit costs per Service Unit (EUR2009)		**180.83**	**174.35**	**165.78**	**161.29**	**157.33**
SES States - Actual data from Reporting Tables		**2015A**	**2016A**	**2017A**	**2018A**	**2019A**
Terminal costs (EUR2009)		1 084 292 134	1 096 452 312	1 088 212 452		
Total terminal Service Units		6 318 950	6 621 834	6 890 820		
Real terminal unit costs per Service Unit (EUR2009)		**171.59**	**165.58**	**157.92**		
Difference between Actuals and Planned (Actuals vs. PP)		**2015**	**2016**	**2017**	**2018**	**2019**
Real terminal costs (EUR2009)	in value	-33 421 358	-7 510 304	22 111 694		
	in %	-3.0%	-0.7%	2.1%		
Total terminal Service Units	in value	137 937	290 127	460 050		
	in %	2.2%	4.6%	7.2%		
Real terminal unit costs per Service Unit (EUR200	**in value**	**-9.24**	**-8.77**	**-7.86**		
	in %	**-5.1%**	**-5.0%**	**-4.7%**		

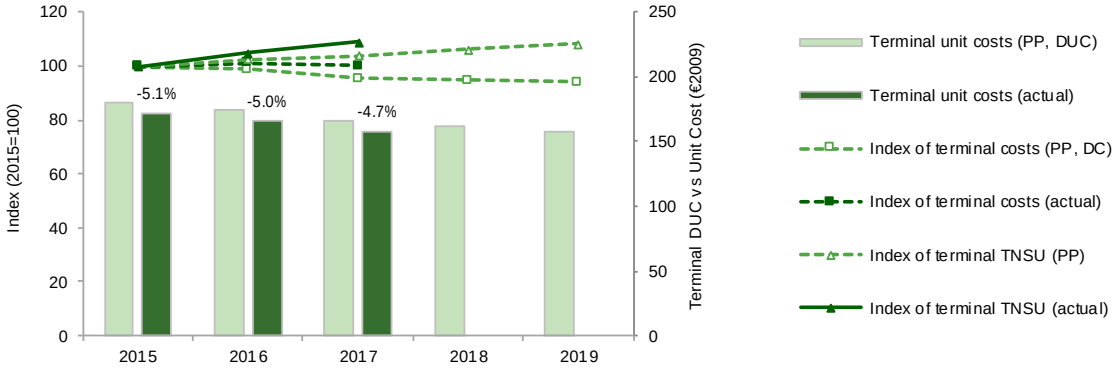


Figure 28: Terminal costs, traffic and unit costs (actual vs. Performance Plans, SES level)

5.10.4 The overall deviation of terminal unit costs observed at Union-wide level (-4.7%) masks different situations across the 36 TCZs as shown in Figure 29.

5.10.5 Actual terminal unit costs were lower than planned in 25 TCZs out of 36, with in most cases a combination of lower actual costs and higher traffic compared to RP2 PPs. Among these 25 TCZs, six managed to achieve reductions in the terminal DUC of more than -20.0%: Greece (-51.9%), Cyprus (-36.4%), Malta (-30.8%), Latvia (-26.6%), Hungary (-21.5%) and Poland – zone 1 (-21.4%).

5.10.6 For four TCZs, actual unit costs were higher than planned by more than +10.0%: Belgium Oostende-Brugge (+30.8%), Switzerland (+19.5%), Sweden (+18.1%) and Slovenia (+14.6). For Belgium Oostende-Brugge, the higher unit cost is due to significantly lower traffic compared to the forecast used in the PPs (-30.8%), for the other three CZs the higher unit cost is due to substantial higher actual costs than planned.

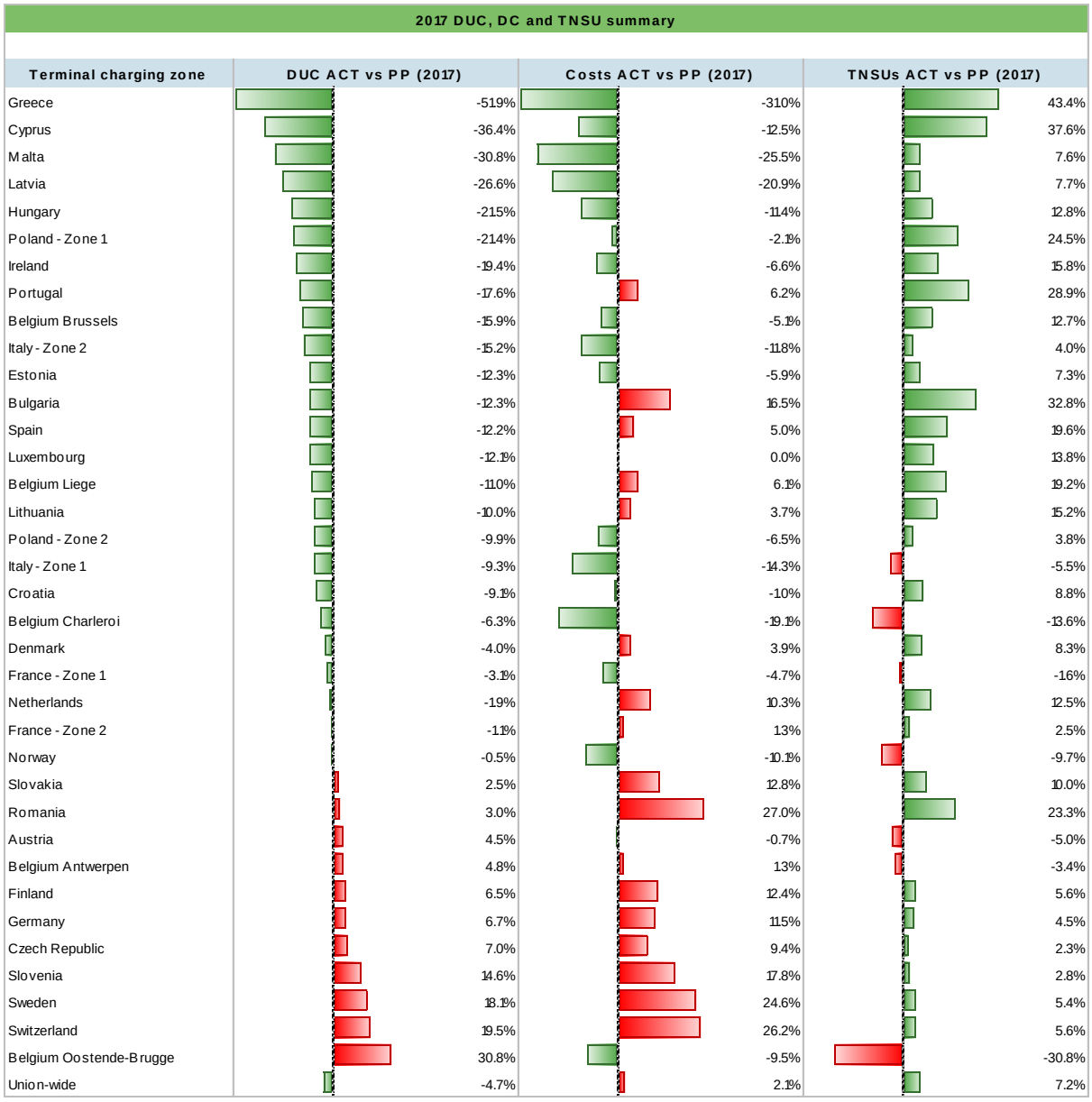


Figure 29: 2017 TANS actual costs vs. PP at State level

5.10.7 For seven TCZs, the actual number of TNSUs was lower than planned in the RP2 PPs, and two of them had traffic levels that fell below the -10% alert threshold, Belgium Charleroi (-13.6%) and Belgium Oostende-Brugge (-30.8%). It is worth noting that these TCZ were not subject to Terminal Navigation Charges (TNC) since terminal ANS costs were 100% subsidised by the State or regional authorities in 2017.

5.10.8 For 15 TCZs, the actual numbers of TNSUs compared to the planned in the RP2 PPs were higher than +10%, exceeding the alert threshold. Significant deviations above +30% were observed for Greece (+43.4%), Cyprus (+37.6%) and Bulgaria (+32.8%).

5.10.9 More details on the deviation between the DUC and actual en-route unit cost for 2017 at TCZ level are available in the local level view part of this 2017 Monitoring Report.

5.11 Actual 2017 traffic vs TSUs in adopted Performance Plans (PPs)

5.11.1 Figure 30 shows that the TNSU forecasts used in the PPs are consistently below the low scenario of the STATFOR forecast (February 2018) for all years until the end of RP2. Indeed, if any of three STATFOR February 2017 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 the +10% threshold in the year 2019. It must be noted that that only 19 out of the 36 original TCZ are applying traffic risk-sharing.

5.11.2 As for en-route, the actual terminal traffic over RP2 will be higher than the forecasts provided in the PPs based on current projections at a Union-wide level. This implies additional revenues for the States/ATSPs but also amounts to be reimbursed to airspace users according to the traffic risk-sharing adjustments.

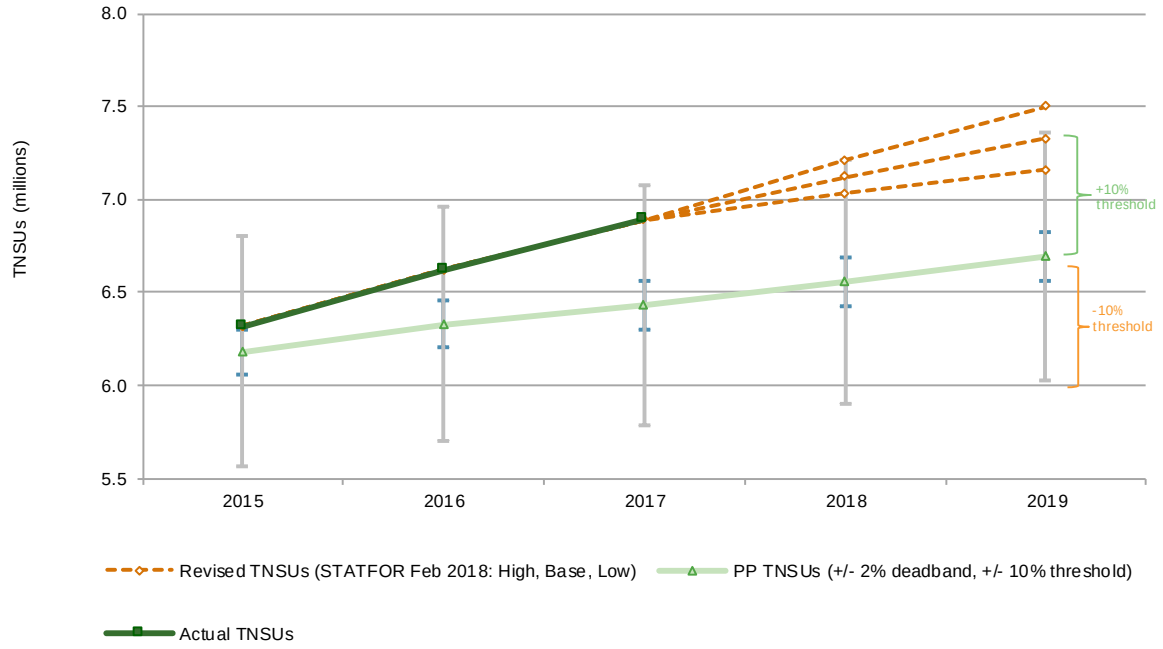


Figure 30: Terminal traffic monitoring (SES level)

5.12 Actual 2017 en-route costs vs. costs in adopted PPs

5.12.1 Figure 31 shows that at SES level actual terminal costs were lower than planned for the MET service providers (-6.2% or -2.7 M€$_{2009}$) and the NSAs (-6.3% or -0.7 M€$_{2009}$). On the other side the terminal cost for the main ATSPs were higher (+2.5% or 25.5€). Due to their relative size in the CZs, most of the deviation observed for the total terminal ANS costs (+2.1% or +22.1 M€$_{2009}$) was due to the main ATSPs.

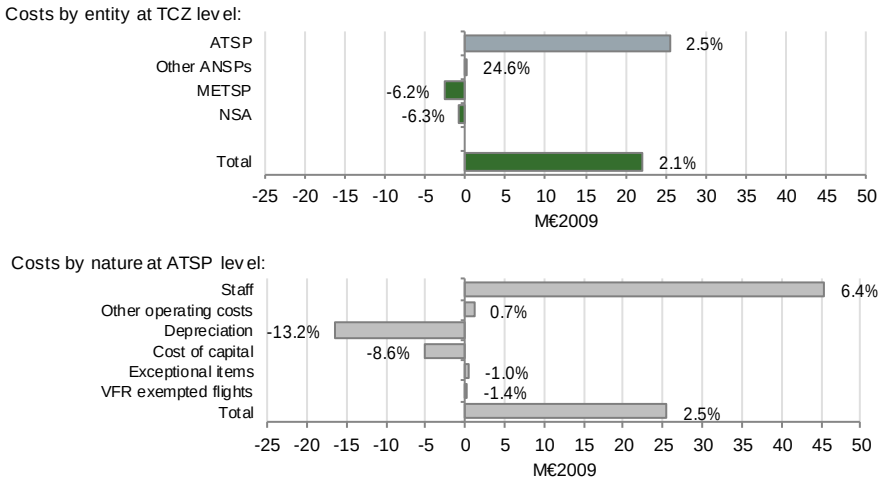


Figure 31: 2017 actual terminal costs compared to PPs (SES level)

5.12.2 Figure 31 also shows that the observed higher actual costs compared to the DCs for the main ATSPs masks different situations across the different costs categories in 2017. The main driver is higher staff costs (+6.4% or +45.4 M€$_{2009}$), partially compensated by lower depreciation costs (-13.2% or -16.4 M€$_{2009}$) and lower cost of capital (-8.6% or -5.2 M€$_{2009}$).

5.12.3 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 2017 Annual Monitoring Report.

5.12.4 Figure 32 presents the variation for each TCZ between actual costs and determined costs.

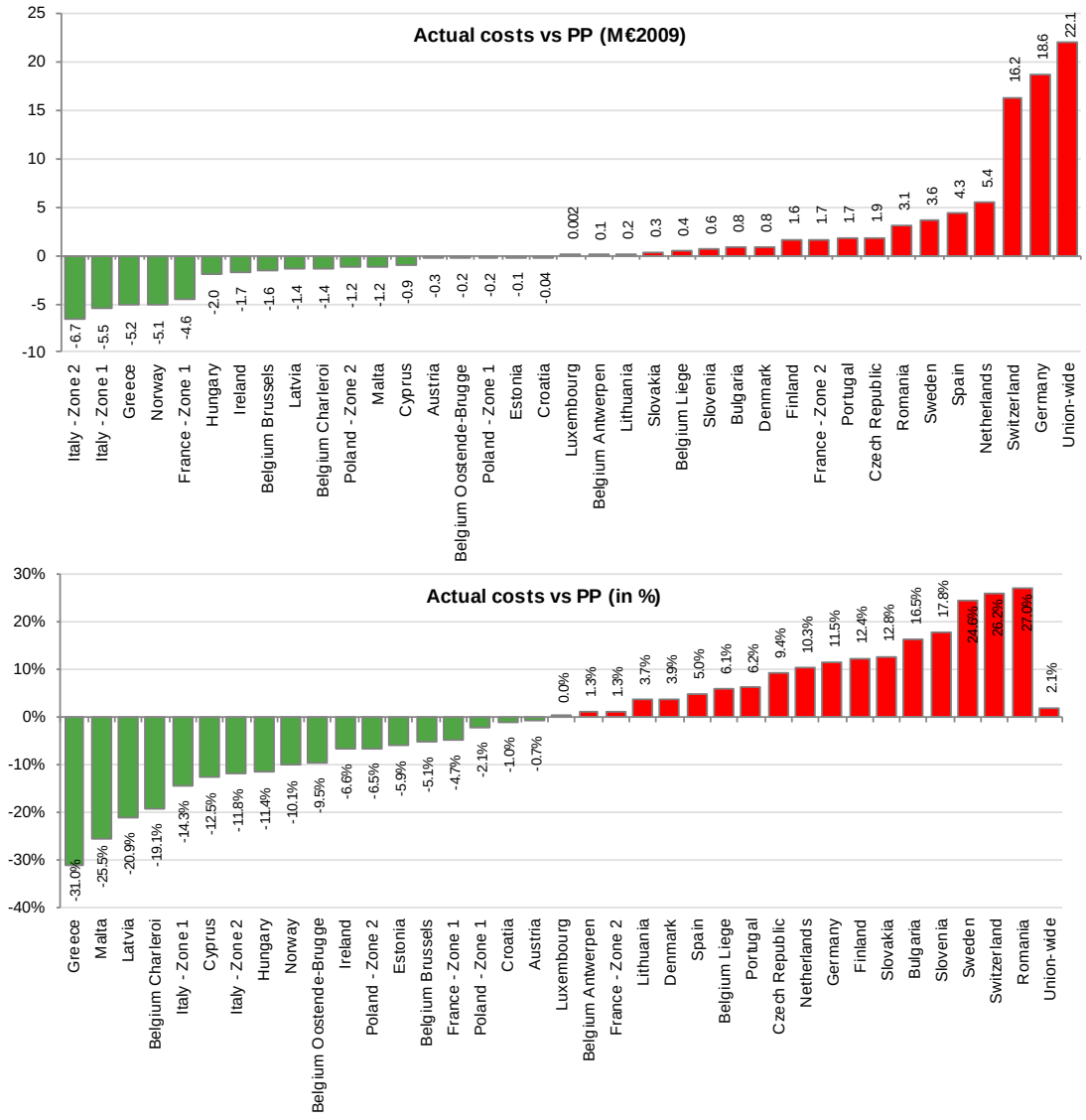


Figure 32: 2017 actual terminal costs compared to PPs (SES level)

5.12.5 As shown in Figure 32, actual costs were higher than planned for 18 CZs. Nine of these states had an observed deviation above 10% and three of them above 20%:

- Romania with +27.0% or +3.1 M€$_{2009}$, the ATSP ROMATSA (+27.2%, or +3.1 M€$_{2009}$) being the major contributor to the observed difference. The higher than planned terminal costs in real terms were mainly driven by a significantly higher actual staff cost (+29.1%, or +2.3 M€$_{2009}$) and higher exceptional costs (+ 1.1 M€$_{2009}$), when no exceptional costs were planned. No drivers underlying the deviation of actual costs for 2017 outlined above are provided in the additional information to the June 2017 en-route reporting tables or the DANUBE FAB 2017 Monitoring Report;
- Switzerland with +26.2%, or +16.2 M€$_{2009}$, due to the higher than planned terminal costs in real terms for the ATSP Skyguide (+27.5%, or +16.4 M€$_{2009}$). The main driver for the observed difference was significantly higher actual staff costs for Skyguide (+31.6%, or +13.8 M€$_{2009}$). As for en-route, this difference was mainly due to significantly higher than planned pension costs for Skyguide;
- Sweden with +24.6% or +3.6 M€$_{2009}$. The higher than planned terminal costs in real terms were mainly driven by higher actual costs for the ATSPs (LFV and Swedavia) (+23.5%, or +3.3 M€$_{2009}$). The main driver was the higher than planned staff costs

(+30.3%, or +2.8 M€2009). As for en-route, this difference was mainly due to significantly higher than planned pension costs for LFV;

- Germany with +11.5% or 18.6 M€2009 was, in absolute terms, the main contributor to the observed difference at Union-wide level. The higher than planned terminal costs in real terms were mainly driven by higher actual costs for the ATSPs (DFS) (+11.7%, or 18.4 M€2009). In 2017, DFS showed higher actual staff costs (+13.2%, +19 M€2009) than planned.

5.12.6 Figure 32 shows that actual costs were lower than planned for 18 CZs. Nine of these CZs had an observed deviation above -10% and three of them above -20%:

- Greece with -31.0% or -5.2 M€2009. The lower than planned terminal actual costs in real terms were driven by lower actual costs for the ATSP HCAA (-31.9%, or -5.2 M€2009) due mainly to lower actual operating costs (-71.8%, or -2.9 M€2009) and lower actual staff costs (-9.1% or -1.0 M€2009). Additionally, Greece did not report any actual terminal depreciation costs or cost of capital for 2017, while such costs were included in the RP2 PP;
- Malta with -25.5% or -1.2 M€2009. The lower than planned terminal actual costs in real terms were driven by lower actual costs for the ATSP MATS (-29.7%, or -1.2 M€2009). According to the additional information to the June 2018 terminal reporting tables, this results mainly from:
  (a) lower actual operating costs (-61.6% or -0.8 M€2009) due to *"better allocation of costs between en-route and terminal and also due to the implementation of cost saving measures"*;
  (b) lower actual other depreciation costs (-58.3% or -0.7 M€2009) explained by *"better allocation of costs between en-route and terminal and also due to delays in the implementation of the planned CAPEX programme".*
- Latvia -20.9% or -1.4 M€2009. The lower than planned terminal actual costs in real terms were mainly driven by reductions for the ATSP LGS (-20.3% or -1.2 M€2009) due to the lower actual depreciation costs (-37.5% or -0.7 M€2009), lower actual other operating costs (-39.1% or -0.3 M€2009) and lower actual staff costs (-5.1% or -0.2 M€2009). The main driver for the observed deviation between actual and planned depreciation costs is mainly "*end of useful life of several fixed assets and investments made, but not yet put into operations*".

5.13 ATSPs 2017 Overall Terminal Economic Surplus vs. Performance Plans

Although 30 main ATSPs reported information relating to terminal ANS in 2017, the analysis presented hereafter focuses on 28 ATSPs in order to take into account the specificities of some TCZs:

- Actual data for the ATSPs operating in UK TCZ B (mainly NERL) are not publicly available (provided to the Commission on a confidential basis as terminal ANS are provided on a contractual basis – see paragraph 5.9.4).
- In Cyprus and at four Belgian regional TCZs, terminal ANS is 100% subsidised by the States/Regions.
- 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.
- Greece reported zero actual costs for depreciation, cost of capital and ATSP's asset base (HCAA) in the June 2017 submission of terminal reporting tables, under the

statement that "*all fixed assets in operation which are used for the provision of ATS in the terminal navigation charging zone have been fully depreciated*". For monitoring purposes, the overall estimated terminal surplus is therefore just the outcome of the net gain retained by the main ATSPs (HCAA) as a result of the variations in costs, since traffic risk-sharing does not apply in this TCZ and no bonus or penalty from capacity incentives has been reported.

- From 2017, France and Poland have two terminal CZ but one single ATSP each (DSNA and PANSA respectively). Therefore, the ATSP surplus is calculated by taking in to account both CZs for each state.

5.13.1 In these cases, the notion of economic surplus is either not appropriate, or to be interpreted with caution. NERL, DCAC and Belgocontrol (with the exception of its activity in Brussels TCZ) have therefore been excluded from the analysis presented below.

5.13.2 Figure 33 presents: i) the net gain retained by the main ATSPs in 2017 as a result of the variations in costs and traffic, as well as the bonus from capacity incentives (see left-hand side); and ii) the overall estimated surplus when adding to this net gain the return on equity embedded in the cost of capital (see right-hand side).

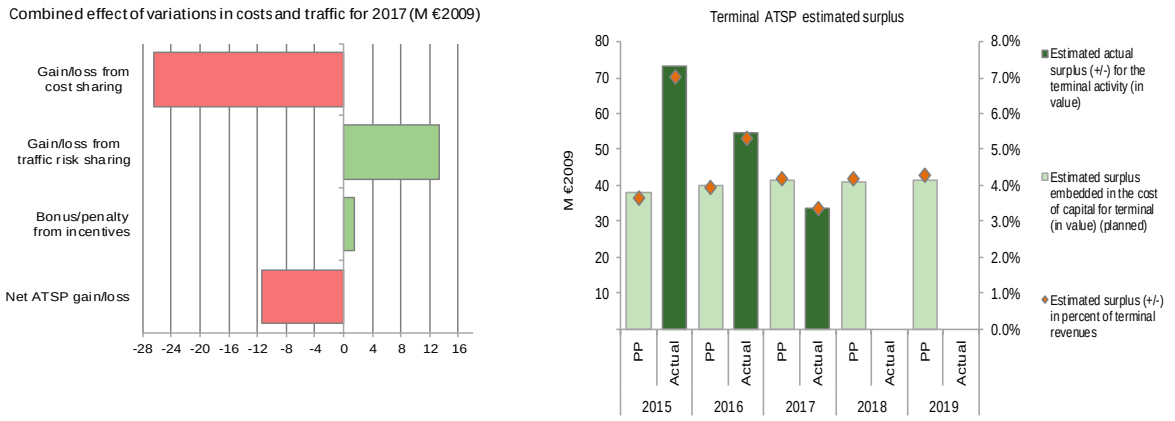


Figure 33: Estimated surplus for 2017 terminal ANS activity at Union-wide level (SES level)

5.13.3 In 2017, the main ATSPs collectively generated a net loss of -11.5 M€$_{2009}$ on the terminal activity. This is a combination of three elements:

- a loss of -26.4 M€$_{2009}$ arising from the cost-sharing mechanism;
- a gain of +13.4 M€$_{2009}$ arising from the traffic risk-sharing mechanism (applied in 18 out of 36 TCZs included in this analysis); and
- a gain of +1.5 M€$_{2009}$, corresponding to a bonus from the capacity incentive mechanism.

5.13.4 Five ATSPs (DFS, ENAV, Skyguide, LVNL and Oro Navigacija) reported a bonus for their operational performance in 2017 (for an overall amount of 1.6 M€$_{2009}$) and two (Finavia, and PANSA) reported a penalty (for an overall amount of 0.1 M€$_{2009}$). The inclusion of these bonuses in the chargeable cost base is still being assessed by the European Commission.

5.13.5 Ex-post, the overall estimated surplus taking into account the net loss from the terminal activity mentioned above (-11.5 M€$_{2009}$) and the surplus embedded in the actual cost of capital (45.0 M€$_{2009}$) amounts to 33.5 M€$_{2009}$ (3.3% of the 2017 terminal revenues, see right-hand side of Figure 33). At Union-wide level, the resulting ex-post rate of return on equity (RoE) is 5.0%, which is lower than the 6.5% planned in the PPs. Many TCZs are very small (123 out of 174 airports are below 70 000 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.

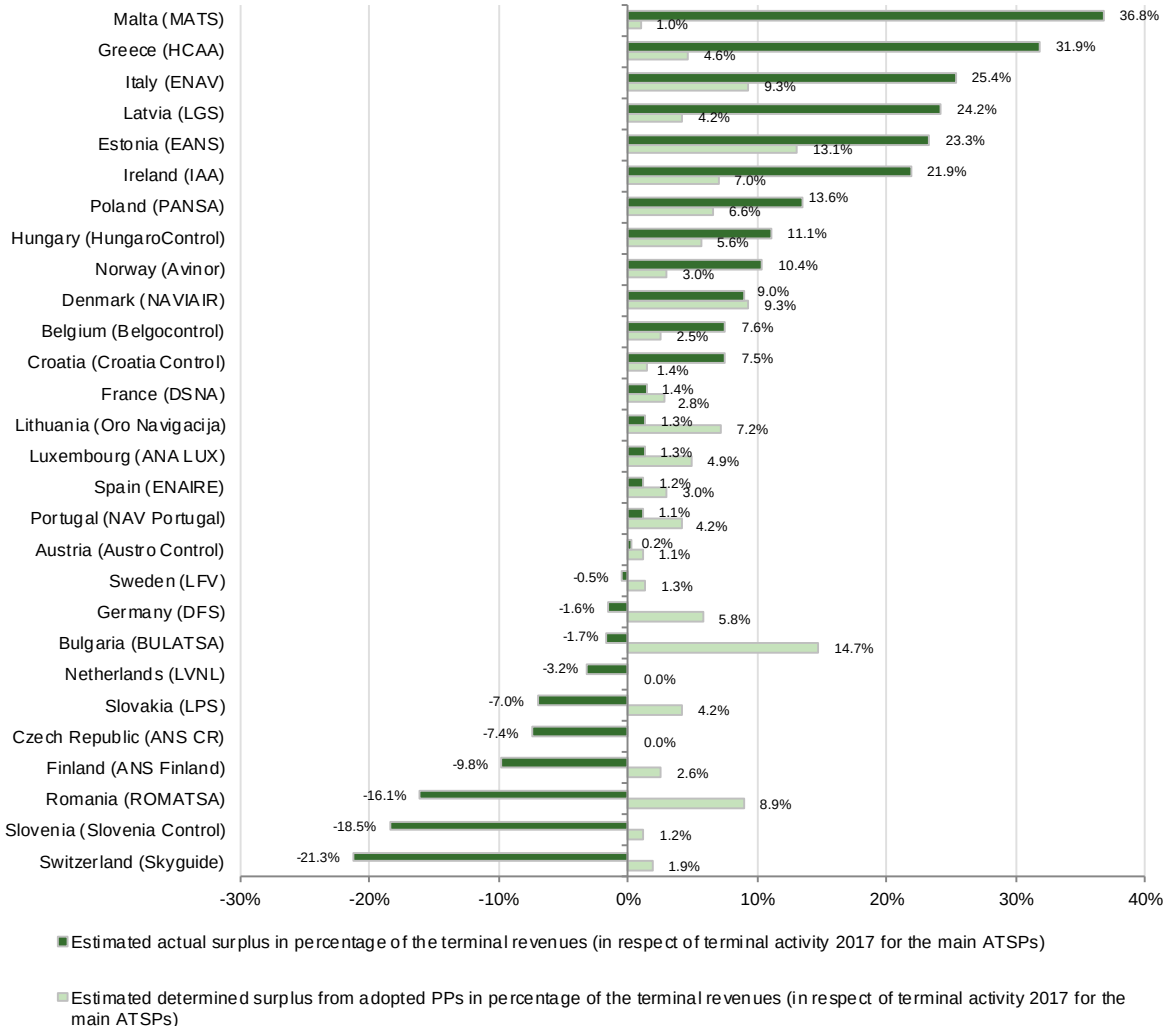


Figure 34: Estimated surplus for the 2017 terminal activity at (main) ATSPs level[7]

5.13.6 Figure 34 shows that 11 ATSPs did achieve a higher actual estimated surplus than planned. This is particularly the case of the six ATSPs operating in Malta, Greece, Italy, Latvia, Estonia and Ireland, where the overall estimated surplus exceeds 20% of ATSPs' revenues. All these ATSPs achieved lower costs than planned (from -31% for HCAA (Greece) to -5.9% for EANS (Estonia)). Where traffic risk-sharing applies in the mentioned states (Estonia, Ireland, France, Malta and Italy - Roma/Fiumicino), actual traffic was higher than planned. This implies additional revenues for the States/ATSPs to be shared with the airspace users according to the traffic risk-sharing adjustments.

5.13.7 On the other hand, Figure 34 also shows that 10 ATSPs incurred an estimated economic loss in respect of the 2017 terminal activity:

7 Figure 34 reflects a mix of different situations with some TCZs applying the traffic risk sharing arrangements while others do not. In addition, it should be noted that five TCZs (Cyprus and the four Belgian regional airports) are not included in Figure 34 since the provision of ANS in these TCZs is 100% financed by State funds.

- For Romania, Slovenia and Sweden, where traffic risk-sharing does not apply, the observed losses are entirely due to higher actual costs compared to the planned values.
- In the case of Germany, the estimated surplus embedded in the cost of capital (+10.5 M€$_{2009)}$ and the positive outcome of the traffic risk sharing (+4.5 M€$_{2009}$) were not sufficient to outweigh the significant increase in costs (+11.7% or +18.4 M€$_{2009}$).
- In the case of Czech Republic, the observed ANS CR loss is due the higher actual costs (+9.7%), which were partially mitigated by the positive outcome of the traffic risk-sharing. However, the rest of the loss could not be absorbed by the Return on Equity (RoE) since no cost of capital is charged by ANS CR to terminal ANS airspace users.
- In the case of the Netherlands, LVNL has no return on equity and therefore no ex-ante estimated surplus was embedded in the cost of capital provided in the NPP for RP2. As a result, the observed loss is mainly due to higher-than-planned costs (+10.2%), partially compensated with the positive outcome of the traffic risk-sharing and a bonus.
- Skyguide (Switzerland) shows the highest difference (-21.3% actual surplus compared to +1.9% as planned in the PP), this is mainly due to a loss of -16.4 M€$_{2009}$ arising from the cost-sharing mechanism since Skyguide had substantially higher costs than planned (+27.5%) mostly related to staff costs and more concretely pensions costs.

5.13.8 More details on the main ATSPs economic surplus are available in the local level view part of this 2017 Annual Monitoring Report.

5.14 Union-wide 2017 Actual Costs and Costs for Users

5.14.1 This section analyses the actual terminal costs for airspace users in respect of ANS activities in 2017 (also referred to as the “true cost for users”) in the same way as is done for en-route ANS (see section 5.8).

5.14.2 In Cyprus and at four Belgian regional TCZs, terminal ANS is 100% subsidised by the States/Regions. TANS activities are therefore fully financed though "income from other sources". Consequently, the calculation shown below excludes the adjustments generated for these TCZs and takes into account only the “other revenues”.

5.14.3 Figure 35 shows that the actual costs incurred by airspace users in respect of activities performed in 2017 (918.7 M€$_{2009}$) are -19.7% (-225.8 M€$_{2009}$) lower than the DCs billed based on actual TNSUs (1 144.5 M€$_{2009}$).

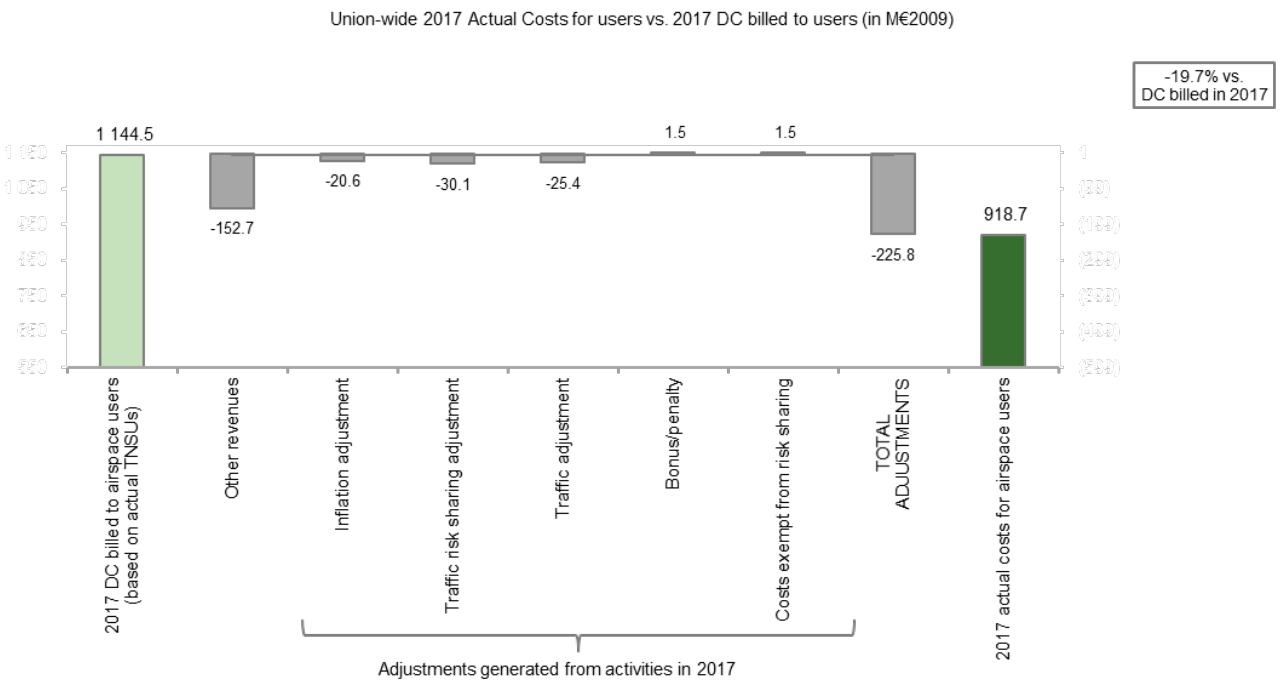


Figure 35: Union-wide 2017 actual costs for users vs. 2017 DCs billed to users (in M€$_{2009}$)

5.14.4 The most important factor contributing to the observed difference is the deduction of some -152.7 M€$_{2009}$ of other revenues. In a large majority of TCZs, there are either no, or only small, amounts of other revenues deducted from the determined costs. However, particular circumstances in a few TCZs have a large impact at Union-wide level. This is especially the case for:

- Spain (-73.0 M€$_{2009}$) reflecting the fact that terminal ANS costs are partially financed by two elements: 1) revenues from agreements with the airport manager regarding aerodromes service provisions for all airports in the CZ and 2) ENAIRE commercial income (publications, and minor consulting activities);
- Belgium (-27.4 M€$_{2009}$ in total for the five TCZs) where the financing of TANS in 2017 was partly (Brussels airport) or fully (regional airports) subsidised by the State or regional authorities;
- Cyprus (-7.5 M€$_{2009}$) where terminal ANS was free of charge for the airspace users in 2017 since TANS costs were 100% subsidised by the State; and
- France (-25.9 M€$_{2009}$) reflected reimbursements from the SESAR Joint Undertaking, revenues from commercial activities, the co-financing of Coflight by ENAV and Skyguide and reimbursements of EC grants.

5.14.5 For almost all States (Belgium and Norway being the only exceptions), the actual inflation index in 2017 was lower than planned in the PPs. The overall net effect of inflation adjustments at State level is a forthcoming reimbursement (-20.6 M€$_{2009}$) to airspace users.

5.14.6 Traffic risk-sharing applies to 18 TCZs out of the 36 included in this monitoring report. In these TCZs, the net effect of differences between actual and planned TNSUs is a forthcoming reimbursement (-30.1 M€$_{2009}$) to airspace users. Since traffic was in general higher than planned, the traffic adjustments relating to costs not subject to traffic risk-sharing is again a forthcoming reimbursement (-25.4 M€$_{2009}$) to airspace users.

5.14.7 Five ATSPs (DFS, ENAV, Skyguide, LVNL and Oro Navigacija) reported a bonus for their operational performance in 2017 (for an overall amount of 1.6 M€$_{2009}$) and two (Finavia and PANSA) reported a penalty (for an overall amount of 0.1 M€$_{2009}$). The overall result is a bonus

of 1.5 M€$_{2009}$. The inclusion of these bonuses in the chargeable cost bases will be assessed by the European Commission.

5.14.8 Finally, +1.5 M€$_{2009}$ costs exempt from cost-sharing were reported. These costs will be eligible for carry-over (reimbursed to airspace users) to the following reference period(s), if deemed eligible by the European Commission.

5.15 Gate-to-Gate ANS DCs Monitoring

5.15.1 As shown in Table 27, actual gate-to-gate ANS costs[8] at Union-wide level in 2017 were -1.9% lower than planned in the adopted PPs (7 091 M€$_{2009}$ compared to 7 231 M€$_{2009}$) due to a combination of lower en-route costs and higher terminal costs.

2017 Gate-to-gate ANS actual costs vs. PP							
SES States - Data from RP2 Performance Plans		**2015D**	**2016D**	**2017D**	**2018D**	**2019D**	**RP2 Planned**
Real en-route costs (determined costs 2015-2019) - (in EUR2009)		6 235 113 277	6 195 878 072	6 164 525 008	6 110 343 143	6 018 185 578	30 724 045 078
Real terminal ANS costs - (in EUR2009)		1 117 713 492	1 103 962 617	1 066 100 758	1 058 073 714	1 052 864 252	5 398 714 833
Real gate-to-gate ANS costs - (in EUR2009)		7 352 826 769	7 299 840 689	7 230 625 766	7 168 416 856	7 071 049 830	36 122 759 910
Share of en-route costs in gate-to-gate ANS costs		**84.8%**	**84.9%**	**85.3%**	**85.2%**	**85.1%**	**85.1%**
SES States - Actual data from Reporting Tables		**2015A**	**2016A**	**2017A**	**2018A**	**2019A**	**RP2 Actual**
Real en-route costs - (in EUR2009)		6 079 182 146	6 060 358 280	6 002 695 473			18 142 235 900
Real terminal ANS costs - (in EUR2009)		1 084 292 134	1 096 452 312	1 088 212 452			3 268 956 899
Real gate-to-gate ANS costs - (in EUR2009)		7 163 474 280	7 156 810 592	7 090 907 926			21411192 798
Share of en-route costs in gate-to-gate ANS costs		**84.9%**	**84.7%**	**84.7%**			**84.7%**
Difference between Actuals and Planned (Actuals vs. PP)		**2015**	**2016**	**2017**	**2018**	**2019**	**RP2**
Real gate-to-gate costs (EUR2009)	in value	-189 352 488	-143 030 096	-139 717 840			-14 711567 112
	in %	-2.6%	-2.0%	-1.9%			-40.7%
En-route share	in p.p.	0.1 p.p.	-0.2 p.p.	-0.6 p.p.			-0.3 p.p.

Table 27: 2017 gate-to-gate ANS actual costs vs. PPs (SES level)

5.15.2 The actual proportion of en-route in total ANS costs (84.7%) 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.

5.16 CAPEX Monitoring

5.16.1 The objective of the following section is to present the information provided by the NSAs in their 2017 NSA Monitoring Reports in relation to the ANSPs' investments.

5.16.2 Table 28 shows the aggregation of the individual national data from the RP2 National Performance Plans related to the ATSPs' Total CAPEX, Main CAPEX and real gate-to-gate ANSP costs compared with the actual data from the NSA Monitoring Reports. The planned and actual CAPEX data are taken as they are from the NSA Monitoring Reports and presented both in nominal and real terms (i.e. €$_{2009}$).

5.16.3 Table 28 shows that in 2017 the actual total CAPEX was 953.88 M€$_{2009}$, this is -7.6% lower than planned in the PP (1032.67 M€$_{2009}$) and it represents 15.1% the total real gate-to-gate costs. The difference of -7.6% lower actual CAPEX than planned, although significant, shows a change in the tendency compared with the first two years of RP2, where the actual CAPEX compared to planned were -27.7% in 2015 and -20.0% in 2016.

8 UK TCZs were excluded from this analysis in order to ensure consistency with Section 5.10.

5.16.4 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 it seems that the trend continues despite higher traffic than planned in RP2.

5.16.5 Over the first 3 years of RP2, 18% (i.e. 573 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.

Data from RP2 national performance plan	2015P	2016P	2017P	2018P	2019P	RP2P
Total CAPEX (in M €2009)	1017.76	1064.03	1032.67	955.99	818.10	4888.56
Main CAPEX (in M €2009)	725.84	789.06	760.89	664.37	540.84	3481.00
% Main into Total CAPEX	71.3%	74.2%	73.7%	69.5%	66.1%	71.2%
Real gate-to-gate ANSP costs (in M €2009)	6498.11	6419.50	6413.42	6349.56	6251.10	31931.67
% of CAPEX into Real gate-to-gate ANSP costs	15.7%	16.6%	16.1%	15.1%	13.1%	15.3%
Actual data from Reporting Tables	2015A	2016A	2017A	2018A	2019A	RP2A
Total CAPEX (in M €2009)	736.08	851.03	953.88			
Main CAPEX (in M €2009)	515.44	626.93	688.76			
% Main into Total CAPEX	70.0%	73.7%	72.2%			
Real gate-to-gate ANSP costs (in M €2009)	6315.51	6283.07	6299.13			
% of CAPEX into Real gate-to-gate ANSP costs	11.7%	13.5%	15.1%			
Actuals vs Planned in absolute value & percentage	2015	2016	2017	2018	2019	RP2
Total CAPEX (in M €2009)	-281.68	-213.00	-78.79			
Total CAPEX (in %, for M €2009)	-27.7%	-20.0%	-7.6%			

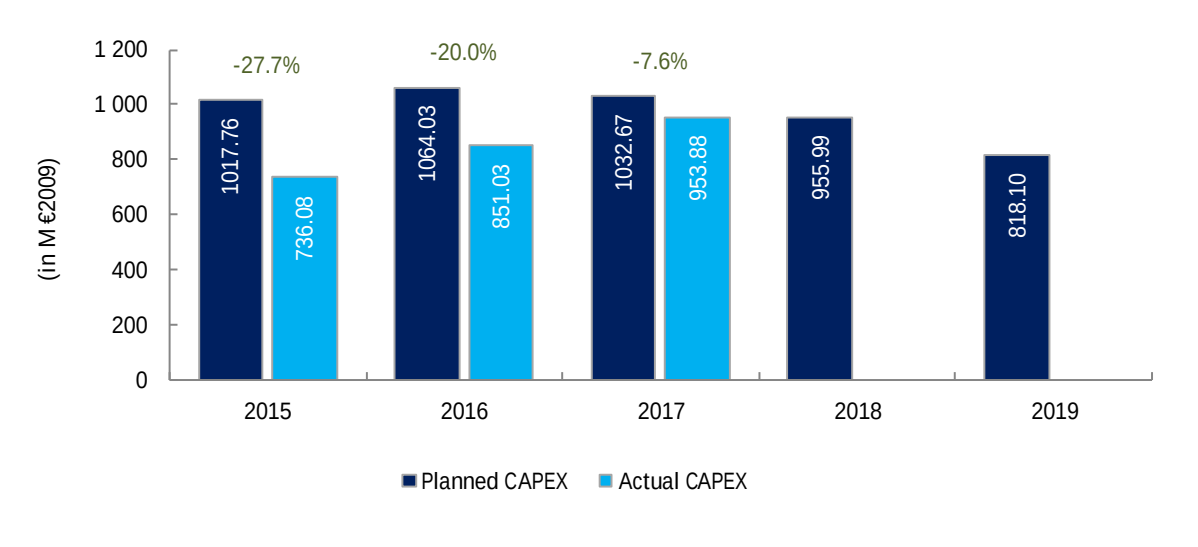


Table 28: 2017 gate-to-gate ATSP actual CAPEX vs. PPs (SES level)

6 Network Performance Plan

6.1 Safety

6.1.1 The EoSM questionnaire for the NM has not been sent back to EASA in June 2017. NM has indicated that the EoSM will be re-evaluated later in 2018. Therefore, no verified data can be reported in 2017, and the values of 2016 are the latest regarding the level achieved by the NM.

6.1.2 The NM reported that it applied severity classification using the RAT methodology to 100% of AA/A, B or C ATM-s occurrences, thus achieving the 2019 target. However, these figures have not been verified by either EASA or EUROCONTROL/DPS.

6.2 Environment

6.2.1 In addition to the KEP and KEA indicators, which are KPIs, NM has four PIs: the KEP and KEA indicators for the entire NM area (as opposed to the SES area), the NM added value in achieving the flight planning target, and the route extension due to en-route design.

6.2.2 The two horizontal flight efficiency PIs for the entire NM area are highly correlated to the two corresponding KPIs. They are defined for different areas and therefore do not necessarily follow the same evolution:

- Regarding the KEP value defined for the entire NM area, similarly to the result achieved for the SES area, the target was missed (by 0.47 percentage points -- 4.62% vs. 4.17%).
- Regarding the KEA value defined for the entire NM area, in contrast to the result achieved for the SES area, the target was met (by 0.01 percentage points – 2.77% vs 2.78%).

6.2.3 The NM reports that the “added value in achieving the flight planning target” result was much lower than the target.

6.2.4 The route extension due to en-route design improved by 0.11 percentage points, reaching 2.36% (compared to a target of 2.53%).

6.3 Capacity

6.3.1 Average en-route ATFM delay in the SES RP2 area in 2017 was 0.94 minutes per flight, (up from 0.91 minutes per flight in 2016) which means that the Union-wide capacity target of 0.5 minutes was not achieved.

6.3.2 The NM, in the NM Annual Report, provided the following overview of capacity performance:

- The en-route weather registered another significant increase (+30% more than in 2016, +96% over 2015) followed by an increase of 12% for capacity/staffing delays. The network had less disruptions and events-related delays.

6.3.3 The NM Annual Report also provided details on capacity performance at individual ACCs:

- Eighteen ACCs had higher delays than forecast (only capacity, staffing, events and weather reasons). Thirty ACCs recorded fewer delays than forecast.

- A number of ACCs, which had been identified in the Network Operations Plan (NOP) as having capacity shortcomings for the summer season, implemented measures and performed better than expected. These include Athens, Makedonia, Lisbon, [Skopje] and Zagreb ACCs – all with traffic growth above 9%.
- Marseille ACC en-route delays were well above the planned NOP delay forecast. The general roster was built to focus on demand peaks in the morning leaving fewer sectors in the evenings. The situation was worsened by the increase in SW axis traffic and a decrease in the number of ATCOs, especially in the East sectors.
- Nicosia had a traffic growth of 12%, bringing additional complexity in some sectors. In addition, non-slot adherence of flights from nearby airports strongly impacted traffic predictability and regular military activity interfered significantly with ATC provision.
- Nevertheless, and despite the slight capacity increase, the ACC did not deliver the maximum number of sectors declared in the NOP during many of the peak summer periods.
- Karlsruhe did not comply with the capacity plans agreed in the NOP but the UAC duly forewarned NM on its staffing issues for the summer. Brest and Bordeaux have performed better than 2016 with increased number of sectors opened (including first-rotation) but still have periods with insufficient capacity in the face of high demand (e.g. Saturdays). Maastricht, despite the flexible sector schemes, was operating at full capacity in 2017 and at times was not able to cope with the high geographically imbalanced demand.

6.3.4 In relation to highlighting risks and corrective measures, the NM annual reports states:

6.3.5 NM produced traffic forecasts in February and September 2017 in support of operational planning. It quantified the capacity of the network, identified individual ACCs' needs and provided operational performance forecasts for delivering the ATFM function. This was done in close cooperation with ANSPs who gave further input.

- NM's performance analysis identified a number of critical areas and investigated the underlying causes; NM developed an Action Plan that proposed additional measures for Belgium, Cyprus, Czech Republic, Maastricht UAC, France (Brest ACC), Germany (Karlsruhe and Langen ACCs), Greece (Athens and Makedonia ACCs), Poland, and Portugal.

6.4 Cost-efficiency

6.4.1 The Network Management Board endorsed NM's 2017 Budget in November 2016. It was approved by the EUROCONTROL Provisional Council on 1-2 December 2016 and by the Single Sky Committee on 13-14 December 2016.

6.4.2 The approved NPP cost-efficiency targets are the "total NM Costs in nominal terms" for every year of RP2 (2015-2019).

6.4.3 The 2017 total actual NM costs in nominal terms is reported to amount to 197 627 K€ which is -9.4% lower than planned (or -20.5 M€) in the approved NPP (218 126 K€). The NPP cost-efficiency target has therefore been met in 2017 (see Table 29: Total NM RP2 costs forecast profile and 2017 actual costs below).

	NPP FORECASTS RP2				
NM Forecast Cost (nominal, '000€)	2015 F	2016 F	2017 F	2018 F	2019 F
Total (nominal, '000€)	216 810	217 045	218 126	220 360	223 561
	Monitoring RP2 Actual costs				
NM Actual Cost (nominal, 000€)	**2015 A**	**2016 A**	**2017 A**	2018 A	2019 A
Total (nominal, '000€)	**213 908**	**206 600**	**197 627**		
% deviation Actual vs. Forecast	**-1.3%**	**-4.8%**	**-9.4%**		

Table 29: Total NM RP2 costs forecast profile and 2017 actual costs

6.4.4 NM reports on a range of initiatives progressed during 2017 and that improved cost-efficiency (see the detailed breakdown of NM total costs in Table 11 below):

- The transfer of generic and office IT activities, formerly part of the NM technical services division and performed for other Agency directorates, to the new Central IT unit at corporate level as of 1 October 2017.
- The introduction of the cost allocation methodology (CAM) which ensured that the support costs allocated to NM are transparent and as a result the indirect costs allocated to NM were significantly reduced (-23% or -9.4 M€ less than planned for 2017). This trend is expected to continue until the end of RP2.
- NM continued to scrutinise all expenditure through the implementation of an Expenditure Review Panel (ERP). This panel reviews all contracts and procurement plans against the business needs and strategic alignment before the expenditure is made. In doing so, the operating costs are minimised (indeed operating costs are -8.3% or -3.5 M€ less than planned).
- The reduction of NM systems development and operating costs through the gradual implementation of n-CONECT.

	RP2 PLANNED COSTS PROFILE from NPP				
NM Forecast Costs (nominal, 000€)	*2015 F*	*2016 F*	*2017 F*	*2018 F*	*2019 F*
1 1a Staff Remuneration	*91 883*	*93 189*	*94 725*	*96 360*	*98 927*
1 2 Operating	*45 609*	*44 693*	*43 656*	*43 873*	*43 366*
1 3 Depreciation	*3 587*	*3 521*	*3 996*	*4 773*	*5 158*
1 4 Cost of capital	*252*	*381*	*441*	*473*	*487*
1 1a Staff Receipts	*-974*	*-1 005*	*-1 025*	*-1 046*	*-1 087*
1 2 Other Receipts	*-1 140*	*-1 393*	*-1 643*	*-1 643*	*-1 643*
1 2 Sales of services UPP	*-913*	*-839*	*-842*	*-848*	*-848*
1 2 Sales of services UPP Overhead	*-273*	*-252*	*-252*	*-254*	*-254*
Indirect Costs	*41 767*	*41 323*	*41 045*	*40 338*	*41 064*
Future (net) Costs Total	*179 798*	*179 618*	*180 101*	*182 026*	*185 170*
Costs of the Past	*37 012*	*37 427*	*38 025*	*38 334*	*38 391*
Grand Total	*216 810*	*217 045*	*218 126*	*220 360*	*223 561*

	Monitoring RP2 Actual costs				
NM Actual Costs (nominal, 000€)	**2015 A**	**2016 A**	**2017 A**	2018 A	2019 A
Staff Remuneration	**94 449**	**95 012**	**94 436**		
Operating	**42 068**	**43 214**	**40 043**		
Depreciation	**2 556**	**1 525**	**429**		
Cost of capital	**84**	**32**	**28**		
Staff Receipts	**-1 048**	**-1 117**	**-1 125**		
Other Receipts	**0**	**-1 111**	**-2 711**		
Sales of services UPP	**-1 240**	**-1 659**	**-669**		
Sales of services UPP Overhead	**0**	**0**	**0**		
Indirect Costs	**41 037**	**34 508**	**31 622**		
Future (net) Costs Total	**177 906**	**170 404**	**162 052**		
Costs of the Past	**36 002**	**36 196**	**35 575**		
Grand Total	**213 908**	**206 600**	**197 627**		

Table 30: Breakdown of total NM RP2 costs and receipt (forecasts and actual)

7 Alert Thresholds

7.1 Presentation of the Alert Thresholds

7.1.1 Article 19 of the Performance Regulation 390/2013 [Ref. i] defines specific mechanisms to handle exceptional situations occurring in Reference Periods. These "alert mechanisms" can be triggered in Reference Periods at both Union-wide level and local level when unforeseeable circumstances occur that are both insurmountable and beyond the control of the States, ANSPs and NM or when alert threshold(s) are reached at EU level.

7.1.2 Two traffic alert thresholds, one at Union-wide level and one at local level, were defined in Commission Decision 2014/132/EU of 11 March 2014 [Ref. v] setting the Union-wide performance targets and alert thresholds for RP2.

- a deviation over a calendar year by at least 10% of actual traffic expressed in en-route service units compared to Union-wide planned figure (111 436 000 in 2017) defined in the Annex of the aforementioned Commission Decision 2014/132/EU;
- a deviation over a calendar year by at least 10% of actual traffic expressed in service units compared with forecasts set out in the respective Performance plans at local level.

7.2 Union-wide Level

7.2.1 From the 2017 traffic data, it can be seen that the traffic alert threshold of ±10% was reached at Union-wide level. As shown on Figure 36, actual en-route Service Units in 2017 were +13.8% higher than the planned 2017 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).

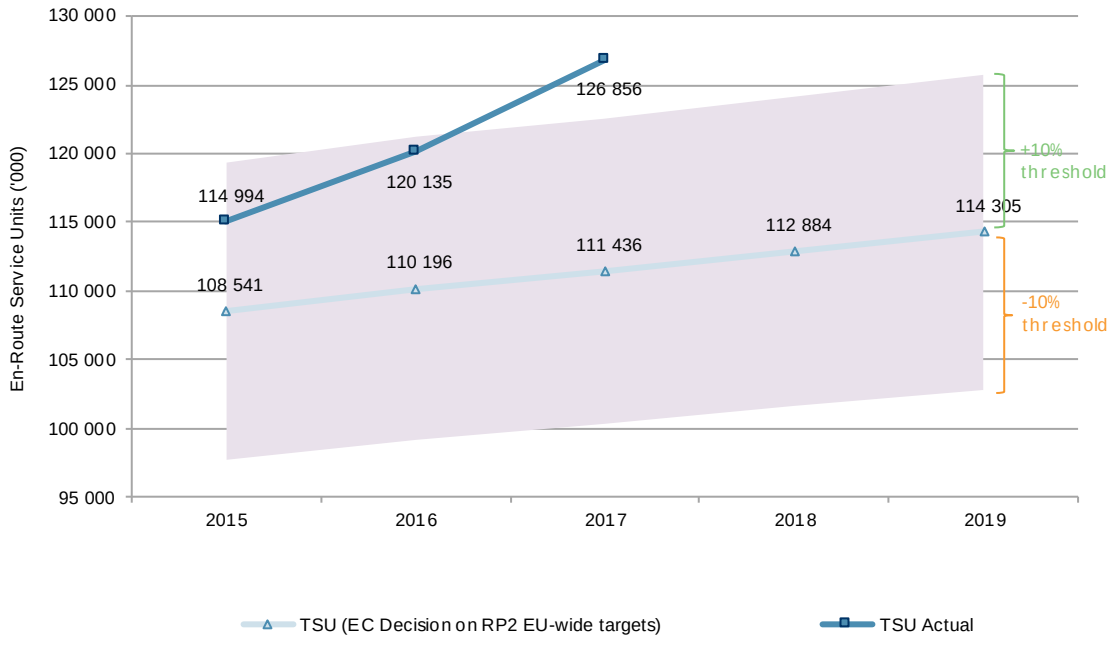


Figure 36: En-route service units at Union-wide level

7.3 Local Level

7.3.1 According to Article 19(3) of the Performance Regulation, States may decide to apply different alert thresholds at local level than the Union-wide level. In this case, they shall describe and justify them in their Performance Plan. So far, no States decided to use a different alert threshold. Therefore, the same threshold (±10% compared to the traffic forecasts contained in each Performance Plan) applies to all the en-route CZs.

7.3.2 Figure 37 presents the proportional difference between actual and planned en-route Service Units for each CZ in 2017.

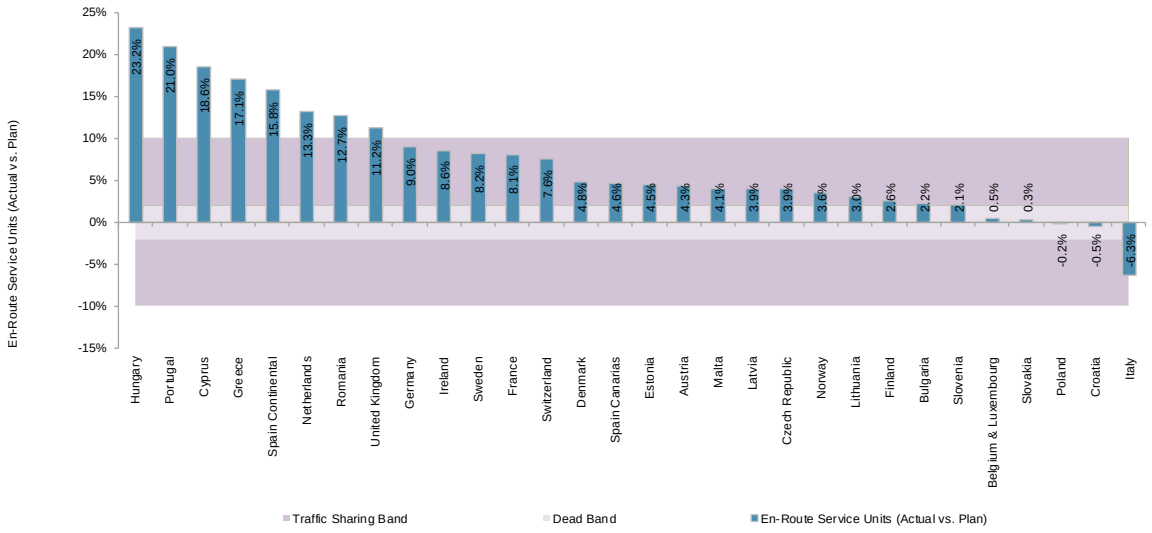


Figure 37: 2017 En-route actual service units versus PP by charging zone

7.3.3 At State level, Figure 37 shows that, eight CZs experienced a traffic increase above the +10% threshold: Hungary (+23.2%), Portugal (+21.0%), Cyprus (+18.6%), Greece (+17.1%), Spain Continental (+15.8%), the Netherlands (+13.3%), Romania (+12.7%) and United Kingdom (+11.2%). On the other side, no States were below the -10% threshold.

7.3.4 Two of these States (Romania and Portugal) submitted in 2017 a request to the European Commission to revise their RP2 en-route cost-efficiency targets for the years 2018 and 2019 (see note at 5.2.4 above). Portugal already exceeded the +/- 10% threshold in 2015 with +13%.

7.3.5 It is noteworthy that, based on the traffic risk-sharing mechanism defined in the Charging Regulation 391/2013 [Ref. iv], if traffic is below -10% (or respectively above +10%), all losses exceeding -10% traffic (or respectively all gains exceeding +10% traffic) may be recovered from (or shall be returned to) airspace users through an adjustment of the chargeable unit rate in N+2.

8 Annexes

		Additional taxi-out time (min/dep)			Additional ASMA time (min/arr)		
FAB	**State**	**2015**	**2016**	**2017**	**2015**	**2016**	**2017**
Baltic	Lithuania	n/a	n/a	n/a	n/a	n/a	n/a
	Poland	n/a	n/a	n/a	n/a	n/a	n/a
Blue Med	Cyprus	n/a	n/a	n/a	n/a	n/a	n/a
	Greece	1.16	1.31	1.89	0.82	1.10	0.88
	Italy	n/a	4.11	4.01	n/a	1.10	1.12
	Malta	n/a	n/a	1.75	0.46	0.67	0.79
Danube	Bulgaria	1.32	1.41	2.03	0.36	0.45	0.38
	Romania	n/a	n/a	n/a	n/a	n/a	n/a
DK-SE	Denmark	1.92	2.32	1.91	1.48	1.56	2.11
	Sweden	1.59	2.08	2.11	1.37	1.18	1.20
FAB CE	Austria	n/a	n/a	n/a	n/a	n/a	n/a
	Croatia	n/a	n/a	n/a	n/a	n/a	n/a
	Czech Republic	n/a	n/a	n/a	n/a	n/a	n/a
	Hungary	1.11	1.39	1.29	0.59	0.94	1.43
	Slovakia	n/a	n/a	n/a	0.64	0.31	0.32
	Slovenia	n/a	n/a	n/a	n/a	n/a	n/a
FABEC	Belgium	n/a	n/a	n/a	n/a	n/a	n/a
	France	n/a	n/a	n/a	n/a	n/a	n/a
	Germany	n/a	n/a	n/a	n/a	n/a	n/a
	Luxembourg	n/a	n/a	2.25	0.50	0.61	0.82
	Netherlands	n/a	n/a	n/a	n/a	n/a	n/a
	Switzerland	2.91	3.11	3.38	2.77	2.58	2.34
NEFAB	Estonia	n/a	n/a	n/a	n/a	n/a	n/a
	Finland	1.97	2.80	2.86	1.06	0.98	1.08
	Latvia	n/a	n/a	n/a	n/a	n/a	n/a
	Norway	n/a	n/a	n/a	1.82	n/a	n/a
SW FAB	Portugal	n/a	n/a	n/a	n/a	n/a	n/a
	Spain	3.40	3.72	3.53	1.38	1.67	1.73
UK-Ireland	Ireland	n/a	n/a	n/a	n/a	n/a	n/a
	United Kingdom	5.06	5.54	5.59	4.01	n/a	n/a

Table 31: Additional taxi-out time & Additional ASMA time (2015-2017) National Level

		Arrival ATFM Delay (min/arr)					
		2015		2016		2017	
FAB	State	National target	Actual (all causes)	National target	Actual (all causes)	National target	Actual (all causes)
Baltic	Lithuania	0.00	0.00	0.00	0.00	0.00	0.00
	Poland	0.04	0.04	0.04	0.21	0.04	0.14
Blue Med	Cyprus	n/a	0.09	n/a	0.51	n/a	0.93
	Greece	0.10	0.06	0.10	0.26	0.10	0.65
	Italy	0.41	0.57	0.41	0.13	0.41	0.22
	Malta	0.10	0.01	0.10	0.01	0.10	0.01
Danube	Bulgaria	0.00	0.00	0.00	0.00	0.00	0.00
	Romania	0.00	0.00	0.00	0.34	0.00	0.31
DK-SE	Denmark	0.11	0.03	0.11	0.03	0.11	0.03
	Sweden	0.35	0.07	0.35	0.22	0.35	0.12
FAB CE	Austria	1.88	0.79	1.29	0.72	1.28	0.81
	Croatia	0.05	0.01	0.05	0.00	0.05	0.00
	Czech Republic	0.25	0.04	0.30	0.01	0.35	0.07
	Hungary	0.05	0.00	0.05	0.00	0.05	0.03
	Slovakia	0.00	0.00	0.00	0.00	0.00	0.00
	Slovenia	0.00	0.00	0.00	0.00	0.00	0.00
FABEC	Belgium	n/a	0.89	n/a	0.73	n/a	0.60
	France	0.60	0.34	0.60	0.59	0.60	0.48
	Germany	0.65	0.33	0.65	0.45	0.65	0.44
	Luxembourg	0.48	0.11	0.49	0.08	0.48	0.05
	Netherlands	2.00	2.91	2.00	2.00	2.00	3.21
	Switzerland	2.18	2.48	2.35	1.78	2.18	1.33
NEFAB	Estonia	0.00	0.00	0.00	0.00	0.00	0.00
	Finland	0.13	0.55	0.13	0.27	0.14	0.26
	Latvia	0.04	0.00	0.04	0.01	0.04	0.00
	Norway	0.60	0.37	0.60	0.44	0.60	0.38
SW FAB	Portugal	0.60	0.60	0.60	0.63	0.60	1.08
	Spain	0.80	0.62	0.80	0.89	0.80	0.98
UK-Ireland	Ireland	0.18	0.14	0.18	0.15	0.20	0.08
	United Kingdom	0.87	0.95	0.78	1.19	0.78	1.37

Table 32: Arrival ATFM Delay - Targets and Observed Performance (2015-2017) National Level

		ATFM slot adherence			ATC pre-departure delay (min/dep)		
FAB	**State**	**2015**	**2016**	**2017**	**2015**	**2016**	**2017**
Baltic	Lithuania	91.0%	91.2%	92.3%	n/a		n/a
	Poland	94.0%	94.6%	95.5%	n/a		n/a
Blue Med	Cyprus	84.8%	81.0%	82.5%	n/a		n/a
	Greece	91.3%	91.3%	91.2%	0.54	0.75	0.67
	Italy	92.9%	93.4%	94.1%	n/a	1.39	1.2
	Malta	95.1%	96.3%	95.5%	0.08	0.16	0.17
Danube	Bulgaria	98.8%	98.8%	99.0%	0.04	0.03	0.08
	Romania	93.6%	91.8%	91.6%	n/a		n/a
DK-SE	Denmark	95.9%	97.9%	98.2%	0.03	0.07	0.09
	Sweden	96.9%	95.4%	97.5%	0.04	0.09	0.12
FAB CE	Austria	87.1%	93.2%	94.3%	n/a		n/a
	Croatia	89.7%	89.9%	88.7%	n/a		n/a
	Czech Republic	94.2%	94.9%	94.5%	n/a		n/a
	Hungary	94.3%	93.8%	93.1%	0.13	0.11	0.25
	Slovakia	98.0%	97.2%	97.6%	n/a		n/a
	Slovenia	94.5%	96.3%	94.7%	n/a		n/a
FABEC	Belgium	92.6%	93.5%	94.8%	n/a		n/a
	France	85.8%	85.3%	85.9%	n/a		n/a
	Germany	93.3%	93.3%	93.5%	n/a		n/a
	Luxembourg	82.6%	82.9%	82.6%	0.02	0.01	0.04
	Netherlands	88.1%	89.8%	88.6%	n/a		n/a
	Switzerland	91.8%	92.2%	93.4%	1.23	0.80	0.7
NEFAB	Estonia	92.2%	91.3%	55.3%	n/a		n/a
	Finland	89.0%	88.3%	91.2%	0.15	0.18	0.34
	Latvia	95.5%	94.5%	95.8%	n/a		n/a
	Norway	98.2%	98.1%	98.1%	0.04	0.05	0.09
SW FAB	Portugal	89.3%	90.0%	91.8%	n/a		n/a
	Spain	94.5%	93.9%	94.2%	0.41	0.49	0.61
UK-Ireland	Ireland	96.9%	95.7%	94.8%	n/a		n/a
	United Kingdom	90.7%	91.8%	93.5%	n/a		n/a

Table 33: ATFM Slot Adherence & ATC Pre-Departure Delay (2017) National Level

9 References

i Commission Implementing Regulation (EU) No 390/2013 of 3 May 2013 laying down a performance scheme for air navigation services and network functions. OJ L 128, 9.5.2013, p.1.

ii Regulation (EC) No 549/2004 of the European Parliament and of the Council laying down the framework for the creation of the Single European Sky. OJ L 96, 31.3.2004, p. 1., as amended by Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009. OJ L 300, 14.11.2009, p.34.

iii Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the Single European Sky OJ L 96, 31.3.2004, p. 10–19, as amended by Regulation (EC) No 1070/2009 of the European Parliament and of the Council of 21 October 2009. OJ L 300, 14.11.2009, p.34.

iv Commission Implementing Regulation (EU) No 391/2013 of 3 May 2013 laying down a common charging scheme for air navigation services. OJ L 128, 9.5.2013, p31.

v Commission Implementing Decision of 11 March 2014 setting the Union-wide performance targets for the air traffic management network and alert thresholds for the second reference period 2015-19. OJ L 71, 12.3.2014, p.20.

vi "Report on the Implementation of the NPP and NSP" in 2017 Network Manager Annual Report 2017, pp.41-85 (not yet published)

vii Commission Regulation (EC) No 2150/2005 of 23 December 2005 laying down common rules for the flexible use of airspace. OJ L 342, 24.12.2005, p.20.

viii University of Westminster calculations for "Network average cost of ATFM delay per minute" http://www.eurocontrol.int/sites/default/files/publication/files/european-airline-delay-cost-reference-values-final-report-4-1.pdf

ix Commission Decision 2011/121/EU of 21 February 2011 setting the Union-wide performance targets and alert thresholds for the provision of air navigation services for the years 2012 to 2014. OJ L 48, 23.2.2011, p.16.

x Commission Implementing Decision (EU) 2017/2376 of 15 December 2017 amending Implementing Decision (EU) 2015/348 as regards the consistency of the revised targets in the key performance area of cost-efficiency included in the amended national or functional airspace block plans submitted by Malta, Bulgaria and Poland (notified under document C(2017) 8433) (Text with EEA relevance.) OJ L 337, 19.12.2017, p. 68–79.

xi Commission Implementing Decision (EU) 2015/348 of 2 March 2015 concerning the consistency of certain targets included in the national or functional airspace block plans submitted pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period. OJ L 60, 4.3.2015, p.55.