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A fresh look at the Single European Sky

Accompanying the documents

Amended proposal for a Regulation of the European Parliament and of the Council on the implementation of the Single European Sky (recast)
and
Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EU) 2018/1139 as regards the capacity of the European Union Aviation Safety Agency to act as Performance Review Body of the Single European Sky

{COM(2020) 579 final}

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1. Introduction

1.1. Policy context

The Single European Sky (SES) initiative aims to improve the overall efficiency of the way in which European airspace is organised and managed. This is done through the reform of the industry providing air navigation services, which are natural monopolies regulated at Union level.

Air traffic management (ATM) in Europe needs to be reformed to cope both with sustained air traffic growth over the last decade and with significant unforeseen traffic variations such as the one caused by the COVID-19 pandemic. This requires changes allowing operations to take place under the safest, most cost- and flight-efficient and environmentally friendly conditions, as well as measures contributing to the reduction of aviation emissions, in accordance with the objectives of the European Green Deal.

This implies de-fragmenting the European airspace, reducing delays, increasing safety standards and flight efficiency to reduce the aviation environmental footprint, and regulating charges related to monopolistic service provision. In this context, close civil-military collaboration, at national and EU levels, is necessary for the implementation of the Single European Sky.

Today, two of the biggest challenges facing the European ATM network are:

- the need for a system with scalable air traffic control capacity, capable of managing aircraft in the safest and most economically and environmentally friendly way, minimising delays and consequential extra fuel burn and emissions, inconvenience for passengers, and congestion; and
- the continued need to reduce the environmental footprint through appropriate measures in the area of air traffic management, knowing that such measures can contribute directly and indirectly to such reductions.

A lack of air traffic control capacity results in additional costs, delays or emissions. Delays are unnecessary and avoidable and cost the EU €6 billion alone in 2019.[1] These costs are passed on to the passenger by the airline. Flight paths can be environmentally sub-optimal in terms of CO_2 emissions, when pilots have to fly around congested airspace sectors or when airlines evade charging zones with higher rates. The Single European Sky legislation aims to address the issue of un-scalable air traffic control capacity and introduce measures that will improve in particular the environmental performance, which can be achieved through ATM.

1.2. Legislative background

Two major legislative packages constitute the current SES system – the first (SES I) adopted by the co-legislators in 2004 consists of now three (initially four) regulations, and the second (SES II) amended those Regulations in 2009. The number of Commission acts adopted in this area is significant, and so is the breadth of the details covered.[2] The relevant legislative rules are closely linked to those developed

[1] Eurocontrol: PRC analysis in 2013 SES2+ impact assessment
[2] An overview of SES legislation can be found in Annex III

for the European Union Aviation Safety Agency (EASA), parts of which have been superseded by the EASA Basic Regulation adopted in 2018.[3] The experience gained with SES I and SES II since 2004 and 2009, respectively, as well as with the high number of implementing acts adopted, has shown that the principles and direction of the SES are valid and warrant a continuation of their implementation. Despite this body of legislation, the high costs of air traffic management (ATM) and delays resulting from limited capacity, as well as inefficiencies in ATM causing congestion leading to delays that are detrimental to the environment, persist. It is clear that the overall targets set when SES was first established were not fully achieved in their expected timeframe. The aviation sector has evolved over the last decade, and these changes should be taken into account.

1.3. Rationale for amending the SES2+ proposal and the EASA Basic Regulation

The original proposal for a regulation of the European Parliament and of the Council on the implementation of the Single European Sky (SES2+) was adopted by the Commission on 11 June 2013. The Transport (TTE) Council agreed a partial General Approach on 3 December 2014. Trilogue negotiations began in 2015, but stalled for different reasons, *inter alia* because of the disagreement between the United Kingdom and Spain over the status of Gibraltar airport.

In 2017, the European Court of Auditors (ECA) issued a Special Report on the Single European Sky[4]. It made recommendations for implementation by the Commission, most of which already featured in the SES2+ proposal. In 2019, the ECA followed up this analysis with another Special Report on the regulation of ATM modernisation in the EU.[5] The report makes recommendations to the Commission. Both reports provide valuable advice on the implementation of SES and its technological pillar, SESAR[6].

In 2019, work began to revive the discussion on the future of the Single European Sky. A Wise Person's Group, composed of fifteen eminent experts in the field, was set up to assess the current situation and future needs for ATM in the EU. After months of consultations in the form of hearings with all relevant operational stakeholders, a common view was formed, resulting in the Report of the Wise Persons Group on the future of the Single European Sky in April 2019, containing ten recommendations.[7] In parallel, a Pilot Project was commissioned by the European Parliament on the future architecture of the European airspace, which also resulted in a report in March 2019[8]. Under the Finnish Presidency of the Council of the European Union, a high-level conference on the future of the Single European Sky was held in September 2019, resulting in a signed joint stakeholder declaration urging action on the part of the European institutions to simplify the regulatory framework and institutional set-up to respond to the current and future needs of European ATM, making it fit for purpose.

From a political perspective, the European Parliament called on the Presidency of the Council ahead of the Transport Council of December 2019 to start work on the SES2+ proposal, putting it on the agenda

[3] Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018
[4] https://www.eca.europa.eu/Lists/ECADocuments/SR17_18/SR_SES_EN.pdf
[5] https://www.eca.europa.eu/Lists/ECADocuments/SR19_11/SR_SESAR_DEPLOYMENT_EN.pdf

[7] https://ec.europa.eu/transport/sites/transport/files/2019-04-report-of-the-wise-persons-group-on-the-future-of-the-single-european-sky.pdf
[8] https://www.sesarju.eu/node/3253

of the Council. A policy debate was held during this session, resulting in the following conclusions by the Presidency on a way forward regarding the next legislative steps to be taken:

"…a majority of Member States advocated working on the basis of the SES II+ draft text and a complementary analysis from the Commission on proposals for new measures"

Finally, the departure of the United Kingdom from the Union lifted the formal barrier that blocked the negotiations on the SES2+ proposal.

In light of these developments, it would appear appropriate to amend the SES2+ proposal, in particular for the following reasons:

- The text needs to be aligned with relevant Union legislation adopted and in force[9] since the negotiations on the SES2+ proposal stalled;
- A revision of some definitions and concepts would simplify the text and reflect stakeholder inputs and current operating environment, as well as relevant conclusions from reports and studies recently carried out;[10]
- Recommendations resulting from the European Parliament pilot project on the future architecture of the European Airspace and from the European Court of Auditors may need to be reflected;
- Technology has advanced in addition to market developments, which should be taken into account.

The push for decarbonisation in the context of the European Green Deal across industry sectors has also led to additional considerations for measures that can be taken to reduce the environmental footprint of ATM.

In some cases, the preferred options from the 2013 impact assessment should be considered valid, while in other cases, those options should be updated to reflect changes in the sector. Section 4 of this Commission Staff Working Document describes the new approaches proposed and presents evidence to support the changes.

2. Challenges

The core problems identified in the 2013 impact assessment on the Single European Sky focus on air traffic control capacity and delays, cost reduction in air navigation service (ANS) provision and flight efficiency and environment. The same challenges are addressed in this Staff Working Document and amended proposal, with a decreased emphasis on cost reduction and an increased emphasis on delays and the environment.

[9] Primarily the EASA Basic Regulation 1139/2018

[10] The evidence used in this Staff Working Document and for the modifications in the legislative text can be found in Annex IV.

In the short term, the COVID-19 crisis has substantially altered the economic conditions under which air navigation services are provided. Air navigation service providers are faced with the challenge to adjust activities and related costs in response to the crisis – also to support the future recovery of the air transport sector – while at the same time ensuring that future air traffic growth does not create another delay crisis like the one experienced before the current crisis caused by the COVID-19 pandemic. This ultimately shows the need for transforming the way air navigation services are provided so that changes in demand can improve and be accommodated in a more flexible way.

2.1. Delays and congestion

From this point forward, ATM fixed costs must be reduced to a minimum, so that service provision is economically sustainable even in cases of unforeseen traffic variations, for example in times of crisis.

Figure 1 presents the long-term traffic forecast as calculated for the Challenges of Growth – European Aviation in 2040 study.

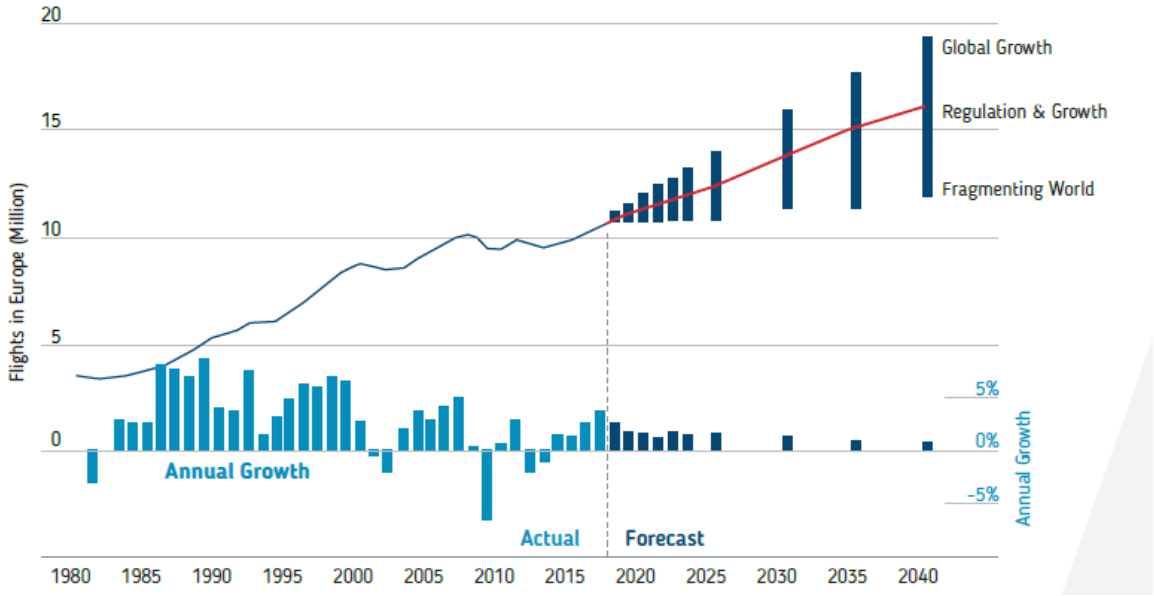

Figure 1: Overview of the future long-term traffic (IFR movements)[11]

This forecast does not take into account the current crisis caused by the COVID-19 pandemic. Currently, there is no other forecast that reliably estimates the impact of the crisis on the long-term traffic levels. Past experience shows that after all crises Europe has faced in the past (e.g. SARS, volcanic ash, financial crisis), the demand for travel returned. This is depicted in Figure 2 (below).

[11] European Aviation in 2040 - Challenges to growth – flight forecast (EUROCONTROL)

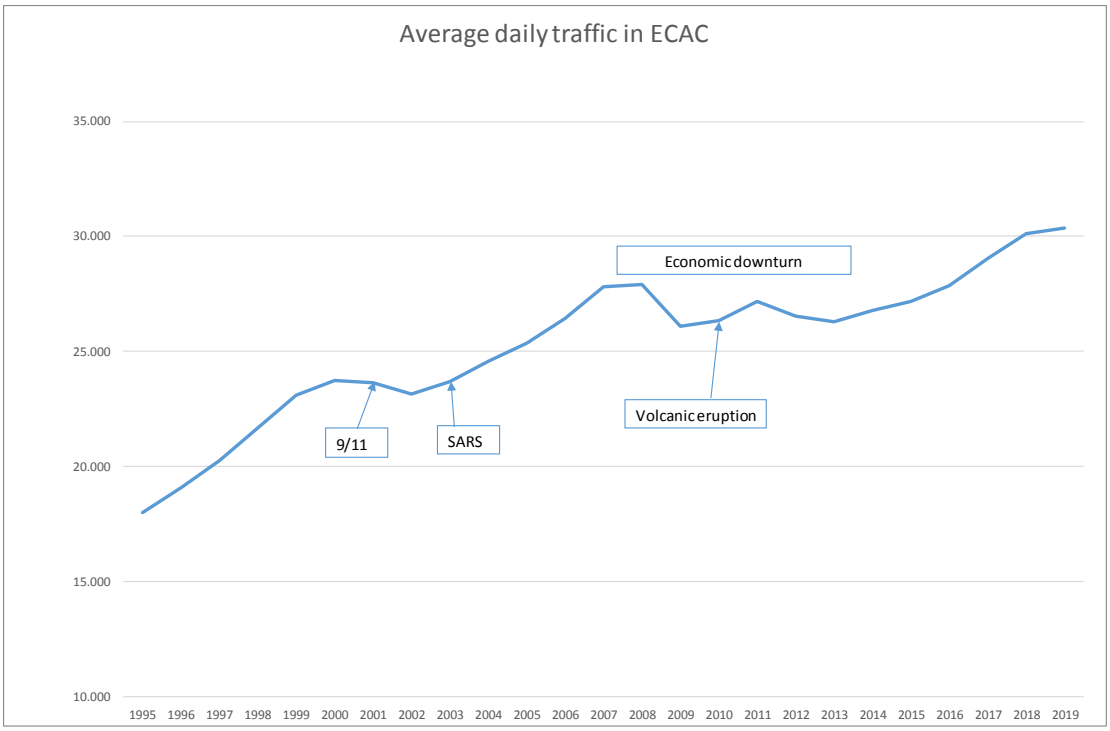

Figure 2: Traffic growth recovery after certain crises

Initial analysis of capacity levels for the next months are estimated by Eurocontrol as follows:

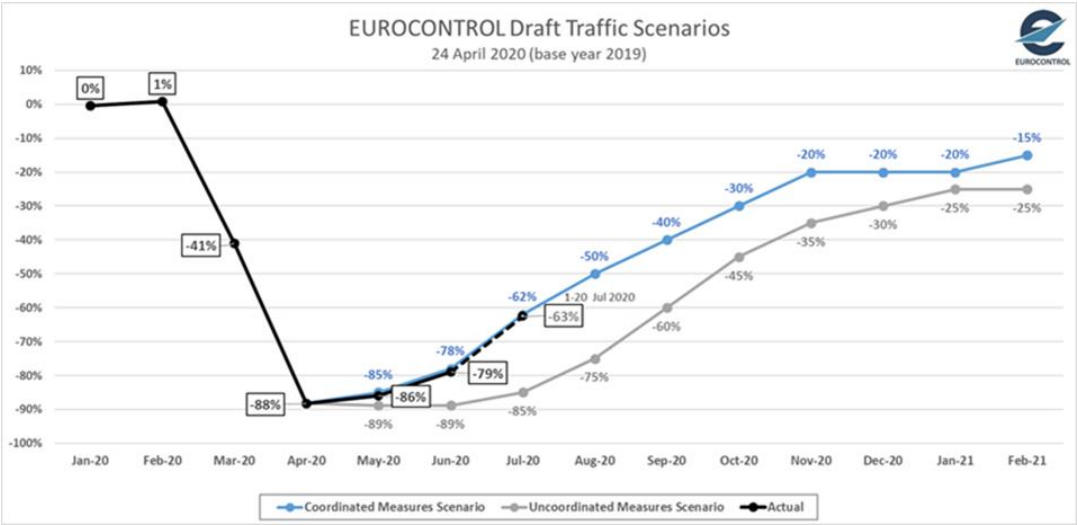

Figure 3 – Draft Traffic Scenarios 2020-2021

The figure above depicts a sharp decline in traffic levels compared to 2019 between January and April 2020, during the height of the COVID-19 pandemic in Europe and the introduction of travel restrictions. Recovery begins shortly thereafter, with a prediction along the lines of two scenarios: the implementation of coordinated or uncoordinated measures. Actual recovery has been more rapid than

predicted with nearly 40% of traffic recovery in July 2020, predicted to reach 50% of capacity recovery in August 2020.

Considering the big picture, and looking ahead to the recovery of the traffic, there have been limited improvements in air traffic control capacity over the last several years, while growth in the number of flights has increased, causing congestion and delays over a large area of the Union. The summer peak travel period of 2018 in particular and 2019 were witness to major air traffic control capacity crises in the core areas of European airspace. This can be observed in Table 1, which shows the increase in *en route* delay of more than 100% in 2018 compared with 2017. The summer of 2020 was forecast to experience a similar capacity crunch and resulting delays. However, this is no longer the case due to the current travel restrictions caused by the COVID-19 pandemic.

	2016 (minutes 000s)	2017 (minutes 000s)	2018 (minutes 000s)	2019 (minutes 000s)
Airport ATFM delays	6,823	6,574	6,575	6,686
En-route ATFM delays	8,665	9,282	19,052	17,481
Total ATFM delays	15,488	15,856	25,627	24,166

Table 1: Evolution of delays 2016-2019 - EUROCONTROL

The main causes of delay and actual delay minutes have not changed considerably over the years, as can be seen in the table below. In the first quarter of 2020, however, delay minutes were close to zero as a direct result of travel restrictions due to the COVID-19 pandemic. In other years, the primary reason remains air traffic controller (ATC) staffing and capacity as shown in Figure 4.

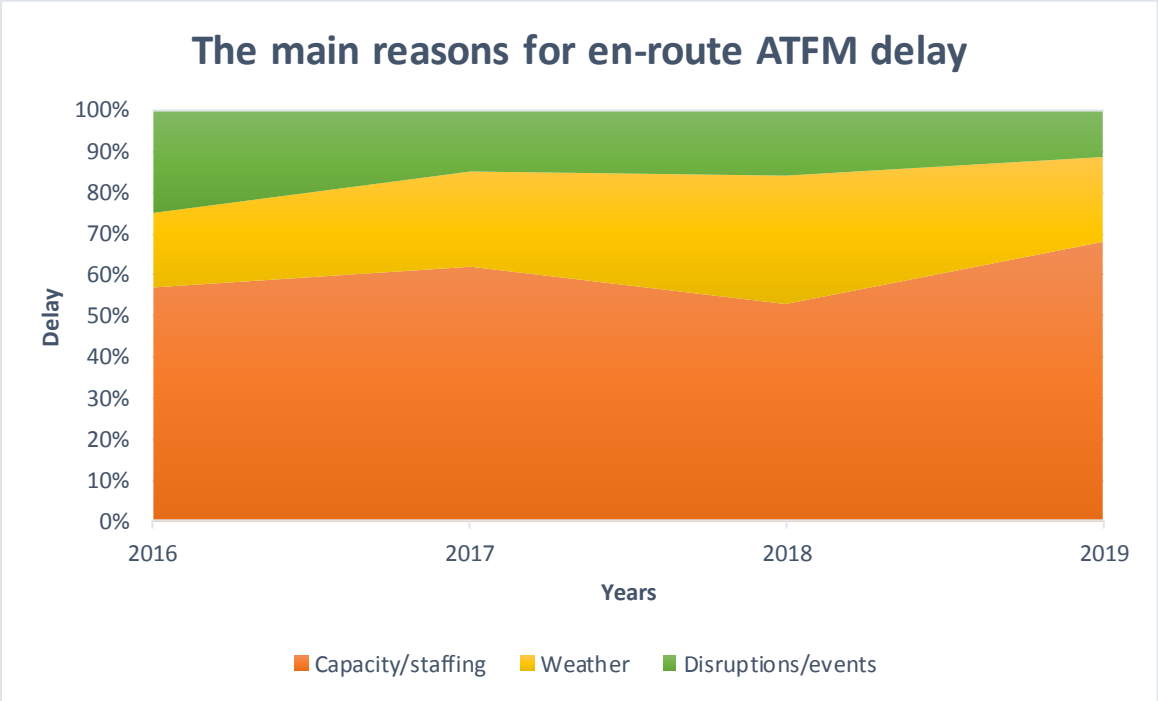

Figure 4: European ATFM en-route network delays 2019 - delay causes - EUROCONTROL

In 2018 and 2019, the Network Manager, re-appointed by the Commission for the 2019-2029 period, took crisis measures to manage the congestion by re-routing aircraft around the congested areas, which

was a necessary measure to manage the traffic. The actions managed to alleviate the congestion to some degree but these measures are unsustainable in the long term. Additional avoidable CO_2 emissions were generated due to inefficient flight paths taken due to the required diversions around the congested areas. Nevertheless, without these crisis measures, the delay situation would have been worse as flights would likely have to wait in holding patterns or be instructed to make additional diversions, resulting in increased fuel burn.

One of the main lessons learned from the congestion caused by un-scalable capacity is that air navigation service providers often could not provide the level of air traffic control capacity that was committed in the Network Operations Plan prepared by the Network Manager. The evidence of this is shown in Table 2 below.

ANSP	Capacity (2019 planned)	Capacity (2019 achieved)	Difference (%)
Austrocontrol – Vienna ACC	202	181	-11%
Skeyes – Brussels ACC	140	118	-15%
DFS – Karlsruhe ACC	399	279	-30%
DSNA – Marseille ACC	287	222	-23%

Table 2: Planned vs achieved capacity in 2019 (movements per hour) - EUROCONTROL

In case one air navigation service provider is unable to provide the required air traffic control capacity, then the possibility to delegate service provision to another service provider is needed. For example, in 2019, Deutsche Flugsicherung (DFS) committed to deliver the capacity of 399 movements/hour from their Karlsruhe Area Control Centre. The actual delivery was 279 movements/hour, which is 30% less than what was committed. As a result, a number of flights had to be re-routed, flying sub-optimal routes. This is not the only example of non-delivery of the planned capacity.

In order to avoid this situation, stronger commitment by air navigation service providers is needed in the planning (pre-tactical) phase so that the Network Manager can be in a position to manage the capacity-brokering process, which has been hampered in the past by air navigation service providers that did not deliver the capacity they committed to the Network Manager.

2.2. Environmental challenges

2.2.1. Air Traffic and Emissions Growth

There were 10.3 million flights in the Single European Sky (SES) area[12] during 2019. The increase for the year was 4.92% and 1.15% from 2017 and 2018, respectively. Flights are forecast to increase at an average annual growth rate of 1.6% over the third Reference Period (RP3 – 2020-2024) of the performance scheme[13] to 11.2 million flights by 2024 under the base traffic forecast[14]. This forecast was revised downward in comparison to the forecast made at the beginning of 2019 reflecting the uncertainty related to withdrawal of the United Kingdom from the Union, the precarious economic

[12] EU28 + Norway & Switzerland
[13] See section 4.3
[14] EUROCONTROL STATFOR statistics and forecast service spring 2020

outlook, recent bankruptcy of airlines and the grounding of the Boeing 737MAX aircraft, in particular. This, coupled with the continuing increase of aircraft size, means decelerating flight growth.

Moreover, the travel restrictions caused by the COVID-19 pandemic in 2020 resulted in an almost 90% reduction in capacity and flights in April 2020. This figure is gradually recovering but is forecast to return to pre-health crisis levels only in 2021 at the earliest (see Figure 3.5 above). The entire STATFOR[15] forecast for RP3 will be revised to take into account the pandemic and gradual air traffic recovery. From now on, building on low traffic levels, environmentally optimal trajectories should continue to be the main objective. Under a scenario in which capacity is sufficient, flights can more easily be planned with direct routes, ensuring lower emissions.

As regards CO_2[16], the total emissions for flights flying within the ECAC[17] area have increased by 9% from 191.3 million tonnes (Mt) in 2017 to 208.7 Mt in 2019. If nothing is done, it is estimated that future CO_2 emissions under the base traffic forecast scenario would increase to 302.8 Mt by 2035 i.e. a 58% increase vs. 2017.

The figure below presents the dispersion of CO_2 emissions during all phases of flight.

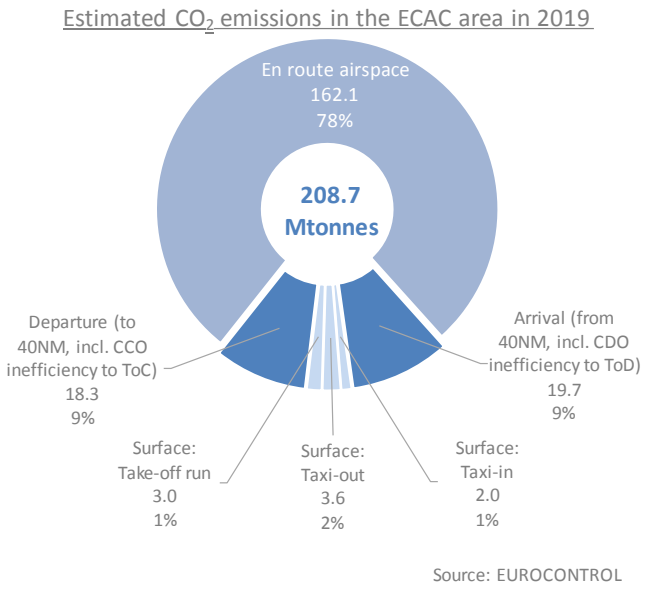

Figure 5: Aviation CO_2 emissions and flight phases in 2019

[15] EUROCONTROL's statistics and forecast service

[16] While greenhouse gas emissions includes non-CO_2 effects such as nitrogen oxides (NO_x), vapour trails and cloud formation triggered by the altitude at which aircraft operate, this chapter focuses on carbon dioxide (CO_2).

[17] European Civil Aviation Conference (ECAC) - 44 Member States: Albania, Armenia, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Monaco, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom

The main contributor to the total gate-to-gate CO_2 emissions is that produced during *en route* flight, accounting for 78%, with 18% of the total emissions generated during the departure and arrival phases, and finally, 4% of emissions during surface movements (including the take-off run).

2.2.2. Network flight inefficiencies

When comparing the gate-to-gate actual trajectories of all flights controlled in the ECAC area in 2019 against their unimpeded trajectories[18], there are an additional 6% gate-to-gate CO_2 emissions[19] . This corresponds to a "benefit pool" of 11.6 Mt of excess CO_2 emissions that ATM can directly influence, as can be seen in Figure 6. It should be noted, however, that there are a number of reasons why the actual trajectory flown can vary from the unimpeded trajectory, and therefore 100% efficiency is not achievable (e.g. due to adverse weather, avoidance of 'Danger Areas', need to maintain minimum separation). Some inefficiency is unrecoverable due to necessary operational constraints and interdependencies[20].

In recent years, the congestion and necessary re-routing of many flights added several % points of additional emissions, leading the total avoidable emissions to around 10%.

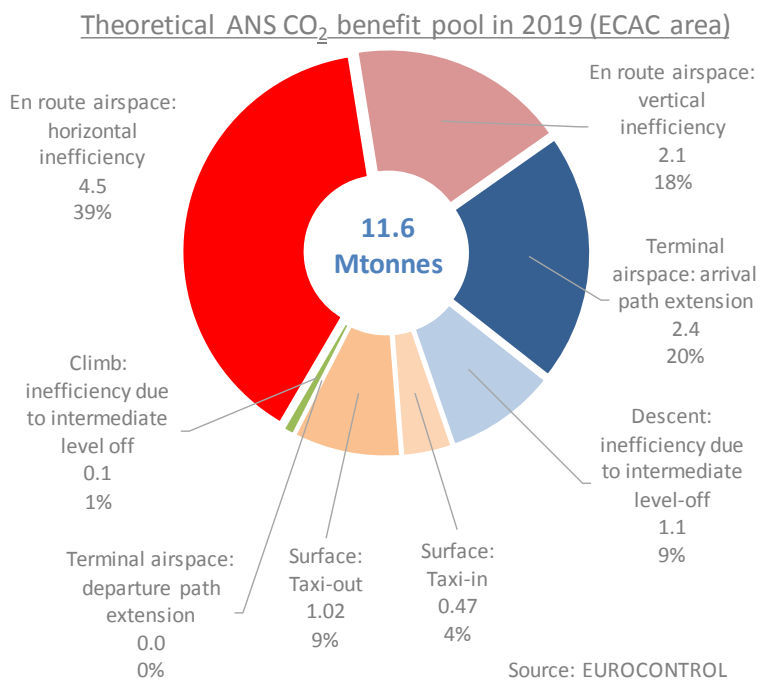

Figure 6: ANS CO2 benefit pool 2019

[18] Unimpeded trajectories are characterised by: zero additional taxi-out time, no level-off during climb (full fuel CCO), no sub-optimal cruise level, en-route actual distance equal to great circle distance (orthodromic distance i.e. shortest distance between two points on the surface of a sphere), no level-off during descent (full fuel CDO), no additional time in the Arrival Sequencing and Metering Area (ASMA), zero additional taxi-in time.

[19] EUROCONTROL Aviation Intelligence Unit

[20] CANSO, 2012, ATM Global Environment Efficiency Goals for 2050

Figure 7 illustrates the relative excess CO_2 emissions[21] broken down into the different flight phases. The relative excess CO_2 emissions have remained roughly stable over the last eight years, even though traffic has increased. This is an average across all annual operations but that masks significant diversity of emissions performance across the network both on city-pairs and by individual air carriers.

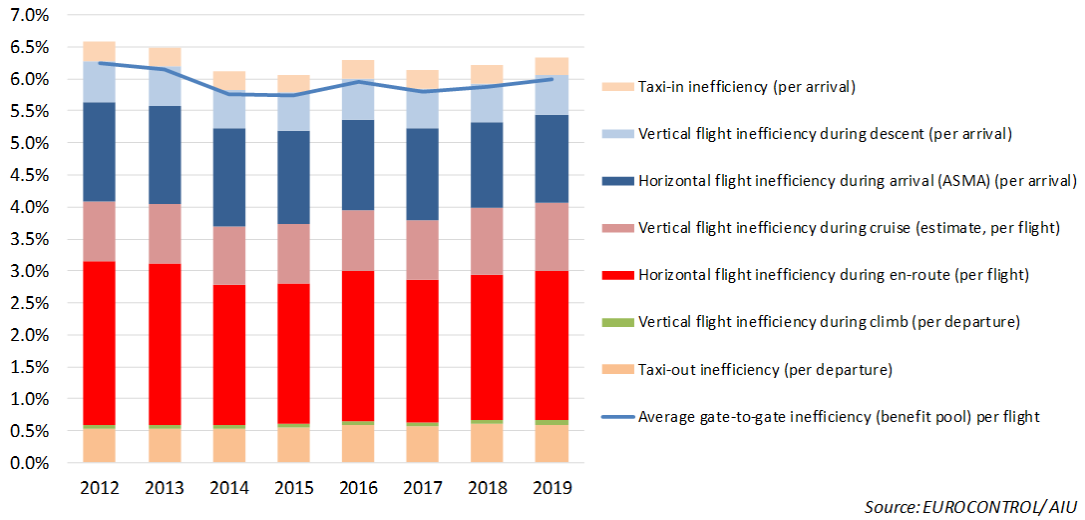

Figure 7: Breakdown gate-to-gate excess CO2 emissions due to network inefficiency in the ECAC area

Clearly, a number of measures can be taken, in addition to the implementation of the European ATM Master Plan, to improve flight efficiency and subsequently reduce CO_2 emissions during most, if not all, phases of flight, such as the implementation of a continuous descent approach, local measures, etc. ATM charges should be increasingly used to incentivise efficient behaviour and the Network Manager should have a strengthened coordination role in pursuit of this goal.

3. Objectives pursued

The main objective of the 2013 SES2+ proposal was to:

'improve the competitiveness of the European aviation system vis-à-vis other comparable regions, and in particular developing further the SES initiative, which implies de-fragmenting the European airspace, reducing delays, increasing safety standards and flight efficiency as to reduce the environmental footprint of aviation and the costs related to service provision.'

That same objective should be maintained, with an even greater emphasis on delay reduction and flight efficiency, in order to contribute to reducing aviation's carbon footprint, while maintaining the goals of cost-efficiency and de-fragmentation. Safety in ATM is a paramount constant objective, and is being effectively addressed and managed under Regulation (EU) 2018/1139 ('EASA Basic Regulation') and at national level. Clear links between the two Regulations should therefore be established.

[21] Excess emissions expressed as a percentage of the total annual emissions with unimpeded trajectories in the ECAC area

The amended SES2+ proposal should take into account outcomes from the inter-institutional negotiations at the time, and retain the same high-level policy objectives and choices as were agreed to by Member States in 2009 and again stated in the 2011 White Paper for Transport.[22] Furthermore, the Commission's Aviation Strategy for Europe of 2015[23] called for the immediate adoption of the SES2+ proposal by the co-legislators. The European Parliament Resolution on this Strategy specifically recalled that 'airspace is also part of the EU single market, and that any fragmentation resulting from its inefficient use, as well as diverging national practices' causes 'longer flight times, delays, extra fuel burn and higher levels of CO2 emissions.' The letter from the European Parliament's Committee on Transport and Tourism to the Finnish Presidency of the Council of the European Union of November 2019 urged them to put SES2+ back on the agenda of the Council and begin work, as they 'are ready to negotiate the text in a swift manner.'[24] The Commission's European Green Deal of December 2019[25] identifies SES as a measure that 'will help achieve significant reductions in aviation emissions.' The Single European Sky reform should be a reform with structural changes designed to ensure that the sector is fit and better able to realise its economic potential in a balanced way, by providing for a more flexible and scalable provision of air navigation services, fit for the operating environment of today and of the future, and by improving on environmental performance. Once the pandemic is contained, it will be even more crucial to increase resilience and scalability in the management of European skies. In the short term, this means reducing the risk that a progressive return to operations would be disrupted by unforeseen airspace closures or lack of air traffic control capacity. It is crucial to arrive at a more agile service provision environment with an ability to scale the capacity quickly and efficiently to demand when it grows or declines, or where the geographical needs change. Scalability means the capacity that the ATM system needs to adapt quickly to traffic demand variations without generating negative externalities such as cost, delay or emissions.

4. New approaches and evidence

4.1. General

This section describes what issues should be addressed in the SES2+ proposal, how they should be addressed, and the evidence to justify changes.

4.1.1. Coherence with Union legislation

Provisions that now fall under the competence of the EASA Basic Regulation[26] should be removed, such as oversight tasks related to safety and rules on interoperability. Definitions should be updated and added, for example, on SESAR.

[22] https://ec.europa.eu/transport/themes/strategies/2011_white_paper_en
[23] https://ec.europa.eu/transport/modes/air/aviation-strategy_en
[24] TRAN/D/2019/38211 Letter from Chairwoman Karima Delli to H.E. Minna Kivimaki, Ambassador of Finland to the European Union 28.11.2019
[25] COM(2019) 640 final
[26] Regulation No 2018/1139

4.2. National Supervisory Authorities - NSAs

4.2.1. *Independence of NSAs*

The preferred policy option in the impact assessment accompanying the 2013 SES II+ proposal refers to the ineffective role of NSAs and calls for the introduction of mutual cooperation and EU-level coordination as well as institutional separation of NSAs from the air navigation service providers (ANSPs). Full institutional separation instead of current functional separation of NSAs from the ANSPs that they oversee, as is the case in some Member States, is required. The intention was to further increase the level of independence and keep NSAs from using ANSP personnel for oversight and economic regulation related tasks. This intention remains valid.

NSA independence should be strengthened vis-à-vis the 2013 SES II+ proposal as regards strategic decision-making. This would follow the same approach as regulation in other transport sectors such as rail, for example as regards requirements on persons in charge of strategic decisions. The preferred option in the impact assessment was the institutional separation of NSAs from ANSPs, in addition to mutual co-operation and EU coordination, a logic that should continue to be followed.

In its 2017 Special Report No 18 on the Single European Sky, the European Court of Auditors issued a specific recommendation on the independence and capacity of NSAs.

Recommendation 3 of the European Court of Auditors – Ensure full independence and capacity of NSAs

NSAs should be fully independent and have the capacity to fulfil their functions. To this end, Member States should ensure that NSAs are hierarchically, financially and functionally independent from ANSPs and have the resources necessary to oversee and monitor the performance and charging schemes. We note that the prompt adoption of the applicable provisions in the SES2+ legislative package would be beneficial in this regard. Deadline: 2019

Arguably, the ECA recommendation alone justifies a strengthened proposal for the independence of NSAs from ANSPs, or from any private or public entity. Some NSAs continue to be only functionally separated from the ANSPs they oversee, which is seen as a conflict of interest. This situation should be remedied to ensure the full independence of the NSA, in terms of their organisation, functioning, legal structure and decision-making. National supervisory authorities should also have the necessary financial resources and capabilities to carry out the tasks assigned to them.

4.2.2. Tasks of NSAs

The NSA tasks should slightly change to include conducting the activities necessary for the issuance of economic certificates, overseeing the correct application of procurement requirements and to reflect their role regarding the functioning of the performance and charging schemes.

Furthermore, NSAs should be able to delegate tasks related to the implementation of the performance and charging scheme to the Agency acting as Performance Review Body (PRB), in order to further assist NSAs, which would help overcome difficulties in resourcing NSAs.

There should be a clear delineation of tasks between NSAs and the national competent authorities (NCAs) referred to in the EASA Basic Regulation. NSAs would be responsible for economic regulation, for overseeing the correct application of procurement requirements as well as the performance and charging scheme. NSAs would also be in charge of issuing the economic certificates covering requirements unrelated to safety (financial robustness, liability and insurance cover). NCAs would focus on safety oversight and other tasks described in Regulation (EU) 2018/1139. This distinction would not prevent Member States from attributing both sets of tasks to one entity at national level, provided that the independence requirements are respected.

4.2.3. Cooperation between NSAs

Mutual cooperation regarding safety certification and safety oversight is addressed by the EASA Basic Regulation. Mutual cooperation and EU-level coordination regarding economic regulation tasks should also be addressed, in line with the preferred policy option on NSAs.

4.3. Service provision

4.3.1. Economic certification of air navigation service providers and designation of air traffic service providers

Safety certification and safety oversight tasks are carried out by the national competent authorities (NCAs) and are laid out in the EASA Basic Regulation. Only additional requirements not covered by the EASA Basic Regulation, namely requirements on financial robustness, liability and insurance cover, should be maintained. Those requirements should be subject to a separate economic certificate to be issued by national supervisory authorities, as it would relate to their field of competence. In order to provide air navigation services in the Union, air navigation service providers would need both the safety certificate, regulated under EASA Basic Regulation, and the economic certificate, regulated under the SES.

Conditions for the designation of air traffic service providers should be strengthened to ensure that minimum public interest requirements are fulfilled. This would notably align with Union trade and competition policies. The designation should be time limited, with a possibility of renewal. Such a system would ensure that the Member States reconsider the designation decision in a reasonable timeframe. Provisions related to the functional airspace blocks (FABs) have turned out not to function well, which pleads for their removal.

4.3.2. Conditions regarding the provision of services including Communication and Navigation (CNS), Aeronautical Information (AIS), ATM Data (ADS), Meteorological (MET) and terminal air traffic services (ATS)

4.3.2.1. New approach to the provision of CNS, AIS, ADS, MET and terminal ATS

The procurement of CNS, AIS, ADS, MET and terminal air traffic services under market conditions has the potential to enhance cost-efficiency and should therefore be made possible., It would be important to ensure a level playing field and avoid discrimination, cross-subsidisation and distortion of competition. Therefore, *en route* services should be organisationally separated from the other air navigation services. This approach would be without prejudice to the choice as to whether or not to de-couple these services

from the provision of air traffic services. Moreover, the above-mentioned objectives could only be fully achieved where accounts are separated as appropriate.

In order to ensure that procurement entails the expected benefits, it would be preferable that compliance with the requirements be monitored. To this effect, NSAs should oversee the correct application of those requirements. Providers could decide to continue providing all the services in an integrated manner, but could not prevent other providers from offering competing services. This aspect presents a close link with the issue of exchange of and access to operational data, which are necessary for the provision of the services concerned. In this respect, the price for access to those data is important. It would be appropriate to base that price on marginal cost, so that it covers only the costs that are not already paid for.

A set of requirements along these lines would enable cross-border air traffic data service provision and the possibility for competition of data service provision on a European market.

At the same time, the above approach could lead to a separate offer of ATM data services and, as a consequence, to potentially important rationalisation. Corresponding capacity could be available 'on demand' and possibly cross-border, with greater flexibility for monopolistic ATS services. It should however remain the choice of the air traffic service providers, or of the airport, to make use of this or not.

Airport operators should be enabled to procure terminal air traffic services for aerodrome control under market conditions, to reap cost-efficiency gains. Where they would decide to do so, the Member States should designate the ATS providers chosen by the airport operators as a result of a procurement procedure. Regarding terminal air traffic services for approach control, by contrast, Member States should retain the possibility to choose whether to allow procurement, as the services are sometimes provided by more than one airport. It would not appear appropriate to constrain the action of airport operators or supervisory authorities any further: Where a Member State has allowed procurement, the decision on whether to procure or not would be left to the airport operator, or to the national supervisory authority where the approach control is not provided by an airport, but is provided by a group of airports.

Since the SES performance and charging schemes are aimed at problems specific to services provided outside market conditions, terminal air traffic service providers operating under market conditions should not be subject to those schemes. However, they should provide relevant data on the performance of air navigation services for monitoring purposes.

This new approach would directly follow from the preferred option of the 2013 impact assessment and would present a potential for rationalisation which is significant and would allow for the implementation of 'capacity on demand', meaning that service provision could be taken over by different providers more flexibly. However, in contrast to the original proposal, it would introduce more choice and flexibility in order to account for the variety of situations in Europe and for the reasons laid out in 4.3.2.2.

Indeed, in the 2013 impact assessment, the preferred option was to structurally separate support services from core services (ATS). Under that option, the assets and staff required for support services provision were to be transferred into a separate organisation, independent from the core air traffic service provider. As a consequence, and under the same option, , the possibility for Member States to

designate these support service providers was to be removed as those services could no longer be bundled together with the core service (ATS) and designation could only take place in respect of the core service. This would have made the support services subject to European procurement rules. As a result, the 2013 proposal envisaged the compulsory unbundling of support services, i.e. air traffic services in all Member States were supposed to be separated from the provision of support services and made open to competition within the Union. It also suggested to enable centralised services to be offered by the Network Manager.

The approach suggested above achieves similar results, but through somehow different means. It allows certain services to be opened to the market, but requires the separation of accounts from *en route* air traffic services, leading to greater transparency and competition.

4.3.2.2. Justification for the new approach

At the time of the original SES2+ proposal, the 'vertical unbundling' of services was one of the most contentious proposals and was politically unacceptable for Member States in the initial discussions, and was one of the reasons that negotiations on SES2+ stalled. The 2013 impact assessment describes stakeholder views as especially negative on the side of trade unions and professional staff associations, as well as political opposition in certain Member States:

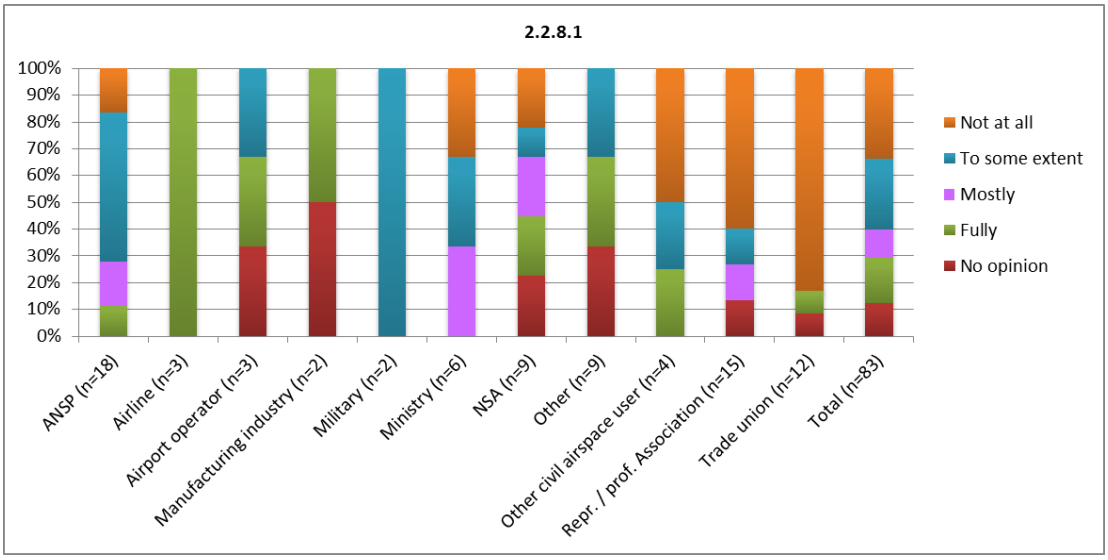

Figure 8: Support for unbundling of services from the core bundled ANSPs and opening up the market for them

Airlines fully supported the idea while the majority of ANSPs agreed, at least to some extent. As, however, revealed in bilateral consultations, the expected long-term effects of the then-proposed measures gathered large support. It was widely accepted that structural separation enables the creation of a true market, since services were supposed to be tendered out through an open process. Similar views are held still today.

Furthermore, the report adopted by the Wise Persons Group, regarding the future of the Single European Sky recommends *inter alia* the creation of a new market for ATM data service providers.

This justifies that the general idea of de-coupling be maintained. However, given the experiences drawn from the legislative discussions held so far, a change towards a voluntary de-coupling of CNS, AIS, ADS,

MET or terminal air traffic services from *en route* air traffic services, appears appropriate. It should be combined with an obligatory separation of accounts. This would allow for the creation of a (voluntary) market for *data* services in particular, a concept that most stakeholders indeed support. The creation of an opportunity to voluntarily participate in a market for data services would help overcome the difficulties that arose during the negotiations on the 2013 SES2+ proposal, as the unbundling of services would not be imposed.

The creation of such a market is supported also by the findings made in the European Parliament's pilot project Airspace Architecture Study, in which the major ATM stakeholders participated. This assessment was performed on the assumption of a new target architecture with an ATM data layer, presuming that ten air traffic data service providers (ADSPs) would operate in the market. The study estimates that the additional resilience brought by the dynamic delegation of air traffic services and capacity on demand would account for 38 million saved minutes of delay in the period 2019-2030. The following benefits were estimated:

- **Capacity**: Network is able to accommodate 15,7 million flights (increase of 50% in Network throughput compared to 2017) with delays below or at the level of the agreed SES target (max 0,5 min per flight distributed across all flights)
- **Environment**: Between 240 and 450 kg of CO_2 saved on average per flight due to optimisation of trajectories
- **Cost Efficiency**: Between EUR 57-73 saved per flight due to ANS productivity gains
- **Safety**: All simulations have been done against controller workload and indicate that the same safety levels can be maintained[27]

Furthermore, this approach would embrace the logic of a Digital Single Market. Finally, an ongoing Commission study on ATM Data Services Provision suggests that ATM data services, including production and processing of data, account for a market potential of up to EUR €2.2 billion per year or 25% in the ANS costs. The study also estimates the cost reduction potential at about 15% of present costs of data production infrastructure and processing.

4.3.3. Common information services for unmanned aircraft (i.e. drones)

The SES ecosystem has evolved since the beginning of the initiative in 2004. The new users of the airspace are one of the significant changes. Unmanned aircraft, commonly called drones, are already delivering innovative services within the European airspace. Yet, these emerging technologies also present a challenge. The rising number of unmanned aircraft system (UAS) operations in the European airspace poses safety, security and airspace integration issues. In order to ensure safe UAS traffic management while at the same time ensuring that those unmanned aircraft can safely operate within the existing air traffic environment in a harmonised way across the European airspace, there is a need to develop a robust regulatory framework.

It is therefore necessary to establish requirements on the pricing, and related oversight, of the Common Information Services (CIS) that are needed to enable safe air traffic management of the unmanned

[27] https://www.sesarju.eu/node/3253

traffic (i.e. drones), as well as on the pricing of and access to data necessary for such services. Those requirements should be similar to those relating to air traffic data services, namely that air navigation service providers must make data available at marginal cost. In addition, if an ANSP wishes to become a CIS provider, and in the interest of transparency and to avoid discrimination and cross-subsidisation, it should have separate accounts.

If U-space services are provided under market conditions, then a single point of truth needs to be established on data to enable the dynamic reconfiguration of airspace intended for unmanned aircraft. For this, rules on common information services are necessary.

This issue needs to be considered in the context of the ongoing work in the EASA Committee on the U-space regulation.

4.3.4. Performance scheme

4.3.4.1. New approach to the performance scheme

The approach to the performance scheme should change in several aspects.

Firstly, the responsibility of drafting and submitting the performance plans, which include binding performance targets, should be shifted away from the NSAs to the ATS providers. As a result, each air traffic service provider would draft its own plan, which would include the costs for the all air navigation services provided and procured necessary for the provision of air traffic services. This practice would enable air traffic service providers to take responsibility for their own plans, and allow NSAs to focus on their supervisory tasks.

Secondly, the performance plans should no longer be submitted to the Commission, as is the practice today, but rather to the Agency acting as Performance Review Body or to the national supervisory authority. This would ensure that the assessment of the performance plans be carried out with the required expertise and resources, while guaranteeing the independence of that assessment, which remains necessary. It would also allow for appeal procedures against the decisions taken on the performance plans.

The Agency acting as PRB would be in charge of assessing and approving the performance plans for *en route* air navigation services. The national supervisory authorities would be in charge of assessing and approving the performance plans for terminal air navigation services.

Such split of responsibilities however raises an issue of articulation between the procedures, in case air traffic service providers supply both types of services. Logically, they should in this case submit two separate performance plans, which however could give rise to diverging assessments as regards the allocation of costs between *en route* and terminal air navigation services.

In order to address this risk, the Agency acting as PRB would first assess the said allocation of costs between the two types of services. This would best be done on the basis of the classification of services notified by Member States and approved by the Commission ahead of each reference period.

In addition, the Network Manager should also draft and submit a performance plan for network functions, which would be assessed and approved by the Commission on the basis of an opinion of the Agency acting as PRB.

An additional change would include the removal of the targets on safety, since such target does not appear necessary in light of the existing substantive rules.

4.3.4.2. Justification for a new approach to the performance scheme

A change in the approach to the performance scheme is justified to adhere to the impact assessment's preferred policy option on the performance scheme, which is to reduce Member States' involvement in the target-setting process. This could be achieved by letting the ATS providers themselves set their performance targets, and those targets would be approved by either the PRB or independent NSAs. By shifting the responsibility of drawing up the performance plans away from the NSAs to the air traffic service providers (ATSPs), the NSAs would be able to fully focus on their economic oversight and local regulatory role, which is in line with the objective of having a more neutral target-setting process as addressed in the impact assessment and a strengthened independence of NSAs. The issue of resource limitations of NSAs would be addressed by providing that NSAs must be financed sufficiently. ATSPs should be made fully responsible for their performance plans. This approach aligns with regulation applicable to other network industries such as telecoms or energy, in that performance decisions would be taken by a dedicated, independent entity and not by the Member State, as is the case today. It would separate better the responsibilities of the operator and the regulator also at national level. Finally, a reduction of the reference period to two years as a minimum would reflect the current preferences of Member States.

With a strong, independent and technically competent Performance Review Body (PRB) function for the Agency to assess and approve the targets for *en route* services, and independent NSAs assessing and approving the targets for terminal services, the involvement of Member States in the target-setting process would be reduced, allowing a de-politicized target-setting process. Such a change would therefore be within the scope of the preferred policy option, which was to revise the target-setting process and improve the economic regulation.

4.3.5. Charging scheme

4.3.5.1. *Adaptations of the charging scheme*

The main principles related to the charging scheme should remain unchanged. However, if performance plans are to be adopted by air traffic service providers and no longer by Member States, minor adaptations are needed. In particular, the unit rates should be set specifically by the NSAs, rather than by Member States at large, after verification and approval of the Agency acting as PRB that they are in accordance with the performance plans and the charging rules. Given their role as supervisors of air traffic service providers, the NSAs are best placed for these purposes. The costs incurred by NSAs and other costs incurred by the Member State in relation to air navigation services (such as the costs of EUROCONTROL) ought to be charged to the air traffic service provider so that they could be included in the cost base for charges.

The charging scheme should continue to be fully consistent with Article 15 of the 1944 Chicago Convention on International Civil Aviation and take due account of Eurocontrol's charging system for *en route* charges.

4.3.5.2. Modulation of charges

The charging scheme should foresee that the Commission sets up Union-wide mechanisms supporting in particular the rollout of new technologies, or improvements in environmental performance and service quality. NSAs should also be able to set up such mechanisms at terminal charging zone level.

The possibility to modulate charges at local level in the performance and charging scheme already exists in Regulation (EC) No 550/2004 and is further laid out in Commission Implementing Regulation (EU) 2019/317 of 11 February 2019 laying down a performance and charging scheme in the single European sky, and is a possibility left to Member States. Most Member States, however, have not made use of it. Modulation should be mandatory at EU level in light of its positive effect on reducing CO_2 emissions. For example, charges may be modulated for airspace users that choose more environmentally-friendly flight paths.

Implementing modulation of charges at national level is difficult because modulation needs to be effective and ensure a level playing field across Member States (i.e. if one Member State applies it but the neighbouring Member State does not, it would reduce the benefits and limit its impact). It would also be impracticable if each Member State would set up different modulation mechanisms for the airspace under their responsibility. The benefits of modulation can materialise only if a flight is incentivised in a similar manner along all the portions of airspace through which it flies. Moreover, the environmental impact of aviation is cross-border by nature.

Therefore, *en route* charges should be modulated at European level, in a harmonised way, to ensure consistency, fairness, a level playing field and effectiveness of such measures across the pan-European network. For example, an aircraft equipped with 'clean' technologies or burning sustainable aviation fuel could benefit at network level by being offered priority services, or reduced ANS charges, whereas a 'polluting' aircraft would have to pay higher charges. Creating a pan-European modulation of charges would help overcome the reluctance of Member States to do this only at local level.

This would also address the ECA Special Report of 2019 on the deployment of ATM technologies,[28] which explicitly calls for a mandatory system for the modulation of charges:

Recommendation 2 of the European Court of Auditors – Reinforce the effectiveness of common projects

The Commission should make proposals to reinforce the effectiveness of Common projects by strengthening their enforcement mechanisms. This could include, for example, a making mandatory the system of modulation of charges, applicable to both ground and airborne stakeholders, which is currently voluntary in the charging scheme regulation. Such modulation should notably include more favourable navigation charges for early movers in the deployment of common projects. Timeframe: end of 2020.

[28] https://www.eca.europa.eu/Lists/ECADocuments/SR19_11/SR_SESAR_DEPLOYMENT_EN.pdf

4.3.5.3. Common unit rate

In addition, a possibility of introducing a common unit rate for *en route* air traffic services across the Single European Sky airspace should be introduced. The aim would be to open up the opportunity to incentivize airspace users to fly the shortest possible routes, but also to include a possibility for charging for potential higher airspace operations, in case this market segment develops in the future. In any case, the measure should be revenue neutral for air traffic service providers.

An expert opinion was produced by Eurocontrol for DG MOVE on this issue. Airspace users optimise their routings by minimising not only the sum of fuel costs, but also the route charges. This may lead to choosing to fly longer routes because the charges are lower in a certain charging zone. To address this problem, one solution is to supress any incentive for airspace users to fly longer routes for these purposes by setting a common unit rate that would apply in *en route* charging zones of the thirty SES States. The calculation would be per flight and would be made only for charging purposes, not for setting the determined costs: this means that it would be revenue neutral for air traffic service providers. This would result in benefits to the environment, network, ANSPs, airspace users and for the route charges system. Concretely, according to Eurocontrol, this would result in some of the following benefits:

- Lower CO_2 emissions (-0.17%, 290 000 tons per annum)
- Lower fuel consumption (-0.17%, 90 000 tons per annum)
- Lower NOx emission (-0.15%)
- Improved flow and sector load predictability for the network
- Financial transparency for Member States and ANSPs
- Lower Direct Operating Costs (-€150mn per annum) for airspace users due to lower flight time (-0.07%) and fuel burn (-0.17%)
- Simpler invoicing for airspace users as there would be a fixed charge per flight

Currently, airspace users are flying direct routes since there is no congestion, due to the COVID-19 pandemic. Incentives generated by a single unit rate would materialise in times of greater congestion, as it would incentivize airspace users to fly more direct routes, thereby saving on emissions. This is why a single unit rate should not be made mandatory by the legislator at this stage. Rather, the legislator should provide for a corresponding empowerment for the Commission, which the latter may resort to where appropriate, following further study and notably if congestion returns to pre-COVID-19 pandemic levels.

4.3.6. Establishment and tasks of a PRB function

4.3.6.1. New approach on the PRB

A new function for the Performance Review Body should be established, for the implementation of the performance and charging schemes. The tasks and powers should form a complete and consistent set, covering all relevant aspects of the performance and charging schemes. This includes the assessment of the allocation of costs between *en route* and terminal air navigation services, and assessing and

approving the performance plans of designated air traffic service providers for *en route* services. It would also be to provide opinions to the Commission for the setting of Union-wide performance targets and for the assessment of the Network performance plan. Another task should be to monitor the performance of *en route* air navigation services and to compile a Union-wide overview of the performance of terminal air navigation services, on the basis of the monitoring done by national supervisory authorities. Finally, it should be to issue corrective measures where performance targets are not met, and to conduct investigations as part of the review of compliance with the rules on the performance and charging schemes.

The new function should be administratively integrated into EASA ('the Agency'), which would act as PRB, clearly separated from EASA's safety-related tasks.

It could be explored between the Union and Eurocontrol that technical expertise and relevant performance-related data be transferred from Eurocontrol to the Agency acting as PRB, in order to make use of existing knowledgeable staff and to avoid duplication of data collection. Today, costs related to Eurocontrol staff are charged to airspace users and only costs related to data collection are paid through the Union budget. Transfers of staff from Eurocontrol to the Agency acting as PRB would therefore, from an airspace user perspective, maintain stable staff costs related to work on economic regulation of air navigation services. This transfer would require an agreement between the Union and Eurocontrol. The preferred option in the 2013 impact assessment called for shortening the target-setting process and favouring technocratic input from the PRB. The PRB would be entirely nominated by the Commission to ensure impartiality and allow for expertise from outside the aviation sector to be introduced. The new approach would not introduce a new concept, in relation to the PRB, that is outside the scope of the 2013 impact assessment.

4.3.6.2. Justification for the establishment and tasks of the PRB function

The economic regulation of air traffic management is a permanent task, requiring substantial technical work and expertise. Therefore, a permanent PRB function should be established. Under the constraints of the Union's financial rules, it is increasingly difficult to engage high-quality, stable and technically knowledgeable support services for the Commission to exercise this regulatory function. Qualitatively, a more professionalised PRB function would make the economic regulation of ATM more robust, with a staff and management able to deliver better quality recommendations, in a more efficient and timely manner. This would allow for shorter reference periods as the current periods of five years have been repeatedly criticised by Member States. In order to reduce this period, it is necessary to have staff working full time with adequate expertise in all key performance areas. Part of this staff could be composed of Eurocontrol technical experts transferred from Eurocontrol's Performance Review Unit in case a suitable agreement would be found between the Union and Eurocontrol. A permanent PRB function would ensure stability of experts required to perform core work tasks and analyses, and limit the need for extensive coordination between different organisations, as is the case today. It would also gain more credibility, which would allow for more effective performance improvements in Europe.

Finally, one of the recommendations of the Wise Persons Group on the future of the SES calls for establishing a strong, independent and technically competent economic regulator at European level, accommodating it within EASA. The decisions of the independent economic regulator should be subject to an appeal mechanism.

Structure of the PRB

Annex I analyses and assesses the different options for the set-up of the PRB.

The PRB function should be executed by a Union body. Establishing a standalone, independent Union body would be the preferred option to guarantee the full independence and strong focus on economic regulation of the PRB and its experts. However, for cost-efficiency reasons, the option to locate the PRB within an existing Union agency operating in the aviation sector, i.e. in EASA, should be chosen. Indeed, integrating the PRB into an existing structure would keep the marginal administrative and IT costs for the new structure to a minimum. In general, locating a new Union body in an existing agency is considered to be a more cost-efficient option.

This option would entail the establishment of the PRB function and its administrative integration within EASA, which would thus become the agency hosting the PRB function. This implies that EASA would provide infrastructure and support services (human resources, finance, IT, etc.) to the PRB. If technical expertise from Eurocontrol could be transferred to the PRB, the cost of human resources would remain stable for airspace users. In case of an agreement between the Union and Eurocontrol, the office of the PRB could be set up in the facilities of Eurocontrol in Brussels, which would contribute to create synergies.

However, as EASA's responsibilities include safety oversight and certification of air navigation service providers, it is of crucial importance to ensure that the economic regulation pillar is functionally fully separated from the safety pillar for the Single European Sky regulated under EASA Basic Regulation. This entails an independent governance for the PRB, segregated from the current tasks and personnel of EASA. This structure would need to ensure an absence of conflict of interests between the safety oversight functions and the economic regulation function.

In particular, there should be a functional separation between the activities on performance review and the rest of EASA's activities. This would be reflected in reporting and accountability channels at management level. In order to ensure full separation, a Regulatory Board for Performance Review and a separate Board of Appeal for Performance Review should be established.

As regards the budget, the fees and charges levied for the PRB function for the exercise of activities on performance review should be clearly identified and separated from the other fees and charges of EASA. This is to ensure that what is charged to air navigation service providers, and ultimately to airspace users via air navigation charges, for the PRB function, covers only the activities on performance review.

Financial impact

Quantitatively, a more professionalised PRB would make a positive impact on the Union budget as currently €6 million annually are spent on PRB experts and administrative support from the Union budget. It is objectively justified to finance the PRB function from fees and charges paid by designated air traffic services providers, on account of interventions necessary for the application of the performance and charging schemes. There should also be a possibility for voluntary financial contributions from Member States, or national supervisory authorities. Such a configuration is easier to be realised if this function is hosted in an Agency, i.e. EASA. As a result of this configuration, there would be no negative impact on the Union budget, nor on the budget of EASA for its other activities.

The activities of a professionalised PRB would be charged to air traffic service providers and included in their cost bases. The cost would in fact be passed on to airspace users via route charges. It can be estimated that the corresponding increase of the charges would only be marginal. Using 2019 figures and dividing the total cost of the PRB by the total number of service units in Europe, the following figures emerge:

- Current PRB cost = €6 million
- Total number of *en route* service units (2019) = 139 million
- This makes an increase in the unit cost of €0.04. The targeted unit cost for 2019 was €50.65, so this would be an increase of 0.07%.

Therefore, even if a permanent PRB would be financed without Union funding, the corresponding increase of the charge to airspace users would be negligible. Financial synergies would be leveraged from the cost-efficiency gained from a common administrative structure by being located within EASA. Part of this staff could be composed of technical experts transferred from Eurocontrol. In addition, if an agreement between the Union and Eurocontrol would be found, it may be possible to set up a local office of the PRB in the facilities of Eurocontrol in Brussels, which would also contribute to create synergies.

4.3.7. Transparency of accounts of air navigation service providers

The transparency of accounts of ANSPs should be further strengthened, particularly by requiring the maintenance of separate accounts for each air navigation service. NSAs and the Agency acting as PRB should have a right of access to the accounts of the ANSPs under their supervision. Financial data should be audited by the NSA or an entity independent from the ANSP, and conclusions should be made publicly available.

This is in line with accounting standards, market rules, and would allow for a voluntary de-coupling of services, by ensuring that discrimination, cross-subsidisation and distortion of competition are avoided.

4.4. Chapter IV (Network Management)

4.4.1. Functional Airspace Blocks (FABs)

FABs should no longer be regulated, but may continue to exist by choice of their Member States, if deemed useful. The abolition of specific rules on FABs would not stand in the way of, or otherwise affect more flexible cooperation configurations among ANSPs.

Indeed, the experience and assessment of the functioning of FABs since they were first set up in 2009 has made clear that the FABs have failed to address the problem of airspace fragmentation, which was their original objective. As an example, performance plans for the third reference period (RP3) were all submitted to the Commission by Member States individually at the end of the second reference period (RP2), with the exception of FABEC. In bilateral meetings with FABs carried out in 2019 with DG MOVE, it became clear that only a few FABs are effectively functioning. In addition, other types of cooperation between Member States without limiting them to a predefined geographical area are also encouraged. This is why the obligation for Member States to formally cooperate within FAB should be abolished. However, this would not prevent Member States from continuing to cooperate in the context of FABs or

other forms or ways, should they wish to do so. Neither would this prevent any ANSP to delegate or outsource certain services to the ANSP of another Member State (i.e. cross-border service provision) to enable better capacity management and match with resources.

The 2013 impact assessment accompanying the SES2+ proposal presents a preferred option of making FABs more flexible. It presents evidence that flexibility over rigidity is preferred. The option would focus the FABs as tools for achieving the performance scheme targets. Airspace design would be increasingly moved to the level of the Network Manager to ensure seamless airspace throughout the network, whereas the FABs themselves would focus on finding the optimal alliances for each part of the services being provided. The desired flexibility expounded by the preferred option could be addressed by removing requirements on FABs altogether.

4.4.2. Network management

4.4.2.1. Adaptions suggested

In order to facilitate the discharge of network functions and to enable the Network Manager to better respond to crises, a number of adaptations should be made.

The network functions should be more clearly defined and should include the facilitation of delegation of air traffic services provision as well as management of the delivery of air traffic control capacity in the network, as set out in the binding Network Operations Plan previously agreed between the Network Manager and individual air navigation service providers. An additional function should consist in the management of the planning, monitoring and coordination of the implementation activities of deployment of the European ATM network infrastructure, in accordance with the European ATM Master Plan and taking into account operational needs. More generally, the definition of network functions should be reviewed in a perspective of strengthening the overall network-oriented approach. This should notably support the implementation of the mandatory Network Operations Plan, the achievement of the binding performance targets, as well as the deployment of the ATM network infrastructure in accordance with the European ATM Master Plan.

The role of the Network Manager in contributing to the execution of the network functions should be clearly set out. Requirements on the cooperative decision-making process should also be strengthened, to ensure that the interest of the network prevails and that the procedures allow for resolving issues and finding consensus. Airports should also be addressed in the proposal and shall be fully integrated into the network.

The overall aim would be to strengthen the functioning of the European network.

Cooperation and consultation with operational stakeholders should remain a key activity for the execution of the network functions. Critically, Member States' sovereignty over their airspace and the requirements of the Member States relating to public order, public security and defence matters should remain unaffected.

The Network functions should remain subject to an adapted performance scheme.

The safety oversight of Network Manager and its capacity to perform network functions should remain, as today, the responsibility of EASA.

One of the preferred options of the 2013 impact assessment consisted in creating a joint undertaking of the industry to operate the Network Manager with a role for Eurocontrol built around the Network Manager, and a more comprehensive centralised service provider, including also airspace design in a broad sense. Better defining and strengthening the network functions and the governance of the Network Manager would be in line with the rationale of that preferred option. The studies and recommendations available justify the proposed approach, as will be explained immediately below.

4.4.2.2. Justification

The airspace, capacity and infrastructure management concepts developed below build on reports of the Network Manager periodically presented to Member States in the comitology committee (Single Sky Committee), on the second recommendation of the Wise Persons Group on the Future of SES, as well as on the EP Pilot Project on the New Airspace Architecture Study. In the peak summer seasons of 2018 and 2019, when delays negatively affected large parts of the network, the Network Manager developed a number of measures to address the 'capacity crisis'. This experience has shown the essential role played by the Network Manager, but also the need to strengthen its coordination function, as well as to ensure that the interests of the network prevails in its daily, as well as crisis, management.

The table below shows in summary what are the airspace, capacity and infrastructure management concepts

Airspace management	✓ Optimised organisation and utilisation of airspace leading to better scalability, additional capacity and/or more efficient use of existing capacity, and making the network more resilient. ✓ Airspace design and utilisation would be such as to promote the use of the best possible trajectories and preferred routes for civil airspace users and, for military airspace users, to improve effectiveness of military activities.
Capacity management	✓ The Network Operations Plan as a binding instrument would be of assistance when it comes to compliance with the Union-wide performance target on capacity. ✓ An integration of the Airport Operations Plans with the Network Operations Plan would facilitate the connection of capacity on the ground with capacity in the air
Infrastructure management	✓ Planning: This item would entail improved planning, in terms of identifying the ATM network infrastructure deployment needs aiming to support the sustainable future development of ATM infrastructure with a view to supporting sustainable future development of ATM including in the form of infrastructure rationalisation. The planning would be aligned to the European ATM Master Plan and involve full cooperation with all concerned stakeholders. ✓ Deployment: The item would facilitate the timely deployment of ATM network infrastructure improvements based on standardised

	and sustainable technologies, subject to coordination between the Network Manager and the SESAR Joint Undertaking regarding the industrialisation phase. ✓ Monitoring: This would concern the deployment and technical performance of the relevant infrastructure and would contribute to the effective operation of the European ATM network.

Table 3: Airspace, capacity and infrastructure management concepts

The work of the Network Manager already largely achieves the objectives of the "airspace management" item referred to above, through the discharge of the existing functions in accordance with Commission Implementing Regulation 2019/123. Reinforced cooperative decision-making procedures would further improve the efficiency of this work.

In order to facilitate capacity management, the Network Operations Plans should become mandatory and be linked to the individual ATSPs performance plans. Evidence from the Network Manager on the Network Operational Plan (NOP) shows a lack of commitment by some Member States to provide capacity. It also shows that actual performance is not in line with the NOP. Moreover, lower than planned delivery of capacity cannot be justified by corresponding reduced needs, as significant delays are observed. These delays are shown in the Table below. In comparison to the target set at an average of 0.5 min of delay per flight. In some Member States, these delay figures are double or triple.

ANSP	Delay 2019
Austrocontrol – Vienna ACC	4787 min/day or 1.88min/flt
Skeyes – Brussels ACC	1771 min/day or 1.02 min/flt
DFS – Karlsruhe ACC	8382 min/day or 1.67 min/flt
DSNA – Marseille ACC	5515 min/day or 1.71 min/flt

Table 4: Delays 2019 in ATM Network

In addition, airports must be fully integrated into the network in order to effectively contribute to the overall performance of the network and the performance scheme in general. This could be achieved by integrating the Airport Operations Plan (AOP) and the NOP, so as to connect capacity on the ground with capacity in the air.

As regards infrastructure management, the 2019 ECA Special Report 11 on modernisation of ATM calls for a more effective way of managing ATM infrastructure:

Recommendation 5 of the European Court of Auditors – Ensure appropriate monitoring of performance benefits delivered by ATM modernisation

The Commission should:

(a) ensure that ATM modernisation is appropriately monitored. Performance benefits should be measured and compared with the initial expectations (PCP CBA);

(b) where applicable in the performance scheme, ensure that targets being proposed take into account all performance gains being realised – thereby assuring their delivery to airspace users.

Timeframe: as soon as possible and at the latest for the next target setting exercise (reporting period 4 of the performance scheme)

Finally, in secondary legislation, the work of the two working groups supporting the existing Network Management Board, the working group on operations (NDOP) and the NDTECH, composed of relevant stakeholders should be strengthened to ensure continued industry leadership in the work of the Network Manager. These groups are likely to be the main fora to reinforce the industry role in achieving effective decision-making in a single value chain from operations to technology.

4.4.3. Availability of and access to operational data for general air traffic

It is necessary to ensure that the provision of air traffic data services can be carried out on a cross-border and Union-wide basis for operational purposes. In addition, it is important that new entrants to the data market have access to the relevant operational data of ANSPs even before they are certified, so that they are able to decide on market entry. Therefore, access to this data should be granted not only to authorities, but also to air traffic service providers, airspace users and airports, to entities having a proven interest in considering the provision of air navigation services. In order to prevent cross-subsidisation or double charging, principles for pricing rules should also be laid down.

4.5. Airspace, Interoperability and technological innovation

4.5.1. Flexible Use of Airspace (FUA)

Flexible use of airspace was only mentioned in the recitals of the 2013 SES2+ proposal, and the existing Article 7 of Regulation (EC) 551/2004 should be re-inserted. It should, in addition, clearly allocate the responsibility of ensuring the uniform application of FUA to Member States, and ensure its consistency with the ATM Master Plan. This would be complementary to the EASA Basic Regulation, which establishes the essential requirement that airspace management needs to support the uniform application of FUA.

4.5.2. SESAR coordination

SESAR was set up in 2004 and has been evolving, driven by the objectives of the Single European Sky, from the definition phase to the development phase and ultimately to the deployment phase. A number of instruments and actors related to SESAR have been developed and put in place under Union law including implementing acts, such as the common project regulation[29], the European ATM Master Plan[30], the SESAR Joint Undertaking and the SESAR Deployment Manager. However, this reality should also be appropriately reflected in the legal framework. Definitions for SESAR should therefore be laid down, and provisions for the effective coordination between all phases of the SESAR project should be defined. This would allow for increased coherence with other legal instruments related to SES and for

[29] Commission Implementing Regulation (EU) No 716/2014 of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan
[30] https://www.atmmasterplan.eu/

future changes to SESAR to address the challenges of ATM modernisation, while maintaining a strong and clear link to the Single European Sky framework.

4.6. Final Provisions

As regards committee procedure, each Member State should be allocated two seats, so that they can be represented both by a civil and a military representative.

As regards consultation of stakeholders, requirements for consultation should not only apply to the Commission and to NSAs, but also to Member States, EASA including in its function as PRB, and to the Network Manager. The list of stakeholders to be consulted should also include the Network Manager and relevant non-governmental organisations. In this light, necessary arrangements and consultation processes should be put in place to support civil and military collaboration in order to guarantee a balanced consideration of economic as well as security and defence requirements.

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4.7. Secondary legislation

Not all of the recommendations put forward by the European Court of Auditors, the Wise Persons Group or other relevant stakeholders lend themselves to being implemented by the co-legislators, as they are particularly detailed and/or technical, to a point that would be unusual and indeed impractical for basic legislation. Furthermore, some of the details and technicalities would require additional assessment. The basic legislation should provide a legal basis to develop the relevant details in secondary legislation. The timeline for this legislation would be before the end of the third reference (performance) period of SES, which is towards the end of 2024.

Changes to air traffic controllers' (ATCOs) way of working may result from the implementation of SESAR solutions. This issue does not need to be touched upon in an amendment to the SES legislation, since it could be addressed in a Commission act amending Regulation (EU) 2015/340.[31]

On training and licencing of ATCOs to adapt to the future systems architecture, the lack of availability of ATCO resources is identified as one of the structural causes for capacity shortages. Several Member States have also acknowledged, in their performance plans, the need for investing in recruitment.

Another key element that hampers scalability and sustainability of the European ATM network is limited flexibility in the use of ATCO resources across area control centres (ACCs). In current operations, airspace is organised in sectors. Each controller is responsible for controlling within one sector or group of sectors only, and the most usual setup is that one planner and one executive controller assume full responsibility for a given sector. Each sector/group of sectors has its own specificities in terms of shape, available routes, exit and entry points to the airspace, traffic patterns, etc. For a controller to be able to work in a sector, he or she must hold not only a generic controller licence, but also be trained and certified to understand and deal with the specificities of the sector. The larger the number of sectors a

[31] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011 (OJ L 63, 6.3.2015, p. 1)

controller is endorsed for, the more flexibility is available to the ANSP for rostering on any given day (as the ANSP can assign the controller to work at any of the sectors they are endorsed for). This limitation is recognised both by the Wise Persons Group report and the Airspace Architecture Study. EASA will investigate the evolution of ATCO training and ATCO licencing to move from a sector dependent to sector independent approach.

ANNEX I – Analysis of options for the set-up of the Performance Review Body

1. Options for the PRB set up

Two options have been assessed in identify the preferred set up for the Performance Review Body, and are presented in the table below. As explained in section 4.3.2.5, the economic regulation of air traffic management is a permanent task, requiring substantial technical work and expertise. Therefore, a permanent PRB should be established. Option 1 and Option 2 both address this issue.

Option 1: New standalone Agency	**Option 2: PRB integrated in an existing Agency**
This option would create a new independent and standalone Agency for the PRB. This would entail creating a body with a legal personality and setting up a new administrative structure. This agency would be fully independent to perform economic regulation of air navigation services, in particular for *en route* services.	This option would extend the mandate of an existing Union decentralised agency to integrate the tasks of the PRB. This would entail sharing the same administrative structure, while creating a department for the economic regulation of air navigation services. Separate boards to cater for the different streams of work would be created. This option would allow for the creation of an independent regulator, while benefiting from administrative synergies with an already existing and full-fledged EU agency. The chosen Agency would be EASA because of its work in the aviation sector.

2. Assessment of the two options

2.1 Budget

In terms of budget, for both Option 1 or Option 2, the PRB would be mainly financed from fees and charges (the rest of the revenues including voluntary financial contributions from Member States, national supervisory authorities, or from third countries). Fees and charges would be levied by the PRB. These costs would be charged to air traffic service providers and therefore included in the unit rates set by the NSA and paid by airspace users via route charges. Therefore, quantitatively, the new structure for the PRB would make a positive impact on the Union budget, as currently €6 million annually are spent on PRB experts and administrative support from the Union budget.

Both in case of Option 1 and Option 2, initial set up costs would be incurred, before the PRB is fully able to begin offering its services. The Regulation should foresee contributions made by designated air traffic

service providers covering the future set up costs of the PRB. Given that the administrative structure of EASA already exists, the initial set up costs for the PRB would be lower under Option 2 than Option 1.

As a conclusion, Option 1 and Option 2 are equivalent in terms of impact on the Union budget but Option 2 is better regarding the set up costs.

2.2 Efficiency

Under Option 1, the full costs of all the administrative, IT and billing tasks, and the related infrastructure, would need to be covered. Under Option 2 however, only the marginal costs for these assignments and marginal cost for the additional infrastructure would be required.

One criteria to consider when assessing Options 1 or 2 is therefore the size of the agency, and the proportion of such costs in the overall cost structure. Indeed, as highlighted in the Evaluation of the EU decentralised Agencies,[32] small agencies often face specific efficiency constraints, and governance may be a non-negligible fixed cost in proportion of their resources. This Evaluation recommends in particular to extend the mandate of another existing agency dealing with similar goals, tasks and/or interest groups instead of creating an agency, especially if the staff is assumed to remain under 75 for some years.

The intended size for the PRB would be small, circa 40 FTEs. This makes the proportional costs for the administrative and IT tasks, and the related infrastructure high. Such size is below the 'critical mass' of 75 FTEs assessed in the Evaluation. It is therefore preferable to choose Option 2 and administratively integrate the PRB into EASA.

In terms of governance, Option 1 would entail having its own governance. This includes also having its own financial and audit functions and entails substantial oversight costs. Under Option 2, the marginal oversight cost could be catered for by the resources dedicated to overseeing EASA. From an administrative perspective, efficiency gains could be made from the sharing of resources.

As a conclusion, Option 2 is preferable in terms of cost efficiency.

2.3 Effectiveness

Both Option 1 and Option 2 address the objective of setting up a permanent and independent body for the economic regulation of air navigation services.

Under Option 1, there would be no pre-existing expert staff in which to tap. Recruitment would need to focus on hiring staff with both sectoral expertise on air traffic management and regulatory expertise on economic regulation of network industries. This would need to be done in parallel to setting up the administrative structure of the new body.

[32] https://europa.eu/european-union/sites/europaeu/files/docs/body/synthesis_and_prospects_en.pdf

Under the option of locating the PRB in an existing Agency, choosing which Agency should be of utmost importance. The defining criteria when deciding where to locate the PRB should be the skills and expertise related to the aviation sector.

However, in order to meet the objective of establishing an independent regulator, the absence of conflict of interests should be guaranteed and the PRB should be fully functionally separated from the other activities of EASA. Indeed, EASA's responsibilities include the safety oversight and certification for air navigation service providers. It is particularly important to keep safety oversight separate from economic regulation, and without significant independence of the PRB on the management, decision-making and budgetary issues, accommodating the PRB in EASA could create conflicts of interest.

As a conclusion, both Options 1 and Option 2 would be effective in achieving the policy goal. Option 2 would be more cost-effective in the short and long term, considering the benefits from sharing administrative costs, provided potentially damaging conflicts of interest are adequately addressed.

2.4 Conclusion

Given the options considered against the criteria of their impact on the budget, the efficiency and the effectiveness, the preferred option would be to administratively integrate the PRB into EASA.

ANNEX II – Abbreviations

ACC – Area Control Centre

ADS – Air Traffic Data Services

ADSP – Air traffic Data Service Provider

AIS – Aeronautical Information Services

ANS – Air Navigation Services

ANSP – Air Navigation Service Provider

ATC – Air Traffic Control(ler)

ATFM – Air Traffic Flow Management

ATM – Air Traffic Management

ATS – Air Traffic Services

CDM – Cooperative Decision-Making

CNS – Communication, Navigation and Surveillance

CO_2 - Carbon Dioxide

DFS – Deutsche Flugsichering (DFS)

EASA – European Aviation Safety Agency

ECA – European Court of Auditors

ECAC – European Civil Aviation Conference

FAB – Functional Airspace Block

FABEC – Functional Airspace Block Europe Central

FUA – Flexible Use of Airspace

KPA – Key Performance Areas

MET – Meteorological Services

NM – Network Manager

NOP – Network Operational Plan

NSA – National Supervisory Authority

PRB – Performance Review Body

RP – Reference Period

SES – Single European Sky

SESAR – Single European Sky ATM Research

STATFOR – EUROCONTROL's Statistics and Forecast

TTE – Transport and Tourism Council

WPG – Wise Persons Group on the future of SES

ANNEX III – Single European Sky legislation

Regulatory area	Legislation	
AIR TRANSPORT		
SINGLE EUROPEAN SKY **Framework Regulation**	**Regulation (EC) No 549/2004** of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky (the framework Regulation), OJ L 96, 31.3.2004, p.1. *[IMPLEMENTATION IN THE EEA: Y (549/2004)] [APPLICATION IN THE EEA: cf. OJ L 230, 25.08.2016, p. 45]* **Amended by:** **Regulation (EC) No 1070/2009** of the European Parliament and of the Council of 21 October 2009, OJ L 300, 14.11.2009, p. 34. *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 25]*	
Implementing rules	**Commission Implementing Regulation (EU) 2019/123** of 24 January 2019 laying down detailed rules for the implementation of air traffic management (ATM) network functions and repealing Commission Regulation (EU) No 677/2011 (Text with EEA relevance), OJ L 28, 31.1.2019, p. 1 **Commission Implementing Regulation (EU) 2019/317** of 11 February 2019 laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013, (Text with EEA relevance), OJ L 56, 23.2.2019, p.1.	
Commission decisions	**Commission Implementing Decision of 11 March 2014** setting the Union-wide performance targets for the air traffic management network and alert thresholds for the second reference period 2015-19 (Text with EEA relevance) (2014/132/EU), OJ L 71, 12.03.2014, p. 20. *[APPLICATION IN THE EEA: cf. OJ L 230, 3.9.2015, p. 43] [APPLICATION IN THE EEA: cf. OJ L 230, 25.08.2016, p. 45]* **Commission Implementing Decision (EU) 2019/903 of 29 May 2019** setting the Union-wide performance targets for the air traffic management network for the third reference period starting on 1 January 2020 and ending on 31 December 2024 (Text with EEA relevance), OJ L144, 3.6.2019, p.49 **Commission Implementing Decision (EU) 2015/347 of 2 March 2015** concerning the inconsistency of certain targets included in the national or functional airspace block plans submitted pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period and setting out recommendations for the revision of those targets (notified under document C(2015) 1263) (Only the Bulgarian, Spanish, Czech, German, Greek, French, Croatian, Italian, Hungarian, Maltese, Dutch, Portuguese, Romanian, Slovak and Slovenian texts are authentic) (Text with EEA relevance), OJ L 60, 4.3.2015, p. 48. **Commission Implementing Decision (EU) 2015/348 of 2 March 2015** concerning the consistency of certain targets included in the national or functional airspace block plans submitted pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period (notified under document C(2015) 1293) (Text with EEA relevance), OJ L 60, 4.3.2015, p. 55.	

	Amended by: **Commission Implementing Decision (EU) 2017/2376 of 15 December 2017** amending Implementing Decision (EU) 2015/348 as regards the consistency of the revised targets in the key performance area of cost-efficiency included in the amended national or functional airspace block plans submitted by Malta, Bulgaria and Poland (notified under document C(2017) 8433) (Text with EEA relevance), OJ L 337, 19.12.2017, p. 68. **Commission Implementing Decision (EU) 2018/2021 of 17 December 2018** amending Implementing Decision (EU) 2015/348 as regards the consistency of the revised targets in the key performance area of cost-efficiency included in the amended national or functional airspace block plans submitted by Portugal and Romania (notified under document C(2018) 8489) (Text with EEA relevance), OJ L 323, 19.12.2018, p. 18. **Commission Implementing Decision (EU) 2015/1055 of 30 June 2015** concerning the consistency of certain targets included in the national or functional airspace block plans submitted by Switzerland pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period (notified under document C(2015) 4403) (Only the French, German and Italian texts are authentic) (Text with EEA relevance), OJ L 171, 2.7.2015, p. 14. **Commission Implementing Decision (EU) 2015/1056 of 30 June 2015** concerning the inconsistency of certain targets included in the national or functional airspace block plan submitted by Switzerland pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period and setting out recommendations for the revision of those targets (notified under document C(2015) 4407) (Only the French, German and Italian texts are authentic) (Text with EEA relevance), OJ L 171, 2.7.2015, p. 18. **Commission Implementing Decision (EU) 2016/599 of 15 April 2016** concerning the consistency of certain targets included in the revised national or functional airspace block plans submitted pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council with the Union-wide performance targets for the second reference period (notified under document C(2016) 2140) (Only the Bulgarian, Croatian, Czech, German, Hungarian, Italian, Portuguese, Romanian, Slovak, Slovenian and Spanish text is authentic) (Text with EEA relevance), OJ L 103, 19.4.2016, p. 37. **Commission Implementing Decision (EU) 2017/258 of 13 February 2017** concerning revised performance targets and appropriate measures included in the national or functional airspace block plan submitted by Switzerland pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council that are not adequate in respect to the Union-wide performance targets for the second reference period and setting out obligations for corrective measures (notified under document C(2017) 728) (Only the French, German and Italian texts are authentic) (Text with EEA relevance), OJ L 38, 15.2.2017, p. 71. **Commission Implementing Decision (EU) 2017/259 of 13 February 2017** concerning certain revised performance targets and appropriate measures included in the national or functional airspace block plans submitted pursuant to Regulation (EC) No 549/2004 of the European Parliament and of the Council that are not adequate in respect to the Union-wide performance targets for the second reference period and setting out obligations for corrective measures (notified under document C(2017) 729) (Only the Dutch, English, French, German, Greek, Italian and Maltese texts are authentic) (Text with EEA relevance), OJ L 38, 15.2.2017, p. 76. **Commission Implementing Decision (EU) 2017/553 of 22 March 2017** concerning the consistency of the targets in the key performance areas of capacity and cost- efficiency included in the revised functional airspace block plan submitted pursuant to Regulation (EC) No 549/2004 by Belgium, Germany, France, Luxembourg and the Netherlands with the Union- wide performance targets for the second reference period (notified under document C(2017) 1798) (Only the Dutch, French, and German texts are authentic) (Text with EEA relevance), OJ L 79, 24.3.2017, p. 11. **Commission Decision** of 29 July 2010 on the designation of the Performance Review Body of the Single European Sky, C(2010) 5134 final. (repeal: see Art. 7 and 8 of Commission Implementing Decision of 24

	September 2014 on the extension of the designation of the Performance Review Body of the single European sky (2014/672/EU), OJ L 281, 25.9.2014, p. 5: "*Article 7* **Repeal :** Commission Decision of 29 July 2010 and Commission Decision of 25 July 2013 are repealed." "*Article 8* **Entry into force and application:** This Decision shall enter into force on 1 July 2015 and shall apply until 31 December 2016"). **Commission Recommendation of 23 November 2011** on the revision of targets contained in performance plans under Commission Regulation (EU) No 691/2010, OJ C 348, 29.11.2011, p.1. **Commission Recommendation of 26 July 2012** on the implementation of performance plans and targets in consistency with the European Union- wide performance targets adopted pursuant to Commission Regulation (EU) No 691/2010 and the preparation for the second performance reference period (Text with EEA relevance) (2012/C 228/01), OJ C 228, 31.7.2012, p. 1 **Commission Implementing Decision (EU) 2016/1373** of 11 August 2016 approving the Network Performance Plan for the second reference period of the Single European Sky performance scheme (2015-2019) (Text with EEA relevance), OJ L 217, 12.8.2016, p. 51. **Commission Implementing Decision (EU) 2016/2296 of 16 December 2016** setting up the independent group of experts designated as Performance Review Body of the single European sky, OJ L 344, 17.12.2016, p. 92.
SINGLE EUROPEAN SKY **Service provision Regulation**	**Regulation (EC) No 550/2004** of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the single European sky (the service provision Regulation) (OJ L 96, 31.3.2004, p. 10) *[APPLICATION IN THE EEA: Y (550/2004) Special adaptations with regard to Iceland]*. **Amended by:** **Regulation (EC) No 1070/2009** of the European Parliament and of the Council of 21 October 2009, OJ L 300, 14.11.2009, p. 34 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 25]*
Implementing rules	**Commission Implementing Regulation (EU) No 716/2014** of 27 June 2014 on the establishment of the Pilot Common Project supporting the implementation of the European Air Traffic Management Master Plan (Text with EEA relevance), OJ L 190, 28.06.2014, p. 19 *[APPLICATION IN THE EEA: cf. OJ L 129, 19.05.2016, p. 49]* **Commission Implementing Regulation (EU) 2017/373** of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (Text with EEA relevance), OJ L 62, 8.3.2017, p. 1 **Commission Regulation (EU) No 176/2011** of 24 February 2011 on the information to be provided before the establishment and modification of a functional airspace block, OJ L 51, 25.2.2011, p. 2. *[APPLICATION IN THE EEA: cf. OJ L 291, 31.10.2013, p. 58] [APPLICATION IN THE EEA: cf. OJ L 211, 17.7.2014, p. 48]* **Commission Implementing Regulation (EU) 2016/1377** of 4 August 2016 laying down common requirements for service providers and the oversight in air traffic management/air navigation services and other air traffic management network functions, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011 and (EU) No 1035/2011 and amending Regulation (EU) No 677/2011

	(Text with EEA relevance), OJ L 226, 19.8.2016, p. 1 **Commission Implementing Regulation (EU) No 409/2013** of 3 May 2013 on the definition of common projects, the establishment of governance and the identification of incentives supporting the implementation of the European Air Traffic Management Master Plan (Text with EEA relevance), OJ L 123, 4.5.2013, p. 1 *[APPLICATION IN THE EEA: cf. OJ L 211, 17.7.2014, p. 38]*
Commission decisions	**Commission Implementing Decision (EU) 2015/290** of 20 February 2015 on the compliance of 2014 unit rates for charging zones under Article 17 of Implementing Regulation (EU) No 391/2013 and repealing Decision 2013/631/EU (notified under document C(2015) 882), OJ L 51, 24.2.2015, p. 10. **Commission Implementing Decision (EU) 2015/670** of 27 April 2015 on the compliance of unit rates for charging zones for 2015 under Article 17 of Implementing Regulation (EU) No 391/2013 (notified under document C(2015) 2635) (Only the Bulgarian, Spanish, Czech, Danish, Estonian, Greek, English, Croatian, Latvian, Lithuanian, Hungarian, Maltese, Polish, Portuguese, Romanian, Slovenian, Finnish and Swedish texts are authentic) (Text with EEA relevance), OJ L 110, 29.4.2015, p. 25. **Commission Implementing Decision (EU) 2017/2378** of 15 December 2017 on the compliance of unit rates for charging zones for 2017 under Article 17 of Implementing Regulation (EU) No 391/2013 (notified under document C(2017) 8501) (Only the Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Italian, Latvian, Lithuanian, Portuguese, Romanian, Slovak, Slovenian, Spanish and Swedish texts are authentic), OJ L 337, 19.12.2017, p. 83. **Commission Implementing Decision (EU) 2018/703** of 8 May 2018 on the compliance of the unit rate for the charging zone of Switzerland for 2015, 2016 and 2018 under Article 17 of Implementing Regulation (EU) No 391/2013 (notified under document C(2018) 2726) (Only the German, French and Italian texts are authentic) (Text with EEA relevance), OJ L 118, 14.5.2018, p. 16. **Commission Implementing Decision (EU) 2018/704** of 8 May 2018 on the compliance of unit rates for charging zones with Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013 pursuant to Article 17 of Implementing Regulation (EU) No 391/2013 (notified under document C(2018) 2729) (Only the Bulgarian, Croatian, Czech, Danish, Dutch, English, Estonian, Finnish, French, German, Greek, Hungarian, Irish, Latvian, Lithuanian, Maltese, Polish, Portuguese, Romanian, Slovak, Slovenian, Spanish and Swedish texts are authentic) (Text with EEA relevance), OJ L 118, 14.5.2018, p. 18. **Commission Implementing Decision (EU) 2019/1742** of 17 October 2019 on the compliance of unit rates for charging zones with Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013 (notified under document C(2019) 7333) (Text with EEA relevance) OJ L 267, 21.10.2019, p. 9–11 **Commission Implementing Decision (EU) 2019/1291** of 30 July 2019 on the compliance of the 2019 unit rate for the charging zone of Switzerland with Implementing Regulations (EU) No 390/2013 and (EU) No 391/2013 (notified under document C(2019) 5532) (Text with EEA relevance.) OJ L 203, 1.8.2019, p. 8–9 **Commission Implementing Decision (EU) 2019/2074** of 17 December 2019 on the existence of market conditions, within the meaning of Article 35 of Commission Implementing Regulation (EU) 2019/317, in respect of some of the terminal air navigation services at the airports of Alicante and Ibiza
SINGLE EUROPEAN	**Regulation (EC) No 551/2004** of the European Parliament and of the Council of 10 March 2004 on the organisation and use of the airspace in the single European sky (the airspace Regulation), OJ L 96,

SKY **Airspace Regulation** **Implementing rules**	31.3.2004, p. 20. *[APPLICATION IN THE EEA: Y (551/2004) Geographical limitation in scope of Regulation]* **Amended by:** **Regulation (EC) No 1070/2009** of the European Parliament and of the Council of 21 October 2009, OJ L 300, 14.11.2009, p. 34 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 25]* **Commission Implementing Regulation (EU) 2017/373** of 1 March 2017 laying down common requirements for providers of air traffic management/air navigation services and other air traffic management network functions and their oversight, repealing Regulation (EC) No 482/2008, Implementing Regulations (EU) No 1034/2011, (EU) No 1035/2011 and (EU) 2016/1377 and amending Regulation (EU) No 677/2011 (Text with EEA relevance), OJ L 62, 8.3.2017, p. 1 **Commission Regulation (EU) No 255/2010** of 25 March 2010 laying down common rules on air traffic flow management, OJ L 80, 26.3.2010, p. 10. *[APPLICATION IN THE EEA: OJ L 161, 21.6.2012, p. 33 (255/2010)]* **Amended by** **Commission Implementing Regulation (EU) No 923/2012** of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (Text with EEA relevance), OJ L 281, 13.10.2012, p. 1 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 34]* **Commission Implementing Regulation (EU) 2016/1006** of 22 June 2016 amending Regulation (EU) No 255/2010 as regards the ICAO provisions referred to in Article 3(1) (Text with EEA relevance), OJ L 165, 23.6.2016, p. 8. *[APPLICATION IN THE EEA: cf. OJ L 89, 5.4.2018, p. 16]* **Commission Implementing Regulation (EU) 2017/2159** of 20 November 2017 amending Regulation (EU) No 255/2010 as regards certain references to ICAO provisions (Text with EEA relevance), OJ L 304, 21.11.2017, p. 45. **Commission Regulation (EC) No 2150/2005** of 23 December 2005 laying down common rules for the flexible use of airspace, OJ L 342, 24.12.2005, p. 20. *[APPLICATION IN THE EEA: Y (2150/2005)]* **Commission Implementing Decision (EU) 2019/709** of 6 May 2019 on the appointment of the network manager for air traffic management (ATM) network functions of the single European sky *(notified under document C(2019) 3558)*, OJ L 120, 8.5.2019, p. 27. **Commission Implementing Decision (EU) 2019/2168** of 17 December 2019 on the appointment of the chairperson and the members and their alternates of the Network Management Board and of the members and their alternates of the European Aviation Crisis Coordination Cell for the air traffic management network functions for the third reference period 2020-2024, OJ L 328, 18.12.2019, p. 90–96 **Commission Implementing Decision (EU) 2019/2167** of 17 December 2019 approving the Network Strategy Plan for the air traffic management network functions of the single European sky for the period 2020-2029, OJ L 328, 18.12.2019, p. 89–89

SINGLE EUROPEAN SKY **Interoperability Regulation**	**Regulation (EC) No 552/2004** of the European Parliament and of the Council of 10 March 2004 on the interoperability of the European Air Traffic Management network (the interoperability Regulation), OJ L 96, 31.3.2004, p. 26. *[APPLICATION IN THE EEA: Y (552/2004)]* **Amended by:** **Regulation (EC) No 1070/2009** of the European Parliament and of the Council of 21 October 2009, OJ L 300, 14.11.2009, p. 34 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 25]* **Regulation (EC) No 552/2004 repealed by:** **Regulation (EU) 2018/1139** of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008, (EU) No 996/2010, (EU) No 376/2014 and Directives 2014/30/EU and 2014/53/EU of the European Parliament and of the Council, and repealing Regulations (EC) No 552/2004 and (EC) No 216/2008 of the European Parliament and of the Council and Council Regulation (EEC) No 3922/91 (Text with EEA relevance), OJ L 212, 22.8.2018, p. 1. (but see in particular Art. 139) **Commission communication concerning the implementation of Article 4 of Regulation (EC) No 552/2004** of the European Parliament and of the Council on the interoperability of the European Air Traffic Management network (Text with EEA relevance) (Publication of titles and references of Community specifications under the Regulation) (2012/C 332/05), OJ C 332, 30.10.2012, p. 9
Implementing rules	**Commission Implementing Regulation (EU) No 1206/2011** of 22 November 2011 laying down requirements on aircraft identification for surveillance for the single European sky, OJ L 305, 23.11.2011, p.23. *[APPLICATION IN THE EEA: cf. OJ L 291, 31.10.2013, p. 59] [APPLICATION IN THE EEA: cf. OJ L 211, 17.7.2014, p. 48]* **Commission Implementing Regulation (EU) No 1207/2011** of 22 November 2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky, OJ L 305, 23.11.2011, p.35 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 39]* **Amended by:** **Commission Implementing Regulation (EU) No 1028/2014** of 26 September 2014 amending Implementing Regulation (EU) No 1207/2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (Text with EEA relevance), OJ L 284, 30.9.2014, p. 7. *[APPLICATION IN THE EEA : cf. OJ L 211, 4.8.2016, p. 69]* **Commission Implementing Regulation (EU) 2017/386** of 6 March 2017 amending Implementing Regulation (EU) No 1207/2011 laying down requirements for the performance and the interoperability of surveillance for the single European sky (Text with EEA relevance), OJ L 59, 7.3.2017, p. 34. **Commission Regulation (EU) No 73/2010** of 26 January 2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky, OJ L 23, 27.1.2010, p. 6. *[APPLICATION IN THE EEA: cf. OJ L 85, 30.3.2017, p. 52]* **Amended by:** **Commission Implementing Regulation (EU) No 1029/2014** of 26 September 2014 amending Regulation (EU) No 73/2010 laying down requirements on the quality of aeronautical data and aeronautical information for the single European sky (Text with EEA relevance), OJ L 284, 30.9.2014, p.

	9. *[APPLICATION IN THE EEA: cf. OJ L 85, 30.3.2017, p. 52]* **Commission Regulation (EC) No 262/2009** of 30 March 2009 laying down requirements for the coordinated allocation and use of Mode S interrogator codes for the single European sky, OJ L 84, 31.3.2009, p. 20. *[APPLICATION IN THE EEA: Y (262/2009)]* **Amended by:** **Commission Implementing Regulation (EU) 2016/2345** of 14 December 2016 amending Regulation (EC) No 262/2009 and Implementing Regulation (EU) No 1079/2012 as regards references to ICAO provisions (Text with EEA relevance), OJ L 348, 21.12.2016, p. 11. *[APPLICATION IN THE EEA: cf. OJ L 305, 29.11.2018, p. 32]* **Commission Regulation (EC) No 29/2009** of 16 January 2009 laying down requirements on data link services for the single European sky, OJ L 13, 17.1.2009, p. 3. *[APPLICATION IN THE EEA: Y (29/2009)]* *[APPLICATION IN THE EEA: cf. also OJ L 345, 19.12.2013, p. 17]* **Amended by:** **Commission Implementing Regulation (EU) No 441/2014** of 30 April 2014 amending Regulation (EC) No 29/2009 laying down requirements on data link services for the single European sky (Text with EEA relevance), OJ L 130, 1.5.2014, p. 37. *[APPLICATION IN THE EEA: cf. OJ L 230, 3.9.2015, p. 42] [APPLICATION IN THE EEA: cf. OJ L 8, 12.1.2017, p. 23]* **Commission Implementing Regulation (EU) 2015/310** of 26 February 2015 amending Regulation (EC) No 29/2009 laying down requirements on data link services for the single European sky and repealing Implementing Regulation (EU) No 441/2014 (Text with EEA relevance), OJ L 56, 27.2.2015, p. 30. *[APPLICATION IN THE EEA: cf. OJ L 8, 12.1.2017, p. 23]* **Commission Implementing Regulation (EU) 2019/1170** of 8 July 2019 amending and correcting Regulation (EC) No 29/2009 laying down requirements on data link services for the single European sky, OJ L 183 9.7.2019, p.6. **Commission Implementing Decision (EU) 2019/2012** of 29 November 2019 on exemptions under Article 14 of Commission Regulation (EC) No 29/2009 laying down requirements on data link services for the single European sky (Text with EEA relevance), OJ L 312, 3.12.2019, p. 95–100 **Commission Regulation (EC) No 633/2007** of 7 June 2007 laying down requirements for the application of a flight message transfer protocol used for the purpose of notification, coordination and transfer of flights between air traffic control units, OJ L 146, 8.6.2007, p. 7. *[APPLICATION IN THE EEA: Y (633/2007)]* **Commission Regulation (EU) No 283/2011** of 22 March 2011 amending Regulation (EC) No 633/2007 as regards the transitional arrangements referred to in Article 7, OJ L 77, 23.3.2011, p. 23. *[APPLICATION IN THE EEA (*283/2011) EEE OJ 76 15.3.2012, p.35] **Commission Implementing Regulation (EU) No 1079/2012** of 16 November 2012 laying down requirements for voice channels spacing for the single European sky (Text with EEA relevance), OJ L 320, 17.11.2012, p. 14 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 36]* **Amended by:**

Commission Implementing Regulation (EU) No 657/2013 of 10 July 2013 amending Implementing Regulation (EU) No 1079/2012 laying down requirements for voice channels spacing for the single European sky (Text with EEA relevance), OJ L 190, 11.7.2013, p. 37 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 38]*

Commission Implementing Regulation (EU) 2016/2345 of 14 December 2016 amending Regulation (EC) No 262/2009 and Implementing Regulation (EU) No 1079/2012 as regards references to ICAO provisions (Text with EEA relevance), OJ L 348, 21.12.2016, p. 11. *[APPLICATION IN THE EEA: cf. OJ L 305, 29.11.2018, p. 32]*

Commission Implementing Regulation (EU) 2017/2160 of 20 November 2017 amending Implementing Regulation (EU) No 1079/2012 as regards certain references to ICAO provisions (Text with EEA relevance), OJ L 304, 21.11.2017, p. 47.

Commission Regulation (EC) No 1033/2006 of 4 July 2006 laying down the requirements on procedures for flight plans in the pre-flight phase for the single European sky, OJ L 186, 7.7.2006, p. 46.
[APPLICATION IN THE EEA: Y (2033/2006)]

Amended by

Commission Implementing Regulation (EU) No 923/2012 of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation and amending Implementing Regulation (EU) No 1035/2011 and Regulations (EC) No 1265/2007, (EC) No 1794/2006, (EC) No 730/2006, (EC) No 1033/2006 and (EU) No 255/2010 (Text with EEA relevance), OJ L 281, 13.10.2012, p. 1 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 34]*

Commission Implementing Regulation (EU) No 428/2013 of 8 May 2013 amending Regulation (EC) No 1033/2006 as regards the ICAO provisions referred to in Article 3(1) and repealing Regulation (EU) No 929/2010 (Text with EEA relevance)), OJ L 127, 9.5.2013, p. 23. *[APPLICATION IN THE EEA: cf. OJ L 92, 27.3.2014, p. 30]*

Commission Implementing Regulation (EU) 2016/2120 of 2 December 2016 amending Regulation (EC) No 1033/2006 as regards the provisions referred to in Article 3(1) (Text with EEA relevance), OJ L 329, 3.12.2016, p. 70. *[APPLICATION IN THE EEA: cf. OJ L 305, 29.11.2018, p. 31]*

Commission Implementing Regulation (EU) 2018/139 of 29 January 2018 amending Regulation (EC) No 1033/2006 as regards references to ICAO provisions (Text with EEA relevance), OJ L 25, 30.1.2018, p. 4.

Commission Regulation (EC) No 1032/2006 of 6 July 2006 laying down requirements for automatic systems for the exchange of flight data for the purpose of notification, coordination and transfer of flights between air traffic control units, OJ L 186, 7.7.2006, p. 27.

Amended by

Commission Regulation (EC) No 30/2009 of 16 January 2009 amending Regulation (EC) No 1032/2006 as far as the requirements for automatic systems for the exchange of flight data supporting data link services are concerned, OJ L 13, 17.1.2009, p. 20
[APPLICATION IN TH EEEA: Y (30/2009)]

Implementation

	Commission Implementing Regulation (EU) No 1079/2012 of 16 November 2012 laying down requirements for voice channels spacing for the single European sky (Text with EEA relevance), OJ L 320, 17.11.2012, p. 14 *[APPLICATION IN THE EEA: cf. OJ L 154, 22.05.2014, p. 36]*
ATCO-licence	**Directive 2006/23/EC** of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence, OJ L 114, 27.4.2006, p. 22. *[APPLICATION IN TH EEEA: Y (2006/23)]*
SESAR	**Council Regulation (EC) No 219/2007** of 27 February 2007 on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR), OJ L 64, 2.3.2007, p. 1. **Amended by** **Council Regulation (EC) No 1361/2008** of 16 December 2008, OJ L 352, 31.12.2008, p.12. **Council Regulation (EU) No 721/2014** of 16 June 2014 amending Regulation (EC) No 219/2007 on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR) as regards the extension of the Joint Undertaking until 2024 (Text with EEA relevance), OJ L 192, 1.7.2014, p. 1.

ANNEX IV – List of reports, studies and other evidence

1. European Court of Auditors Special Report Number 18 on the "Single European Sky: a changed culture but not a single sky", https://eca.europa.eu/Lists/ECADocuments/SR17_18/SR_SES_EN.pdf, 2017

2. European Court of Auditors Special Report Number 11 on "The EU's regulation for the modernisation of air traffic management has added value – but the funding was largely unnecessary", https://www.eca.europa.eu/Lists/ECADocuments/SR19_11/SR_SESAR_DEPLOYMENT_EN.pdf, 2019

3. "A proposal for the future architecture of the European Airspace", SESAR, https://www.sesarju.eu/node/3253, 2019

4. Report of the Wise Persons Group on the future of the Single European Sky, https://ec.europa.eu/transport/sites/transport/files/2019-04-report-of-the-wise-persons-group-on-the-future-of-the-single-european-sky.pdf, April 2019

5. Study on Data Services provision carried out by Steer Davies Gleeve on behalf of the European Commission, DG MOVE, ongoing

6. "A high-level vision for achieving the Single European Sky", https://ec.europa.eu/transport/sites/transport/files/modes/air/single_european_sky/doc/icb/2015-01-22-icb-high-level-vision-for-achieving-ses.pdf, Industry Consultation Body, January 2015 and "ICB Vision for a Single European Sky (2nd edition), July 2019, on request.

7. European Aviation Environmental Report 2019 and its update on ATM, https://www.easa.europa.eu/eaer/system/files/usr_uploaded/219473_EASA_EAER_2019_WEB_LOW-RES.pdf, March 2020

8. Joint stakeholder declaration on future of the Single European Sky, https://ec.europa.eu/transport/sites/transport/files/2019-09-high-level-conference-future-of-ses-declaration.pdf, September 2019

9. Evaluation of the EU de-centralised agencies in 2009, https://europa.eu/european-union/sites/europaeu/files/docs/body/synthesis_and_prospects_en.pdf, December 2009