

【欧州】【航空】

Aviation - Environmental Issues: The EU' s reform of the Single European Sky and adoption of a regulation on the establishment of the Common Project One (CP1) towards a more sustainable and efficient European ATM

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【概要 : Summary】

The Single European Sky (SES) initiative was launched in 2004 to reduce fragmentation of the airspace over Europe. The aim was to improve the performance of air traffic management in terms of safety, capacity, cost-efficiency and the environment. A proposal for a revision of the Single European Sky (SES 2+) was put forward by the European Commission in 2013, but negotiations in Council of the European Union stalled since 2015.

In the view of the European Green Deal and the COVID-19 pandemic, which caused a reduction in air traffic of about 90% in April 2020 without any sign of significant recovery ever since, the European Commission presented a revision and upgrade of the SES regulatory framework on 22 September 2020. The objective is to modernise the management of European airspace and to establish more sustainable and efficient flightpaths, which could help to reduce up to 10% of aviation emissions.

Most recently, the European Commission adopted a regulation that establishes the Common Project One (CP1) in support of the SES. The CP1 is a new framework that contributes to making flying

in the European skies more sustainable by ensuring a more efficient management of airways. The CP1 follows an intense pilot phase of implementing new technological and operational air traffic management (ATM) solutions under the SESAR (Single European Sky Air traffic management Research) project. The CP1 focuses on the most efficient solutions and sets a realistic implementation timeline to be respected by the concerned parties including airlines, airports and air navigation service providers.

【記事 : Article】

1. The Single European Sky (SES) initiative
The European airspace covers around 10.8 million km², with the European air navigation service (ANS) system covering 37 air navigation service providers (ANSPs) and 60 control centres, with some 16,900 air traffic controllers (ATC) compared to 13,000 ATC in the USA. The five biggest ANSPs (DFS for Germany, DSNA for France, ENAIRE for Spain, ENAV for Italy and NATS for the UK) bear 60% of total European gate-to-gate service provision costs and operate 54% of European traffic. The fragmented structure of the European airspace caused significant flight

delays due to the continuous air traffic growth. For increasing safety standards and flight efficiencies as well as in order to reduce the aviation environmental footprint, the ATM in Europe had to be reformed.

In 2004, the EU presented the Single European Sky (SES) initiative to modernise and harmonise the management of air traffic (ATM) in Europe.

The main objective is to reform ATM in order to cope with sustained air traffic growth and operations under the safest, most cost- and flight-efficient and environmentally friendly conditions. Therefore, the SES is intended to reduce fragmentation of the airspace over Europe, and to improve the performance of air traffic management in terms of safety, capacity, cost-efficiency and the environment. It was introduced in order to improve mainly the economic and safety shortcomings of a fragmented European airspace, but by reorganising air traffic management, it was also implied to improve the aviation sector's environmental friendliness.

Furthermore, the SES aims to improve the ATM also beyond the border of the European Union as it extends to third "neighbouring" countries, giving priority to the association and/or integration of third countries into the EU legal framework. It also considers the added value of regional cooperation activities carried out at the level of international organisations, such as the International Civil Aviation Organization (ICAO) and Eurocontrol.

Achievements have already been made at operational, technological and institutional levels; efforts are ongoing to maximise the benefits of activities initiated under the SES framework. In 2014, the European air traffic management (ATM) system controlled 26,800 flights on an average daily basis. As a result of the SES policy, average delays for en-route air traffic flow management improved to close to 0.5 min per flight, which was a remarkable achievement compared to the heavy delays that

occurred in the 1990s and 2000s.

In 2013, a proposal for a revision of the Single European Sky (SES 2+) was put forward by the European Commission. However, negotiations between the Council, European Parliament and the European Commission stalled since 2015. A key reason for the stalling was the disagreement between the United Kingdom and Spain over the status of the Gibraltar airport within the SES 2+. However, following Brexit, this obstacle does no longer exist. In 2018 and 2019, a lack of ATC capacity in some areas led to significant congestion and delays, and crisis measures for the network had to be implemented, demonstrating once more that the European aviation sector still was in need of the SES reform.

2. The SES reform and the European Green Deal

According to the European Commission, direct CO₂ emissions from aviation accounted for 3.8% of the EU's total CO₂ emissions in 2017. Furthermore, the aviation sector is responsible for 13.9% of the GHG emissions from transport, making it the second biggest source of transport GHG emissions after road transport. Furthermore, the current GHG emission levels in aviation and the forecasts suggest that the aviation emissions could further increase and triple until 2050.

However, in order to achieve climate neutrality and net-zero GHG emissions by the year 2050, as mentioned in the European Green Deal (COM (2019) 640 final), which the European Commission presented on 11 December 2019, the transport sector will have to reduce its GHG emissions by 90% by 2050. Therefore, also the aviation sector will have to contribute to this GHG emissions reduction target in the transport sector. The European Green Deal explicitly mentions that in aviation, work on adopting the Commission's proposal on the SES will need to restart, as this could help to achieving the GHG emission reductions in aviation: "In aviation, work on

adopting the Commission's proposal on a truly Single European Sky will need to restart, as this will help achieve significant reductions in aviation emissions. " (COM (2019) 640 final, p.10). In this context, it will be important to introduce the SES related measures like the improvement of the ATM performance. The SESAR project, as the technological dimension of the SES, defines, develops and deploys interoperable ATM solutions aiming to optimise the management of air traffic. It aims at enabling airspace users to fly safely at the most efficient trajectories and ensures the safe integration of new flying vehicles (such as drones) in all classes of airspace.

3. The amended proposal for a regulation of the implementation of the Single European Sky (recast)

In 2019, a Wise Person's Group of 15 experts was set up to assess the current situation and future needs for air traffic management in the EU. Based on their recommendations, the Commission then amended the SES 2+ text, introduced new measures and drafted a separate proposal to amend the EASA Basic Regulation. On 22 September 2020, the European Commission proposed a revision and upgrade of the SES regulatory framework. After the five-year delay of the SES 2+ it was in fact the European Green Deal, which became a key driver in proposing this reform and the upgrade of the SES regulatory framework. The Green Deal recognises the environmental benefits the SES could potentially generate. The objective is to modernise the management of European airspace and to establish more sustainable and efficient flightpaths, which is expected to reduce up to 10% of air transport emissions.

This SES reform proposal not only comes in a reaction on the European Green Deal proposal, but it also comes at a time that the negative impact of the COVID-19 pandemic on the aviation sector is at the verge of destroying parts of the

industry, due to the sharp drop in air traffic caused by the pandemic. Therefore, the reform calls for greater resilience of the EU's air traffic management, by making it easier to adapt traffic capacities to demand. The need to put the Single European Sky reform into reality is underlined by the results of 2019, that showed that compared to optimal trajectories, current trajectories of all flights controlled in the European region in 2019 caused an additional 6% in CO2 emissions. This corresponds to 11.6 Mt of CO2 emissions that could have been avoided. In addition, extraordinary measures taken in 2018 and 2019 during the capacity crisis required the re-routing of many flights which caused an increase in GHG emissions, meaning that the total avoidable emissions could reach 10%.

Therefore, on 22 September 2020, the European Commission presented the „Amended proposal for a regulation of the European Parliament and of the Council on the implementation of the Single European Sky (recast) “ (COM/2020/579 final). It is a proposal to reform and upgrade the Single European Sky regulatory framework.

In order to enable the aviation sector to better realise its economic potential, while operating more sustainably, it is necessary to provide for a revision ensuring a more flexible provision of air navigation services for the future. The rules proposed should make it possible to adapt the capacity quickly and efficiently to increases or decreases in demand or to varying geographical needs. This would also contribute to the objectives of the European Green Deal and most importantly to the reduction of CO2 emissions in the aviation sector.

The required reduction of those emissions involves a basket of different measures, many of which will deploy their effects only in the longer term. The SES reform encourages better flight efficiency and could reduce CO2 emissions most of all during the flight phases. In fact, enabling direct routing - compared to zigzagging

through different blocks of airspaces or having aircraft to fly at lower altitudes and thus burning more fuel remains the most effective measure of the proposed network reforms. The timely revision and application of the new rules could bring first tangible CO2 reductions already from the start in 2025.

The Network Manager will have a strengthened coordination role to pursue this goal. The SES reform intends to modernise the ATM in the European airspace in a way that optimises and embraces the use of modern technologies. It ensures collaborative network management that allows airspace users to fly on environmentally optimised routes. The Commission's proposal for a SES reform intends to secure safe and cost-effective ATM services by firstly, strengthening the European network and its management to avoid congestion and suboptimal flight routes; promoting a European market for data services needed for a better air traffic management; streamlining the economic regulation of air traffic services provided on behalf of Member States to stimulate greater sustainability and resilience; and by boosting better coordination for the definition, development and deployment of innovative solutions.

This updated reform of SES comes 7 years after the 2013 SES2+ proposal and finally the ATM reform should deliver a safe network that avoids unnecessary delays and emissions, in a cost-efficient manner. Where necessary, the proposal changes to the current measures and rules.

The preferred options from the 2013 impact assessment remain largely unchanged, while some have been updated to new priorities and changes in the aviation sector. In some cases, the solutions corresponding to the preferred options identified in the 2013 impact assessment have been maintained, but some of the solutions have been updated to reflect changes in the sector.

One of the most contentious points of the 2013 proposal was the so-called vertical unbundling

of air navigation service providers. The current proposal allows air traffic service providers (monopolistic providers) to procure air navigation services necessary to control air traffic, in particular data services. The purchase of such data on a European data market, rather than having all air navigation services producing the data themselves, is expected to reduce costs. The mandatory use of functional airspace blocks would be ended and the regional cooperation between air navigation service providers would be centrally steered. Better network management, combined with effective economic regulation, is expected to incentivise cooperation within the network. The Network Manager (currently Eurocontrol, until 2029) will become more important in managing the modernisation of the ATM infrastructure. Furthermore, in order to enhance coordination in Europe, new functions such as optimising airspace design and air traffic flow and capacity management have been added to the Network Manager's responsibilities.

Air navigation service providers will have to deliver the capacity announced in their Network Operations Plan. All stakeholders, airlines, airports and air navigation service providers will have to act jointly. The same should also apply to the military, except when defence or security needs prevail. The mandatory vertical unbundling of support services for ATM has been replaced by the voluntary decoupling of en-route air traffic services from other air navigation services, such as air traffic data services, communication, navigation and surveillance services, aeronautical information services, meteorological services, as well as terminal air traffic services.

4. The COVID-19 pandemic's impact on the SES

Before the COVID-19 pandemic hit the aviation sector, it was forecasted by the ICAO that by 2050, international aviation emissions could

triple compared with the year 2015. However, the situation could be changed significantly, depending on how the mid- and long-term impacts of the ongoing COVID-19 pandemic will be. Therefore, the ATM in Europe needs to be reformed to cope with both, the sustained air traffic growth over the last decade and the unforeseen traffic variations caused by factors like the current COVID-19 pandemic and its impact. Both issues require regulatory changes towards the achievement of a safe, cost- and flight-efficient European ATM system that will support the measures outlined in the European Green Deal and reduce aviation emissions.

The COVID-19 pandemic has significantly reduced the demand for ATM and airport services. In April 2020, the flight activities in Europe collapsed by 90% compared to the previous year. This has led to reduced incomes of many ATM stakeholders. However, also in the light of the COVID-19 pandemic, it will be crucial to increase resilience, scalability and sustainability in the management of manned and unmanned air traffic. It has consequently also reduced their capacity to invest into technological upgrades, which is a concerning issue, as before the COVID-19 pandemic, the European ATM suffered of serious capacity constraints, due to the lack of introducing SES measures to de-fragmentate the air traffic but also due to the lack of upgrading the ATM technology. The COVID-19 pandemic is expected to further negatively impact the ATM upgrading, since 90% of project partners' investments into ATM modernisation are delayed due to the pandemic. However, there is a willingness among the stakeholders to continue the ATM modernization and consider the SESAR deployment as a key enabler to meet the SES high-level goals.

As the main objectives and preferred options set out in the impact assessment continue to be the same in essence, it is unlikely that the rules proposed will have significantly different

economic, environmental or social impacts compared to the original SES2+ proposal. The current proposal will be submitted to the Council and the Parliament for deliberations, which the Commission hopes will be concluded without delay.

5. European Commission adopts regulation on the establishment of Common Project One (CP1) in support of the SES initiative

On 1 February 2021, the European Commission adopted a regulation that establishes the Common Project One (CP1) in support of the single European sky (SES) initiative. It is a new framework that contributes to making aviation more sustainable by ensuring a more efficient management of airways. Following the pilot phase of implementing new ATM solutions under the SESAR project, ATM Research under the Pilot Common Project (PCP), Commission Implementing Regulation (EU) No 716/2014, the Common Project One (CP1) focuses on the most efficient solutions and sets a realistic implementation timeline to be respected by airlines, airports and air navigation service providers.

In particular, the Commission staff working document entitled "Accelerating the modernisation of the Union's air traffic management infrastructure through more effective common projects" presents a way forward to ensure a faster and more effective modernisation of the EU's ATM infrastructure. The staff working document accompanies and supports the new "Commission Implementing Regulation on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014 Concluding the pilot phase of the SESAR deployment framework". The Implementing Regulation establishes the "Common

Project One (CP1)”. The CP1 package consists of the regulation, its technical annex including details about the ATM functionalities, stakeholders required to implement a specific functionality and implementation timeline.

The CP1 package’s Commission Staff Working Document (SWD 9/2021) provides an overview of the SESAR project, its deployment phase and the review of the implementation of the Pilot Common Project (PCP), which was in force since 2014. The common projects are Commission implementing Regulations that mandate the synchronised implementation of selected essential air traffic management (ATM) functionalities.

The first common project, called the Pilot Common Project (PCP), Commission Implementing Regulation (EU) No 716/2014, was launched in 2014. The Commission services started to review the implementation of pilot common project in 2017. The CP1 package reviews this implementation of the Pilot Common Project (PCP). The PCP review confirmed that the common projects are suitable policy tools for upgrading the European ATM infrastructure, but the concept needed fine-tuning. The CP1 aims to introduce significant improvements in the SESAR deployment framework. The Common Project One (CP1) is a regulation that mandates the deployment of essential air traffic management (ATM) functionalities that have been developed in the framework of the SESAR project. The aim is to make the European ATM more efficient, reliable and ready for the digital age. CP1 focuses on the most efficient solutions and sets a realistic implementation timeline to be respected by the concerned parties, including airlines, airports and air navigation service providers. The proposal comes at a time of a sharp drop in air traffic caused by the COVID-19 pandemic and answers the calls for greater resilience of the EU’s air traffic management, by making it easier to adapt traffic capacities to demand. All the solutions included into the CP1 have passed the test of criteria that they

are ready for implementation. They address the essential operational changes defined in the European ATM Master Plan, among others. These solutions are grouped into six functionalities that introduce a higher degree of digitalisation and interoperability for civil and military airspace users, airports and air navigation service providers. The new solutions will ensure more direct and therefore more fuel-efficient flight paths and more efficient flight trajectories will also allow modern aircraft to exploit fully their greener and quieter technologies.

According to the European Commissioner for Transport, Adina Vălean, modernising the European air traffic management (ATM) is central to meeting the European Green Deal’s objectives and ensuring the long-term resilience of the aviation sector. The detailed arrangements for implementing the CP1 will be included into the Deployment Programme that the Commission will adopt in the second half of 2021. The EU will provide funding to support the implementation of the CP1 through the Connected Europe Facility programme. The SESAR Deployment Manager will coordinate the CP1 implementation. The CP1 regulation was published in the EU’s Official Journal and came into force 20 days after its publication in the Official Journal, which was on 22nd February 2021. The CP1 Regulation repeals and replaces the PCP Implementing Regulation (EU) No 716/2014. The detailed arrangements for implementing the CP1 will be included into the Deployment Programme that the Commission will adopt in the second half of 2021. The expected final deadline for completion of the entire CP1 will be the end of 2027.

References

European Commission: Communication from the Commission. The European Green Deal. COM(2019) 640 final. In:
<https://eur-lex.europa.eu/legal->

[content/EN/TXT/?uri=COM:2019:640:FIN](#), 11. 12. 2019,
retrieved 18 February 2021

European Commission: Questions and Answers - Single European Sky: for an efficient and sustainable air traffic management. In:
https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_1716, 22 September 2020, retrieved 18 February 2021

European Commission: Amended proposal for a Regulation of the European Parliament and of the Council on the implementation of the Single European Sky (recast), COM/2020/579 final, {SWD(2020) 187 final}. In:
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2020%3A579%3AFIN>, 22 September 2020, retrieved 18 February 2021

European Commission: Aviation: a new step towards modernising and greening the European skies. In:
https://ec.europa.eu/transport/modes/air/news/2021-02-01-modernising-and-greening-european-skies_en, 1 February 2021, retrieved 23 February 2021

European Commission: Mobility and Transport. Air. Single European Sky. In:
https://ec.europa.eu/transport/modes/air/ses_en

European Commission: Single European Sky: for a more sustainable and resilient air traffic management. In:
https://ec.europa.eu/transport/modes/air/news/2020-09-22-ses-more-sustainable-and-resilient-air-traffic-management_en, 22/09/2020, retrieved 23 February 2021

European Commission: Single European Sky: for a more sustainable and resilient air traffic management. In:
https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1708, 22 September 2020 retrieved 18 February 2021

European Commission: Commission Staff Working Document. Accelerating the modernisation of the Union's air traffic management infrastructure through more effective common projects. Accompanying the document Commission Implementing Regulation on the establishment of the Common Project One supporting the implementation of the European Air Traffic Management Master Plan provided for in Regulation (EC) No 550/2004 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 409/2013 and repealing Commission Implementing Regulation (EU) No 716/2014 Concluding the pilot phase of the SESAR deployment framework. In:
<https://ec.europa.eu/transport/sites/transport/files/swd20210009.pdf>, Brussels, XXX[...] (2021) XXX draft, retrieved 18 February 2021

European Parliament Committee on Transport and Tourism: AMENDMENTS 16 - 329. Draft report Marian-Jean Marinescu. (PE 662.138v01-00) Proposal for a regulation of the European Parliament and of the Council on the implementation of the Single European Sky (recast) Proposal for a regulation (COM(2020) 0579 - C9-0334/2020 - 2013/0186 (COD)). In:
https://www.europarl.europa.eu/doceo/document/TRAN-AM-680868_EN.pdf, 5.2.2021, retrieved 18 February 2021