PRB | Performance review body of the single european sky

Performance Review Body
Advice on the Union-wide targets for RP4

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REMARKS FROM THE CHAIR

RP3 has been a challenging period for European Air Traffic Management (ATM) where Air Navigation Service Providers (ANSPs), airlines, airports, and ground handlers had to quickly respond to the impact of the COVID-19 pandemic, the subsequent rapid upturn in traffic, and Russia's war of aggression against Ukraine which lead to airspace closures, change of traffic patterns, and an increase in military traffic. The PRB recognises that events of such type are unpredictable and that it is difficult for ANSPs to adapt to largescale changes in demand. However, experience over RP3 has shown ANSPs must develop greater flexibility over the coming years to ensure a sustainable European ATM system for the future.

In terms of safety, the system has performed well. However, for other metrics the results are more worrying. While some ANSPs rose to the challenges, for others the desired outcomes were not achieved. This has led to a continued capacity shortage in crucial areas of the Single Sky Member States, resulting in unacceptable delays with high costs for airlines. Recent years have shown that some ANSPs have not invested or have not invested as planned in the necessary resources and technology to improve capacity and to improve flight efficiency.

Experience gained from our monitoring of the performance scheme has influenced the PRB's view on priorities and targets in RP4. The PRB has also taken into consideration the views expressed by stakeholders in response to the consultation on RP4 target ranges, including the consultation event in November 2023, and subsequent follow up meetings with a number of ANSPs and associated National Supervisory Authorities. I would like to thank stakeholders for their submissions and input to this process.

The PRB has considered the comments received and made changes to some elements of the target calculations. Upon reflection, the PRB continues to be of the view that there should also be a focus on the impact of Air Traffic Management on environmental performance. This must be supported by the provision of adequate staffing and implementation of necessary and cost-efficient solutions to eliminate endemic capacity shortfalls whilst safety must continue to be the backbone of all ANSP activities.

In preparing this report, the PRB considered the difficult question of whether the target setting for RP4 should be adjusted to take account of the insufficient performance of a few or whether the few underperformers must live up to the standards set by others. We concluded that underperformers must take necessary measures to perform at acceptable levels; in particular ATCO shortages must stop being presented as a recurring argument for the lack of capacity during RP4 and recruitment and training must proceed at the maximum rate possible.

In order to achieve the level of ambition set out in this report, all stakeholders within the European ATM network must work closely together. The PRB will play its part in this process by closely monitoring performance to highlight where capacity issues are resolved and where performance levels are improving across the network.

On behalf of all PRB members, I would like to thank our colleagues from the Eurocontrol Network Manager and the Eurocontrol Aviation Intelligence Unit, our colleagues from the European Aviation Safety Agency (EASA), and the PRB Support Team for their invaluable contributions to this report.

Cathy Mannion
PRB Chair

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1 INTRODUCTION

1 One of the primary tasks of the Performance Review Body (PRB) is to assist the Commission when setting the Union-wide performance targets under Article 11(3)(a) of Regulation (EC) 549/2004. The detailed requirements for the setting of those Union-wide performance targets are set out in Article 9 of Commission Implementing Regulation (EU) 2019/317 (herein referred to as the Regulation):

- At the latest 19 months before the start of the reference period, the National Supervisory Authorities (NSAs) should provide to the Commission initial cost data and information about traffic forecasts.
- At the latest 15 months before the start of the reference period, the Commission shall publish indicative target ranges for the Union-wide performance targets.
- Stakeholders shall be consulted on these target ranges.
- At the latest seven months before the start of the reference period, the Commission shall adopt the Union-wide performance targets.

2 This report is the PRB's advice to the Commission on the Union-wide targets for the fourth reference period (RP4, 2025-2029) for each key performance area (KPA) with supporting evidence. Moreover, it provides advice for the comparator groups for the assessment of the cost-efficiency criterion and the alert thresholds beyond which a Member State may request a revision of the performance targets (i.e. deviation from the instrument flight rules (IFR) movements and from the service units, and the variation from the capacity reference values).

3 Stakeholders have been consulted through an online survey, which was open from 4th October to 1st December 2023, and during a targeted consultation event in Brussels held on 8th November 2023. During the consultation process, some air navigation service providers (ANSPs) and Member States raised concerns about issues relating to recruitment and training of air traffic controllers (ATCOs) at a pace which would allow the resolution of any shortage by the start of the fourth reference period (RP4). The PRB followed-up on this subject within the consultation process.

4 The PRB's advice on the targets for RP4 (this document) is complemented by five annexes:

- Annex I – Comment response document;
- Annex II – Update on the impact of Russia's war of aggression on horizontal flight efficiency;
- Annex III – Outcomes from the follow-up discussions with delay hotspot ANSPs;
- Annex IV – Methodology for the definition of comparator groups for cost-efficiency; and
- Annex V – Alert thresholds analysis.

5 In developing its advice on the targets for RP4, the PRB used data provided by Eurocontrol (Aviation Intelligence Unit), the Network Manager, the European Union Aviation Safety Agency (EASA), and the Member States.[1]

6 The PRB closely collaborated with EASA regarding the safety KPA and with the Network Manager regarding the capacity and environment KPAs. Eurocontrol provided an update on the estimation of the impact on KEA of the Russia's war of aggression against Ukraine (Annex II).

[1] Detailed references to the source of the data are included in this document.

2 PRB OBJECTIVES FOR RP4

7 During the target setting process, the PRB sought input from stakeholders on the proposed Union-wide target ranges for RP4. Through an online survey, a dedicated consultation event (details in Annex I), and subsequent discussions with some ANSPs and their NSAs (details in Annex III), the PRB presented its advice on the RP4 target ranges with the aim of gathering feedback and developing the advice on Union-wide targets for RP4.

8 The survey, consultation event and subsequent discussions saw active participation of representatives from:

- Airlines;
- ANSPs;
- NSA and Member State representatives;
- Professional staff representatives; and
- Other aviation organisations.

9 The consultation process resulted in substantial feedback, with 47 respondents completing the survey, 71 participants actively contributing to the stakeholder consultation event, and ANSPs and their NSAs participating in follow on discussions. Notably, there was significant alignment among stakeholders regarding the priorities outlined in the PRB advice on the Union-wide target ranges for RP4.

10 The purpose of the target setting process is to improve performance at a Union-wide and local level. Taking into account the generally positive feedback on the PRB objectives for RP4, the pillars defined in the advice on the target ranges remain valid:

- Safety remains of paramount importance, to take account of the impacts from other KPAs, to control the impact from widespread changes to ATM functional systems, and to progress regulatory compliance. This approach shall continue in RP4.
- Environment is the priority for RP4 (after safety), which is consistent with the EU's green agenda. Reducing CO_2 emissions is a top priority for the European Union and society as a whole. ANSPs must offer the best level of capacity to enable optimum flight efficient trajectories, reduce emissions and reach a higher level of environmental efficiency by the end of 2029. For the coming reference period, the PRB considers the environment KPA as the top priority and advises the adoption of ambitious but achievable targets.
- Environmental performance, traffic recovery and growth need to be sustained by improved capacity performance. Member States must provide the required capacity to minimise the impact on airspace users in terms of delays, and on society in terms of avoidable CO_2 emissions.
- Cost levels must support the delivery of safety, environment, and capacity performance improvements, while remaining at an efficient level.

3 TRAFFIC FORECAST

- The latest service units forecast (end of February 2024) is higher than the March 2023 forecast, which was the basis of the proposed target ranges.
- The increase in IFR movements and en route service units during RP4 is forecast to be relatively homogeneous across Member States and slower than experienced in the past.
- Several Member States will not reach the levels of 2019 IFR movements and service units by the end of RP4.

11 The latest available traffic forecast was published by Eurocontrol on 26th February 2024. This follows the previous forecast published in March 2023, which provided the basis for the PRB advice on the Union-wide target ranges for RP4.[2] The latest forecast considers the latest flight trends, the updated economic forecasts, and the geopolitical events that occurred at the end of 2023.

12 Similar to the previous forecast, differences between the scenarios forecast are symmetric for both IFR movements and service unit forecasts. By 2029, the differences between the values of the scenarios are +/-9% for IFR movements and +10/-11% for service units.

13 As defined in the Regulation, the STATFOR base forecast is the basis for setting targets. Accordingly, the analysis carried out in this section is based on the base forecast.

3.1 IFR movements forecast

14 The Union-wide IFR movements are forecast to be 10.6M in 2029. This amount will be the highest managed by the system to-date. The 2019 levels (10M), the previous highest recorded level, is expected to be reached by end of 2026 and in 2029 the Union-wide IFR movements is forecast to be +6.1% higher than in 2019 (Figure 1).

15 After the +9.2% increase from 2022 to 2023, the rate of increase is forecast to decrease to +4.8% in 2024 (+6.2% in the traffic forecast of March 2023). Thereafter, the Union-wide increase is forecast to slow, being an average +2.1% per year (from 2024 to 2029) (+1.5% per year in the traffic forecast of March 2023). By comparison, the average increase for 2014-2019 was +2.8%.

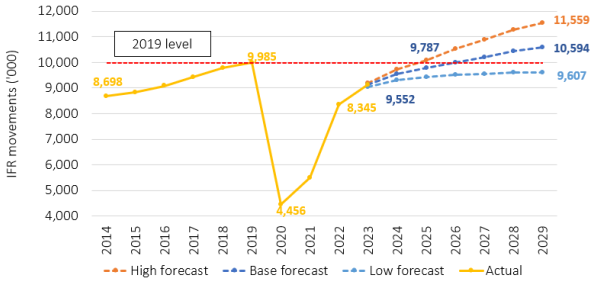

Figure 1 – Union-wide IFR movements actuals from 2014 to 2023, and STATFOR February 2024 forecast from 2024 to 2029 (source: PRB elaboration on STATFOR forecast).

16 When analysed at Member State level, the situation is more varied. According to the STATFOR base forecast, seven Member States are not expected to reach the 2019 level of IFR movements by the end of 2029 (Denmark, Estonia, Finland, Latvia, Lithuania, Poland, and Sweden). Two Member States (Cyprus and Norway) are expected to reach the 2019 levels in 2028, while three Member States (Czech Republic, Germany, and the Netherlands) are expected to reach the 2019 levels in 2029. All other Member States are forecast to reach 2019 levels no later than in the early years of RP4.

17 When analysing the average increase of traffic from 2024 to 2029, Member States are forecast to have an average increase of around +2.6% (+1.7% in the traffic forecast of March 2023). Only four Member States deviate significantly from the average: Norway and the Netherlands are expected to have traffic that will remain relatively flat during RP4 (+1.2%), while Malta (+3.7%) and Cyprus (+5.3%) show the greatest expected average growth. However, these are relatively small differences compared to what has been experienced in the past. By comparison, 2014-2019 recorded wider traffic disparities between Member States. The forecast average Member State growth during RP2 was +4.0%, with the extremes being Norway (-0.9%) and Croatia (+6.6%).

[2] A forecast was also published by STATFOR in October 2023.

3.2 *En route service units forecast*

18 The Union-wide en route service units are forecast to be 148M in 2029, higher than the 143M that was forecast in March 2023. As for IFR movements, these forecasts would be the highest managed by the system to-date. The 2019 level (125M), which was the highest recorded to date, is forecast to be reached before the start of RP4 (in 2024). In 2029, the Union-wide service units is forecast to be +18% higher than in 2019 (+14% in the traffic forecast of March 2023) (Figure 2).

19 After the +13% increase recorded from 2022 to 2023, the rate of increase is forecast to decrease to +5.4% in 2024 (+7.3% in the traffic forecast of March 2023). From 2024 onwards, the increase is forecast to be relatively low, averaging +2.7% per year (from 2024 to 2029) (+2.0% in the traffic forecast of March 2023). By comparison, during the period 2014-2019 the average increase was +4.3%.

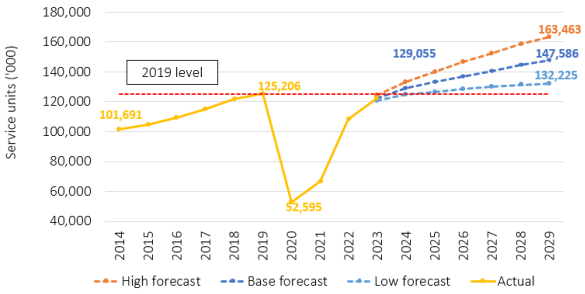

Figure 2 – Union-wide en route service units actuals from 2014 to 2023, and STATFOR February 2024 forecast from 2024 to 2029 (source: PRB elaboration on STATFOR forecast).[3]

20 When analysed at the Member State level, ten Member States are not expected to reach the 2019 level of service units by the end of 2029 (Cyprus, Czech Republic, Denmark, Estonia, Finland, Latvia, Lithuania, the Netherlands, Poland, and Sweden). The other Member States are forecasted to reach 2019 levels before the end of RP3, or in the first two years of RP4, apart from Slovakia that is forecasted to reach the 2019 level only in 2027.

21 When analysing the evolution of traffic from 2024 to 2029, Member States are forecast to have an average increase of around +2.8% (+1.9% in the traffic forecast of March 2023). The increase traffic growth is homogeneous across all the Member States, being within circa one percentage point of the average, with the only exception of Cyprus (+5.6%). By comparison, for 2014-2019, the average Member State growth was +4.6%, with the extremes being Norway (+1.9%) and Bulgaria (+8.0%).

[3] Service units from 2014 to 2019 are displayed in M2.

4 SAFETY

- Safety performance area remains of paramount importance.
- Safety performance needs to continue to improve during RP4.
- Targets are advised to be a minimum level of maturity D in safety risk management, and C for the other EoSM Management Objectives.

4.1 PRB target ranges proposal

22 Ensuring a continued, high level of safety performance remains the highest priority when proposing targets.

23 The safety KPI acts both as a vehicle to improve safety performance and as a control mechanism. As a control mechanism it helps to manage the impact of actions and decisions taken under the other three KPAs, known as interdependencies, and on changes implemented on a wider scale in the ATM functional system or in airport systems. When changes occur, it is important to ensure risk is not transferred, and that risks to safety are not increased. Widespread implementation may be challenging to manage and may require, for example, strengthening of the methodologies applied, an increased monitoring to detect degrading safety levels, and/or increased awareness.

24 Russia's war of aggression against Ukraine causes an increased pressure on safety management, notably on the adjacent Member States. Such pressures include the diversion of traffic flows resulting from airspace closure, the increased operation of unmanned aerial vehicle and military flights, increased cyber security risks, and potential cyber attacks. While it is not possible to predict the evolution of the conflict, the ANSPs need to have a safety management system that has sufficient levels of resilience. This will enable ANSPs to be agile and adaptable in the face of challenge and to effectively identify and control these types of change. Against this background, the maturity of the safety management systems needs to continue to improve, especially in the areas of safety risk management and safety assurance.

25 Considering the above and the expected developments for RP4, the PRB and EASA jointly concluded that, to ensure safety levels are retained and where possible improved, targets needed to be set to ensure continued improvements of safety performance.

26 Prior to the commencement of the target setting exercise, an EASA RP4 S(K)PI drafting group proposed to retain the EoSM as the safety KPI and to align the EoSM to the CANSO standard of excellence (SoE) revision February 2023 and amending this to reflect European standards. Members of this drafting group included EASA, the PRB, ANSPs and NSAs.

27 The PRB and EASA recommended safety targets for RP4 as shown in Table 1. The same targets were proposed for the Network Manager. The targets are to be achieved by the last year of RP4, with ANSPs clearly planning the improvement required during the reference period to achieve the target and specifying the maturity levels to be achieve each year of the reference period.

Effectiveness of Safety Management	
Management Objectives	**2029 maturity levels**
Safety culture	C
Safety policy and objectives	C
Safety risk management	D
Safety assurance	C
Safety promotion	C

Table 1 – RP4 Union-wide targets for the Effectiveness of Safety Management.

4.2 Key comments from stakeholders

28 Overall, stakeholders agreed with the objectives adopted by the PRB and EASA when setting the targets for RP4 (i.e. safety is paramount and that safety performance, where possible, should be strengthened during RP4). ANSPs and NSAs also highlighted that safety is already at a high level. Nevertheless, stakeholders agree that further improvements should be sought, but noted that

safety improvements would come at a cost (i.e. an increased cost base due to additional effort and staff required).

29 Stakeholders supported the alignment of the EoSM to the CANSO SoE and amending this to reflect regulatory requirements and European standards. Some stakeholders noted that regulatory compliance should already exist, and not achieved only at the end of RP4. However, the PRB and EASA underline that compliance for certification and performance management are different concepts.

30 Some ANSPs and NSAs argued that it was not possible to assess the proposed targets given the revised EoSM was not available. However, EASA and the PRB note that the basis for the EoSM, the SoE, was available and the level of complexity well understood and assessable. In addition, a number of stakeholders raised concerns that the revised EoSM for RP4 may become too extensive when combining the RP3 EoSM, the CANSO SoE, and adding regulatory compliance. These stakeholders suggested that diverting too far away from the CANSO SoE compromised the objective to harmonise the EoSM and the CANSO SoE to reduce effort by the ANSPs in assessing their maturity levels. Some stakeholders raised concerns that there is a diversity among NSAs, which may lead to inconsistency in the verification between Member States.

31 The main concern raised by ANSPs and NSAs related to the difference in maturity levels between RP3 and RP4 and the translation of maturity levels between RP3 and RP4 (where ANSPs are likely to start RP4 one maturity level lower due to the more challenging RP4 EoSM). Stakeholders argued that this was too simplistic an approach, and that differences in maturity levels could result in degrading maturity of the SMS and relieve pressure on ANSPs to achieve RP3 targets.

32 Details on the feedback received during the consultation process and the PRB responses can be found in Annex I of this report.

4.3 Additional evidence available

33 Since the publication of the PRB's advice on the target ranges for RP4, two additional pieces of evidence became available to the PRB:

- The development of the RP4 EoSM questionnaire is concluded. The revised draft RP4 EoSM questionnaire was issued by EASA in early February 2024, and was subject to an EASA managed stakeholder consultation thereby allowing stakeholders to suggest changes in light of the proposed RP4 targets. EASA released the final RP4 EoSM questionnaire in early March 2024; and
- Initial monitoring data from Member States on the 2023 safety KPA has been received. This data shows a continuing improvement in the maturity of the safety management systems for those ANSPs that still need to achieve RP3 targets. The PRB, therefore, considers it realistic that the majority of ANSPs will reach the RP3 targets by 2024.

4.4 Safety targets recommendation

34 To support the setting of the safety targets, the PRB and EASA have taken into consideration the comments received during the target setting consultation process as well as the additional evidence that subsequently became available.

35 The targets proposed by the PRB and EASA are consistent with the PRB advice on the Union-wide target ranges for RP4, and fully aligned with the PRB ambitions.

Historical evidence

36 In the advice regarding the target ranges for RP4, the PRB and EASA assumption was that all ANSPs should reach the RP3 targets at the end of RP3. Monitoring data from 2023 shows continued improvement with additional ANSPs reaching the RP3 targets. Those providers still below the target are progressing to improve their minimum maturity levels, with most in line with their RP3 performance plan.

37 EASA notes that ANSPs should employ change management principles to alleviate any perceived dissonance during the transition from RP3 to the upgraded RP4 metric.

Expected minimum maturity levels starting RP4

38 The RP4 EoSM questionnaire was as described in the PRB advice regarding the target ranges for RP4. The EASA led consultation on the revised draft RP4 EoSM questionnaire provided stakeholders with an opportunity to comment and suggest changes ahead of the final version being published.

39 The EoSM maturity levels have, as expected, become more challenging. This is the means by which the PRB and EASA drive improvements to safety performance during RP4, thereby protecting and strengthening the safety system against challenges posed by other KPAs. Based on the discussions in the EASA S(K)PI drafting group (involving ANSPs, NSAs, and social partner organisations) particular focus was placed on ensuring that requirements were achievable. The PRB considers that this objective has been reached.

40 With a more demanding EoSM for RP4, the minimum maturity levels achieved by ANSPs at the start of RP4 may be reduced. This should not be interpreted as degrading safety performance; rather the metric has become more demanding. All things being equal, any difference in safety performance levels between RP3 and RP4 should be a misperception, not actual. Therefore, the PRB and EASA consider that this approach will continue to drive improvements.

41 NSAs are responsible for the verification of the maturity levels claimed by ANSPs during their self-assessment. This was the case in previous reference periods and will continue to be so in RP4. As the RP4 EoSM questionnaire is derived from the CANSO SoE which is supported by CANSO and Eurocontrol, NSAs have many opportunities to consult with peers and access supporting explanatory material. For those parts of the EoSM questionnaire which reflect regulatory requirements, the means of compliance and guidance material prepared by EASA supports the understanding of what is required by the EoSM questionnaire.

42 The concern about NSA diversity is not specific to the choice of EoSM verification mechanism. Therefore, it should not cause the development of a specific EoSM questionnaire, which would not fulfil the purpose of driving improvements.

43 All stakeholders supported the objective that safety is paramount and that safety performance, where possible, should be improved. This supports the role of Member States to ensure that there is no degradation in the level of safety performance between RP3 and RP4. For RP4, the EoSM will become more demanding, which will affect the minimum maturity level ANSPs will have when starting RP4.

44 The Regulation, in defining targets to be achieved during the last year of a reference period, allows in principle ANSPs to report lower maturity levels in the beginning of the reference period than the actual maturity level of end of RP3. It is the obligation of the Member States to ensure that this does not happen, and this is consistent with the overarching objective that safety performance be continuously improved. The PRB and EASA will carefully analyse this aspect during the assessment of the draft performance plans for RP4.

45 Arguably, the more challenging RP4 EoSM questionnaire may have a cost implication for ANSPs (and potentially NSAs). However, to balance the targets and achievements in the other KPAs, which may give rise to pressures on the safety KPA, it is necessary to incrementally increase the safety performance to maintain the health of the system. The PRB and EASA consider that any additional cost is likely to be marginal given the overall ANSP cost base.

46 The PRB and EASA confirm the assessment of the impacting factors as presented in the PRB advice on the Union-wide the target ranges for RP4. The safety KPA as a control mechanism remains essential and the more challenging EoSM for RP4 remains an important vehicle to ensure this.

PRB and EASA approach

47 Considering the analysis underlying the PRB advice on the Union-wide target ranges for RP4, the feedback from the stakeholders, and the additional evidence that became available, the PRB and EASA recommend the targets to be set to ensure continued improvements in safety performance.

48 The PRB and EASA recommend safety targets for RP4 as in Table 1 and these are fully aligned with the PRB's advice on the Union-wide target ranges for RP4 (Table 2, next page). The same targets are proposed for the Network Manager.

Union-wide safety targets for RP4	
Management Objectives	2029 maturity levels
Safety culture	C
Safety policy and objectives	C
Safety risk management	D
Safety assurance	C
Safety promotion	C

Table 2 – RP4 Union-wide targets for the Effectiveness of Safety Management.

5 ENVIRONMENT

- The PRB's ambition of prioritising environmental performance for RP4 remains unchanged, with targets to support the EU's move towards a carbon-neutral economy.
- The targets build upon the original ambition for the end of RP3, network efficiency improvements within the ERNIP, the interdependency with capacity, and the route extensions following Russia's war of aggression against Ukraine.
- The PRB recommends the Member States to define an environmental incentive scheme and additional local environment targets based on the most appropriate performance indicator, which best reflects the contribution ATM makes to improve flight inefficiencies.

5.1 PRB target ranges proposal

49 To align with the European Union's green agenda, the PRB proposed to prioritise environmental performance for RP4. In 2019, the European Commission published the European Green Deal, which aims for the EU to become the first climate-neutral continent by 2050, and it is accompanied by an intermediate goal of the Fit for 55 package to reduce net greenhouse gas emissions by 55% by 2030. The proposed environment target ranges supported the EU's ambition of a carbon neutral economy, to which all sectors are expected to contribute. Aviation is no exception. Furthermore, an ambitious environmental performance improvement is dependent on ambitious capacity performance, as adequate capacity provision enhances horizontal flight efficiency.

50 Following Russia's war of aggression against Ukraine and consequent airspace closures, traffic flows and flight efficiency have been negatively impacted. The PRB proposed to include an increased value of KEA to account for the impact of Russia's war of aggression against Ukraine. As not all Member States have been equally impacted, when defining the local targets, the PRB suggests that this increase is only allocated to affected Member States.

51 Finally, to drive environmental performance improvement over RP4, the PRB recommended the Member States to define an environmental financial incentive scheme and additional local environment targets as specified in Article 10 (3) and 11 (4) of the Regulation.

52 To support the setting of the environment target ranges, the PRB considered four pieces of evidence:

- Evidence 1: Analysis of the historical KEA performance;
- Evidence 2: The estimated benefit defined in the European Route Network Improvement Plan (ERNIP);
- Evidence 3: The PRB study on the interdependency between capacity and environment; and
- Evidence 4: The impact on Union-wide KEA of Russia's war of aggression against Ukraine.

53 The RP4 Union-wide target ranges proposed are shown in Table 3.

KEA		
Year	Upper bound	Lower bound
2025	2.71%	2.49%
2026	2.70%	2.46%
2027	2.69%	2.44%
2028	2.67%	2.42%
2029	2.66%	2.39%

Table 3 – RP4 Union-wide target ranges proposed for environment KPA.

5.2 Key comments from stakeholders

54 The main comments from stakeholders centred on the suitability of KEA, the prioritisation of the environment KPA over the others, the level of ambition of the targets, and the methodology used for developing the targets.

55 Stakeholders supported a balanced focus on KPAs and, while there was widespread support for minimising aviation's impact on the environment, concerns were raised about how this priority aligned with the PRB's commitment to safety as the paramount focus.

56 Acknowledging the interdependencies, there was agreement among stakeholders that environmental performance cannot be isolated but should be

considered alongside both capacity and cost-efficiency performance, which reinforces the PRB's view that capacity targets must be set to support environmental performance and that cost efficiency targets must allow for the delivery of the necessary capacity.

57 Concerns about the efficacy of the KEA indicator were also raised. Both airspace users and ANSPs expressed the view that they did not consider KEA as an appropriate indicator, highlighting its shortcomings. Similarly, while incentives are highlighted as valuable tools for Member States to encourage ANSPs to provide services that minimise aviation's environmental impact, incentives on KEA are not considered appropriate by the PRB and the majority of stakeholders. In its advice to the target ranges for RP4, the PRB encouraged Member States to set local incentives on additional indicators, as specified in articles 10(3) and 11(4) of the Regulation.

58 Many ANSPs, Member States, and NSAs expressed concern about the level of ambition of the environment targets; given the limited level of control that an ANSP has towards the performance trade-offs with other KPAs.

59 A final concern related to the lack of transparency in data disclosure, methodologies, and assumptions used to develop the ranges and the use of data from the COVID-19 pandemic, which were considered to be anomalies in relation to traffic levels.

60 Details on the feedback received during the consultation process and the PRB responses can be found in Annex I of this report.

5.3 Additional evidence available

61 Since the publication of the PRB's advice on the target ranges for RP4, three additional pieces of evidence became available to the PRB:

- The 2023 full year environment performance;
- Updated capacity targets; and
- Updated technical note on the impact of Russia's war of aggression against Ukraine on horizontal flight efficiency (HFE) indicators.

62 At the time of writing the target ranges report, published in September 2023, complete KEA data for 2023 was not yet available. The 2023 Union-wide KEA was 2.99%, surpassing its 2.40% target by 0.59 percentage points. This outcome suggests that it would be more appropriate to set the starting point for RP4 at the higher end of the target ranges proposed as outlined in the following sections.

63 The capacity targets were updated due to a refinement of the calculation. Consequently, there is a slight increase in the value of the interdependency factor (between capacity and environment) that is included in the proposed the environment targets.

64 Finally, the PRB received an updated technical note on the impact of the war in Ukraine on HFE indicators (Annex II), which provides updated values for each Member State and SES area for each calendar month of 2022 and 2023. As a result of the update, the allowance included in the calculation of environment targets has been increased from 0.24 to 0.28 percentage points.

5.4 Environment targets recommendation

65 To support the setting of the environment targets, the PRB considered comments received during the consultation processes.

66 The target ranges have also been adjusted to account for the evolution of the capacity targets and the update to the allowance relating to the impact on the Union wide KEA of Russia's war of aggression against Ukraine.

Analysis of historical KEA performance

67 In the PRB advice on the Union-wide target ranges for RP4, the PRB considered starting points of 2.20%-2.40% for the lower and upper bounds, respectively. These figures considered the best theoretical efficiency improvements, as laid out in the ERNIP, and the past environmental performance. During the consultation, many stakeholders thought that the target ranges were too optimistic and challenging to be achieved, particularly given the geopolitical situation, current levels of performance, and the use of COVID-19 pandemic traffic levels in the data.

68 The PRB has considered the concerns raised and proposes to base environment targets on the starting point included in the upper bound of the previous report (i.e. 2.40%). In the PRB's view this maintains an ambitious yet realistic starting point. The 2.40% takes into account the environmental performance achieved during the COVID-19 pandemic, characterised by low traffic levels,

demonstrating that the proposed targets could be achieved if sufficient capacity is provided. Therefore, the PRB proposes to build RP4 targets on the original ambition for the end of RP3 (2024) of 2.40%.

Estimated benefits defined in the ERNIP

69 Contrary to stakeholders' concerns about potential overestimation of the ERNIP benefits, the PRB considers its estimations to be conservative given that the benefits of FRA and cross-border FRA have largely been achieved in terms of improving the efficiency of the air traffic service (ATS) route network design. The PRB emphasises that the ERNIP benefits are drawn from the ERNIP plan, which is developed by the Network Manager in coordination with Member States and operational stakeholders.

70 The PRB believes the evolution over RP4 should be sufficiently ambitious given that environment is a priority for RP4. Therefore, the PRB proposes to consider the lower bound (most ambitious) efficiency gain of the ranges as described in the PRB advice on the Union-wide target ranges for RP4. Therefore, the targets should decrease of 0.01 pp in 2025, followed by a 0.02pp decrease per year starting in 2026, with a linear ramp up of the benefits over RP4. The total expected efficiency gain is 0.09pp in 2029 (Table 4).

Year	Ramp up
2025	-0.01pp
2026	-0.03pp
2027	-0.05pp
2028	-0.07pp
2029	-0.09pp

Table 4 – KEA decrease for each year based on an assumed ramp up of ATS Route Network (ARN) benefits for the targets.

Capacity and environment interdependencies

71 The PRB acknowledges that the current study on the environment and capacity interdependencies serves as a starting point and that further research is required. However, the PRB considers it important to incorporate the latest information in the development of the targets. While stakeholders expressed concerns on the simplistic nature of the model, the PRB maintains the linear regression models to quantify the interdependency between Union-wide HFE and en route ATFM delays as there are no indications of non-linearity in the samples. Additionally, the use of COVID-19 pandemic data is retained within the scope, despite the exceptional nature of the period. This ensures a continuous sample enabling the identification of trends and providing relevant data insights on the interdependency between the KPAs.

72 The PRB proposes to retain the values based on the current interdependency methodology, and to maintain the ATFM delay impact on the horizontal flight efficiency. As mentioned above, the update of the capacity targets results in a change of the impact on the environment targets. The updated interdependency values are shown in Table 5.[4]

Year	CAP target and ENV adjustments
2025	0.58min/flight
	+0.08pp
2026	0.58min/flight
	+0.08pp
2027	0.58min/flight
	+0.08pp
2028	0.48min/flight
	+0.07pp
2029	0.48min/flight
	+0.07pp

Table 5 – Yearly KEA adjustments due to interdependency with capacity.

The impact on Union-wide KEA of Russia's war of aggression against Ukraine

73 Acknowledging the widespread support from stakeholders on the addition of an allowance to the KEA targets due to route extensions following Russia's war of aggression against Ukraine, the PRB recommends an allowance to be included when setting the Union-wide targets. The value of the impact has been revised following the update of the figures. As detailed in Annex II to this report, the revised Union-wide KEA deterioration is estimated at 0.28 percentage points (+0.04pp from the target ranges). While it is not possible to predict the evolution of the conflict and the geopolitical climate, the PRB assumes that route

[4] The PRB study on the interdependency between the delay and horizontal flight efficiency demonstrated that one minute of delay per flight results in a 0.14 percentage point increase in horizontal flight efficiency. Therefore, for the target setting the PRB has estimated that 0.58 min/flight of delay translates to an increase of 0.08 percentage points in KEA.

extensions resulting from Ukrainian, Belorussian, and Russian airspace closures will remain in place for the entirety of RP4.

74 The PRB recommends the Network Manager to allocate this allowance only to the impacted Member States when developing the reference values. This ensures that the allowance is adequately considered when setting local targets.

PRB approach

75 As for the target ranges, the PRB recommends prioritising environmental performance for RP4 to align with the European Union's green agenda, which aims to reduce net greenhouse gas emissions by 55% by 2030 and achieve climate neutrality by 2050. By following ambitious environmental targets, ANSPs can drive sustainable practices within the aviation industry and contribute to lowering its environmental impact.[5]

76 It is important to note that an ambitious environment target is also dependent on the delivery of ambitious capacity targets, as adequate capacity provision enables better horizontal flight efficiency.

77 The PRB recommends a target for 2029 that builds on the original ambition for the end of RP3 (2024), while accounting for the benefits of recent and future improvements from ATM measures and ongoing updates to the European network, and for the interdependency between environment and capacity. The resulting target for 2029 following this approach are:

- 2029 target: 2.40% - 0.09% (ERNIP benefits) +0.07% (interdependency) = 2.38%.

78 As mentioned above, the PRB recommends including the updated impact of Russia's war of aggression against Ukraine on KEA. However, when defining the local targets, this impact should be only considered for impacted Member States. Also, it is not possible to predict the evolution of the conflict and the geopolitical climate, the PRB assumes that route extensions resulting from Ukrainian, Belorussian, and Russian airspace closures will remain in place for the entirety of RP4 The resulting KEA target for 2029 adding the estimated impacts are:

- 2029 target: 2.38% + 0.28% = 2.66%.

79 To set the targets for the years 2025-2028, the PRB recommends targets evolving based on the ramp up of ERNIP ATS route network (ARN) improvements and interdependency with the capacity targets. The resulting yearly Union-wide KEA ranges are shown in Table 6 (next page).

80 The PRB deems the target proposed for 2025 of 2.75% ambitious yet achievable. In 2023, en route ATFM delay was 1.83 minutes per flight, 1.25 minutes per flight higher than the capacity target proposed for 2025 (0.58 minutes per flight). Based on the interdependency study, the 1.25 minutes of delay per flight contributed approximately 0.18 percentage points to Union-wide KEA performance in 2023. Adjusting the actual KEA performance in 2023 (2.99%) for this interdependency, the KEA performance would have been approximately 2.81% had the average en route delay per flight been 0.58 minutes. This demonstrates that the proposed targets of 2.75% in 2025 is realistic and not overly ambitious as long as the capacity targets are achieved.

81 The PRB recommends that Member States define an environmental financial incentive scheme and additional local environment targets based on additional indicators as specified in Article 10 (3) and 11 (4) of the Regulation.

82 Member States should consider schemes that incentivise ATM related actions to reduce emissions. Such incentive schemes should relate to the contribution of ATM to improving flight efficiency and encourage improvements at local and network levels. For this purpose, these schemes should assess the effectiveness of ATM in helping airspace users to achieve their most environmentally efficient route. The PRB remains available to support Member States during the process.

[5] Compared to 1990 levels.

Union-wide environment targets					
KEA	2025	2026	2027	2028	2029
Analysis of historical KEA performance (starting point)	*2.40%*	*2.40%*	*2.40%*	*2.40%*	*2.40%*
Estimated benefit defined in the ERNIP (yearly ramp up to -0.09pp)	*-0.01pp*	*-0.03pp*	*-0.05pp*	*-0.07pp*	*-0.09pp*
PRB study on the capacity and environment interdependencies (yearly allowance for CAP targets)	*+0.08pp*	*+0.08pp*	*+0.08pp*	*+0.07pp*	*+0.07pp*
The impact on Union-wide KEA of Russia's war of aggression against Ukraine (flat allowance)	*+0.28pp*	*+0.28pp*	*+0.28pp*	*+0.28pp*	*+0.28pp*
Union-wide targets	2.75%	2.73%	2.71%	2.68%	2.66%

Table 6 – Union-wide environment targets.

6 CAPACITY

- Capacity provision must enable environmental performance and ensure a low level of delay for airspace users.
- The recommended targets are taking into consideration the uncertainty and the increasing impact of adverse weather on the operations of ANSPs.
- The PRB recognises that it will not be possible to resolve all existing capacity issues before 2027. However, it is not possible to quantify the exact impact of these issues for the Union-wide average en route ATFM delay.

6.1 PRB target ranges proposal

83 Given the interdependency between capacity and flight efficiency, the PRB identified the capacity KPA as the enabler for better environmental performance. This can be achieved by eliminating ATFM delays as much as reasonably possible. In its advice on target ranges, the PRB's analysis suggested that ANSPs should resolve delays due to sector-opening gaps and the lack of ATCOs by the end of RP3 and that ANSPs should be able to eliminate most en route ATFM delays by the end of 2027 by implementing the measures included in the NOP.

84 However, as achieving zero ATFM delays is neither reasonable nor realistic, the PRB proposed a capacity target range calculated as the sum of the allowance for weather-related delays, the allowance for non-ATC disruptions, and a system resilience buffer which allowed for minor delays.

85 The PRB's advice on Union-wide target ranges for RP4 was to not include any allowance related to the impact of the war in Ukraine. While it was not possible to predict the evolution of the conflict, the PRB assumed that ANSPs fully adapt to the current status by the end of RP3.

86 Given the RP3 experience to date, the PRB signalled to Member States that the local capacity targets must be supported by strong and impactful financial incentive schemes. Incentives to ensure delivery of a specified outcome need to be set at an appropriate level (especially when a deviation from the cost-efficiency trends is requested).

87 To support the setting of the capacity target ranges, the PRB considered three pieces of evidence:

- Evidence 1: Historical capacity performance of ANSPs, especially focusing on delays with ATC capacity and ATC staffing reasons;
- Evidence 2: Historical occurrence of non-ATC disruptions-related and adverse weather-related delays; and
- Evidence 3: Capacity improvement plans included in the European Network Operations Plan 2023-2027 Edition April 2023 (NOP), the analysis conducted by the SESAR Deployment Manager on the expected benefits of the implementation of CP1 ATM functionalities, and the RP3 performance plans and monitoring reports submitted by the Member States.

88 The proposed RP4 Union-wide capacity target ranges are shown in Table 7.

Average delay (min/flight)		
Year	Upper bound	Lower bound
2025	0.5	0.41
2026	0.5	0.38
2027	0.5	0.35
2028	0.4	0.33
2029	0.4	0.31

Table 7 – RP4 target ranges proposed for capacity KPA.

6.2 Key comments from stakeholders

89 During the stakeholder consultation processes, ANSPs noted the discrepancy between the proposed target ranges and the current performance of the network. Moreover, ANSPs highlighted the difference between the delay forecast included in the NOP and the target ranges proposed by the PRB, with the forecast delay in the NOP being significantly higher than the upper bound of the capacity target ranges. On the other hand, airspace users noted that the NOP shows where improvements would be necessary, and that it should not be used as a baseline.

90 Stakeholders referred to the economic optimum level of delays, and how a balanced approach

between cost-efficiency and capacity targets was required to ensure a feasible combination of targets.

91 Some stakeholders commented on how the interdependency between environment and capacity performance may be affected in certain situations by measures proposed by the Network Manager and how increasing capacity may reduce horizontal flight efficiency. They also noted that unexpected traffic growth and the increasing volatility of traffic levels affected the ability of ANSPs to provide sufficient capacity, especially when coupled with a significant increase in traffic complexity.

92 Airlines highlighted that past and present underperformance should not be used to define the ambition of the targets and that more pressure is required to eliminate underperformance from the network. They commented that the costs associated with surplus capacity should not be borne by airlines.

93 Several comments highlighted the increasing impact and uncertainty of adverse weather and how the weather allowance included in the capacity target should take this into consideration. On the other hand, others suggested that the impact of weather may be overestimated, as it is not transparent if capacity problems were already present before the weather impact.

94 The benefits coming from system implementations, in general, and from those related functionalities included in the Common Projects 1 Regulation were also the subject of comment. Some considered that these benefits may be overestimated and may take more time to materialise.

95 Details on the feedback received during the consultation process and the PRB responses can be found in Annex I of this report.

6.3 Additional evidence available

96 Since the publication of the PRB's advice on the target ranges for RP4, two additional pieces of evidence became available to the PRB:

- The capacity performance of 2023; and
- Outcomes from the follow-up discussions with delay hotspot ANSPs.

97 The PRB considered data on capacity performance of 2023 that now covers the full year, although not including the post-operational adjustments. Delay data from 2023 shows that the capacity problems at the hotspots remain unresolved, and in addition, delays related to adverse weather increased compared to previous years. On the positive side, ANSPs which suffered a significant impact from the war in Ukraine managed to adapt and improve their performance compared to 2022.

98 During the consultation process, the PRB engaged with ANSPs experiencing significant delays during the past number of years to gather more information on issues related to ATCO recruitment, training, and rostering. Details are included in Annex III of this report. Generally, the PRB concluded that some ANSPs may not be able to fully resolve the ongoing issues related to the lack of ATCO staff by the start of RP4. On the other hand, all ANSPs who were consulted reported measures to improve capacity and rectify the situation.

6.4 Capacity targets recommendation

99 The PRB carefully considered all the comments received during the consultation process, and the additional evidence that became available.

100 The targets proposed are above the upper bound of the target ranges advice for the capacity KPA as a result of the revised calculation for the weather allowance. The targets remain fully aligned with the PRB ambitions for RP4.

Historical capacity performance

101 Historical performance, including 2023, was significantly worse than the upper bound proposed in the capacity target ranges. The performance of 2022 and 2023 was largely driven by technical issues, industrial action of ATCOs in ANSPs at key locations, and the aftermath of the COVID-19 pandemic, in addition to the well-known issues of ATCO shortages. Moreover, traffic volatility and changes in network flows due to geopolitical events also adversely affected some ANSPs, driving higher delays.

102 In 2023 there were 9.075M IFR movements in the SES area, with the average en route ATFM delay being 1.84 minutes per flight (before post-ops adjustments), 1.34 minutes per flight above the 2023 target. As a comparison, in 2016 the number of IFR movements was even slightly higher at 9.085M flights but the average en route ATFM delay was less than half of the 2023 figure at 0.87 minutes per flight. In 2012, 2013, and 2014, the number of IFR movements were between 8.910M

and 9.080M each year, while average en route ATFM delay was between 0.54 and 0.63 minutes per flight.[6] This shows that even without the technological development of the past ten years and the advanced functionalities now available for controllers, ANSPs were able to manage traffic with only one-third of the delay of 2023.

103 As for the currently existing issues of ATCO shortage and staffing, the follow-up discussions showed that the resolution of these issues is within the control of ANSPs. Rather than requiring fundamental changes to the staff hiring process, the issues related to delays in the hiring processes. These issues have been largely known since 2017 (at least), and their root causes lie within the remit of the ANSP concerned to resolve. It is clear that COVID-19 pandemic related restrictions had a detrimental impact. However, it is important to emphasise that these problems existed before the COVID-19 pandemic, as pointed out in the annual monitoring reports of the PRB and were within the power of the ANSPs to resolve.

104 The PRB concludes that the performance of 2022 and 2023 should not be used as a valid baseline for the setting of capacity targets for RP4, despite representing the current operational reality of some ANSPs. At the same time, the PRB recognises that it will not be possible to resolve all existing capacity issues before 2027. At this point, it is not possible to quantify the impact of these issues on Union-wide average en route ATFM delay targets.

Allowance for adverse weather and non-ATC disruptions

105 In the PRB advice on the Union-wide target ranges for RP4, the PRB proposed to include a weather allowance in the capacity target ranges calculated based on historical averages (0.20 and 0.27 minutes per flight for the lower and upper bound).

106 Following the comments received during the consultation process on the calculation of the allowance related to adverse weather phenomena, the PRB considered weather-related delays without including 2020 and 2021 in the dataset.

107 This alternative calculation yielded a higher short-term average weather impact, resulting in 0.35 minutes per flight (+0.08 minutes per flight to the original figure). Considering the increasing unpredictability of weather phenomena and their impact on capacity performance, the PRB recommends including a weather allowance of 0.35 minutes per flight in the capacity target for each year of RP4 (i.e. +0.08 higher than the upper bound of the target ranges). As a reference, the weather allowance included in the NOP is 0.28 minutes per flight for the years of RP4, which is 0.07 minutes per flight lower than that proposed by the PRB.

108 The PRB understands that uncertainty around weather is increasing, as the occurrence and severity of weather phenomena affecting aviation in general. At the same time, uncertainty around the weather can also result in a significantly lower impact on capacity during the following years. In addition, ANSPs now have access to more advanced forecasting tools and services and should make use of this opportunity to improve their planning and mitigate the impact of weather.

109 Weather-related delays cannot be excluded from the capacity target setting as per the regulatory definition of the key performance indicator on capacity. However, Member States have the possibility to define incentive schemes which exclude weather-related delays from the calculation of financial bonuses and penalties, thereby protecting the ANSPs.

110 Finally, in the PRB advice on the Union-wide target ranges for RP4, the PRB proposed to include a non-ATC related disruptions allowance in the capacity target ranges calculated based on historical averages (0.01 and 0.03 minutes per flight for the lower and upper bound). Given the uncertainty of possible disruptions not under direct control of ANSPs, the PRB recommends including 0.03 minutes per flight in the capacity target for each year of RP4 (i.e. upper bound of the target ranges).

Capacity improvement plans and benefits of CP1 ATM functionalities

111 The comments received from some ANSPs and Member States concerning the implementation and benefits of CP1 and other advanced ATM system functionalities suggested that the benefits associated with these measures may be overestimated in the capacity target ranges. The evidence

[6] Data is sourced from the data published by Eurocontrol AIU on https://ansperformance.eu.

collected on the benefits of CP1 in the PRB advice on the Union-wide target ranges for RP4 showed that full and timely implementation of the ATM functionalities would bring ATFM delay savings in the order of ten million of minutes (compared to a scenario in which none of the functionalities were implemented). The PRB is aware that the current operational scenario is not equivalent to the theoretical scenario used for the above calculation since actual benefit can only be measured after implementation. Accordingly, the CP1 implementation benefit could not be used as quantitative evidence in the definition of target ranges.

112 With respect to the comments received on the implementation of capacity improvement measures by the start of RP4 and the discrepancy between the target ranges and the NOP delay forecast, the PRB reiterates that the 2023-2027 edition of the NOP was prepared before the capacity target ranges for RP4 (and thus the targets for RP4). Therefore, the measures and the delay forecast established based on those measures should not be used as a baseline for the target setting. Once the Union-wide capacity targets are set, ANSPs should devise capacity improvement plans which contribute adequately to achieving the targets. This may require additional efforts to be made and additional measures to be explored by some ANSPs, compared to those included in the current edition of the NOP.

PRB Approach

113 As for the target ranges, given the interdependency between capacity and flight efficiency, the top priority for the capacity KPA in RP4 is to support environmental performance in the European ATM network by eliminating ATFM delays (which result in aircraft flying longer distances).

114 The PRB proposes capacity targets calculated as the sum of the allowance for non-ATC disruptions, the allowance for weather-related delays, and a system resilience buffer which allows for minor delay.

115 The PRB recommends including 0.03 minutes per flight for each year of RP4 as an allowance for non-ATC-related disruptions. The value should be included for all years of RP4 given the uncertainty around possible disruptions not under the direct control of ANSPs.

116 The PRB recommends including 0.35 minutes per flight for each year of RP4 as an allowance related to adverse weather. The latest evidence shows an increased impact of adverse weather on capacity performance. Thus, the allowance for weather-related delays has been increased by +0.08 minutes per flight compared to the target ranges advice.

117 The system resilience buffer was included in the capacity target ranges to allow for unforeseen difficulties and to acknowledge that targeting zero en route ATFM delay is neither practically feasible nor economically meaningful. The PRB discussions with the ANSPs in the delay hotspots of the network indicated that not all capacity issues related to ATCO shortage and allocation may be resolved in full before 2027. However, it is not possible to quantify the impact of this on delay performance, therefore, the PRB recommends using the upper bound of the system resilience buffer, equal to 0.2 minutes per flight for the years 2025, 2026, and 2027 to allow for residual delays resulting from these issues, and equal to 0.1 minutes per flight in 2028 and 2029. While it could be expected that the benefits of capacity improvement measures show a more gradual improvement between 2025-2027, the PRB recognises that some improvement measures may also create short-term constraints. As from 2028 onwards, the PRB expects the ANSPs to have resolved all currently existing issues, implement new, state-of-the-art systems, benefit from investments into advanced ATM functionalities, and therefore further improve capacity performance.

118 The resulting capacity targets for RP4 recommended by the PRB for each year are shown in Table 8 (next page).

Union-wide capacity targets					
Average Delays (min/flight)	2025	2026	2027	2028	2029
Allowance for non-ATC disruption delay	*0.03*	*0.03*	*0.03*	*0.03*	*0.03*
Allowance for weather related delay	*0.35*	*0.35*	*0.35*	*0.35*	*0.35*
System resilience buffer	*0.20*	*0.20*	*0.20*	*0.10*	*0.10*
Union-wide targets	0.58	0.58	0.58	0.48	0.48

Table 8 – Union-wide capacity targets.

7 COST-EFFICIENCY

- The RP4 priority for cost-efficiency remains unchanged: Ensure that environment and capacity performance is delivered at an efficient cost.
- The cost base should gradually become more efficient.
- The PRB revised the methodology to estimate the 2024 baseline and 2029 cost base taking account of stakeholder comments.

7.1 PRB target ranges proposal

119 The RP4 priority for the target ranges was to ensure that environment and capacity performance improvements are delivered at an efficient cost. The achievement of the environment target needs to be supported by a consistent capacity target and facilitated by an appropriate cost-efficiency target. For RP4, in order to further support the delivery of the environmental and capacity performance, the PRB proposed to recover a share of the ANSPs' cost inefficiency, while leaving a proportion for the ANSPs to use to improve operational performance. The PRB proposed to reduce between 5% to 10% (i.e. corresponding to 1/3 and 2/3 of the inefficiency identified in Annex II) of the inefficiency in the ANSPs' cost base by the end of RP4. The PRB considered that additional means may be needed by some Member States to improve capacity (under certain conditions). While these costs were not reflected in the target ranges, they could be allowed on a case-by-case basis.

120 The PRB also included the cost for the NSAs as submitted by the Member States. This enables the NSA to further improve their effectiveness as local authorities, especially in respect to the monitoring of the implementation of recruitment and investment plans, and of safety, environmental and capacity performance.

121 To support the setting of the cost-efficiency target ranges, the PRB considered three pieces of evidence:

- Evidence 1 – Cost forecast based on Member States' submissions;
- Evidence 2 – Cost forecast based on historical data. This evidence applies statistical methods to forecast the costs for each year from 2024 to 2029; and
- Evidence 3 – Cost inefficiency estimated by the academic group. As for RP3, the PRB asked a group of academics to estimate, through benchmarking, the range of ANSP cost inefficiency observed in the current system.

122 The RP4 Union-wide target ranges and the 2024 baseline proposed are shown in Table 9.

2024 baseline: 55.61€$_{2022}$ / 7,198M€$_{2022}$

y-o-y change of determined costs		
Year	Upper bound	Lower bound
2025	-0.7%	-3.1%
2026	-0.7%	-3.1%
2027	-0.7%	-3.1%
2028	-0.7%	-3.1%
2029	-0.7%	-3.1%

Table 9 – RP4 target ranges proposed for cost-efficiency KPA.

7.2 Key comments from stakeholders

123 Stakeholders expressed reservations regarding the methodologies applied for the calculation of the 2024 baseline. The main comment related to the overestimation compared to the submissions by Member States. Comments received also questioned the baseline methodology for not including the impact of geopolitical events, such as Russia's war of aggression against Ukraine.

124 While most stakeholders agreed with the cost-efficiency objective, some expressed concerns regarding the ambition of the targets and the methodologies implemented in forecasting. Others commented on the lack of transparency regarding the methodology for the calculation of local targets. Stakeholders also expressed concern about not considering interdependencies between cost-efficiency and other KPAs. Some comments were made about the use of a flat recovery of inefficiency, as it neglected the heterogeneity among the ANSPs.

125 Details on the feedback received during the consultation process and the PRB responses can be found in Annex I of this report.

7.3 Additional evidence available

126 One additional evidence, the STATFOR February 2024 forecast, became available after the publication of the PRB advice on the Union-wide target ranges for RP4 (which was based on the forecast from March 2023). The differences in the traffic forecast have two impacts on cost-efficiency targets:

- The Union-wide service units forecasted are -0.4% lower in 2024, and +3.3% higher in 2029; and
- The average increase in service units from 2024 to 2029 is +2.7%, 0.7 percentage points higher than previously forecast, therefore increasing the contribution of the traffic evolution to the achievement of the cost-efficiency targets.

7.4 Cost-efficiency targets recommendation

127 To support the setting of the cost-efficiency targets, the PRB has taken into consideration the comments received during the consultation processes. As a consequence, the methodology for the definition of the 2024 baseline values and the cost forecasts for 2029 has been revised.

128 The targets proposed are within the target ranges advice and fully aligned with the PRB ambitions for RP4.

2024 Baseline values

129 As defined by the Regulation, both a Union-wide baseline value for the determined costs and a Union-wide baseline value for the determined unit cost should be defined in respect to the year preceding the start of the reference period (i.e. 2024). The baseline proposed in the PRB advice on the Union-wide target ranges for RP4 was based on an average between four values: (i) Member States' submission, (ii) PRB service units based forecast, (iii) PRB IFR based forecast, and (iv) maximum per Member State of (i), (ii), and (iii). The resulting values were 55.61€$_{2022}$ for the 2024 unit costs, corresponding to 7,198M€$_{2022}$.

130 Considering the comments received from stakeholders, the PRB decided to revise the methodology to estimate the baselines. The revised cost baseline is calculated primarily on the basis of the Member States' submissions and, for six Member States, on the PRB cost forecast for 2024. As described in Annex I of the PRB advice on the target ranges for RP4 (paragraph 210), the Union-wide aggregation of the Member States' submissions for 2024 may be biased. The Member States' submissions potentially underestimated costs, given that six Member States did not update the 2024 nominal costs from the RP4 performance plans while they updated upwards both the service units forecast and the inflation index. Therefore, to correct for the potential underestimation for the six Member States which did not update the 2024 costs, the PRB applied its cost forecast based on IFR movements. The resulting revised cost baseline amounts to 7,100M€$_{2022}$. This approach is without prejudice to the assessment of the draft performance plans that will be carried out from October. The 2024 revised determined unit cost baseline is calculated by applying the latest available STATFOR base scenario of February 2024 (i.e. 55.07€$_{2022}$). The resulting baseline in terms of determined unit costs is -1% lower than then one advised by the PRB in the target ranges report. The revised approach reflects the "actual costs available for the preceding reference period", the "latest available cost estimates" and the "traffic variations and their relation to costs" (Article 9 (4) of the Regulation).

2029 Cost base forecast

131 Considering the comments received by stakeholders, the PRB decided to revise the methodology to estimate the cost base for 2029 which, together with the baseline estimation, are the basis for defining the year-on-year change of the RP4 determined unit costs.

132 The revised methodology is a combination of the evidence applied for the definition of the target ranges. In terms of cost base for 2029, the revised methodology considers both the States' submissions and the PRB cost forecast based on IFR movements (i.e. the cost bases used for the upper and lower bounds of the target ranges). Some of the stakeholders' comments challenged the validity of the PRB cost forecasts. However, as highlighted in Annex I of the PRB advice on the Union-wide target ranges for RP4, the difference in 2029 costs between the PRB forecast and the Member States' submissions (7% difference) was largely due to a small number of Member States (which

were identified as outliers in terms of cost increase).[7]

133 In order to retain the values as submitted by the Member States and correct for the biases caused by the few outliers, the revised approach considers the aggregation of the 2029 costs as submitted by the Member States where such costs are below 130% of the 2019 baseline values, while using the PRB cost forecast for the Member States which submitted cost above 130% of the 2019 baseline values. The revised 2029 Union-wide costs before the application of an inefficiency reduction factor amount to 7,669M€$_{2022}$, +2.7% higher that the PRB IFR based forecast and -4.4% lower than as submitted by the Member States. This approach is without prejudice to the assessment of the draft performance plans that will be carried out from October, where local circumstances or deviations for the cost-efficiency targets will be examined.

Cost base inefficiency

134 Based on the results and recommendations of the academic study (Annex II of the PRB advice on the Union-wide target ranges for RP4), the PRB proposed to recover part of the 16% inefficiency identified in the ANSPs' cost base by the end of RP4 (i.e. 5% of inefficiency for the upper bound, 10% for the lower bound).

135 In line with the PRB ambitions and considering the target advice for environment and capacity KPAs, the PRB recommends recovering 5% of the cost inefficiency identified in the cost base. Starting from the 2029 Union-wide determined costs defined in the previous section (i.e. 7,669M€$_{2022}$) and applying the 5% inefficiency reduction to the costs related to the ANSPs, the resulting 2029 determined costs equal 7,314M€$_{2022}$. As indicated in the target ranges report, the cost inefficiency not recovered should be used by the ANSPs to improve operational performance. In monetary values, the cost inefficiency not recovered amounts to 843M€$_{2022}$ only considering 2029 (i.e. 11% of 7,669M€$_{2022}$).

136 The resulting determined unit cost for 2029, factoring in a 5% reduction of inefficiency and divided by STATFOR February 2024 forecast equals 49.60€$_{2022}$.

PRB Approach

137 As for the target ranges, the RP4 priority is to ensure that environment and capacity performance improvements are delivered at an efficient cost. The achievement of the environment target needs to be supported by a consistent capacity target and facilitated by an appropriate cost-efficiency target.

138 For RP4, to further support the delivery of the environmental and capacity performances, the PRB proposes to recover a share of the ANSPs' cost inefficiency. The amount retained by the ANSPs should be used by the ANSPs to improve operational performances. As for the target ranges, the PRB considered that additional means may be needed by some Member States to improve capacity (under certain conditions). While these costs are not reflected in the targets, they could be allowed on a case-by-case basis.

139 With respect to the environmental performance, the PRB strongly advises the Member States to make use of the possibility provided by the Regulation to set financial incentive schemes for environment targets. The PRB remains available to support Member States during the process.

140 Finally, as for the target ranges, the PRB proposes to include NSAs costs as submitted by the Member States. This will enable the NSA to further improve their effectiveness as local authorities, especially in respect to the monitoring of the implementation of recruitment and investment plans, and of safety, environmental and capacity performances.

141 The PRB advises to set the year-on-year change of the average Union-wide determined unit cost as a constant and equal percentage over the RP4 years. The target should be based on the average change from the 2024 baseline to the 2029 forecast determined unit costs, where:

- 2024 baseline calculated following the revised approach considering the Member States' submissions and the PRB cost forecast, divided by STATFOR February 2024 base forecast (55.07€$_{2022}$);[8] and
- 2029 forecast determined unit costs calculated following the revised approach

[7] Paragraphs 202 of the PRB advice on the Union-wide target ranges for RP4.

[8] Excluding the service units for flight segments performed as Operational Air Traffic in Germany.

considering the PRB cost forecast and the Member States forecast costs, factoring in a 5% reduction of inefficiency for the ANSPs, and divided by STATFOR February 2024 base forecast (49.60€$_{2022}$).[9]

142 The resulting year-on-year change of the average Union-wide determined unit cost ranges is -2.1% (Table 10).

143 The proposed cost-efficiency targets translate into 36B€$_{2022}$ of resources over the five years of reference period, +2B€$_{2022}$ (+6%) compared to RP2, and +3B€$_{2022}$ (+9%) compared to RP3.[10] The available resources should be fully dedicated to resolving the capacity constraints and to improving the environmental performance.

Union-wide cost-efficiency targets	
2024 baseline	55.07€$_{2022}$ / 7,100M€$_{2022}$

y-o-y change of Union-wide determined unit costs	2025	2026	2027	2028	2029
Union-wide target	-2.1%	-2.1%	-2.1%	-2.1%	-2.1%

Table 10 – Union-wide cost-efficiency targets.

[9] Excluding the service units for flight segments performed as Operational Air Traffic in Germany.

[10] RP2 values refer to actual costs, RP3 values refer to actual costs from 2020 to 2022 and determined costs for 2023 and 2024.

8 COMPARATOR GROUPS

144 In accordance with point (c) of Article 9 (4) of the Regulation, together with the adoption of the Union-wide performance targets for RP4, the Commission should establish the comparator groups of ANSPs with a similar operational and economic environment for the purpose of assessing performance targets for the cost-efficiency KPA.

145 ANSPs experience diverse operational environments due to variations in ownership and governance, the economic environment, the configuration and size of the airspace they manage, the traffic they handle, and their operational practices and staffing levels. While certain factors can be influenced or managed by ANSPs in some way, other factors can be beyond their control in the short term.

146 During RP3, the PRB received several comments from stakeholders regarding the necessity to modify the current comparator groups to consider the changed economic and operational environment (e.g. rise of inflation rates, COVID-19 pandemic traffic recovery, Russia's war of aggression against Ukraine). In order to take into account the changed environment, the PRB applied a cluster analysis expanding on the variables previously used, and updating the values to the latest available. The output of the statistical model has been corrected to avoid biases not fully considered by the methodology. Annex IV to this report provides details on the methodology.

147 The PRB recommends creating six comparator groups defined as:

- Cluster A: The air navigation service providers of France, Germany, Spain, and Italy.
- Cluster B: The air navigation service providers of Cyprus, Ireland, Malta, and Portugal.
- Cluster C: The air navigation service providers of Bulgaria, Croatia, Greece, Hungary, Romania, Slovakia, and Slovenia.
- Cluster D: The air navigation service providers of Czech Republic, Estonia, Latvia, Lithuania, and Poland.
- Cluster E: The air navigation service providers of Austria, Belgium-Luxembourg, the Netherlands, and Switzerland.
- Cluster F: The air navigation service providers of Denmark, Finland, Norway, and Sweden.

9 ALERT THRESHOLDS

148 In accordance with point (b) of Article 9 (4) of the Regulation, together with the adoption of the Union-wide performance targets, the Commission should establish alert thresholds beyond which Member States may request a revision of the performance targets contained in performance plans. The Regulation specifies that these alert thresholds shall be based on:

- The deviation of the actual traffic from the traffic forecast over a given calendar year, expressed as a percentage of IFR movements;
- The deviation of the actual traffic from the traffic forecast over a given calendar year, expressed as a percentage of service units; and
- The variation of the reference values as a result of the seasonal updates of the Network Operations Plan in comparison to the reference values from the latest version of the Network Operations Plan available at the time of drawing up the performance plan. This variation shall be expressed as a percentage of variation or as a fraction of minutes of en route ATFM delay, depending on the magnitude of the reference values.

149 The PRB has analysed the historical data, the applications for performance plan revision, and the latest available forecast (Annex V to this report).

150 The PRB recommends to not change the threshold, maintaining them at the levels applied for RP3:

- An alert threshold for percentage variation of actual IFR movements in relation to the base forecast at 10%;
- An alert threshold for percentage variation of actual service units in relation to the base forecast at 10%; and
- 0.05 minutes of en route ATFM delay if the reference value from the latest version of the NOP available at the time of drawing up the performance plan is less than 0.2 minutes of en route ATFM delay; or 0.04 minutes of en route ATFM delay increased by 5% of the reference value from the latest version of the NOP available at the time of drawing up the performance plan if the reference value is greater than or equal to 0.2 minutes of en route ATFM delay.

10 PRB ADVICE ON RP4 TARGETS

Safety

Union-wide safety targets RP4	
Management Objectives	2029 maturity levels
Safety culture	C
Safety policy and objectives	C
Safety risk management	D
Safety assurance	C
Safety promotion	C

Environment

Union-wide environment targets					
	2025	2026	2027	2028	2029
KEA	2.75%	2.73%	2.71%	2.68%	2.66%

Capacity

Union-wide capacity targets					
	2025	2026	2027	2028	2029
Average Delays (min/flight)	0.58	0.58	0.58	0.48	0.48

Cost-efficiency

Union-wide cost-efficiency targets	
2024 baseline	55.07€$_{2022}$ / 7,100M€$_{2022}$

y-o-y change of Union-wide determined unit costs	2025	2026	2027	2028	2029
Union-wide target	-2.1%	-2.1%	-2.1%	-2.1%	-2.1%