PRB | Performance review body of the single european sky

Performance Review Body: Monitoring Report on the Financial and Operational Impact of COVID-19 on the SES

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Performance Review Body of the Single European Sky | Rond-Point Schuman 6, 6th Floor, Offices 611-613, B-1040 Brussels
Office Telephone: +32 (0)2 234 7824 | regula.dettling-ott@prb.eusinglesky.eu / prb-office@prb.eusinglesky.eu | webgate.ec.europa.eu/eusinglesky

REMARKS FROM THE CHAIR

The PRB is publishing two reports in February 2021: the Monitoring Report on the Financial and Operational Impact of COVID-19 on the SES and its Report on the revision of the RP3 targets. This report is the former and focusses on performance in 2020 based on the latest data available. Both reports reflect the extraordinary situation of 2020 and 2021, which justifies opening them with similar remarks from the Chair.

In the Monitoring Report 2019, published in autumn 2020, I had written that managing the financial consequences of COVID-19 would be a major challenge for stakeholders and Member States. Little did we know how difficult it would become to cope with the pandemic and how many lives would be lost. Despite the view of this bigger dimension, the concerns of a struggling aviation industry, which is one of the hardest hit, remains a critical factor as it connects people, families, businesses, countries, and provides a livelihood for millions.

The pandemic has changed basic notions about the aviation industry, especially in Europe which – compared to other regions of the world - showed the deepest decline in air travel. Continuing as before is not an option and all stakeholders agree on this.

When the current legal framework for the Single European Sky was defined many years ago, no one considered events such as the current crisis. The SES Basic Regulation assumed a growing aviation industry where users would be able to pay for the services provided by ANSPs (users pay principle) with a stable stream of revenues from an increasing number of passengers. It is clear the risk sharing mechanisms do not effectively deal with the collapse of air travel due to unforeseeable events beyond the control of aviation stakeholders.

During pre-COVID times, structural deficiencies of European air traffic management became evident. One of them was the lack of flexibility and scalability of service provision. Until 2020, it resulted in a shortage of capacity in the core area of Europe, which impacted the entire network. Since traffic started to drop, the deficiencies converted into costly excess capacity.

In discussions about reasonable measures and cost-savings, Member States and ANSPs often point out that air traffic management is essential infrastructure. This is the case, especially in the early days of the pandemic when air cargo was critical to bring medical equipment to Europe. But the issue needs a wider perspective: ANSPs point out how difficult it is to scale operations of air traffic management to actual demand. Considering that the highest cost bloc of ANSPs are staff costs followed by investments, adjustments will indeed be challenging. To contain future financial risks, as well as achieve scalability and resilience, ANSPs will have to overcome the silos they are operating in and reform their way of working i.e. restructuring their companies and investing in new technologies, which will enhance digitalisation and enable cross-border services. This challenge is not new, it is addressed by the ATM Masterplan and SESAR deployment.

On behalf also of my colleagues, I would like to thank our colleagues from Eurocontrol, namely the Network Manager and the Aviation Intelligence Unit, the colleagues from EASA and finally, the PRB Support Team for their invaluable contributions to this report.

Regula Dettling-Ott
PRB Chair

EXECUTIVE SUMMARY

The Exceptional Measures Regulation[1] adopted by the European Commission in the autumn of 2020 asked ANSPs to submit by December 15, 2020 a report to their National Supervisory Authorities "*detailing the measures put in place in order to address the financial and operational impact of the COVID-19 pandemic on their activities*". To ensure a uniform approach and reporting, the PRB prepared templates for submitting data similar to those used for the annual reporting under the performance and charging scheme.

The present report analyses the data submitted by Member States of the SES, detailing how ANSPs responded to the sharp drop in traffic after governments started closing borders in an attempt to contain the spread of the COVID-19 virus. It also includes data on safety, environment and capacity made available by EASA and Eurocontrol/Network Manager.

The data shows that ANSPs vastly differed in their reactions to the pandemic. While all were able to maintain their services, which was and is a challenge during the pandemic, some ANSPs seem to show little room for change against their pre-COVID-19 plans and existing ways of working. Others immediately started to review their structure and processes. These mixed reactions are mirrored in the results.

Assessing the measures taken by ANSPs in response to the crisis, the data shows that ANSPs are limited with respect to the scalability and flexibility of their costs and operations. In addition, at the beginning of the pandemic, it was difficult to predict its impact on air travel and the duration of travel restrictions imposed by governments. However, now more than a year into the most severe crisis of commercial aviation, a more sustainable response from ANSPs is needed. Remaining in current structures will not provide adequate solutions. It will take new ways of cooperation and accelerating the implementation of the ATM Master plan to ensure that European air traffic management can react better and more efficiently to changes in demand.

Safety/EASA observations

- ANSPs handled safety well since the outbreak of the pandemic. Safety levels overall remained as before COVID-19.
- There are some new types of safety issues such as single person operation.
- Safety remains the highest priority.

Environment

- The horizontal flight-efficiency (extension of routes) and terminal performance (holding and taxiing times and continuous climb/descent operations) in the SES area improved with lower traffic and Member States were able to meet the pre-COVID-19 targets.
- Congestion impacted environmental performance i.e. excess capacity led to more efficient routes.
- Data shows that structural problems keep impacting environmental performance: as soon as movements start to increase, extension of routes also increases, even if traffic levels remain far below 2019 levels.
- Airlines should improve direct routing of their flights when better routes are made available.

Capacity

- From January to mid-March 2020, traffic levels remained at forecasted levels – and capacity was insufficient. Like 2018/2019, there were high delays during these "normal" months due to

[1] Commission Implementing Regulation (EU) 2020/1627 of 3 November 2020 on exceptional measures for the third reference period (2020-2024) of the single European sky performance and charging scheme due to the COVID-19 pandemic.

a lack of capacity, which indicates that the problems encountered in 2019 continued to affect performance in early 2020.

- After the sharp drop in traffic in March/April 2020, there were only minimal delays, which meant that Member States/ANSPs achieved the 2020 en route delay target.
- However, two ANSPs still failed to achieve their reference values: DSNA and ENAIRE.
- With reduced traffic, weather related delays disappeared, suggesting that weather does not directly cause delays. It is lack of capacity to deal with difficult weather situations that causes delays.
- The reduction of traffic caused excess capacity in 2020, indicating that ANSPs have only limited means to adapt their capacity to lower demand.
- The downturn in traffic allowed many of the route restrictions in certain areas to be lifted, thus allowing a less constrained flow of traffic in those respective areas.

Cost-efficiency

- The data submitted by ANSPs for 2020 shows that they reduced their costs by only 1% compared to 2019 actual costs (with less than 50% traffic).
- Compared to the financial plans ANSPs had defined before COVID-19, they reduced their cost by 11%. However, those plans had not been adopted before the pandemic broke out as the Commission found most to be inconsistent with the pre-COVID-19 2020 cost-efficiency target.
- ANSPs were aware of the sharp drop in traffic as early as March 2020, meaning that they had enough time to adapt and lower costs for most of the year.
- With the sharp drop in revenues and Eurocontrol granting airlines an additional delay to pay the ATM charges for some months of 2020, ANSPs encountered an equally steep decline in revenues. The monitoring data shows that ANSPs managed the gap in revenues in different ways. A few organized additional finances to cover the entire expected loss in revenues. Many others covered a substantial part of the gap, indicating the respective resources (loans & injection of equity by owners). However, a remarkable gap remains and the Commission should seek further information from NSAs to explain how this will be closed.

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1 ABOUT THE DOCUMENT

1.1 Purpose

1 The challenges brought about by COVID-19 on the aviation industry are exceptional. The effects of the pandemic struck in March 2020 during a time when the European Commission was presenting its assessment of the draft performance plans of Member States for the Third Reference Period (RP3) to the Single Sky Committee (SSC). The Commission had found most of these plans to be inconsistent with the criteria defined by applicable law. However, in view of the uncertain developments, it was agreed not to adopt the draft Decision presented by the Commission. Thus, the draft performance plans for RP3 that Member States submitted in autumn 2019 were not adopted.

2 In spring 2020, when States around the globe implemented travel restrictions to contain the spread of the virus, the Commission started to discuss the effects of the decline of travel by air on the performance and charging scheme and the need to develop exceptional measures for RP3 with Member States. The Commission adapted the performance scheme by modifying Commission Implementing Regulation (EU) 2019/317 following stakeholder consultations and without altering the SES Basic Regulations. The available options thus were limited and consisted of the measures implemented by Regulation 2020/1627 ("exceptional measures Regulation")[2] i.e. revision of the targets for RP3, spreading the traffic risk sharing mechanism over five years, collecting data on the financial and operational measures taken by Member States and implementing additional monitoring for 2020 to be undertaken by the PRB.

3 This report contains and analyses the data Member States submitted to the Commission in December 2020 as part of the obligation under the exceptional measures Regulation. The conclusions of the PRB contained in this report support the PRB's proposal for the revision of targets for RP3.

4 The PRB will follow up on this report with its annual monitoring activities in 2021.

1.2 Legal basis

5 Article 6 of the exceptional measures Regulation contains the legal basis for the additional reporting and monitoring during the COVID-19 pandemic. It has two elements: an obligation for air navigation service providers (ANSPs) to submit the data and the competence given to the national supervisory authorities (NSAs), and the Commission to use the data for the defined purpose. The deadline to submit the report was 15th December 2020. This obligation on Member States to provide data for the purpose of monitoring refers to the Implementing Regulation of the performance and charging scheme (article 36 of Commission Implementing Regulation (EU) 2019/317).

6 The scope of the data ANSPs must provide to the NSAs is defined in article 4 of Commission Implementing Regulation (EU) 2019/317 and allows the national authorities to request the information necessary to carrying out the tasks from their ANSPs i.e. asking for all the data "*related to the detailed functioning of the performance scheme*". This provision also applies to the additional monitoring for 2020/21 and allows NSAs to request information and data for establishing important elements of performance such as the return on equity rate for air navigation charges, planned investments, the business plan, and the allocation of costs between en route and terminal services. Depending on the data received from Member States, the PRB may reach out to NSAs to request additional information to clarify measures taken by ANSPs in 2020.

7 In addition to the above-mentioned legal obligations for providing data for monitoring, ANSPs are required to submit "*a report to their national supervisory authority detailing the measures put in place to address the financial and operational impact of the COVID-19 pandemic on their activities*" (article 6 of Commission Implementing Regulation (EU) 2020/1627). NSAs and the Commission are entitled to use this data for all monitoring duties under the performance and charging scheme. As the Commission has tasked the PRB to monitor the performance of air navigation services (article 3 of Commission Implementing Regulation (EU) 2019/317), the PRB will carry out the additional

[2] Commission Implementing Regulation (EU) 2020/1627 of 3 November 2020 on exceptional measures for the third reference period (2020-2024) of the single European sky performance and charging scheme due to the COVID-19 pandemic.

monitoring specified within the exceptional measures Regulation.

8 Commission Implementing Regulation (EU) 2020/1627 (exceptional measures Regulation) does not define the form of the reporting. To simplify reporting, the Commission with the support of the PRB prepared templates which ANSPs used to submit the data. The templates were similar to those used for annual monitoring activities. The Commission and PRB, through the Performance Working Group of the National Supervisory Authorities (NSAs) Coordination Platform (NCP), explained and discussed the use of these templates with the NSAs.

9 The UK has left the European Union and, as of 1st January 2021, is no longer a Member State of the Single European Sky. The UK is thus no longer considered within the PRB's analysis. Union-wide data refers to the 27 EU Member States plus Norway and Switzerland.

1.3 Completeness of monitoring templates and data used for this report

10 Member States were asked to provide cost data regarding the impact of any actions taken or planned for RP3 because of the COVID-19 pandemic that are different from the draft performance plans submitted in November 2019. The data was split into categories of costs: staff, other operating, cost of capital, depreciation, and exceptional costs. Member States were also asked to provide data regarding any changes to investments planned in the draft performance plans submitted in November 2019. Finally, Member States were asked to provide data regarding any loans or financing received in response to the crisis.

11 Most Member States provided the requested information. All Member States submitted revised cost data and the PRB clarified inconsistencies with data submissions directly with Member States where it was necessary to ensure a validated dataset. However, many ANSPs did not submit information on the anticipated impact of those changes on the environment, capacity or safety KPAs.

12 In terms of financing data, 12 Member States did not provide data indicating whether they required additional financing. This either means that they had sufficient reserves and that additional financing was not necessary, or that they did not disclose the requested information.

13 In addition to the cost data submitted by Member States, the PRB report on data received from EASA and the Network Manager about 2020 performance in the other key performance areas (safety, capacity, and environment) to be assessed under the performance and charging scheme.

2 TRAFFIC SITUATION IN 2020

- In 2020, there were 55% fewer IFR movements compared to 2019.
- In 2020, there were 58% fewer service units compared to 2019.

2.1 IFR movements

14 The pandemic's most obvious impact was on traffic volumes. The number of IFR movements and service units decreased sharply. In 2019, there were 9,984,834 IFR movements compared to 4,455,611 IFR movements in 2020 (-55% compared to 2019) as shown in Table 1.

IFR movements in 2019 compared to 2020		
	2019	2020
Union-wide	9,984,834	4,455,611

Table 1 - Comparison of IFR movements in 2019 and 2020.

15 January and February 2020 saw a similar number of movements as 2019, but traffic during the rest of the year remained significantly below 2019 (Figure 2). Traffic began to slowly recover from the low point in April as summer approached, but this recovery was short-lived. Traffic declined again from August as the second wave of COVID-19 occurred and many countries imposed new quarantines and travel restrictions.

16 The effect of the pandemic was not uniform across Member States (Figure 1). The initial uncoordinated approach meant that some Member States placed restrictions on travel earlier than others, and traffic decreased faster. Member States mostly managed less than 50% of the 2019 traffic levels in 2020, except for Norway where total movements were -44% of the forecasted traffic. For other Member States, the percentage difference between the forecast traffic and actual traffic ranged between -68% and -57%.

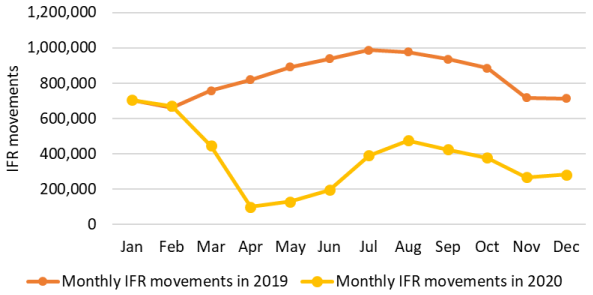

Figure 2 - Actual monthly IFR movements in 2020 (source: PRB elaboration), showing that traffic was like 2019 in the months of January and February but significantly less thereafter.

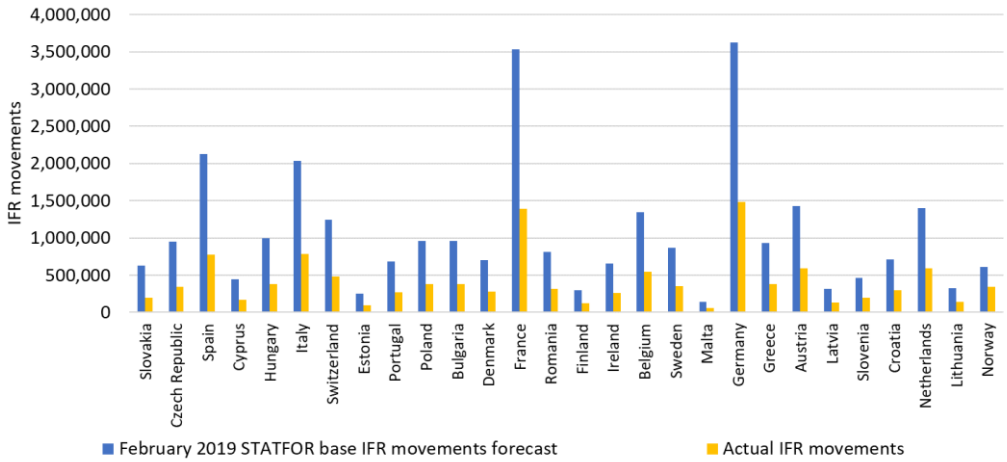

Figure 1 - Actual IFR movements in 2020 compared with the STATFOR base forecast from February 2019 (source: PRB elaboration), showing that most Member States managed less than 50% of the traffic expected. The graph is presented in descending order of percentage difference between forecast and actua traffic.

2.2 Service Units

17 The traffic analysis with respect to service units, which are a factor of maximum take-off weight and distance flown, shows a similar trend as IFR movements i.e. the change in service units follows the change in movements in an intensified form.[3] The pandemic caused a 58% decrease in service units in 2020 compared with 2019 (Table 2).

Service units in 2019 compared to 2020		
	2019	2020
Union-wide	124,741,008	52,594,913

Table 2 - Comparison of service units in 2019 and 2020.

18 Whilst the number of IFR movements in January and February 2020 were like the same months of 2019, the number of service units for the same months were higher than in 2019, continuing the trend seen during RP2 of strong growth in service units above the base forecasts (Figure 4). The COVID-19 restrictions impacted service units from March onward.

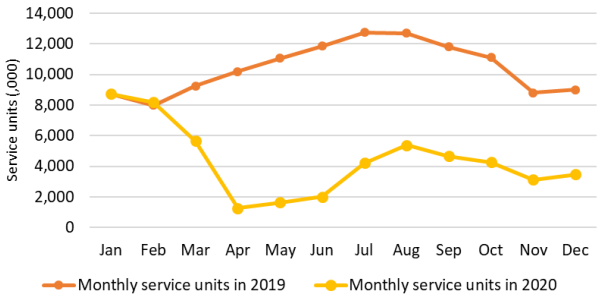

Figure 4 - Actual monthly service units in 2020 (source: PRB elaboration), showing that service units were like 2019 in January and February, but significantly lower thereafter.

19 Comparing actual service units in 2020 to the 2019 draft performance plans, there is a substantial decrease of more than 50% for all Members States (Figure 3). The reduction in service units ranges between 50% and 67%. However, Member States were not equally hit by the pandemic in terms of lower service units than planned. Slovakia and Switzerland registered the biggest difference to with 67% and 64% lower service units respectively.

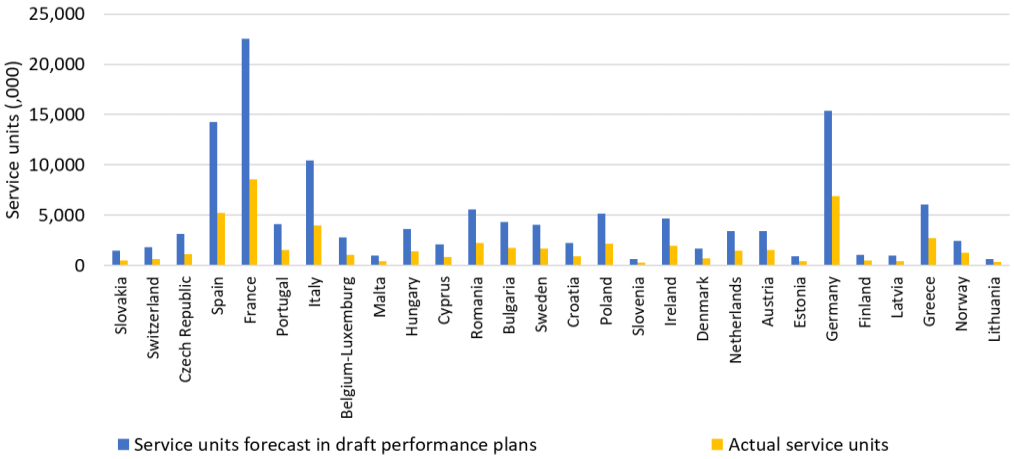

Figure 3 - Actual service units in 2020 compared with the November 2019 draft performance plans (source. PRB elaboration), showing all Member states handled more than 50% less traffic than expected in the forecasts of the 2019 draft performance plan. The graph presents the Member States in descending order of percentage difference between forecasted and actual service units.

[3] Service units are the measure of traffic which is used to determine en route charges and hence impact the revenues of ANSPs.

3 SAFETY

- Full safety data was not available for analysis in this report.
- Preliminary data confirms that safety has remained at a very high level despite COVID-19.
- Preliminary data shows that the reduction in traffic was met with a reduction in occurrences.

3.1 Performance in 2020

20 The exceptional measures do not directly relate to the safety KPA, but considering the overall priority of safety, its levels must not degrade during the current crisis.

21 EASA assessed the safety issues arising from COVID-19 by working closely with Member States, regulators and industry partners.[4] EASA identified the new or emerging safety issues to identify the appropriate mitigation actions, and support their implementation across the industry. Safety issues were grouped into the following categories:

- management systems (reduced oversight by competent authorities due to lockdowns, reduced focus on or prioritisation of safety, risk assessments based on previous normal operations no longer being valid, etc.);
- human performance (personnel may not feel safe and in control about returning to work, decreased wellbeing of aviation professionals during shutdown, etc.);
- training, checking and recency (a type of human performance issue covering issues as skills and knowledge degradation due to lack of recent practice, backlog in training limiting available personnel, etc.);
- outdated information (documentation and database updates may not have been applied, etc.);
- infrastructure and equipment (increased presence of wildlife on aerodromes, operational risks of aircraft storage at aerodromes, malfunction or failure of communication, navigation, and surveillance equipment, etc.);
- financial impacts on safety (reduced financial resources, shortage of operational and technical staff, etc.).

22 For ATM/ANS, a key issue in 2020 was how the skills and knowledge of ATCOs could be maintained with significantly reduced traffic complexity. Not only was simulator, classroom-based, and on the job training subject to public health measures which prevented normal training, but medical certifications were also difficult to renew. Overall, ANSPs and ATCOs themselves have managed this well with few issues arising. However, when traffic increases in 2021, ANSPs will need to manage increasing traffic complexity alongside the skills and knowledge of their ATCOs.

23 EASA's regular monitoring of key risk areas shows that the reduction in traffic has been matched by a corresponding reduction in occurrences. For the airborne collision key risk area (Figure 5, next page), the rate of occurrences per million IFR movements was slightly lower than in the preceding two years. Meanwhile, the rate of runway collision risk occurrences per million IFR movements (Figure 6, next page) remained close to normal levels in the first half of 2020 before declining at the end of the year.

24 The trends shown by the preliminary data confirms that safety has remained at a very high level without any indication that performance, based on occurrence analysis, has been reduced due to safety issues related to COVID-19. Consequently, the management systems in place at the ANSPs appear to have been sufficiently robust and appear to have adequately managed the impact of the changed conditions. This assessment will need to be reviewed after all data will become available.

25 For 2021, and forward looking to the recovery during RP3, it will be essential that ANSPs sustain a well-functioning, adjustable and scalable

[4] Review of Aviation Safety Issues Arising from the COVID-19 Pandemic, EASA, https://www.easa.europa.eu/newsroom-and-events/news/easa-published-review-aviation-safety-issues-arising-covid-19-pandemic.

management systems and improve these in line with the RP3 targets for the Effectiveness of Safety Management. Safety issues related to the recovery must be addressed pro-actively, even if the pace of recovery is uncertain.

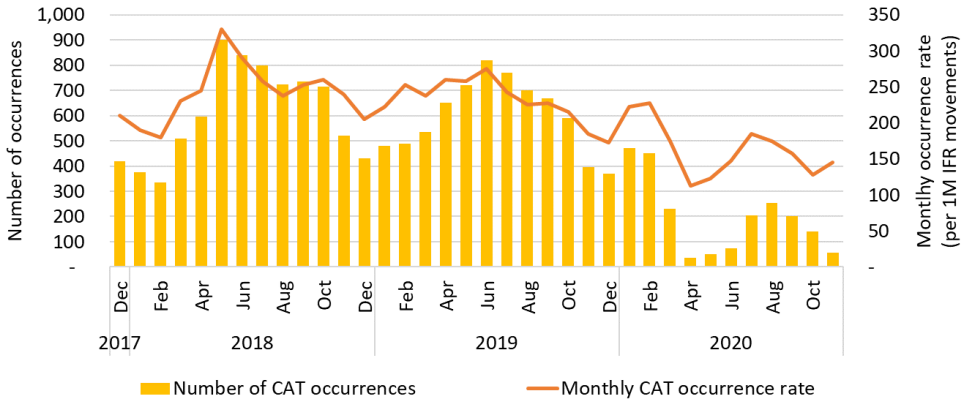

Figure 5 - Number and rate of airborne collision occurrences involving commercial air traffic (CAT) operations per million IFR flights (source: EASA), showing a decrease in both absolute and normalised metrics in 2020.

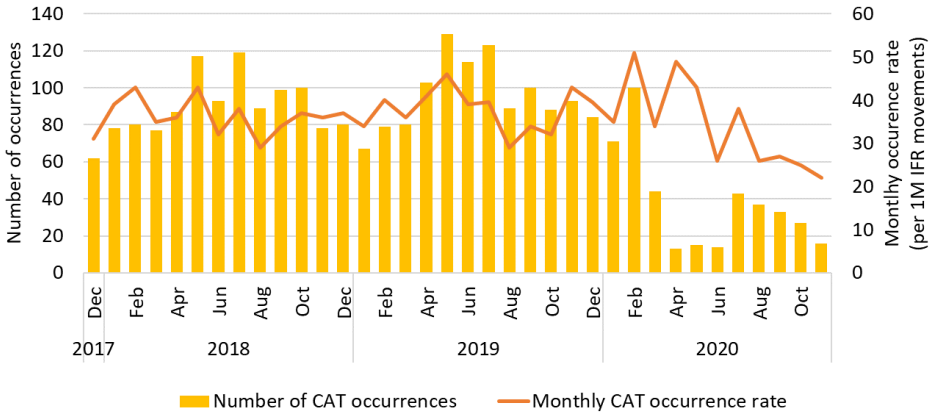

Figure 6 - Number and rate of runway collision occurrences involving commercial air traffic (CAT) operations per million IFR flights (source: EASA), showing a decrease in both absolute and normalised metrics in 2020.

4 ENVIRONMENT

- The Union-wide target was achieved due to low traffic and the UK leaving the SES.
- Horizontal flight efficiency could have improved more in view of the low traffic.
- Terminal environmental performance improved compared to 2019.

4.1 Efficiency of the en route actual routes flown (KEA)

26 The exceptional measures Regulation does not contain provisions directly addressing the environmental performance during 2020. However, monthly data is available from Eurocontrol allowing a first assessment. Previous PRB monitoring reports have shown how the lack of capacity, growing traffic, and airspace user choices have led to degraded environmental performance.

27 The abrupt fall in traffic because of the pandemic provides an opportunity to understand how Europe's air traffic management (ATM) system responds when there is minimal traffic and an excess of capacity.

28 In RP3, the only key performance indicator for environmental performance is the horizontal flight efficiency of the actual routes flown (KEA) and is therefore the only metric which is subject to Union-wide targets.[5]

29 Member States achieved the environment target in 2020 by 0.02 percentage points as shown in Table 3.

Environmental performance in 2020[6]		
	Union-wide target	Actual performance
KEA	2.53%	2.51%

Table 3 - Comparison of actual KEA performance in 2020 with Union-wide targets.

30 In April 2020, traffic levels were 88% lower than in April 2019. During this period of lowest demand on ATM services, KEA was 2.11%. This is an improvement of 26.5% compared to April 2019 when KEA was 2.87%.

31 According to the Network Manager, the route extension due to airspace design (if all flights would have used the route network without any route restrictions and with all conditional routes (CDRs) permanently available) is expected to decrease from 2.22% in December 2019 to approximately 1.85% in 2024. Assuming the progress between 2019 and 2024 is linear, the route extension due to airspace design in 2020 should be approximately 2.15% meaning April 2020 was a very good performance.

32 The data from 2020 shows that since KEA improved, Member States were able to offer more efficient routes, optimise route restrictions, and that airspace users operated on these improved routes as traffic reduced (Figure 7).

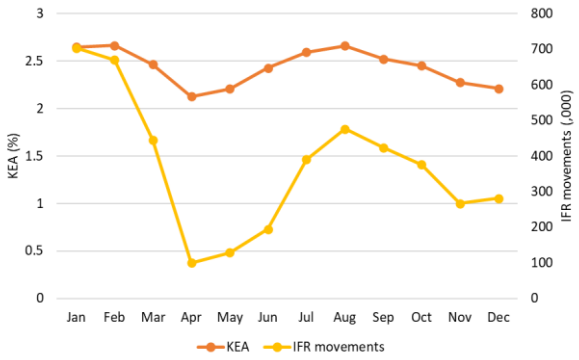

Figure 7 - Monthly KEA performance in 2020 in comparison with IFR movements (source: PRB elaboration), showing good performance in April 2020 but also that Member States could not maintain this as traffic began to recover in the summer months.

33 However, as the year progressed into the summer months and traffic began a mild recovery, extensions of routes increased considerably through to August 2020. When traffic was less than half of that in August 2019, environmental efficiency

[5] KEA measures environmental performance in terms of the excess horizontal length of the planned routes and actual routes respectively than an aircraft takes compared to the so-called achieved distance.

[6] The performance shown accounts for the departure of the UK from the Single European Sky.

improved by only 10% (KEA in August 2020 was 2.71% compared to 3.03% in August 2019).

34 Plotting the 2020 and 2019 monthly performances of KEA against the number of IFR movements, shows a correlation between traffic and KEA i.e. when traffic decreases, KEA improves and vice versa (Figure 8). This indicates that with only extremely low traffic levels can Member States achieve the target and as soon as traffic picks up the performance worsens.

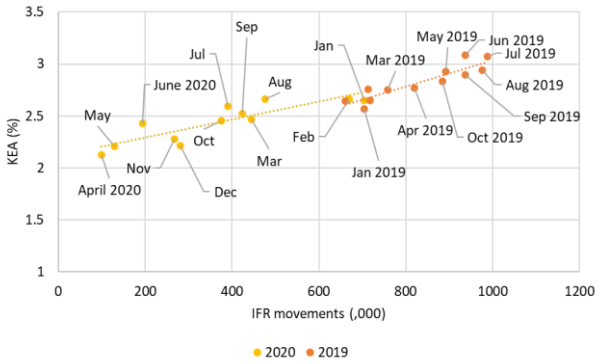

Figure 8 - Scatter plot of KEA compared with IFR movements in 2020 and 2019 (source: PRB elaboration), showing that the variation of KEA in 2020 followed a similar gradient as in 2019 with respect to traffic.

35 At a local level, a number Member States did not perform sufficiently well. Austria, Bulgaria, France, Greece, Hungary, Italy, Malta, Portugal, Romania, Slovakia, and Norway did not achieve their 2020 KEA reference values (Figure 9). Of these Member States, Bulgaria, France, Greece, Malta, and Romania missed their 2020 reference values by over 10%.

4.2 *Efficiency of the shortest constrained route (SCR)*

36 Since 2016, Eurocontrol has published data on the shortest constrained routes (SCRs), which are the shortest plannable routes according to the Network Manager and a measure of the availability of the European route network i.e. it accounts for the impact of route restrictions and airspace closures and is a measure of airspace management and availability.

37 Comparing traffic and KEA with the SCR indicates how ANSPs and the Network Manager managed the situation. The data shows that overall traffic and SCR are related (i.e. as traffic increases so does the SCR) (Figure 10).

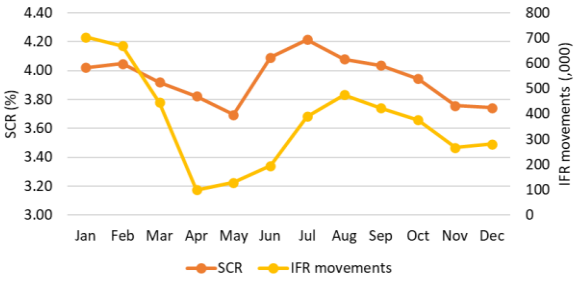

Figure 10 - SCR performance in 2020 (source: PRB elaboration), showing that it generally followed the traffic movements although improvement were possible.

38 In July 2020, when traffic was still considerably below 2019 levels, the SCR was 4.33% and at its highest point in the year, which is a disappointing performance as it meant airspace users could not plan more efficient routes during the summer of 2020 compared to some months of 2019. This is despite the Network Manager relaxing thousands of route restrictions in certain areas.

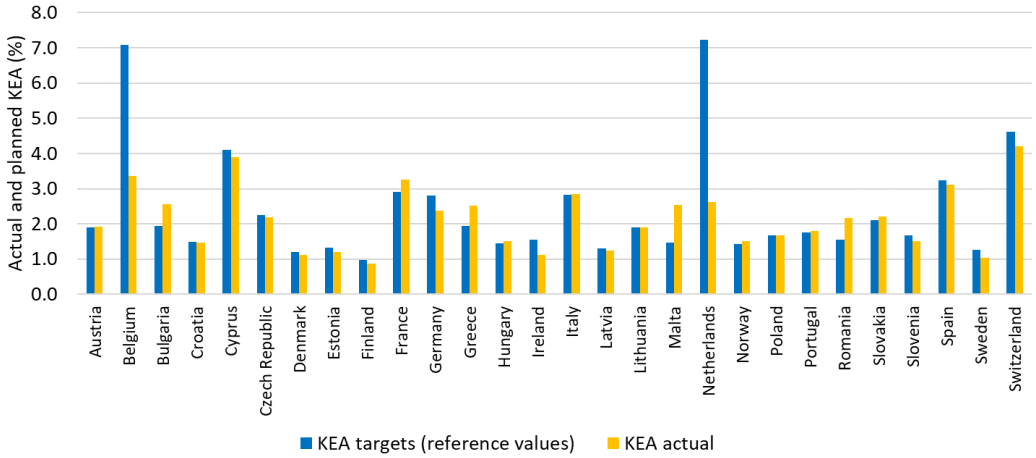

Figure 9 - Actual KEA performance in 2020 compared with the previous local targets (reference values) (source: PRB elaboration), showing many Member States could not achieve their targets with low traffic.

39 These results show that ANSPs could have done more to co-ordinate their route availability with the Network Manager at a time with excess capacity and no ATCO shortages. It is unclear why the SCR in July 2020 was like that of July 2019 when traffic was almost halved.

4.3 Additional time spent in terminal airspace and taxiing out

40 The decrease in traffic also resulted in an improvement in terminal and taxi out environmental performance at European airports. Aircraft could be routed on the ground more efficiently and without having to queue/hold in the air and on the ground.

41 From April 2020 onwards, the additional time spent by airspace users taxiing out and in terminal airspace reduced considerably relative to the same month in 2020 (-70% in April, -71% in May, -74% in June, -69% in July, -66% in August, -70% in September, -67% in October, and -69% in November). The additional time in terminal airspace improved proportionally more than the additional taxi out time (Figure 11).

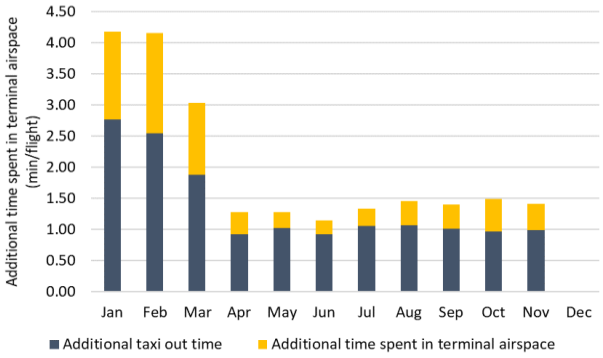

Figure 11 - Additional taxi out and time spent in terminal airspace (source: PRB elaboration), showing terminal environmental performance improved in low traffic conditions. At the time of publication, December 2020 data was not available.

4.4 Share of flights conducting continuous climb/descent operations

42 The performance indicator measuring whether a flight conducted a continuous climb or descent arrival or departure, as determined by the European CCO/CDO Task Force, is important since level flying at lower altitudes burns more fuel. Such fuel intense flying can be reduced with continuous climb and descent operations.

43 From April 2020 onwards, there was an increase in the proportion of flights completing continuous climbs and descents, although the share of flights completing continuous descents remained below 50% (as it was before March 2020) (Figure 12).

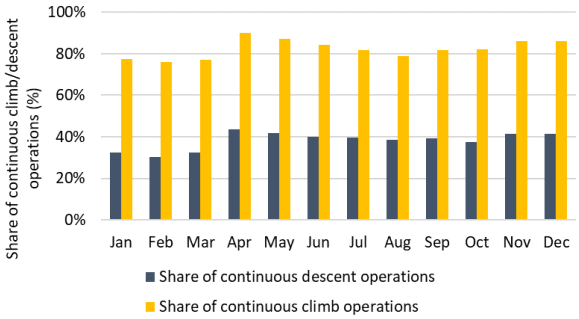

Figure 12 - Share of flights undertaking continuous climb or descent departures or arrivals (source: PRB elaboration), showing terminal environmental performance improved in low traffic conditions.

5 CAPACITY

- The Union-wide capacity target was achieved in 2020 due to low traffic after March.
- Excess capacity in the network should enable ANSPs to make structural reforms to prepare for traffic growth.

5.1 En route ATFM delays

44 Previous PRB monitoring reports were published in an era of sustained traffic growth and increasing delays. This has changed dramatically. In order to better understand the impact of the pandemic, besides providing the yearly average figures, the analysis of capacity performance in this section distinguishes between the pre-COVID period of the year (January and February 2020), and the COVID-affected period (March-December 2020).

45 Such a significant and rapid drop in traffic after March 2020 resulted in overcapacity and a lack of demand. The excess capacity made it possible for ANSPs to respond to the issues caused by the pandemic, such as health and safety measures for ATCOs and other personnel whilst providing sufficient capacity to meet demand.

46 For 2020, the Union-wide target for average en route ATFM delay was 0.9 minutes per flight. The actual average en route ATFM delay in 2020 was 0.36 minutes per flight, which is 0.54 minutes per flight or 60% lower than the target for 2020 (Table 4). During the first two months of 2020, the actual performance was 0.68 minutes per flight, while for the rest of the year, it was 0.22 minutes per flight. The difference is even more pronounced when looking at the April-December period during which the actual average en route ATFM delay was 0.02 minutes per flight.

47 It could be expected that some en route ATFM delays would remain because of the effects of adverse weather and network disruptions (including technical failures and industrial action) which can occur regardless of traffic levels. However, actual data from 2020 shows that this was not the case.[7]

Capacity performance in 2020[8]		
	Union-wide target	Actual performance
ATFM Delays	0.9 min / flight	0.36 min / flight

Table 4 - Comparison of actual delay performance in 2020 with previous Union-wide targets.

48 The majority of en route ATFM delays were generated in the first three months of 2020. ATC capacity and staffing accounted for over 40% of the delays in January and February (Figure 13).

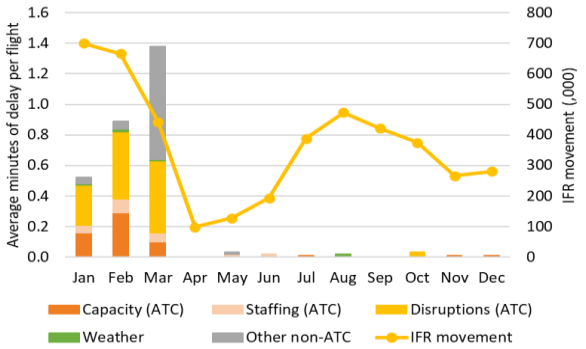

Figure 13 - Monthly capacity performance in 2020 (source: PRB elaboration), showing delays were virtually zero per flight after March.

49 The leading delay causes in January and February 2020 were generated by France (DNSA) and Spain (ENAIRE). En route ATFM delays were higher in each of the first two months of 2020 than those of 2019 even though traffic was lower in January and only 1% higher in February compared to the same period of 2019, which is concerning. In fact, the average en route ATFM delay per flight in February was the highest value registered for any February since 2011.

50 The comparison of actual delays and the evolution of traffic shows that when there are no capacity constraints, there are negligible delays relating to weather and ATC disruptions although it can be assumed that the weather in 2020 was similar to

[7] Delay figures from 2020 are yet to undergo post-ops adjustment, but these are not likely to change the overall Union-wide picture.
[8] The performance shown accounts for the departure of the UK from the Single European Sky.

the weather in 2019. This indicates that most of the delays caused by "weather" are a function of the capacity available.

51 Inevitably, the focus is now on how the aviation industry can recover, but the figures for January and February 2020 highlight how important it is to resolve long-standing structural and operational issues which resulted in unacceptably high delays. ANSPs should use their time with excess capacity to implement the required changes.

52 Figure 14 provides a general overview of the breakdown of Union-wide performance to the Member State level showing how Member States performed compared to their respective reference values.

53 The reference values were calculated based on the Union-wide target and the traffic forecast which was available at the time of setting the original Union-wide performance targets.

54 France and Spain both exceeded their respective reference values due to their performance in early 2020. Aside from these two Member States, Portugal was relatively close to the reference values, but still below. For Portugal, the main driving factors behind the delays were ATC capacity and special events, which all occurred in the pre-COVID-19 period of 2020 (January and February 2020).

5.2 *Arrival ATFM delays*

55 The performance and charging scheme permits national targets on arrival ATFM delays, which is a measure of the capacity at regulated airports. Since the PRB supports a gate-to-gate approach to measuring delays, this section looks at the delays incurred at airports in 2020 and whether it improved during low traffic conditions.

56 Figure 15 (next page) shows the monthly evolution of airport arrival ATFM delay per arrival in 2020, and the distribution of delays across the delay code groups. Similar to the en route situation, most of the delays were generated during the first two/three months of 2020. Arrival delays reduced following the drop in traffic.

57 During the first two months of 2020, the main driver behind airport arrival ATFM delays was adverse weather. This is similar to earlier years and is due to the nature of cold weather airport operations. The delays attributed to adverse weather in these two months are in line with those of 2019.

58 In the months when the number of arrivals reached around 50% of those in 2019, arrival ATFM delays started increasing again, however, only to approximately 10% of the corresponding delays from 2019. This tendency is somewhat different from that of en route ATFM delays and

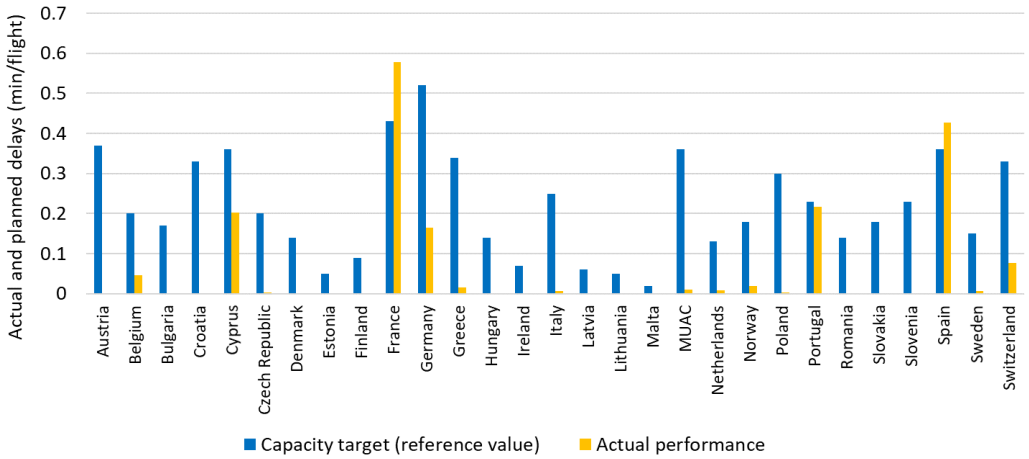

Figure 14 - Capacity performance in 2020 by Member State (source: PRB elaboration), showing individual Member State performance compared to their targets.

implies that there is less excess airport capacity in the network than for the en route environment.

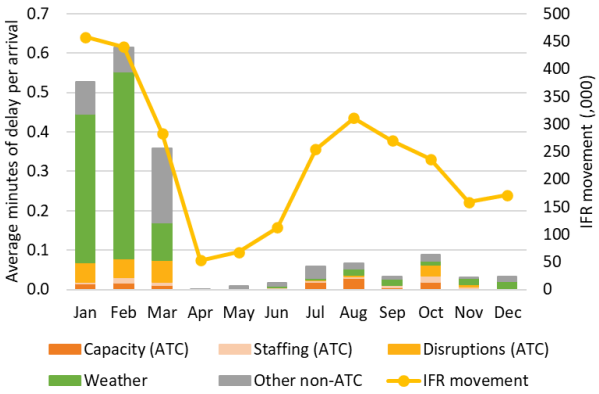

Figure 15 - Terminal capacity performance in 2020 (source: PRB elaboration), showing good performance post March 2020 as traffic reduced.

59 ATC disruption related delays were also present in the first three months of 2020, as well as delays not attributable to ATC, which also accounted for more than half of the total arrival ATFM delays in March.

60 No airport arrival ATFM delays were recorded in April following the significant drop in traffic.

5.3 2020 NOP Recovery Plan

61 Following the outbreak of the pandemic, the Network Manager established a process to develop plans to support the recovery of the network. These were based on a seven-week cycle to coordinate the measures taken by ANSPs, and to inform the ATM community and airspace users about the capacity constraining effects of such measures.

62 In March, the Network Manager removed all airspace restrictions related to peak summer-time operations together with removing Route Availability Document (RAD) restrictions to allow airspace users to optimise routes. Subsequently, the eNM/S2020 measures were also cancelled as the traffic levels meant they were no longer required.

63 Nearly all Area Control Centres (ACCs) adapted sector opening times to match the sudden drop in traffic limiting the number of planned sectors to the minimum required. These sector opening schemes were monitored and adapted to demand to avoid generating significant delay.

64 Another widely applied measure was to allocate Flow Management Position (FMP) responsibilities to duty supervisors thereby reducing the personnel present. Further measures to reduce staff in offices were applied by some ANSPs, including introducing rotation schemes for operational support staff and remote working where possible. ANSPs also reported precautionary measures such as altering the allocation of working positions in the OPS rooms to ensure maximum distance between controllers and regular and thorough disinfection of equipment.

65 Estonia, Latvia, MUAC, Poland, and Sweden have all reported reduced sector capacities due to the pandemic. For Poland and Sweden these reductions focused on specific sectors (only affecting capacities in the terminal area in Poland), whereas Estonia, Latvia and MUAC applied more general approaches. Latvia reduced capacities according to “one ATCO per sector” operations. MUAC applied a 10% reduction to sector capacities as a buffer for ATCO workload. The effects of this measure were compensated by increased sector opening times to avoid the reduction of capacity on offer.

66 Several ANSPs cancelled trainings and simulations to avoid an outbreak of COVID-19 among operational staff. Many ANSPs continued their operational projects even during the worst periods of the pandemic.

67 To cope with the unpredictability of traffic, several ANSPs have set up rostering schemes, which allowed for additional sectors to be opened on tactical or pre-tactical timeframes.

6 COST-EFFICIENCY

- Union-wide 2020 total costs are expected to be only 1% lower than 2019 actual costs.
- There are substantial differences between Member States regarding measure taken in response to the low traffic.
- Staff costs remained similar, and over 80% of the planned new major investments will change.
- Based on the submitted data, the revenue gap for 2020 and 2021 would be 7.3B€.

6.1 En route total costs Union-wide

68 Union-wide total costs for 2020, as defined in the draft performance plans 2019, amount to 6.9B€$_{2017}$, whereas planned costs as defined in the December 2020 Member States' submissions amount to 6.2B€$_{2017}$. The actions put in place by Member States responding to a 58% decrease in service units are expected to lower the Union-wide total planned costs for 2020 by 10%. However, the draft performance plans of 2019 are only of limited value for comparison seeing as they have not been adopted. In March 2020, the Commission had assessed some plans to be inconsistent with the cost-efficiency targets. Indeed, in its draft Decision based on the assessment of the plans by the PRB, which Member States had received in spring 2020, the Commission had highlighted several shortcomings with respect to the cost-efficiency key performance area. The PRB had previously provided a detailed evaluation of the plans and had explained the required modifications.[9]

69 The Union-wide total costs for 2020 which Member States submitted in December 2020 are only 1% less than the actuals of 2019. At a Union-wide level, ANSPs were unable to reduce their costs in 2020 despite the traffic being only half of what they had expected.

70 According to the performance and charging Regulation and thus for the purpose of monitoring, the cost-efficiency is assessed as the year-on-year change of the average Union-wide determined unit cost (-1.9% target). Considering the costs which Member States defined in their December 2020 submissions and considering the actual traffic of 2020, the year-on-year change of the determined unit cost performance is an increase of +128.5% due to the drastic decrease in service units (Table 5), obviously far above the target for 2020 of -1.9%.

71 The exceptional measures Regulation aims at addressing this issue by revising the performance targets and delaying and spreading relevant adjustments to the unit rates. Airspace users will be charged the unit rates as set in the draft performance plans Member States submitted in 2019 until new draft performance plans are adopted. Only when the draft performance plans are adopted the unit rates can be retroactively adjusted with a spread over a period between five to seven years.

Cost-efficiency performance in 2020		
	Union-wide target	Performance as for data submitted by Member Sates
% year-on-year change of the average Union-wide determined unit cost (DUC)	-1.9%	+128.5%

Table 5 - Comparison of cost-efficiency performance as data submitted by Member States with the Union wide-target.

[9] PRB assessment of RP3 performance plans. Union-wide assessment report.

6.2 En route total costs for main ANSPs

72 This section analyses the impact of measures taken on en route total costs of the main ANSPs in response to the COVID-19 pandemic.[10] The references that are made to a specific Member State correspond to the main ANSP. The list of the main ANSPs/Member States is provided in Annex I.

Actions reported for main ANSP en route costs

73 For the remainder of RP3, Member States have planned 309 actions that are expected to lower the cost base by a total of 2.8B€$_{2017}$ (9%) compared to the draft performance plans submitted in 2019. 265 of these actions have been implemented in 2020, lowering the planned costs by 11% (666M€$_{2017}$) compared to the draft performance plans. The majority of the remaining actions are foreseen to be implemented in 2021 (27 actions).

74 The data submitted by Member States shows that the largest percentage decrease in costs is "other operating costs" (-14%, -145M€$_{2017}$) (Table 6). The only cost category showing an increase is "exceptional costs" (+9%, +6M€$_{2017}$).

75 Despite the lower costs compared to the planned costs, the draft performance plan 2019 cannot be considered as a reliable comparison. The plans have never been approved and the PRB had already highlighted issues with the cost base within those plans.

2020 en route costs for main ANSPs			
	Draft performance plan (M€$_{2017}$)	Member States submission December 2020 (M€$_{2017}$)[11]	% difference
Union-wide total costs	**6,096**	**5,430**	**-11%**
Staff costs	4,066	3,616	-11%
Other operating costs	1,009	864	-14%
Depreciation costs	656	616	-6%
Cost of capital	311	273	-12%
Exceptional costs	73	79	+9%
Exempted costs	-19	-19	-1%

Table 6 - Comparison of 2020 costs in draft performance plans and data submitted by Member States.

[10] This report defines main ANSPs as the largest ANSP per charging zone plus MUAC.

[11] Data reported in Table 6 and Table 7 is based on initial costs data submitted for the target setting process (i.e. forward looking cost data). The rest of the analysis sources the data from the submission of the financial and operational impact of the COVID-19 templates. Therefore, small data inconsistencies between sections may appear.

76 To provide a more reliable comparison, the data submitted by Member States for 2020 should be compared with the actual costs incurred in 2019 (Table 7). The Union-wide total costs for 2020 as submitted in December 2020 show a negligible difference against the 2019 actuals, reaching only a 73M€$_{2017}$ reduction Union-wide (-1%). This reduction in cost needs to be put in relation to the actual year on year decrease in movement (-55%) and to the actual 58% decrease in service units.

77 ANSPs in 2020 thus remained at the same cost level as in 2019, however managing only a fraction of the traffic they had managed in 2019. The two tables also show that many ANSPs based their planning for 2020 on the draft performance plans, which were never approved and were designed for entirely different traffic scenarios. This indicates that many ANSPs have not taken measures into account that the Commission had required from Member States and their ANSPs after assessing the initial draft performance plans.

78 Analysing the situation by ANSPs, notable differences exist (Figure 16, next page). ANSPs' reaction to the crisis can be divided in three categories when comparing the cost base against the actuals 2019:

- ANSPs that reduced their costs (reduction greater than -5%);
- ANSPs that did not significantly vary their cost base (-5% to +5%);
- ANSPs that increased their costs (more than +5%).

79 Five ANSPs significantly increased their costs compared to 2019. Sweden (+29%) justifies the increase in costs with additional costs of the pension scheme. Denmark (+15%) explained the increase mostly with the exceptional costs related to "voluntary resignations" as specified in the data submission. The increase in Belgium-Luxembourg of 11% may be justified by a change in the en route/terminal cost allocation. Cyprus does not provide enough explanations for the increase in costs against 2019 actuals (+9%). MUAC (+7%) justifies an increase in costs due to a change in the categorisation of staff contracts.

80 Only a few Member States expect to manage with considerably lower costs than in 2019. Slovakia (-27%), Austria (-17%), Portugal (-16%), Bulgaria (-16%), Latvia (-15%), Slovenia and Czech Republic (-12%) demonstrate that a substantial reduction is possible.

2019 and 2020 en route costs for main ANSPs			
	Actual costs 2019 (M€$_{2017}$)	Member States submission December 2020 (M€$_{2017}$)	% difference
Union-wide total costs	**5,503**	**5,430**	**-1%**
Staff costs	3,694	3,616	-2%
Other operating costs	876	864	-1%
Depreciation costs	622	616	-1%
Cost of capital	274	273	-1%
Exceptional costs	60	79	+33%
Exempted costs	-22	-19	-16%

Table 7 - Comparison of 2019 actual costs and 2020 costs as submitted by Member States in December 2020.

81 The situation remains similar for 2021 (Figure 17): most Member States plan the same or higher costs for 2021 as they had in 2019, despite the likelihood that traffic will remain substantially below the 2019 traffic figures (-54%). The figure shows a lower decrease of costs compared to the 2019 actuals, indicating a general relaxation of cost containment measures already from 2021. In 2021, seven ANSPs are expecting to increase the costs with respect to 2019 actuals: Belgium-Luxembourg, +23%; Cyprus, +22%; Germany, +12%; MUAC, +10%; Romania, +8%; Switzerland, +7%; Denmark, +6%. Only a few Member States expect to manage with costs lower than they had in 2019. For example Slovakia (-24%), Latvia (-16%), Estonia (-15%), and Czech Republic (-13%) demonstrate that a substantial reduction is also possible for 2021.

En route staff costs

82 ANSPs have reported 127 actions regarding staff costs for RP3, lowering the costs against the draft performance plans by 1.2B€$_{2017}$. When analysing the data for 2020, 108 actions have been implemented expecting to lower the costs by 401M€$_{2017}$.

83 Table 8 (next page) categorises the actions reported by the Member States with respect to staff costs for 2020. The largest reduction in staff costs (-170M€$_{2017}$) comes from measures with respect to full time equivalents (FTE). These have an impact on FTEs and are mainly lay-offs, voluntary resignations, and postponement of

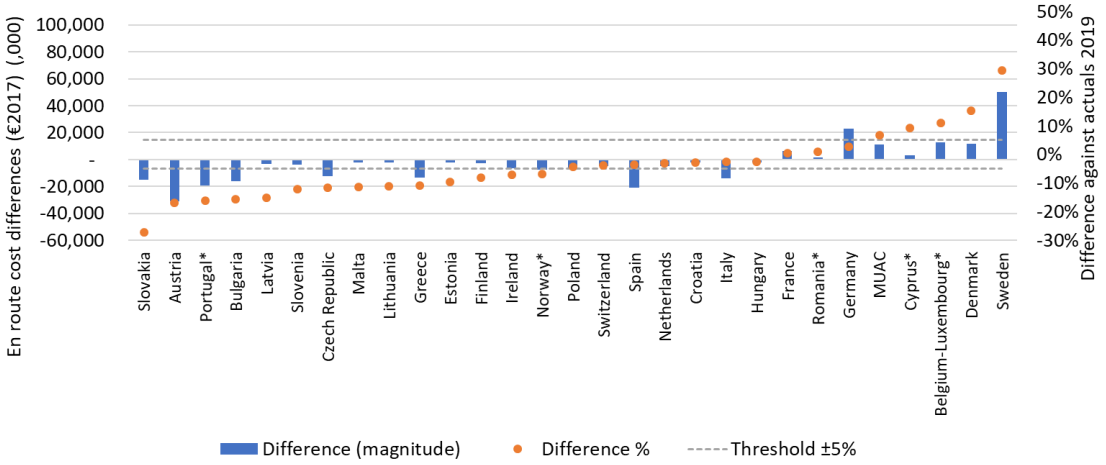

*Figure 16 - Differences between 2019 actual costs and Member States submission for 2020 (source: PRB elaborc tion). * indicates a change in allocation of the en route/terminal cost ratio between RP2 and RP3.*

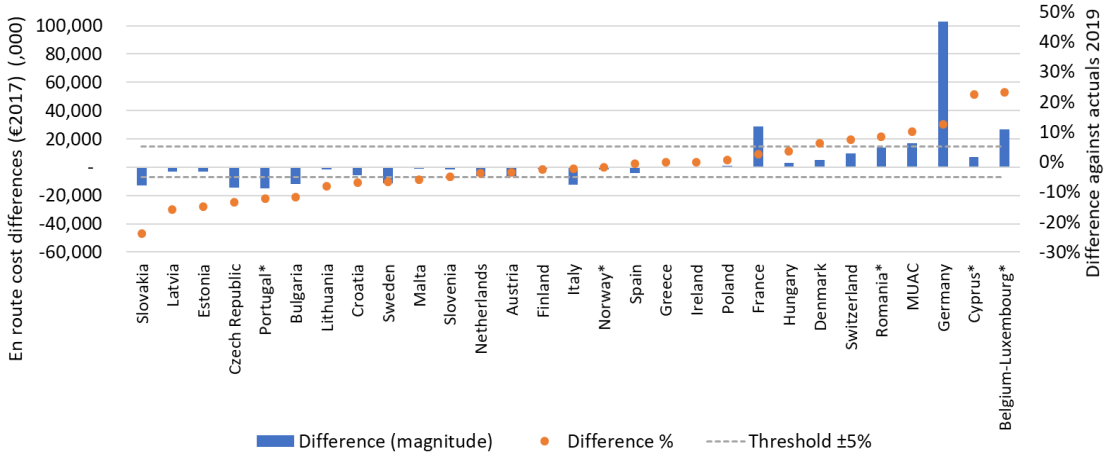

*Figure 17 - Differences between 2019 actual costs and Member States submission for 2021 (source: PRB elaboration). * indicates a change in allocation of the en route/terminal cost ratio between RP2 and RP3.*

recruitment.[12] The second largest reduction comes from "variable compensations" (-103M€$_{2017}$) like cancellation of bonuses and reduction of allowances. Impact on salaries (-90M€$_{2017}$) includes reductions and containment of salaries. 10 Member States have taken actions to reduce overtime (-42M€$_{2017}$). Cancellation of training, closure of the company restaurant, and actions reported as "other" are under the "other" category (i.e. -17M€$_{2017}$). Compensation schemes (-16M€$_{2017}$) includes short time working schemes and the deferral of tax and social security payments allowed by national authorities to mitigate effects of the COVID-19 crisis. Some ANSPs have cancelled the yearly inflation adjustment, inducing a reduction of 13M€$_{2017}$ in 2020. The impact on pension and early retirement (+50M€$_{2017}$) is mainly attributable to Sweden.

En route other operating costs

84 ANSPs have reported 108 actions regarding other operating costs for RP3, lowering the cost against the draft performance plans by 252M€$_{2017}$. When analysing 2020, 100 actions have been implemented that are expected to lower the costs by 130M€$_{2017}$.

85 Table 9 (next page) shows the actions taken regarding other operating costs for 2020. The biggest reduction in other operating costs is due to the reduction of travel and training expenses reported by 23 ANSPs resulting in a reduction of 63M€$_{2017}$. The category "equipment and facilities" results in a cost reduction of 20M€$_{2017}$. Decreases in the costs of external services (e.g. advisory services) are foreseen to reduce the operating costs by 19M€$_{2017}$, while the category "review of RP3 investment plan" results in a reduction of 18M€$_{2017}$. Actions related to other operational costs, extraordinary short term liquidity measures, insurance costs or costs that were submitted as an aggregated value are reported under the category "other". These measures should reduce the costs by 11M€$_{2017}$. "Accounting and taxation" actions are expected to reduce costs by 4M€$_{2017}$. Five ANSPs reported specific COVID-19 safety measures, increasing the other operation costs by 1M€$_{2017}$.

Action category	Number of ANSPs taking the action	Estimated impact of action reported for 2020 (M€$_{2017}$)
FTE	26	-170
Variable compensations	14	-103
Salaries	17	-90
Overtime reduction	10	-42
Other	8	-17
Compensation schemes	5	-16
Inflation adjustment cancellation	4	-13
Pension and early retirements	3	+50

Table 8 - Actions reported for staff costs and the estimated impact on the 2020 costs as planned in the draft performance plan.

[12] In case the reported action does not clearly specify a split between "impact on FTE" and "impact on salaries", the impact has been included as "impact on FTE".

Action category	Number of ANSPs taking the action	Estimated impact of action reported for 2020 (M€$_{2017}$)
Travel and training expenses	23	-63
Equipment and facilities	13	-20
External services	11	-19
Review of RP3 investment plan	7	-18
Other	9	-11
Accounting and taxation	3	+0.3
COVID-19 safety measures	5	+1

Table 9 - Actions reported for other operating costs and the estimated impact on the 2020 costs as planned in the draft performance plan.

En route depreciation costs

86 Member States have reported a total of 42 actions with respect to depreciation costs for RP3, lowering the costs by 91M€$_{2017}$ against the draft performance plans. In 2020, 29 measures have been implemented expecting to lower the cost by 25M€$_{2017}$.

87 The biggest difference of depreciation costs is due to the postponement of investments (-17M€$_{2017}$) which results in a lower asset base and therefore lower foreseen depreciation (Table 10). Under the category "review of the RP3 investment plan", the actions of ANSPs include postponements, cancellations, and reduction of the invested amounts (-11M€$_{2017}$). Actions taken under the category "other" result in an increase in the planned depreciation costs and include updates in the accounting standards, and review of the asset base of existing investments (+3M€$_{2017}$).

Action category	Number of ANSPs taking the action	Estimated impact of action reported for 2020 (M€$_{2017}$)
Postponed investments	18	-17
Review of the RP3 investment plan	10	-11
Other	5	+3

Table 10 - Actions reported for depreciation costs and the estimated impact on the 2020 costs as planned in the draft performance plan.

En route cost of capital

88 Member States have reported 31 actions for RP3, lowering the cost of capital by 2M€$_{2017}$ against the draft performance plans. Analysing 2020, a reduction of 9M€$_{2017}$ is expected. Similarly, the cost of capital planned for 2021 is expected to be lower(-11M€$_{2017}$). For the years 2022 to 2024, the submitted data shows an increase in the cost of capital compared to the draft performance plans. This is mainly due to four Member States (Belgium-Luxembourg, Bulgaria, Denmark and France), which reported changes in the asset base (with the exception of Bulgaria that reported a postponement of investment) resulting in an increase of the cost of capital.

89 Table 11 (next page) shows the actions taken regarding other cost of capital for 2020. The majority of them are related to the reduction of return on equity (ROE). Measures taken by four ANSPs reduce the cost of capital by 5M€$_{2017}$. The postponement of investments results in a reduction of 4M€$_{2017}$ in 2020. The actions taken under the category "other" consists of updates in the accounting standards, resulting in an increase in the cost of capital.

Action category	Number of ANSPs taking the action	Estimated impact of action reported for 2020 (M€2017)
Reduction of return on equity	4	-4.6
Postponed investments	14	-3.7
Change in asset base	7	-0.7
Decrease in interest rate	2	-0.6
Other	1	+0.3

Table 11 - Actions reported for cost of capital and the estimated impact on the 2020 costs as planned in the draft performance plan.

En route exceptional costs

90 Member States have only reported one action for RP3 with respect to the exceptional costs. Denmark is expected to increase the costs by 6M€2017 in 2020 due to "voluntary resignations".

6.3 Actions reported for investment planning

91 ANSPs reported a total of 168 actions with respect to the investments, of which 134 actions related to "new major investments" (i.e. investments greater that 5M€), 24 actions to "other new investments" while the remaining 10 actions with respect to "existing investments".

92 The investment plans as presented in the draft performance plans 2019 have been greatly impacted by the measures taken by the ANSPs. Only 14% of the major investments are planned to remain unchanged despite COVID-19 measures. However, actions taken with respect to the investments cannot be fully considered as cost savings. The postponement of investments only moves the costs from 2020 to later years of the reference period without triggering structural changes in the cost base. Moreover, the late implementation of investments may impact future capacity when the traffic will return to pre COVID-19 levels. The PRB reiterates the advice to the Commission to ensure NSAs strictly monitor the planning, evolution, and implementation of the investments. Moreover, as shown in the PRB Annual Monitoring Report 2019, during RP2, the airspace users financed investments that never materialised. [13]

93 The category "postponed" investments covers investments that have been delayed to a further date compared to initial planning. The category "change of scope" refers to projects that have been extended, reduced or modified (e.g. split of projects).[14] "Cancelled" investments refer to cancelled or suspended projects until at least RP4. The category "accelerated" refers to investments that have been accelerated compared to initial planning. Finally, the category "no change" refers to investments that remained unchanged compared to the initial planning.

94 Figure 18 provides an overview of reported actions concerning "major investments" at Union-wide level.[15] Considering the actions reported, 67 (43%) relates to a postponement of investments; 56 (36%) are related to a change of scope, 7 (5%) to accelerated investments, and 4 (3%) to cancelled investments.

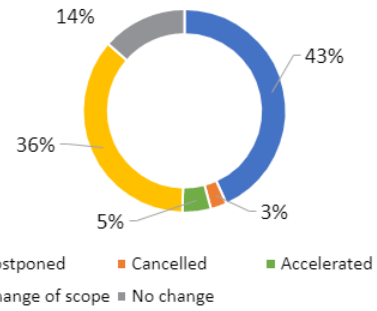

Figure 18 - Percentage of actions reported for major investment planning (source: PRB elaboration), showing that majority of the actions are postponement or a change in scope of the investments.

[13] PRB Monitoring Report 2019. Annex IV – CAPEX report.
[14] Spain reported actions under the category "revision of plan", these actions have been categorised in this report as "change of scope".
[15] Austria (Austrocontrol) provided the expected impact of the actions on investments as an aggregated value of the major, other and existing investments. For the sake of simplicity, in this report it is assumed that the aggregated value relates to major investments only.

95 Figure 19 provides an overview of ANSPs reporting actions concerning "other new investments" at Union-wide level. A total of 24 ANSPs (83%) have reported a change in investment planning, the five remaining ANSPs (17%) did not change their initial plans.

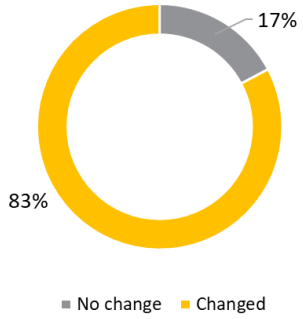

Figure 19 - Percentage of actions reported for other new investment planning (source: PRB elaboration), showing that the majority of the ANSPs changed the initial planning.

96 Figure 20 provides an overview of ANSPs reporting actions concerning "existing investments" at Union-wide level. A total of 10 ANSPs (34%) reported a change in the existing investment planning while 19 (66%) have not changed compared to the initial plans.

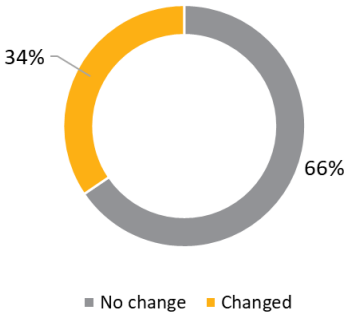

Figure 20 - Percentage of actions reported for existing investment planning (source: PRB elaboration), showing that the majority of the ANSPs did not change their existing planning.

97 ANSPs also reported the changes in the determined costs related to investments for the remainder of RP3 (i.e. depreciation, cost of capital and leasing cost), comparing them against the draft performance plans 2019. Over RP3, the actions reported are expected to lower the costs related to investments by 296M€$_{2017}$ against the draft performance plans (4% of the planned values). The majority of actions and their impact are related to 2020, with 130 reported actions expected to lower the cost by 193M€$_{2017}$ against the plans. The related amounts of actions Member States planned and so far taken during RP3 are shown in Figure 21 (next page).[16]

98 The majority of the actions taken regarding "new major investments" are categorised as "postponements" of the investment (67 actions are expected to lower the costs planned by 206M€$_{2017}$ against the performance plans), followed by "change of scope" (56 actions, expected to lower the planned determined costs by 56M€$_{2017}$). Four actions were reported as "cancelled" investments lowering the planned costs by 1M€$_{2017}$ against the performance plans, while seven actions were reported under the category "accelerated" investments, expecting to increase the planned costs by 5M€$_{2017}$.

99 ANSPs are expected to lower their costs due to "postponements" in major investments over RP3. The respective savings encompass, among others, the postponement of investments as well as a decrease in the foreseen asset value due to a reduction in the initially planned values. The reported foreseen reductions (total of 206M€$_{2017}$ over RP3) decreased the costs in 2020 by 35M€$_{2017}$ (17% of the reductions due to "postponements"), while the largest foreseen reductions are reported to be in 2021 (28%, 57M€$_{2017}$) and in 2024 (22%, 46M€$_{2017}$). In 2022 and 2023 the postponement of the investment represents 19% (39M€$_{2017}$) and 14% (29M€$_{2017}$) respectively of the total cost reductions from the "postponement" of investments.

100 The actions taken regarding "new other investments" and "existing investments" are under the category "changed" investments and are expected to lower the cost by 38M€$_{2017}$.

[16] As for RP3 Regulation, depreciation and cost of capital are presented in nominal €. The information provided in this section are related to en route, based on the allocation information provided by the ANSPs. In the case of missing allocation information, the average allocation from the new major investments or the cost ratio from the performance plans have been applied. Finally, in the cases in which the ANSPs reported an impact of an action (in value) without specifying an action category, the action has been assign to the category "change of scope".

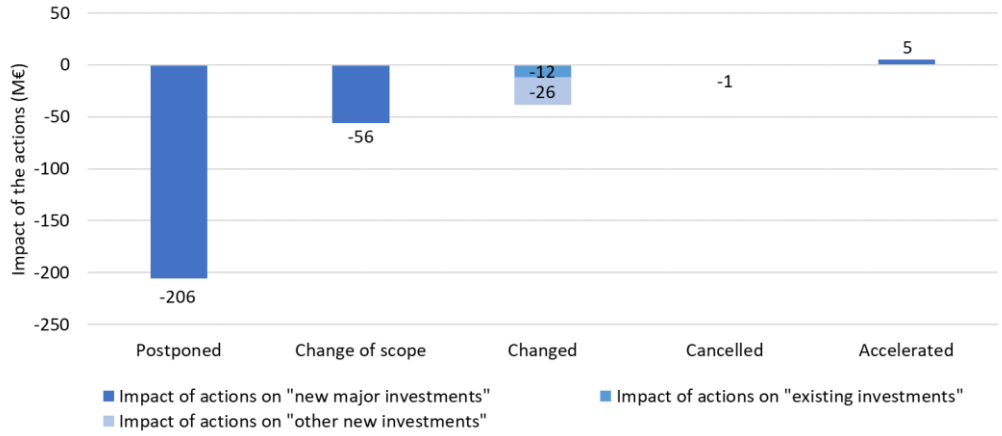

Figure 21 - Impact of actions reported for investment planning (source: PRB elaboration), showing that the majority of the actions (in value) corresponds to a postponement of the investments.

101 Figure 22 provides an overview of the expected impact on the actions taken by ANSPs for RP3. Ireland, Norway, and Switzerland did not report any COVID-19 specific measures that have an impact on investment plans. The lower cost expected from the measures taken by the Czech Republic on major investments were counterbalanced by the planned increase in "other new investments".

102 The total impact of the reported measures taken by Germany are the highest of all ANSPs (-112M€$_{2017}$). Most of them include postponing investments (e.g. iCAS project). However, one project was accelerated (increase of the cost for the drone detection system).

103 The total impact of the measures taken by Sweden and Hungary resulted in an increase in the planned investment (+0.3M€$_{2017}$ and +3M€$_{2017}$, respectively). The expected savings in "new major investments" reported by Sweden were offset by a larger increase in the "other new investments". This is due to an update in the investment planning, prioritising the investments related to remote tower services. The reductions in "new major investments" reported by Hungary were also offset by a larger increase in "other new investments" foreseen in 2022.

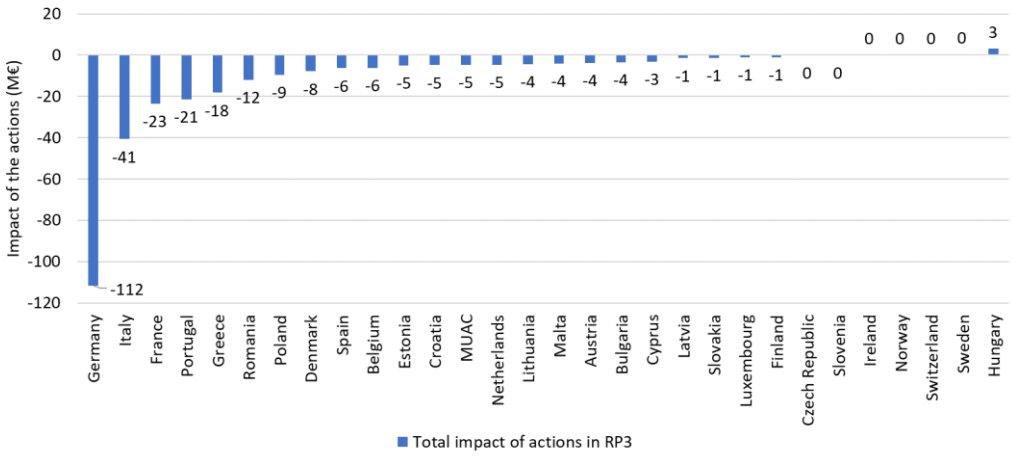

Figure 22 - Expected impact of the actions reported for investment planning per ANSP in RP3 (source: PRB elaboration).

6.4 Actions reported for financing activities

104 Considering the decrease in traffic, the combined estimated revenue gap for 2020 and 2021 is 7.3B€.[17] Taking into account that Member States reported 3.4B€ through financing arrangements, there is a difference of 3.9B€ that ANSPs will need to temporarily finance. Only 18 Member States reported a total of 39 financing arrangements (agreed or planned).[18] The PRB is not in the position to explain how the revenue gap will be financed. Possible explanations may be that some ANSPs: i) may be able to cover the gap of 2020 but will still require additional financing arrangements for 2021, ii) have sufficient reserves, iii) underreported the additional financial agreements or iv) have submitted inflated cost bases for the years 2020 and 2021. The PRB will analyse these issues when assessing the revised draft performance plans.[19] The PRB recommends the Commission ensures NSAs monitor the financial robustness of the ANSPs and whether the reported arrangements are indeed sufficient to meet their financial obligations.[20]

105 Analysing the data at a local level, Figure 23 shows the agreed and planned loans and equity injections reported by the Member States. The figure compares the additional finances against the estimated revenue gap of 2020 and 2021. Only Member States which reported additional finance are included in the graph meaning that, at least in 2020, some Member States seem to have sufficient reserves to fully finance the revenue gap by their own means.

106 When comparing the total value of the arrangements by Member State, France reported the highest total value (1,740M€ of which 903M€ are agreed loans and 837M€ planned loans), representing more than half of the total value of the additional arrangements reported by Member States. Estimates show that these amounts cover around 107% of the foreseen revenue gap for 2020 and 2021. Poland also reported additional financing which would cover the estimated financial revenue gap in 2020 and 2021.

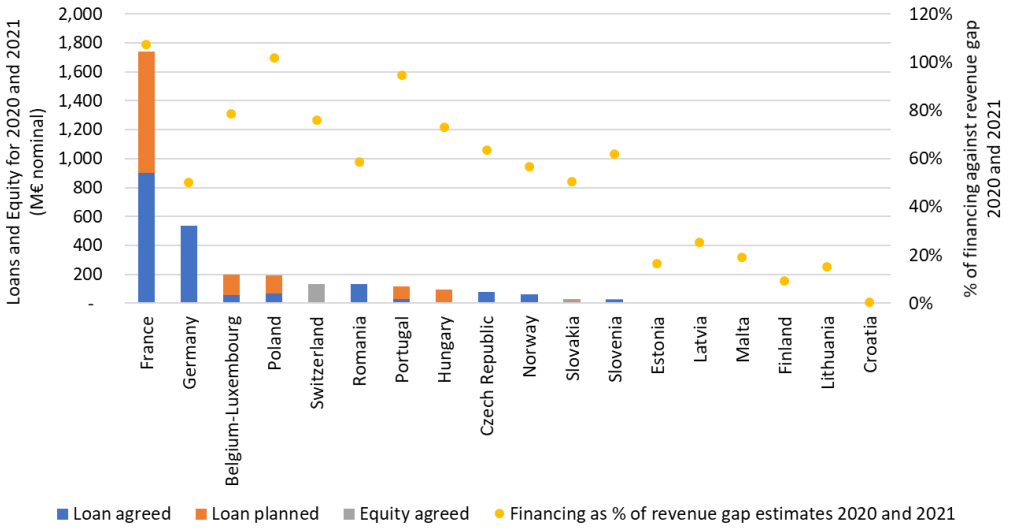

Figure 23 - Amount of agreed and planned loans and equity injections submitted by Member States (source: PRB elaboration), showing the majority of Member States will use own finance to cover the revenue gap.

[17] The revenue expected is computed by multiplying the unit rates for 2020 and 2021 by the actual traffic 2020 and the forecasted one for 2021. The revenue gap is then calculated as a difference between the revenue expected and the cost base as submitted in the forward-looking data.

[18] Ireland reported planned loans but did not provide any data on the foreseen amount since debt arrangements were not yet concluded at the time of the reporting.

[19] Implementing Regulation (EU) 2020/1627.

[20] Implementing Regulation (EU) 2017/373.

107 Table 12 shows the arrangements taken regarding other finance for 2020 and 2021 by category. Of the 18 Member States who reported other additional finance, 16 reported additional loans (agreed and planned), while four Member States reported equity injections. Those four Member States are (in order of total value of the equity injection): Switzerland, Slovakia, Finland, and Slovenia. A fifth Member State, Norway, reported a loan by the mother company that could potentially be turned into equity. Slovakia and Slovenia reported financial agreements in the two categories of additional loans and equity injections.[21]

Arrangement category	Number of Member States	Amount M€
Additional loans	16	3,209
Equity injection	4	153

Table 12 - Description of actions reported for other finance.

108 The majority of the financial arrangements are established with the State (62%), followed by private banks (35%) (Table 13). Most of the loans (especially the ones granted by private banks) are based on variable interest rates linked to EURIBOR or national indexes. Therefore, the average interest rates can only be considered as estimates. The repayment terms of the arrangements range between one and 10 years, with varying payment terms and conditions. Some Member States reported delayed repayment instalments from two to five years. The PRB does not yet have enough information available to provide insights into loan guarantee schemes provided by the States related to the financial obligations of the ANSPs.

Entity	Amount M€	Estimated average interest rate for loans	Repayment terms for loans
Private Bank	1,169	1.0%	1-10 years
Eurocontrol	56	1.4%	1-2 years
Mother company	64	2.5%	undefined
State	2,077	0.4%	1-10 years

Table 13 - Description of actions reporter for other finance by entity. Interest rates are estimated.

[21] Poland reported a financial arrangement consisting of "public financing impacting chargeable unit rates through other revenues". These funds will be returned to the airspace users, therefore this arrangement has been considered as a "agreed loan" for the purpose of this report.

7 CONCLUSIONS

109 The key conclusions from the PRB monitoring of the financial and operational impact of COVID-19 on the SES are summarised for each KPA in this section.

7.1 Safety

110 **Conclusion 1:** Safety has remained at a very high level without any indication that performance, based on occurrence analysis, has been reduced due to safety issues related to COVID-19. This assessment will need to be reviewed after all data has become available in the PRB's full annual monitoring report due in the autumn of 2021.

111 **Conclusion 2:** It will be essential that ANSPs sustain well-functioning, adjustable and scalable management systems and improve these in line with the RP3 targets for the Effectiveness of Safety Management.

7.2 Environment

112 **Conclusion 1:** Member States improved their environmental performance, as measured by KEA, during 2020 due to reduced traffic.

113 **Conclusion 2:** 10 Member States and FABEC did not achieve their environment targets, which is disappointing given that they all experienced very low traffic. The reasons for this will be examined in further detail in the PRB's annual monitoring report.

114 **Conclusion 3:** The data shows that as traffic reduced, the shortest available routes to airspace users improved considerably. However, in the summer of 2020 when traffic began a modest recovery, the shortest constrained routes lengthened showing structural issues remain.

115 **Conclusion 4:** Terminal environmental performance improved greatly with airspace users spending considerably less time in terminal airspace and taxiing out compared to 2019. Furthermore, a larger proportion of the total flights completed a continuous climb or descent operation indicating improved vertical flight efficiency.

7.3 Capacity

116 Data available on delays is still subject to the Network Manager post-operational adjustment process, thus minor changes may be expected in the allocation and attribution of ATFM delays. Still, the following conclusions may be derived for 2020:

117 **Conclusion 1:** The Union-wide target in the KPA of capacity has been met in 2020. This must be considered in the context of the abrupt fall in traffic in March. The pre-COVID period of the year (i.e. January and February) showed high en route ATFM delays, while the COVID-19 affected months registered almost zero en route delays.

118 **Conclusion 2:** Disruptions played a key role in high delays in the first two months of 2020, indicating that the structural capacity problems remained.

119 **Conclusion 3:** The drop in traffic created excess capacity during the COVID-19 affected period of 2020 in the European ATM Network. This eliminated weather and disruption-related delays. The result indicates that weather related delays occur due to capacity problems rather than being unavoidable and inherent parts of the operation.

120 **Conclusion 4:** Airport arrival ATFM delays were similar to those of former years in the first two months of 2020. During the COVID-19 affected months, some airport arrival ATFM delays were registered once traffic levels reached about 50-60% of normal traffic. This indicates that there is less excess capacity at and around airports than in en route operations.

121 **Conclusion 5:** The reaction of ANSPs to the pandemic shows a mixed picture. Several ANSPs are halting projects, investments, and/or airspace reorganisation initiatives, while others are using the months with low capacity to address structural changes.

7.4 Cost-efficiency

122 The information submitted by the Member States in December 2020 reflect preliminary cost results and are not validated actual costs for 2020. Nevertheless, the following conclusions can be drawn from the submitted data.

123 **Conclusion 1**: Comparing the submitted costs for 2020 with the actuals of 2019, Member States showed a negligible reduction in costs (-1%) despite the substantial decrease in movements (-55%) and service units (-58%).

124 Most Member States seem to compare the actions taken in response to the crisis with the plans they had elaborated in 2019 which the Commission had not adopted because they were not

consistent with the cost-efficiency targets. Using this comparison overly inflates the reduction (reduction of 11% for 2020 and 2021).

125 Conclusion 2: ANSPs show considerable differences on the measures implemented to contain costs in 2020. 14 ANSPs reported cost reductions up to 27% against 2019 actuals, 10 show little to no differences, and the remaining five ANSPs increased their 2020 costs compared to 2019 actual costs.

126 Conclusion 3: The investment plans as presented in the draft performance plans of 2019 have been greatly impacted by the measures taken by the ANSPs. Only 21% of the major investments are foreseen to remain unchanged despite the COVID-19 crisis while the majority of the major investments have been postponed or changed in scope.

127 Conclusion 4: There is an estimated gap of 3.9B€ between the revenues and the submitted costs of 2020 and 2021 that ANSPs will have to temporarily finance. It is unclear how Member States and their ANSPs will manage the liquidity problem.

ANNEX I – LIST OF CORRESPONDING MEMBER STATES AND MAIN ANSPS

Member State	Main ANSP
Austria	Austro Control
Belgium	Skeyes
Bulgaria	BULATSA
Croatia	Croatia Control
Cyprus	DCAC
Czech Republic	ANS CR
Denmark	NAVIAIR
Estonia	EANS
Eurocontrol	MUAC
Finland	ANS Finland
France	DSNA
Germany	DFS
Greece	HCAA
Hungary	HungaroControl
Ireland	IAA
Italy	ENAV
Latvia	LGS
Lithuania	Oro Navigacija
Malta	MATS
Netherlands	LVNL
Norway	Avinor
Poland	PANSA
Portugal	NAV Portugal
Romania	ROMATSA
Slovakia	LPS
Slovenia	Slovenia Control
Spain	ENAIRE
Sweden	LFV
Switzerland	Skyguide