



Performance review body
of the single european sky



PRB Monitoring Report 2018

Preliminary Findings

Part A – Member State Level: The seven hot-spots of European Air Traffic Management in 2018

PRELIMINARY RESULTS



27 August 2019

About this document

- 1 The following pages contain a summary of the performance of the seven Member States of the Single European Sky which, in 2018, contributed the greatest delay to the network (Austria, Belgium, Cyprus, France, Germany, The Netherlands and Spain). It is a preliminary analysis enabling authorities, Air Navigation Service Providers and stakeholders to understand the main issues and to define solutions. Defining the best way forward at this stage is crucial because Members States will have to submit their draft performance plans for the upcoming regulatory period (2020 until 2024) by the end of September 2019.

PRELIMINARY RESULTS

- 2 This document contains a preliminary overview of the performance of Austria in 2018. Austria is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results showcase the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

Austria

Comments from the Performance Review Body

Austria showed a good performance for safety, environment, capacity and cost-efficiency until 2016. In 2017 and 2018 delays significantly increased (+ 300% and +170% respectively).

Austria in 2018 had higher revenues than planned due to a higher number of service units (+9.2%). At the same time, costs remained below planned, although staff costs increased. In view of the expected traffic increase, Austria must invest in order to provide capacity and resilience.

In terms of environmental performance, Austria – together with the other states belonging to the Functional Air Space Block Central Europe (FABCE) – missed the targets in 2018.

The Performance Review Body calculated the cost of delays that airspace users (airlines) had to absorb because of the lack of capacity in Air Traffic Management. It amounted to 72.5M€₂₀₀₉. As in almost all other countries of the Single European Sky (SES), airspace users in Austria faced a much higher cost of delay than in prior years.

AustroControl, the Air Navigation Service Provider of Austria, kept its costs relatively stable and below the planned values, despite increased traffic, meaning that they did not spend the money received from airspace users for investments and staff.

In 2019, delays are forecasted to almost double again because the Area Control Centre (ACC) in Vienna - in addition to high traffic volumes - will receive additional diverted traffic to compensate for the lack of capacity in the Karlsruhe Area Control Centre. This development will most likely remain a severe challenge during reference period 3 (starting in 2020).



Key issues (Key Performance Areas)

1.1. Safety

- Under the Performance Scheme, the Effectiveness of the Safety Management and the application of the Risk Analysis Tool (RAT) are assessed both for the national authorities and for the Air Navigation Service Provider.
- During 2018, the authorities of Austria improved their overall score of the Effectiveness of the Safety Management for the Single European Sky from 58 in 2015 to 67 in 2018 (out of 100). Austrian authorities already achieved the target in all safety areas in 2017.
- AustroControl achieved a high and stable overall result for the Effectiveness of the Safety Management, reaching 91 (out of 100) in 2018. With respect to Safety Culture, AustroControl has exceeded the target.
- Both, Austria and AustroControl in 2018 reached the targets for the application of the Risk Analysis Tool.

1.2. Environment

- 7 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path also known as Key Environmental indicator Actual (KEA). With respect to Austria, the environmental targets are analysed for all Member States belonging to the Functional Airspace Block Central Europe (FABCE) and allocated to each Member State.
- 8 The FABCE states missed their targets for environmental performance (KEA) for the third year in a row. For Austria, the result in 2018 worsened in comparison to 2017.
- 9 During 2018, additional taxi-out time at Vienna airport worsened considerably, but no explanation is provided.

1.3. Capacity

- 10 Austria missed the capacity target in 2018. Instead of reaching a delay target of 0.19 minute per flight, 2018 shows 0.54 minute delay per flight. This indicates that AustroControl was not able to cope with capacity constraints, triggered by an increase in traffic above the planned values (but still within the Eurocontrol high forecast), significant weather disturbances and an increase in sector complexity between 2017 to 2018. According to AustroControl, 50% of all en route delays were due to adverse weather. The capacity shortfall in Austria was also caused by the delays stemming from the German Air Navigation Service Provider, DFS, particularly in Karlsruhe, because DFS is responsible for providing services over a portion of Austrian airspace.

1.4. Cost-efficiency

- 11 In 2018, actual costs of AustroControl increased significantly from 2017 and were above the planned (determined) costs. However, the actual unit cost was lower than the determined unit cost due to higher number of service units (+9.23%) AustroControl provided in 2018. Therefore, Austria reached its cost-efficiency target in 2018. Considering the traffic increase, which Austria experienced was within the forecast, and considering that traffic will continue to grow, investing as planned seems paramount for Austria, making sure that investments result in higher performance.
- 12 AustroControl in 2018 received a penalty of 0.96M€₂₀₀₉ (0.5% of total revenues) for missing the capacity performance target of its Functional Airspace Block. This is the maximum penalty that can be applied indicating that the penalties under the applicable performance scheme have a very limited effect.

- 13 This document contains a preliminary overview of the performance of Belgium in 2018. Belgium is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures

Belgium

Comments from the Performance Review Body

Belgium in 2018 showed that they are likely to achieve their targets within safety and cost efficiency at the end of reference period. However, Belgium showed worsening performance in their other Key Performance Areas – this largely is due to the poor performance from Maastricht Upper Air-space Control Centre.

Regarding capacity, Brussels Area Control Centre and Skeyes, the Air Navigation Service Provider, performed well although this is expected to deteriorate slightly in 2019 due to industrial action.

Belgium has delegated the control of its upper airspace to Eurocontrol, i.e. the Maastricht Upper Airspace Control (MUAC). During the assessment of Belgian performance, MUAC's contribution was accounted. Maastricht Upper Airspace Control in 2018 showed a large capacity deficit, despite showing excellent air traffic controller productivity. This deficit will most likely stay for the next five years and will cause significant cost to airspace users.

In 2018, Belgium experienced traffic (and service units) as planned and forecasted. Costs were also as planned and therefore there was limited additional revenues than expected in 2018. Belgium spent more than planned on capital expenditure but is still behind planned values for the entire reporting period 2 (2015 – 2019) because of underspend during 2015 and 2016. The Performance Review Body calculated that the cost of delays that airspace users (airlines and passengers) had to absorb due to the lack of capacity amounted to 115M€ in 2018. The same amount as two-thirds of the total charged cost for the service.

In terms of environmental performance, Belgium – together with the other states within Functional Air Space Block Europe Central (FABEC) missed the targets in 2018.

The safety results of the Air Navigation Service Provider and the regulator are in line with, or better than what was planned.

There has been a worsening of the performance across the second reference period with the worst results in 2018. Improvements will be made in Brussels Area Control Centre, but Maastricht Upper Airspace Control Centre is expected to lack capacity into the third reference period.



Key issues (Key Performance Areas)

2.1. Safety

- 14 Under the Performance Scheme, the Effectiveness of the Safety Management (EoS_M) and the application of the Risk Analysis Tool (RAT) are assessed both for the national authorities and for the Air Navigation Service Provider.
- 15 During 2018, the authorities of Belgium marginally improved their overall score of the EoS_M for the Single European Sky from 62 in 2015 to 68 in 2018 (out of 100). To achieve the target in 2019, Belgium must improve the areas related to Safety Policy and Objectives, which currently exhibit a low maturity (a score of B).
- 16 The Air Navigation Service Provider of Belgium, Skeyes, has constantly improved its overall Effectiveness of the Safety Management score to 86 (out of 100) in 2018. To reach the target in 2019, Skeyes has one area related to Safety Policy and Objectives which needs to be improved from level C to level D.
- 17 Both, Belgium and Skeyes in 2018 reached the targets for the application of RAT.

2.2. Environment

- 18 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to Belgium, the environmental targets are analysed for all the states belonging to the Functional Airspace Block Europe Central and allocated to each Member State.
- 19 FABEC states for the fourth year in a row missed their targets for environmental performance (KEA).
- 20 Whilst there are no local targets for the Member State itself, Belgium achieved a KEA of 3.89% representing a small increase from their 2017 result. Skeyes did not commit to any investment that could improve the environmental performance in its Performance Plan and the lack of investment in en route capacity is likely to not have helped.
- 21 Skeyes noted in its monitoring submission that airspace users prefer less direct routes if the charges are lower which makes improvements in the environmental performance difficult.

2.3. Capacity

- 22 Belgium continued to miss its capacity targets in 2018 and recorded its worst delays thus far since 2015. Whilst en route weather played a role, the data shows that addressing the issues within the control of the Air Navigation Service Provider (e.g. staffing and capacity) would have improved performance considerably.
- 23 In terms of traffic, total flights and service units (-0.2%) are very close to the planned values. Brussels ACC is close to achieving the level of aircraft throughput required to achieve the Union-wide target., Most delays are coming from the Maastricht Upper Area Control Centre, which manages overflights for Belgium. MUAC needs to increase its throughput by 7.8% higher in order to reduce delays to the optimum level. According to the current forecast, this will not be achieved in the next six years, although MUAC has taken measures to help reduce delays in the short term (e.g. air traffic controller recruitment).
- 24 The performance regarding capacity in other areas was more promising with arrival delay for Brussels terminal airspace being at the lowest level in the last four years. Additionally, a best-in-class adherence to the air traffic flow management slot was very good. Liege airport received the maximum financial bonus for its arrival delay performance.

2.4. Cost-efficiency

- 25 Belgium in 2018 has met its cost-efficiency target. It achieved the target largely through reducing actual costs below what airspace users paid in 2018 (determined cost). This underspend for its en route service has also been significant in previous years, however was less severe in 2018. 2018 was the second consecutive year during which Belgium overspent in capital expenditure. This, in part, compensates the underspend in 2015 and 2016, but more investment would be required in 2019 to spend as planned for the entire second reference period (2015 – 2019).
- 26 Belgium received a penalty of 0.46M€₂₀₀₉ (-0.5% of revenues) for missing the capacity performance target at FAB level.

- 27 This document contains a preliminary overview of the performance of Cyprus in 2018. Cyprus is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

Cyprus

Comments from the Performance Review Body

The performance of Cyprus is vital for European Air Traffic Management, connecting European airspace with that of third countries. Insufficient capacity in the airspace of Cyprus creates a bottleneck for the European network, generating considerable delays in several Single European Sky countries. This happened again in 2018. Due to its geo-political location, Cyprus is impacted by developments which remain out of its control.

In 2018, traffic increased substantially with service units rising by 27.4% compared to 2017, generating a large increase in revenues. While actual costs are increasing every year, the Air Navigation Service Provider has still had lower than planned costs for every year of the second reference period.

In terms of environmental performance, Cyprus – together with the other states within Functional Air Space Blue Med missed the targets in 2018.

The safety results are in line with the planned performance and the EoSM target is likely to be achieved in 2019.

Looking back the performance of Cyprus has been varied and no marked improvement has been evident so far. It should be noted that geopolitical situations had a negative impact, making their local circumstances more difficult.

Cyprus will need to improve its capacity and environment performance through further investments in infrastructure and additional recruitment of air traffic controllers. Additional revenues received should be used to fund these developments.



Key issues (Key Performance Areas)

28 Cyprus is a member of the Blue Med Functional Airspace Block. It took until early 2019 for the performance plan of this Functional Airspace Block to be adopted. Due to the lack of binding targets from the performance plan, the Performance Review Body monitored the performance of Cyprus based on the values assigned by the Network Manager (reference values) and did not consider previous performance plan stated targets.

3.1. Safety

29 Under the Performance Scheme, the Effectiveness of the Safety Management (EoS) is assessed both for the national authorities and for the air navigation service provider.

30 During 2018, the authorities of Cyprus have met the planned values with respect to the Effectiveness of the Safety Management for the Single European Sky (60 out of 100). To achieve the target in 2019, Cyprus must improve the areas related to Safety Policy and Objectives.

- 31 CYATS, the Air Navigation Service Provider of Cyprus has met its 2018 safety target and reached an overall Effectiveness of the Safety Management score of 59 (out of 100). To reach the target in 2019, CYATS must improve its score which should be achievable with dedicated effort.

3.2. Environment

- 32 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to Cyprus, the environmental targets are analyzed for all the states belonging to the Blue Med Functional Airspace Block and allocated to each Member State. Blue Med have missed their reference value in 2018 for environmental performance (KEA).
- 33 Particularly notable is the worsening of the actual horizontal flight efficiency (KEA) in Cyprus. The excess length of a flight has increased from 2.02% in 2015 to around 4.10% in 2018. This concerning deterioration in the performance is most likely the result of geo-political issues surrounding North Africa and the Middle East, impacting the Cypriot airspace.
- 34 Cyprus has reported no progress towards free-route airspace implementation in its submission for the monitoring reports or the Network Manager's Network Operations Plan (NOP). The implementation of free-route airspace (where an airspace user is free to define their route) is an important measure to shorten flight routes. It is a priority, which Cyprus needs to address, although the benefits for en route overflights could be limited due to military activities and geopolitical developments.

3.3. Capacity

- 35 The capacity performance of Cyprus has improved during 2018. In 2015, there was an average of 2.47 minutes of delay per flight from air traffic flow management, it has since decreased to 0.63 in 2016, 1.11 in 2017 and 1.10 in 2018.
- 36 Cyprus has managed to achieve this improvement despite unstable traffic. In 2018, the actual traffic exceeded the high growth forecast by Eurocontrol with service units 27% above the planned values. In the previous years, traffic growth remained around the (base) forecast values.
- 37 Nevertheless, the capacity performance of Cyprus in 2018, whilst improved, remained well short of the FAB reference value (optimum) and it remains a bottleneck for the Union-wide airspace.
- 38 Cyprus airspace is heavily impacted by geopolitical issues, which have had a ripple effect on the entire Single European Sky performance. A bottleneck in the Cypriot airspace causes delays throughout the European network. Capacity issues were highlighted as early as 2011. Cyprus should address these concerns. The insufficient infrastructure on the ground has been highlighted by recent events in 2019. Given the fact that the difficulties in Cyprus impact the entire network, a joint effort is needed to improve the situation.

3.4. Cost-efficiency

- 39 From a cost-efficiency point of view, Cyprus has managed its costs in line with the planned expenditure. The result of increased traffic meant an increase in revenues for Cyprus and a decrease in the determined unit cost with both diverging from the planned values.
- 40 Whilst the costs are within the planned range, it is evident that the Department of Civil Aviation (DCAC) has focused mainly on maintenance and replacements rather than improving the service offering i.e. replacement of the secondary surveillance radar, upgrade of backup ATC facilities and ground communications. More investment into new technologies are expected in the latest Network Operations Plan (2019).

41 No payments under the incentive scheme have been reported for 2018.

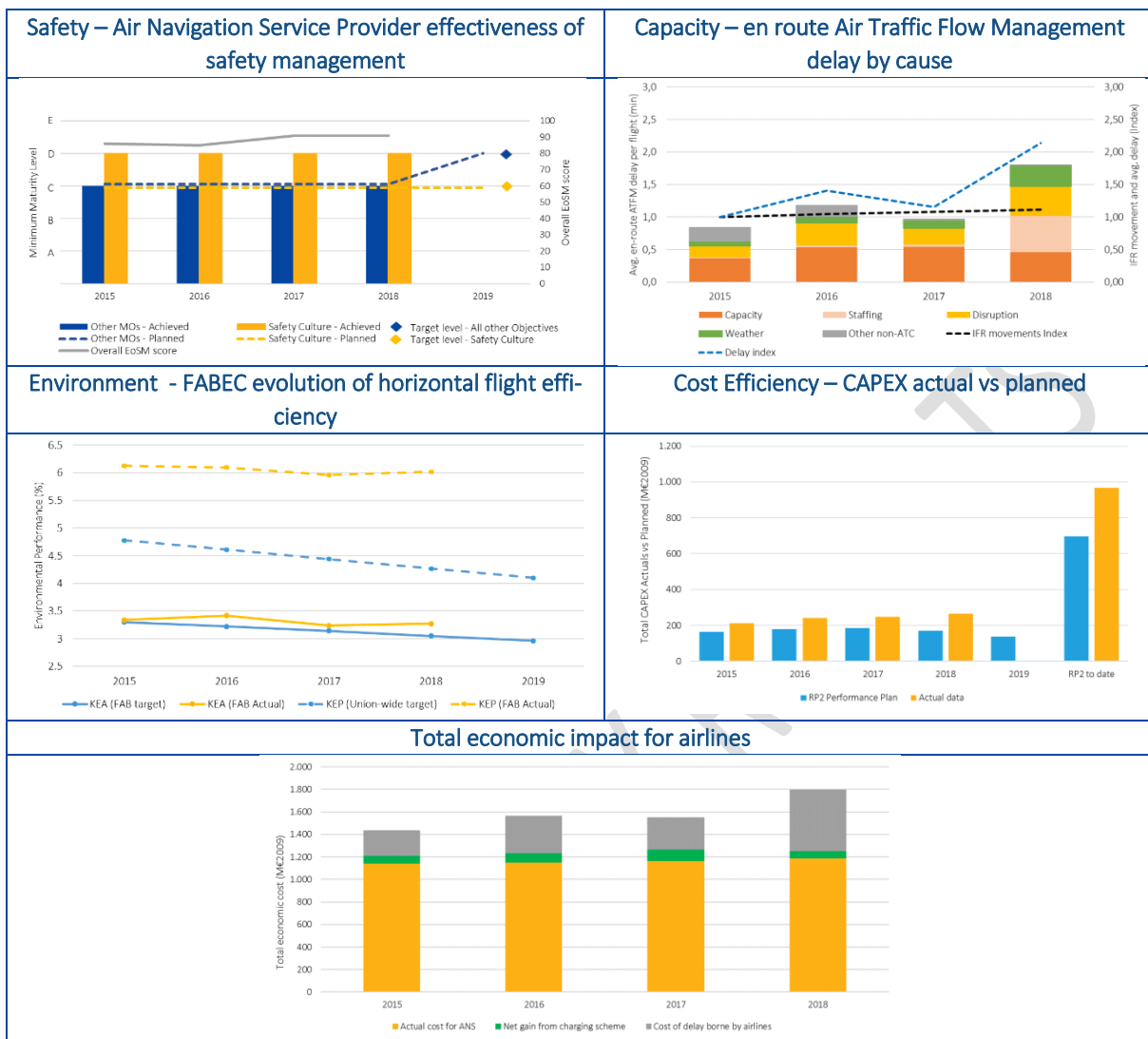
PRELIMINARY RESULTS

- 42 This document contains a preliminary overview of the performance of France in 2018. France is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

France

Comments from the Performance Review Body
<p>During 2018, France showed a good performance for safety and cost-efficiency, but unfortunately, the severe problems with respect to capacity and environment continued in 2018.</p> <p>French Area Control Centres were causing some of the main bottlenecks of European Air Traffic Management with significant delays. The already bad performance of 2017 significantly worsened, doubling the number of minutes of delay in 2018. The main reasons for delay were staffing, weather, industrial actions and capacity. The total cost to airlines caused by the capacity issues in 2018 was 614M€.</p> <p>The French service provider, DSNA in 2018 continued to spend less than planned i.e. did not spend the money charged to airlines, as in the preceding years. In view of the significant delays already experienced in 2016 and 2017, staff and other operating costs would be expected to increase more. Delays to the capital expenditures for their Co-flight and 4-flight systems have been costly and the investments as far as they have been realized did not produce the expected performance improvements. Completing the projects efficiently will be key to reducing delays.</p> <p>In terms of environmental performance, France – together with the other states within Functional Air Space Block Europe Central – missed the targets in 2018.</p> <p>Regarding the effectiveness of safety management, both the Air Navigation Service Provider and regulator are likely to meet the target by 2019 (end of the second reference period).</p> <p>As predicted by the Network Manager, the poor performance of France is expected to continue for the duration of reference period 3 producing significant delays and costs to airspace users.</p>

PRELIMINARY



Key issues (Key Performance Areas)

4.1. Safety

- 43 Under the Performance Scheme, the Effectiveness of the Safety Management (EoS M) is assessed both for the national authorities and for the air navigation service provider.
- 44 For the performance of the French authorities in terms of safety, the French Performance Plan for reference period 2 only included a planned level for the Effectiveness of the Safety Management for 2019. France should be able to achieve this target in 2019 given improvements in the area of safety culture.
- 45 For DNSA, the Air Navigation Service Provider of France, the Effectiveness of the Safety Management remained at a stable high level (91 out of 100) over the past two years. DSNA is in line with its planned target for 2019.

4.2. Environment

- 46 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to France, the environmental targets are analyzed for all the states belonging to the Functional Airspace Block Europe Central and allocated to each Member State. FABEC states for the fourth year in a row missed their targets for environmental performance (KEA).
- 47 Paris Charles de Gaulle was the only French airport where the average additional taxi-out time worsened, even when compared with Paris Orly airport, which had one of its runways closed for the year.
- 48 Paris Charles De Gaulle has been marked for its best-in-class in European performance for additional time in the terminal area amongst airports with more than 200,000 movements and this continued to improve during 2018.

4.3. Capacity

- 49 France in 2018 continued to struggle providing sufficient capacity lagging behind their national reference value, and almost doubling the air traffic flow management delay per flight to 1.80 minutes in 2018.
- 50 DSNA anticipated this degradation in its performance and described the second reference period as a “transition period”. Some of the delay should decrease in 2019 due to the implementation of new technology (4-flight and ERATO systems) in five area control centers.
- 51 Industrial actions by air traffic controllers caused significant delays for the past four years. They will most likely continue, especially in Reims and Marseille Area Control Centres. Furthermore, planned capacity improvement measures decreased against the advice of the European Commission and the Performance Review Body (PRB Monitoring Report 2017). However, according to the 2017 Local level implementation plan, DNSA did not anticipate any capacity issues but in the 2018 Local level implementation plan all but one ACC (Marseille) is expected to have serious capacity issues.
- 52 Arrival air traffic flow management delay remained within the local target during the past four years. Airports with lower traffic (Alpes-Isère, Cannes – Mandelieu and Paris Airport-Le Bourget) individually reported higher delays compared to that of larger airport performance.
- 53 According to the current capacity plans, the two crucially important ACCs in Bordeaux and Marseille will experience a capacity deficit of nearly 20% compared to optimum levels, not only for 2019 but for the next six years. Reims ACC expects similar deficits, but should improve in 2023 and 2024.

4.4. Cost-efficiency

- 54 In 2018, the actual unit cost in France was 9% lower than planned and DSNA’s local cost-efficiency target (actual unit cost vs. determined unit cost), because the number of service units in 2018 increased (+6.2%). Actual costs continued to increase compared to 2017, but were still lower than planned.
- 55 France has consistently produced a return on equity far higher than planned – at least double during the last four years and even triple in 2015 and 2017.
- 56 Improper application of accounting rules led to inaccurate values for depreciation cost, inflating the determined costs for 2018. Over the second reference period, DSNA planned to invest 1.42BN€ namely for two new systems i.e. (Co-flight and 4-flight). As in previous years, investments

were delayed and the needed benefits did not materialise. This impacted not only the results of 2017, but even more severely the capacity results of 2018.

- 57 France received a penalty of 4.53M€₂₀₀₉ (-0.42% of revenue) for missing the Functional Airspace Block's capacity performance target. This figure indicates that under the current Performance Scheme, penalties have only a small effect.

PRELIMINARY RESULTS

- 58 This document contains a preliminary overview of the performance of Germany in 2018. Germany is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

Germany

Comments from the Performance Review Body

During 2018, Germany showed a good performance for safety and cost-efficiency, but unfortunately, the severe problems with respect to capacity and environment continued in 2018. DFS, the German Air Navigation Service Provider was responsible for an unprecedented lack of capacity.

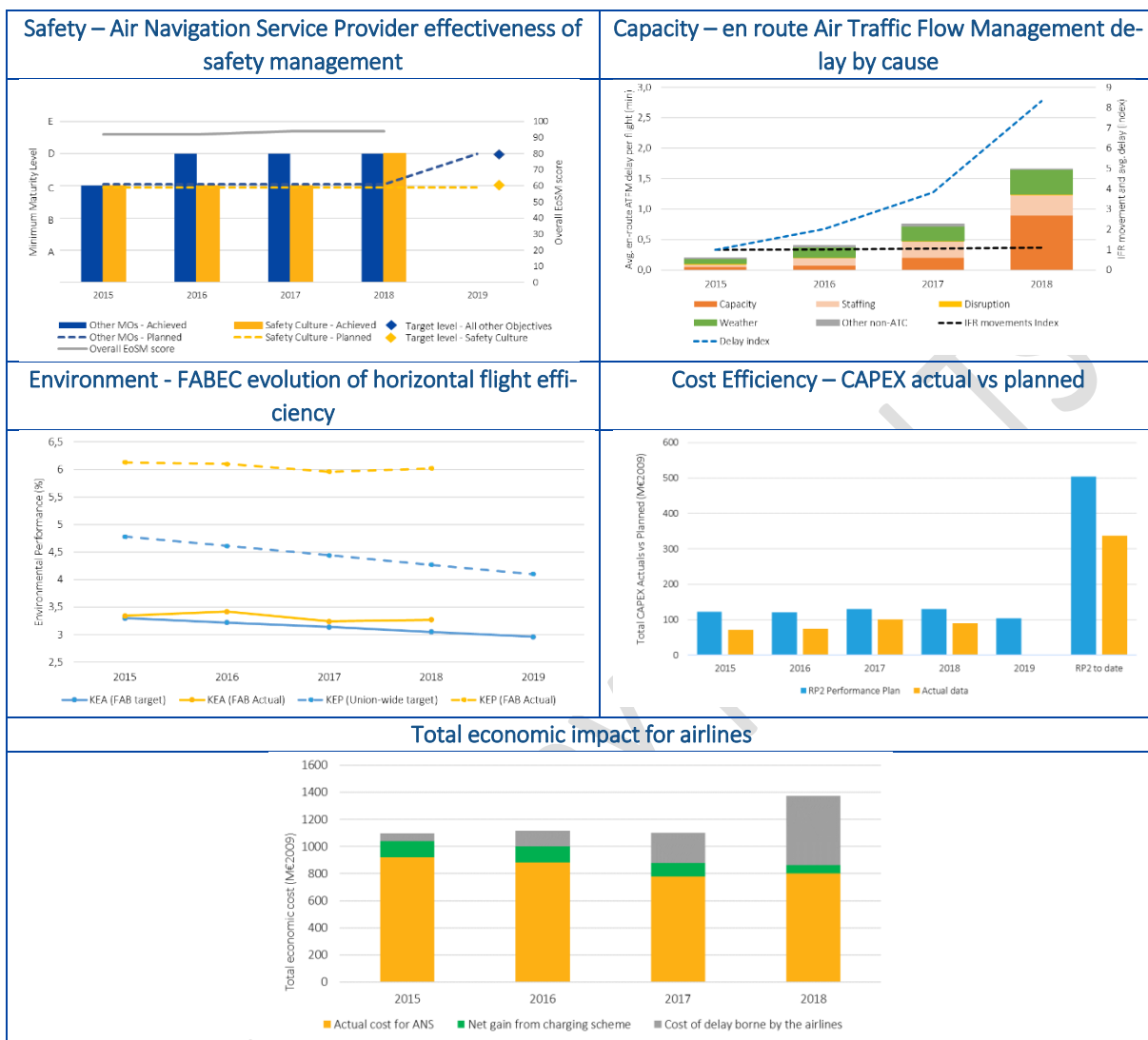
Delays caused in German Area Control Centres impacted the entire European Air Traffic Management network and generated a significant portion of total Air Traffic Flow Management (ATFM) delays in Europe. Delays caused by the Karlsruhe Area Control Centre in particular exploded in 2018 and did not show any relation to traffic growth. From 2014 until 2018, traffic in Karlsruhe ACC in every respect (peak days, summer traffic, yearly traffic) showed little growth or even slightly decreased and nevertheless, delays increased from 0.34 min (2014) to 3.18 (2018), which is one of the worst values in the entire Single European Sky area. The problems in Karlsruhe and other German Area Control Centres are due to a lack of air traffic controllers and a lack of investments. The total cost of the delays to airspace users in 2018 was 576M€.

DFS in 2018 showed a significant underspend between planned and actual costs, as in previous years, which means that DFS for years has not spent the money it receives from airlines, creating a surplus of 141M€ (in 2018). At the same time, airspace users incurred calculated cost of 570M€ due to the delays.

In terms of environmental performance, Germany – together with the other states within Functional Air Space Block Europe Central – missed the targets in 2018. The targets within the Key Performance Area of safety are likely to be met by both the regulator and the Air Navigation Service Provider in 2019.

Germany has delegated the control of its upper airspace to Eurocontrol, i.e. the Maastricht Upper Airspace Control. In the assessment of the German performance, MUAC's contribution was accounted. Maastricht in 2018 showed a large capacity deficit, despite an excellent air traffic controller productivity. This deficit will most likely stay during the next five years and will cause significant cost to airlines.

Looking forward, DFS and German authorities urgently need to address the capacity shortage. Contrary to public statements in Germany, the STATFOR traffic forecast for Germany again for 2018 remained within the expected boundaries. Capacity became an issue because DFS did not react when it became evident that its initial assumptions about traffic growth had been inaccurate.



Key issues (Key Performance Areas)

5.1. Safety

- 59 Under the Performance Scheme, the Effectiveness of Safety Management (EoS_M) is assessed both for the national authorities and for the Air Navigation Service Provider.
- 60 For the performance of the German authorities in terms of safety, the German Performance Plan for reference period 2 (2015 until 2019) only included a planned level of the Effectiveness of the Safety Management for the state, Germany already in 2018 achieved the targets in 2018 for all monitored areas.
- 61 DFS since 2015 has had a high and stable overall Effectiveness of the Safety Management score reaching (94 out of 100) in 2018 and already achieved the 2019 targets, and beyond within the area of safety culture.

5.2. Environment

- 62 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to Germany, the environmental targets are analyzed for all the states belonging to the Functional Airspace Block Europe Central (FABEC) and allocated to each Member State. FABEC states for the fourth year in a row missed their targets for environmental performance (KEA). Germany has achieved 2.87% in 2018 which represents continuation of their performance thus far in the second reference period.
- 63 Many airports monitored in Germany record high additional taxi-out times, Frankfurt in particular with an 0.45 minute per flight increase from 2017.

5.3. Capacity

- 64 Germany achieved its national delay optimum value only in 2015 and has since then experienced worsening delays, peaking at 1.65 minute per flight in 2018. In 2017, an approximate 4% rise in traffic (IFR movements) saw a 90% rise in delays. In contrast, a 4.3% increase in chargeable service units led to a 117% increase in delays during 2018.
- 65 The key reason behind the poor performance is staff shortage and a lack of investments, for which Germany did not provide any explanation. 2020 is the earliest year when DFS expects additional operational air traffic controllers, including for Karlsruhe and Langen ACCs. Nevertheless, Germany will continue to miss its optimum capacity levels by up to 15%. To overcome the capacity shortage, Germany must not only increase staff and investments but also provide transparency as to how it plans to manage local peaks. Lack of adequate rostering seems to be a major issue in crucial area control centers.
- 66 Performance in other capacity indicators were more promising with arrival ATFM delay achieving the target.
- 67 As mentioned within the introduction, Maastricht Upper Area Control Centre also contributed a significant amount of delay to Germany. This further deteriorated Germany's overall performance.

5.4. Cost-efficiency

- 68 Germany met its cost-efficiency target for 2018 by a significant margin (10% below target). This is both due to lower actual costs than planned (only marginal underspend in 2018) and higher revenues from charged services (service units 13.2% above planned).
- 69 These figures show that DFS in 2018 – as in previous years - did not spend and invest the money it received from airspace users. It accumulated 144.7M€₂₀₀₉. In 2018, DFS reduced the underspend between planned and actual costs, but so far, the expenditure has not translated into performance gains.
- 70 Over the second reference period, of the almost 1BN€₂₀₀₉, Germany spent on capital expenditure, only a small part was allocated to specific capacity enhancing measures. Most of the money was used to replace and maintain existing equipment and for new buildings or improvements at airports. Many of these investments had no recognisable impact on the performance assessed by the Performance Review Body.
- 71 Germany received a penalty of 3.84M€₂₀₀₉ (-0.5% of revenues) for missing the Functional Airspace Blocks capacity performance target.

- 72 This document contains a preliminary overview of the performance of the Netherlands in 2018. The Netherlands is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

The Netherlands

Comments from the Performance Review Body

Dutch Air traffic Management in 2018 continued to perform well in the lower airspace, achieving a capacity at the optimum level, whilst meeting its safety and cost efficiency targets. With respect to the en route services, capacity improved significantly in 2018. There are however still considerable delays regarding the terminal airspace – i.e. at Amsterdam Schiphol.

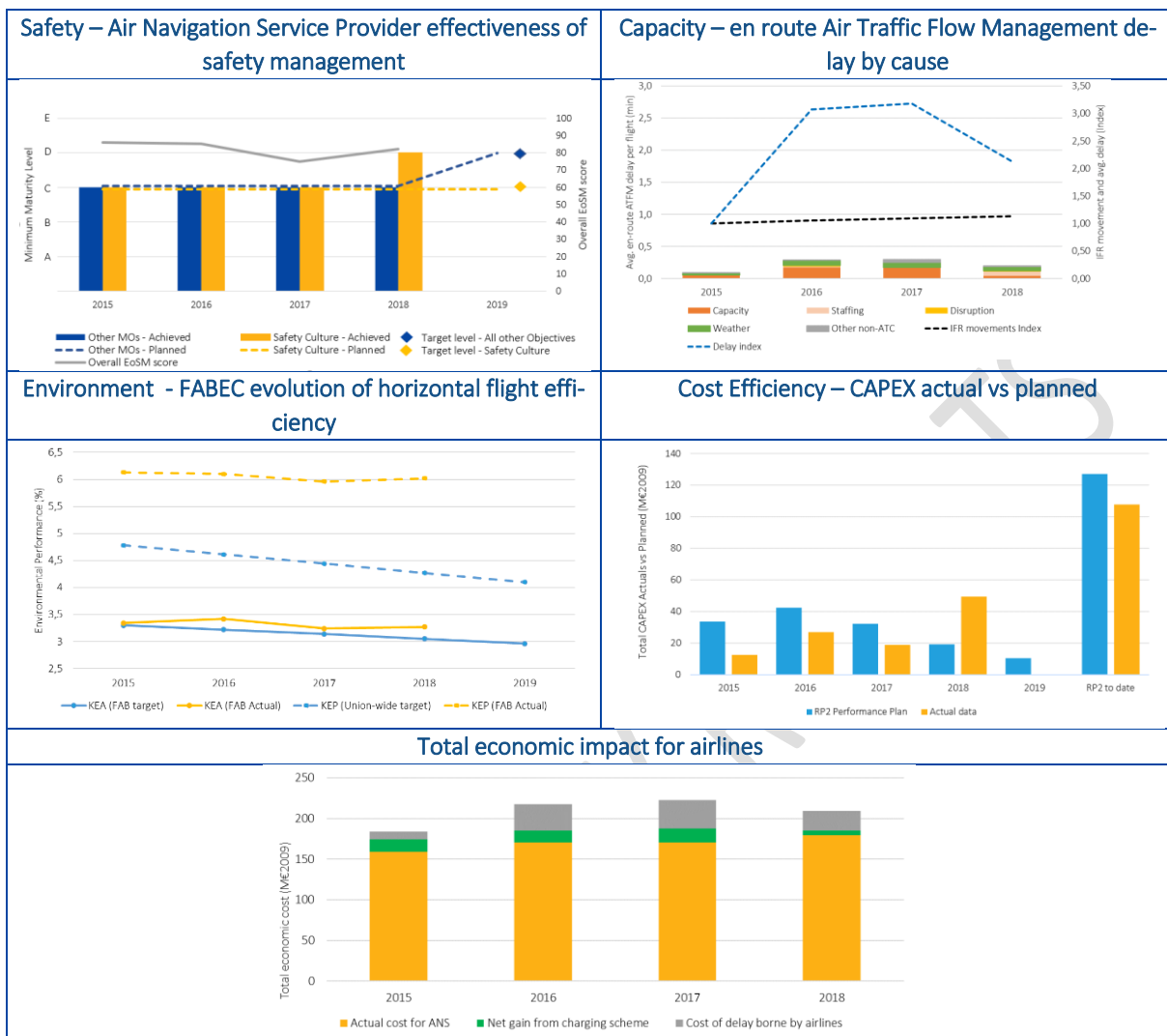
Most delays generated within The Netherlands were from Maastricht Upper Airspace Control Centre (MUAC, operated by Eurocontrol), which controls Dutch upper airspace (above 24,500 feet). MUAC was unable to provide enough capacity in 2018 despite having the best air traffic controller productivity. Structural changes will be needed to increase the capacity of MUAC which in turn will benefit all Member States delegating part of its airspace to MUAC.

The costs-efficiency target was met by the Netherlands in 2018, with higher capital expenditure and costs than planned. This is compensated by the increase in so-called service units which were 11.4% higher than planned. Netherlands is a good example how higher revenues from increased service units are being re-invested into performance.

In terms of environmental performance, The Netherlands – together with the other states within Functional Air Space Block Europe Central – missed the targets in 2018.

The targets within the Key Performance Area of safety are likely to be met by both the regulator and the Air Navigation Service Provider in 2019.

The Netherlands have focussed on improving their capacity performance and achieved lower delays in 2018 for the lower airspace. No delays are expected for 2019 either. The Netherlands should endeavour to increase the capacity of MUAC and decreasing the arrival delays at Amsterdam Schiphol.



Key issues (Key Performance Areas)

6.1. Safety

- 73 Under the Performance Scheme, the Effectiveness of the Safety Management (EoS) is assessed both for the national authorities and for the air navigation service provider.
- 74 For the performance of The Netherlands with respect to safety, the Performance Plan for the second reference period only included a planned level of the Effectiveness of the Safety Management for the state. The Netherlands in 2018 achieved the targets in 2018 and has to improve in the areas of safety risk management and safety awareness.
- 75 LVNL, the Air Navigation Service Provider of The Netherlands lowered its Effectiveness of the Safety Management score from 86/100 in 2015 to 82/100 in 2018. To reach the target level in 2019, LVNL has to improve its score in the area of safety assurance.

6.2. Environment

- 76 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to The Netherlands, the environmental targets

are analyzed for all the states belonging to the Functional Airspace Block Europe Central and allocated to each Member State. FABEC states for the fourth year in a row missed their targets for environmental performance (KEA). In 2018, the actual flight paths were 3.00% longer than the shortest possible route which is a slight year on year improvement.

- 77 LVNL performed well with respect to managing terminal traffic. Additional taxi-out times at Amsterdam Schiphol airport decreased from 3.25 minutes in 2017 to 2.94 minutes in 2018, due to the implementation of airport collaborative decision making (A-CDM) in May 2018. The additional time in terminal airspace at Schiphol Airport, remained at 2015 levels (1.52 minutes per flight, which compared to other airports of a similar size is a good result.

6.3. Capacity

- 78 The Netherlands significantly improved its available capacity during 2018 and reduced its en route air traffic flow management delay by 33%. The number of flights in 2018 increased by 3.2%, while the chargeable service units increased by 13% from 2017 (11.3% above their plan).
- 79 Between 2015 and 2016 there was a steep increase in reported delays noted in previous monitoring as down to cancelled capacity enhancement measures and other temporary re-structuring issues. The focused, planned and executed investment for improved flexible use of airspace through co-location with the military is thought to have contributed to less delays in 2018.
- 80 Performance in other indicators were less convincing with arrival air traffic flow management delay surpassing the target by more than 50% - the largest share of arrival delays in the Single European Sky area. This is mainly caused at the Schiphol terminal airspace and does not affect other Dutch airports.

6.4. Cost-efficiency

- 81 In 2018, LVNL met its 2018 cost-efficiency target. Capital expenditure was higher than planned to continue a trend which started in 2015. The Netherlands is one of the few countries investing the higher revenues they receive from airlines, which enabled LVNL to cope with the increase in traffic, instead of accumulating a high surplus as observed in other countries. By 2018 LVNL accumulated a surplus of less than 12M€.
- 82 LVNL does not build in a return on equity into its planned costs and in 2018 continued the trend of managing the costs within +/- 5% of the planned values.
- 83 The two biggest investments of LVNL planned for reference period 2 are to renew its Flight Data Processor (FDP) and to expand its facilities for military co-location between them and these make up 80% of planned investments. These investments should increase performance after 2020.
- 84 Co-location of the military ATC was planned to reap benefits from 2017 onwards and the data suggests this has been successful.
- 85 Despite missing the capacity target, LVNL was not subject to a penalty since the delay values remained within the deadband with no impact on revenues.

- 86 This document contains a preliminary overview of the performance of Spain in 2018. Spain is among the seven countries which play a vital role for the performance of European Air Traffic Management. The preliminary results are showcasing the main issues in a condensed manner enabling stakeholders to discuss and define required measures.

Spain

Comments from the Performance Review Body

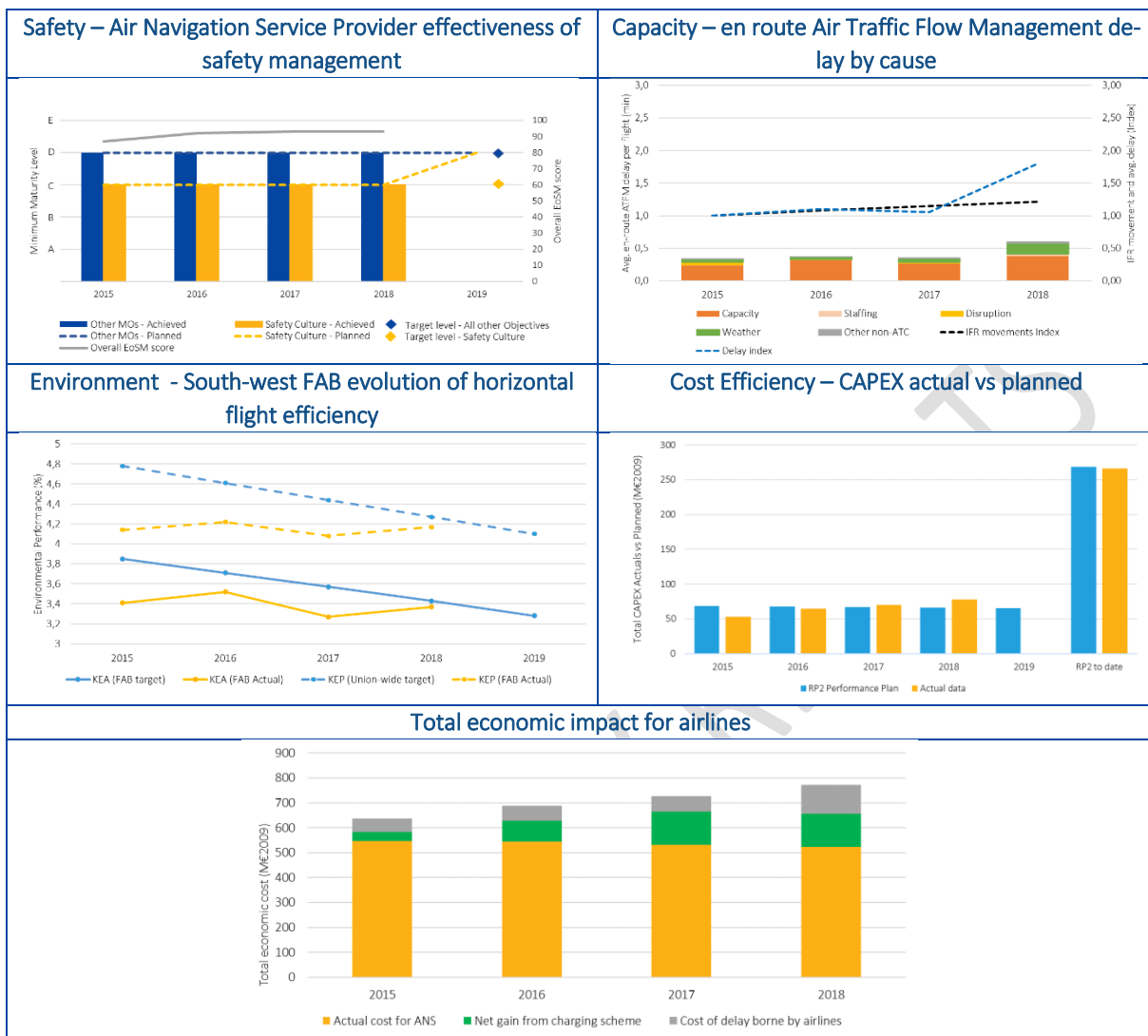
In 2018, Spain was among the Member States that missed the capacity target, with good performance in the remaining key performance indicators. The delays severely impacted the European network. Capacity was an issue because in 2018 traffic in Spain grew by 4.8%.

In terms of cost, actual costs of ENAIRE, the Spanish Air Navigation Service Provider in 2018 again remained below the planned values, with the largest difference in operating expenditure. However, capital expenditure of ENAIRE were as planned and it is one of the few service providers in the Single European Sky area that has spent as planned. However, the results of 2018 indicate that these investments have not translated into enough capacity to achieve the target and caused considerable cost to airspace users (129M€). Furthermore, the increase in service units (21.2% above planned values) indicates that a significant portion of additional revenues is available that the Air Navigation Service Provider has not yet invested.

With respect to environment, the South-West Functional Airspace Block (SW FAB), to which Spain belongs, is the only block that has achieved its horizontal flight-efficiency target for every year since 2015 (reference period 2), which means that excess routes for airlines were kept at the targeted minimum.

The 2019 safety targets for the effectiveness of safety management have already been achieved by the Air Navigation Service Provider and the regulator.

Looking forward it will be important for Spain to focus on improving the capacity of Barcelona Area Control Centre in order to significantly reduce delays.



Key issues (Key Performance Areas)

7.1. Safety

- 87 Under the Performance Scheme, the Effectiveness of Safety Management (EoSMS) is assessed both for the national authorities and for the air navigation service provider.
- 88 Spain has reached its planned values with respect to Effectiveness of the Safety Management until 2018. However, in the past year, it did not improve in safety policy and safety culture. Some effort will be required to reach the target level for 2019.
- 89 ENAIRE, the Spanish Air Navigation Service Provider, has improved its average Effectiveness of the Safety Management score 87 (out of 100) in 2015 to 93 (out of 100) in 2018 and has achieved the highest target levels, complying also with the 2019 targets.

7.2. Environment

- 90 Under the Performance Scheme, environmental performance is measured in terms of excess length of the actual flight path (KEA). With respect to Spain, the environmental targets are analysed for all the states belonging to the SW FAB and allocated to each Member State.

- 91 SW FAB in 2018 met the environment target. The values for Spain stayed at a similar level as 2017.
- 92 With respect to environmental performance related to their airport operations the performance of Spain was worse than in previous years. For Malaga, Palma de Mallorca and Barcelona the additional taxi-out time increased (as usual) during high season and on specific occasions (such as severe weather issues) impacting the overall results. This resulted in a higher national value for airports within the performance scheme, increasing from 3.53 minutes per flight in 2017 to 3.71 minutes per flight in 2018 despite the implementation of a number of Eurocontrol recommended improvements.

7.3. Capacity

- 93 Spain did not meet its en route capacity target in 2018, as in previous years since 2015. Spain in 2018 experienced higher traffic (4.8% increase) partially causing higher delays. ENAIRE stated two main causes for the increase in delays: weather (a 154% increase from 2017) and a lack of capacity (a 52% increase from 2017). In addition, ENAIRE has postponed planned actions to improve capacity aggravating the delay situation.
- 94 ENAIRE carried out some capacity improvement measures in order to reduce the delay and will continue to do so, i.e. through updates to the Air Traffic Management system, increasing the number of controllers, redesigning interfaces between Area Control Centres and through improvements to the weather forecasting. This should help to address the current issues but will not have significant impact on the delay until 2021. This is reflected in the Network Manager's Network Operations Plan where high delay above the target is expected in Barcelona and Palma Area Control Centres until 2020. These two Area Control Centres are stated by ENAIRE to be the focus for performance improvements.
- 95 The established national target on arrival delay (0.60 minute per arrival) was exceeded in 2018 with a result of 1.51 minutes per arrival – a considerable increase from 2017 (0.94 minute per arrival). At the airport level, the highest arrival delay occurs at Barcelona– Spain's most congested airport - where the actual performance is 2.94 minutes per arrival, 57% of which is due to weather.

7.4. Cost-efficiency

- 96 Spain in 2018 had substantially less cost than planned and met its cost-efficiency target significantly below the planned value (-21.1%). This is because Spain in 2018 spent less than planned (lower actual cost) and received higher revenues because chargeable service units for the Spain Continental upper airspace were +21.4% higher than planned.
- 97 The financial results of Spain in 2018 indicate that under the Performance Scheme, the incentive mechanism would be triggered and that bonus or penalties will apply. At the time of writing this preliminary report, the Performance Review Body has not obtained the respective figures.