



Study supporting the evaluation of the European Union Aviation Safety Agency's (EASA) performance in relation to its objectives, mandate and tasks as set out in Regulation (EU) 2018/1139

Final Report



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evaluation of the European
Union Aviation Safety
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2018/1139**

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CONTENTS

I.	Abstract	1
II.	Executive summary	2
III.	RÉSUMÉ	6
IV.	RÉSUMÉ ANALYTIQUE	7
V.	ZUSAMMENFASSUNG	11
VI.	ZUSAMMENFASSUNG DER ERGEBNISSE	12
VII.	List of Abbreviations	1
1.	Introduction	5
1.1	Overview of methodology	7
1.2	Study limitations	7
2.	WHAT WAS THE EXPECTED OUTCOME OF THE INTERVENTION?	9
2.1	Policy background preceding Regulation (EU) 2018/1139	9
2.2	Rationale for the intervention	9
2.3	The IA's preferred policy package	11
2.4	Comparison between IA's preferred policy package and legal text of the intervention	19
2.5	The intervention logic	21
2.6	Point(s) of comparison	24
3.	HOW HAS THE SITUATION EVOLVED OVER THE EVALUATION PERIOD?	28
3.1	Evolution of the points of comparison	28
3.2	Recent developments	51
4.	EVALUATION FINDINGS	57
4.1	To what extent was the intervention successful and why?	57
4.2	How did the EU intervention make a difference?	86
4.3	Is the intervention still relevant?	88
5.	WHAT ARE THE CONCLUSIONS AND LESSONS LEARNT?	91
5.1	To what extent was the intervention successful and why?	91
5.2	How did the EU intervention make a difference?	97
5.3	Is the intervention still relevant?	98
	APPENDIX 1 - Methodology	99
	APPENDIX 2 – Evaluation matrix	123
	APPENDIX 3 – Rationale for the intervention	137
	Appendix 4 - The IA's preferred policy package and the changes introduced by the intervention	150
	Main features and changes brought by Regulation (EU) 2018/1139	150
	APPENDIX 5 – EASA's KPIs	153

APPENDIX 6 – Overview of costs and benefits	163
Appendix 7 – CS-23 and CS-25	176
APPENDIX 8 - Differences in certification and oversight between eu and US	178
APPENDIX 9 – Structural break analyses	179
Appendix 10 – EASA’s Costs and revenues per category from 2013-2021 adjusted for inflation (in thousands)	182
Appendix 11 – Technical details on Technological Developments	184
APPENDIX 12 – List of sources	185

LIST OF TABLES

Table 1. Preferred policy package	12
Table 2. Estimated resource needs of EASA under preferred policy options	18
Table 3. Gap analysis of IA's preferred policy package and Regulation (EU) 2018/1139	19
Table 4. Summary of the points of comparison and variables	25
Table 5. Costs and revenues per category from 2013-2021 (in thousands)	45
Table 6: Approach to the evaluation criteria	100
Table 7. Assessment of data completeness	105
Table 8. Indicators for monitoring and evaluation of the final policy package (Specific Objective 1)	107
Table 9. Indicators for monitoring and evaluation of the final policy package (Specific Objective 2)	107
Table 10. Indicators for monitoring and evaluation of the final policy package (Specific Objective 3)	108
Table 11. Indicators for monitoring and evaluation of the final policy package (Specific Objective 4)	108
Table 12. Overall stakeholder consultation strategy	112
Table 13. Overview of stakeholder consultation activities	112
Table 14. Evaluation Questions Matrix (EQM)	123
Table 15. Main operational objectives of the preferred policy package	142
Table 16. Estimated resource needs of EASA under preferred policy options	149
Table 17. EASA's rulemaking KPIs 2015-2022	154
Table 18. Number of EASA evaluations of existing rules	156
Table 19. Product certification KPIs (2015-2022)	156
Table 20. Standardisation activities KPIs (2015-2022)	159
Table 21. International Cooperation KPIs (2015-2022)	160
Table 22. EASA Statutory Staff & SNEs Establishment plans – temporary agents	161
Table 23. Overview of costs and benefits	165

LIST OF FIGURES

Figure 1: Overview of study logic	6
Figure 2: Intervention logic	23
Figure 3. Ratio of registered commercial aircraft to the number of thousands of intra-EU flights per country	29
Figure 4. Main pillars of forthcoming Ground handling Regulation	31
Figure 5. Numbers of Air Operator Certificates Aeroplanes and Commercial Air Transport aeroplanes in EASA MS	33
Figure 6. Fatal accidents, non-fatal accidents and serious incidents per year involving aerodromes and ground handling	35
Figure 7. Evolution in electric aircraft technology	38
Figure 8. Above: Evolution in SAF technology worldwide; Below: the hydrogen aviation technology patents by country	39

Figure 9. Electric and hybrid-electric vertical takeoff and landing (eVTOL) concepts by country/region	40
Figure 10. Incident and accident rates	41
Figure 11. Airlines' market share	42
Figure 12. The evolution of employment in EU aviation	44
Figure 13. EASA revenues by source	50
Figure 14. To what extent have EASA's certification procedures effectively contributed to increasing the safety of the European aviation system? (n=119)	61
Figure 15. How effective are the stakeholder consultations within EASA's advisory bodies (i.e. are consultations inclusive, timely and do they allow for constructive exchanges of ideas)? (n=79)	64
Figure 16. Total contributions and costs 2018-2021 (in thousands)	67
Figure 17. Total expenditure values and forecast (2013-2021)	68
Figure 18. Number of FTEs within EASA 2018-2021	68
Figure 19. To what extent has the introduction of Regulation (EU) 2018/1139 led to increased costs for your organisation? (n=117)	70
Figure 20. Stakeholder survey: Please specify the nature of these costs? (n=73)	71
Figure 21. Estimated yearly labour cost increases per NCA	73
Figure 22. Estimated annual increase in FTE in NCAs over the period 2018-2022	74
Figure 23. Stakeholder survey: Q. Please indicate which type(s) of benefits, if any, can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139, compared to the previous Basic Regulation (EC) 216/2008? (n=116)	76
Figure 24. To what extent are the individual legal requirements set out in Regulation (EU) 2018/1139 coherent with one another overall (i.e. do not contradict or overlap with each other)? (n=118)	78
Figure 25. In your opinion, are EASA's tasks complementary to (i.e. do not overlap with, duplicate or contradict) those of other regulatory bodies at international, national (e.g. civil aviation authorities), or regional level? (n=120)	79
Figure 26. Could the activities carried out by EASA have been performed at regional, national (by each Member State acting alone), or international level? (n=118)	87
Figure 27. How likely is it that the effects and impacts of Regulation (EU) 2018/1139 would have been achieved without having the Regulation in place (i.e. with only the previous Basic Regulation (EC) 216/2008 in force)? (n = 118)	87
Figure 28. How likely it is that the same results would have been achieved at international, national or regional level without an agency such as EASA? (n=118)	88
Figure 29. To what extent are Regulation (EU) 2018/1139 and the activities of EASA still relevant to address the current problems and needs of your organisation? (n=118)	89
Figure 30: Overview of study logic	105
Figure 31. Overview of the different elements of the consultation activities	111
Figure 32. Overview of coordinated answers	115

Figure 33. Structural break analysis of the accident rate (left: optimal breakpoint in 2016, right: breakpoint in 2018)	121
Figure 34. Structural break analysis of EASA's cost components	121
Figure 35. EASA Rulemaking outputs per year (2015-2021)	154
Figure 36. Approvals issued by EASA during 2018 - 2021	157
Figure 37. Structural break analysis of contributions from third countries (breakpoint in 2018)	180
Figure 38. Structural break analysis of EASA's cost components	181

I. ABSTRACT

The objective of this study is to support the European Commission with evaluating the performance of the European Union Aviation Safety Agency (EASA) in relation to its mandate, including the main objectives and tasks contained therein. In particular, the latest revision of the mandate, contained in Regulation (EU) 2018/113, plays a central role leading to a twin-Evaluation of the Regulation and the Agency itself. This evidence-based supporting study considers, as required by the framework of the Better Regulation Guidelines, five main evaluation criteria (relevance, effectiveness, efficiency, coherence and EU added value). The study combines different techniques of qualitative and quantitative research and analysis, including defining the evaluation points of comparison, desk-based research to collect relevant data and fieldwork activities to collect first-hand evidence from stakeholders (e.g. interviews, survey and workshops). The main outcome of the Evaluation is that generally speaking the Agency has positively contributed to aviation safety within the EU and is a world-wide leader in this regard. It is also viewed very positively by both Member States and private sector stakeholders. However, some areas of focus should be considered going forward, such as performance-based regulation, foresight planning for unexpected events and efficiency considering declining resources and increasing tasks.

II. EXECUTIVE SUMMARY

This document forms the Final Report of the **Study supporting the evaluation of the European Union Aviation Safety Agency's (EASA) performance in relation to its objectives, mandate and tasks as set out in Regulation (EU) 2018/1139¹**. The main objective of Regulation (EU) 2018/1139 is to ensure a **high, uniform level of civil aviation safety** throughout the EU and to contribute to the wider EU aviation policy. Additionally, this Regulation aims to:

- facilitate the free movement of goods, persons, services and capital within the internal aviation market;
- improve the competitiveness of the Union's aviation industry;
- promote a high level of environmental protection; and
- to foster cooperation with third countries and international organisations.

The Regulation also seeks to streamline regulatory, certification and oversight processes, to establish and maintain a high uniform level of civil aviation security, to assist Member States in exercising their rights and fulfilling their obligations under the Chicago Convention, and to promote research and innovation, as well as technical and operational interoperability and the sharing of administrative best practices in order to support passenger confidence in a safe civil aviation environment.

This study, which ran from June 2022 until March 2023, was awarded by the Directorate-General for Mobility and Transport (DG MOVE) of the European Commission to a Consortium led by Ramboll Management Consulting further consisting of the University of Antwerp and individual subcontracted experts. It aims at supporting the Commission with an **independent, evidence-based evaluation of Regulation (EU) 2018/1139, EASA and its working practices in establishing a high level of civil aviation safety**. The evaluation covers the period from August 2018 until December 2022.

This evaluation was conducted according to the Better Regulation Guidelines Toolbox². The study focused on three main methodological tasks:

1. The definition and the implementation of the **evaluation points of comparison**, based on the rationale for the intervention outlined in the 2015 Commission's Impact Assessment³ (henceforth referred to as the "Commission IA") accompanying the proposal for Regulation (EU) 2018/1139;
2. A **desk-based research** to collect qualitative and quantitative information on the performance and the task of EASA and on the features of Regulation (EU) 2018/1139;
3. A set of **fieldwork activities⁴** to collect first hand qualitative and quantitative evidence from stakeholders.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018R1139>

² https://commission.europa.eu/law/law-making-process/planning-and-proposing-law/better-regulation/better-regulation-guidelines-and-toolbox_en

³ COM(2015) 613 final

⁴ The Stakeholder Consultation Report, annexed as a separate document, provides a detailed description of the fieldwork and its key insights

Summary of the study findings and overall conclusions

To what extent was the intervention successful and why?

EASA is widely recognised for its expertise and activities in terms of safety. The **overall quality of safety standards in the EU is perceived as very high** by all the actors within the EU aviation system, although there are opportunities for improvement in areas such as consistent harmonisation of rules and standardisation procedures. To enhance the effectiveness of the agency, there needs to be a **greater utilisation of flexible, performance-based regulations** (as prescribed by Regulation (EU) 2018/1139) and **improved guidance** on their implementation. Despite an overall consensus that over-prescriptive rules should be avoided, some diverging views remain between aviation industry (advocating for more flexible rules) and Member States (calling for stricter definitions). Through a cooperative approach, EASA has established a **positive relationship with Member States and stakeholders**. EASA is planning to further refine its approach to stakeholder consultations by creating ad hoc topic-specific activity groups, outside the two Advisory Bodies (i.e. 'Member States Advisory Body' (MAB) and 'Stakeholder Advisory Body' (SAB)): utilising targeted consultations outside of Advisory Bodies may further improve the organisation's decision making and stakeholder engagement.

EASA has demonstrated **effectiveness** in responding to **external shocks** such as the COVID-19 pandemic, despite the fact that the pandemic caused a significant reduction in EASA's revenues from fees and charges (i.e. the part of EASA's budget funded by the aviation industry). EASA's budget is in fact mainly funded by industry fees and charges (accounting for around 63% of the total EASA budget) with the remaining 22% coming from the European Commission as a subsidy for rulemaking activities. This funding structure might prove problematic during an economic downturn or external factors affecting the industry. Therefore, EASA should consider including additional foresight planning for unexpected events.

These considerations on EASA's budget are even more relevant in light of the **decline in available full-time employees (FTEs) at the agency**, despite an increase in workload and demands. This decline in FTEs has limited EASA's flexibility to adjust to current needs and expand its scope. To keep maintaining a high level of aviation safety, EASA might need increased resources, both financial and human or at least the agency should weigh up additional domains against available resources for a balance between its scope and financial feasibility.

Despite the significant costs of complying with Regulation 2018/1139 and EASA's rules, most **stakeholders** note that the **benefits achieved**, such as an overall harmonised regulatory framework, are considered **proportional** to the costs borne. However, some stakeholders raised **concerns about proportionality and administrative impact**. EASA could increase proportionality by better considering stakeholder types and size of organizations, as well as increasing flexibility and conducting thorough assessments of administrative impact.

Stakeholders provided **positive feedback** on the **coherence** of Regulation (EU) 2018/1139, although there were to an extent perceived **overlaps between EASA's rules on aerodromes** and broader EU regulations, such as the **NIS directive** on network and information systems applicable to critical infrastructures across all Europe and all industries. EASA's activities and the text of the Regulation allow for coherence with other relevant EU policies, such as the **Sustainable and Smart Mobility Strategy (SSMS)** and the **European Green Deal**: both the SSMS' goal of **large zero-emission aircraft** by 2035 and the requirement for EASA (Article 87) to **assist the Commission on environmental protection** are embedded in EASA's activities. Nonetheless, it could be worth considering the need to enhance EASA's mandate in line with the EU policy agenda (e.g. considering a revision of Article 87 of the Regulation).

How did the EU intervention make a difference?

Regulation (EU) 2018/1139 has **introduced changes to address recent trends and challenges in aviation**, such as the increase in the market use of **unmanned aircrafts** and issues with regards to **environmental protection**, among others. Moreover, the Regulation has further improved rules and requirements from the previous Regulation (EC) 216/2008. Overall, the new Regulation **addressed emerging issues which could have not been achieved through the previous Regulation**.

There is wide stakeholder consensus on the fact that having an EU-level regulatory framework is preferable to a fragmented system with different set of rules at national/regional levels. In fact, the **Regulation provides more simplicity to stakeholders and authorities who have to comply with a single high-level set of aviation safety rules and standards all across Europe**. This was identified as the key benefit of having an EU-wide Regulation and an EU agency.

EASA plays a critical role in harmonising aviation safety standards across the EU. Moreover, EASA has been able to establish **relationships with other aviation safety agencies** around the world, resulting in the recognition of each other's certification and oversight activities: this has facilitated the **international acceptance of EU aviation products and services**. While EASA is at the forefront of the development and implementation of innovative technologies (e.g. unmanned aircraft systems and electric aviation), a key challenge for the agency is the balance **between prescriptive rules and new technologies**, as a **legalistic approach may become outdated quickly**. An EU-wide agency provides for a wider overview across the complex and rapidly changing European aviation environment, something which would not be possible to the same extent at regional or national level.

Is the intervention still relevant?

The study findings suggest that the **objectives and the scope of Regulation (EU) 2018/1139 and of EASA are still relevant to the needs of the aviation sector**: according to 75% of the survey participants, Regulation (EU) 2018/1139 and the activities of EASA are 'very relevant' or 'somewhat relevant' to the current problems and needs they face. Nonetheless, it was further noted that while EASA is particularly suited to serving larger stakeholders, its approach should also facilitate smaller, more innovative and out-of-the box stakeholders (e.g. SMEs), either through direct support or by creating a system where their needs are served by other authorities (e.g. NCAs). An example where the **relevance of EASA** was seen as particularly prominent was in relation to the **regulation of unmanned aircrafts**, as in this instance the necessary requirements were drafted ad-hoc and together with most stakeholders, including the industry, leading to a legal framework within a short timeframe. While EASA staff is of the opinion that it should play a leading role in other new policy areas, such as the greening and the digitalisation of the aviation sector, the aviation industry highlighted their concerns about the direction of EASA and its relevance in emerging trends and new topics that may move beyond its core role in aviation safety. It is important to note that any expansion of EASA's scope of activities should not take place at the expense of safety as a key priority. This debate is part of a broader discussion about what should be prioritised by EASA and how linked its core mandate and objectives are to current relevant needs in aviation. In fact, **innovation and technological developments have become increasingly prevalent in the aviation sector**, and these developments have complex implications for EASA's operating environment. For instance, new tools utilising machine learning and artificial intelligence provide a more efficient and faster analysis based on collected flight data, which could have possible implications for aviation safety that need to be taken into consideration by EASA. In this respect, **EASA** is actively engaging in such areas through initiatives like its **AI Roadmap**, which provides a **vision for safety and ethical dimension** when it comes machine learning applications in aviation. Therefore, EASA should continue exploring new ways to stay up to date on key recent innovations

and assess their impact on aviation safety, by establishing synergies and consulting other EU agencies or international stakeholders involved in such technological advancements.

III. RÉSUMÉ

L'objectif de cette étude est d'aider la Commission européenne à évaluer la performance de l'Agence européenne de la sécurité aérienne (AESA) par rapport à son mandat, y compris les principaux objectifs et tâches qu'il contient. En particulier, la dernière révision du mandat, contenue dans le règlement (UE) 2018/113, joue un rôle central, conduisant à une double évaluation du règlement et de l'Agence elle-même. Cette étude d'appui fondée sur des données probantes examine, comme l'exige le cadre des lignes directrices sur l'amélioration de la réglementation, cinq critères d'évaluation principaux (pertinence, efficacité, efficacité, cohérence et valeur ajoutée de l'UE). L'étude combine différentes techniques de recherche et d'analyse qualitatives et quantitatives, y compris la définition des points de comparaison de l'évaluation, la recherche documentaire pour collecter les données pertinentes et les activités de terrain pour collecter des preuves de première main auprès des parties prenantes (par exemple, des entretiens, des enquêtes et des ateliers). Le principal résultat de l'évaluation est que, d'une manière générale, l'Agence a contribué de manière positive à la sécurité aérienne au sein de l'UE et qu'elle est un leader mondial dans ce domaine. Elle est également perçue de manière très positive par les États membres et les parties prenantes du secteur privé. Toutefois, certains domaines d'action devraient être envisagés pour l'avenir, tels que la réglementation fondée sur les performances, la planification prévisionnelle d'événements inattendus et l'efficacité compte tenu de la diminution des ressources et de l'augmentation des tâches.

IV. RÉSUMÉ ANALYTIQUE

Le présent document constitue le rapport final de **l'étude soutenant l'évaluation des performances de l'Agence de la sécurité aérienne de l'Union européenne (AESA) au regard de ses objectifs, de son mandat et de ses tâches, tels que définis dans le règlement (UE) 2018/1139**. L'objectif principal du règlement (UE) 2018/1139 est d'assurer un niveau **élevé et uniforme de sécurité de l'aviation** civile dans l'ensemble de l'UE et de contribuer à la politique aéronautique de l'UE au sens large. En outre, ce règlement vise à :

- faciliter la libre circulation des biens, des personnes, des services et des capitaux au sein du marché intérieur de l'aviation ;
- améliorer la compétitivité de l'industrie aéronautique de l'Union ;
- promouvoir un niveau élevé de protection de l'environnement ; et
- favoriser la coopération avec les pays tiers et les organisations internationales.

Le règlement vise également à rationaliser les processus de réglementation, de certification et de surveillance, à établir et à maintenir un niveau uniforme élevé de sûreté de l'aviation civile, à aider les États membres à exercer leurs droits et à remplir leurs obligations au titre de la convention de Chicago, et à promouvoir la recherche et l'innovation, ainsi que l'interopérabilité technique et opérationnelle et le partage des meilleures pratiques administratives, afin de renforcer la confiance des passagers dans un environnement sûr pour l'aviation civile.

Cette étude, qui s'est déroulée de juin 2022 à mars 2023, a été confiée par la Direction générale de la mobilité et des transports (DG MOVE) de la Commission européenne à un consortium dirigé par Ramboll Management Consulting et composé de l'Université d'Anvers et d'experts individuels en sous-traitance. Elle vise à soutenir la Commission avec une **évaluation indépendante et fondée sur des preuves du règlement (UE) 2018/1139, de l'AESA et de ses pratiques de travail dans l'établissement d'un niveau élevé de sécurité de l'aviation civile**. L'évaluation couvre la période d'août 2018 à décembre 2022.

Cette évaluation a été réalisée conformément à la boîte à outils des lignes directrices pour l'amélioration de la réglementation. L'étude s'est concentrée sur trois tâches méthodologiques principales :

1. La définition et la mise en œuvre des points de **comparaison de l'évaluation**, sur la base de la justification de l'intervention décrite dans l'analyse d'impact de la Commission de 2015 (ci-après dénommée "l'analyse d'impact de la Commission") accompagnant la proposition de règlement (UE) 2018/1139 ;
2. Une **recherche documentaire** visant à recueillir des informations qualitatives et quantitatives sur la performance et la mission de l'AESA et sur les caractéristiques du règlement (UE) 2018/1139 ;
3. Une série **d'activités sur le terrain** pour recueillir des preuves qualitatives et quantitatives de première main auprès des parties prenantes.

Résumé des résultats de l'étude et conclusions générales

Dans quelle mesure l'intervention a-t-elle été couronnée de succès et pourquoi ?

L'AESA est largement reconnue pour son expertise et ses activités en matière de sécurité. La **qualité globale des normes de sécurité dans l'UE est perçue comme très élevée** par tous les acteurs du système aéronautique de l'UE, même s'il existe des possibilités d'amélioration dans des domaines tels que l'harmonisation cohérente des règles et des procédures de normalisation. Pour **renforcer l'efficacité de l'agence, il faut recourir davantage à des réglementations**

souples et fondées sur les performances (comme le prescrit le règlement (UE) 2018/1139) et **améliorer les orientations** relatives à leur mise en œuvre. Malgré un consensus général sur le fait qu'il faut éviter les règles trop prescriptives, certaines divergences de vues subsistent entre l'industrie aéronautique (qui plaide pour des règles plus souples) et les États membres (qui réclament des définitions plus strictes). Grâce à une approche coopérative, l'AESA a établi une relation **positive avec les États membres et les parties prenantes**. L'AESA prévoit d'affiner son approche des consultations des parties prenantes en créant des groupes d'activité ad hoc sur des sujets spécifiques, en dehors des deux organes consultatifs (c'est-à-dire l'"organe consultatif des États membres" (MAB) et l'"organe consultatif des parties prenantes" (SAB)) : l'utilisation de consultations ciblées en dehors des organes consultatifs peut encore améliorer la prise de décision de l'organisation et l'engagement des parties prenantes.

L'AESA a fait preuve **d'efficacité** dans sa réponse aux **chocs externes** tels que la pandémie de COVID-19, malgré le fait que la pandémie ait entraîné une réduction significative des recettes de l'AESA provenant des droits et redevances (c'est-à-dire la partie du budget de l'AESA financée par l'industrie de l'aviation). En fait, le budget de l'AESA est principalement financé par les droits et redevances du secteur (représentant environ 63 % du budget total de l'AESA), les 22 % restants provenant de la Commission européenne sous la forme d'une subvention pour les activités d'élaboration de règles. Cette structure de financement pourrait s'avérer problématique en cas de ralentissement économique ou de facteurs externes affectant l'industrie. Par conséquent, l'AESA devrait envisager d'inclure une planification prévisionnelle supplémentaire pour les événements inattendus.

Ces considérations sur le budget de l'AESA sont d'autant plus pertinentes que le **nombre d'employés à temps plein (ETP) disponibles au sein de l'agence a diminué**, malgré l'augmentation de la charge de travail et des demandes. Cette diminution des ETP a limité la flexibilité de l'AESA pour s'adapter aux besoins actuels et étendre son champ d'action. Pour continuer à maintenir un niveau élevé de sécurité aérienne, l'AESA pourrait avoir besoin de ressources accrues, tant financières qu'humaines, ou du moins l'agence devrait-elle évaluer les domaines supplémentaires par rapport aux ressources disponibles afin de trouver un équilibre entre son champ d'action et la faisabilité financière.

Malgré les coûts importants liés à la mise en conformité avec le règlement 2018/1139 et les règles de l'AESA, **la plupart des parties prenantes notent que les avantages obtenus**, tels qu'un cadre réglementaire harmonisé global, sont considérés comme proportionnels aux coûts supportés. Toutefois, **certaines parties prenantes ont exprimé des préoccupations concernant la proportionnalité et l'impact administratif**. L'AESA pourrait accroître la proportionnalité en prenant mieux en compte les types de parties prenantes et la taille des organisations, ainsi qu'en augmentant la flexibilité et en réalisant des évaluations approfondies de l'impact administratif.

Les parties prenantes ont formulé des **commentaires positifs sur la cohérence** du règlement (UE) 2018/1139, bien qu'il y ait eu, dans une certaine mesure, des chevauchements perçus entre les règles de l'AESA sur les aéroports et des règlements de l'UE plus larges, tels que **la directive NIS** sur les réseaux et les systèmes d'information applicables aux infrastructures critiques dans toute l'Europe et dans tous les secteurs d'activité. Les activités de l'AESA et le texte du règlement permettent une cohérence avec d'autres politiques européennes pertinentes, telles que **la stratégie pour une mobilité durable et intelligente** (SSMS) et le Green Deal européen : l'objectif de la SSMS d'avoir de grands avions sans émissions d'ici 2035 et l'obligation pour l'AESA (article 87) d'assister la Commission en matière de protection de l'environnement sont intégrés dans les activités de l'AESA. Néanmoins, il pourrait être utile d'examiner la nécessité de renforcer le mandat de l'AESA conformément à l'agenda politique de l'UE (par exemple en envisageant une révision de l'article 87 du règlement).

En quoi l'intervention de l'Union européenne a-t-elle fait la différence ?

Le règlement (UE) 2018/1139 a **introduit des changements pour répondre aux tendances et défis récents dans l'aviation**, tels que l'augmentation de l'utilisation sur le marché **des aéronefs sans pilote** et les questions relatives à la protection de l'environnement, entre autres. En outre, le règlement a encore amélioré les règles et les exigences de l'ancien règlement (CE) 216/2008. Dans l'ensemble, **le nouveau règlement aborde des questions émergentes qui n'auraient pas pu être résolues par le règlement précédent.**

Les parties prenantes s'accordent largement sur le fait qu'il est préférable d'avoir un cadre réglementaire au niveau de l'UE plutôt qu'un système fragmenté avec différents ensembles de règles au niveau national/régional. En fait, **le règlement simplifie les choses pour les parties prenantes et les autorités qui doivent se conformer à un ensemble unique de règles et de normes de sécurité aérienne de haut niveau dans toute l'Europe.** Il s'agit là du principal avantage d'un règlement à l'échelle de l'UE et d'une agence européenne.

L'AESA joue un rôle essentiel dans l'harmonisation des normes de sécurité aérienne dans l'ensemble de l'UE. En outre, **l'AESA a pu établir des relations** avec d'autres agences de sécurité aérienne dans le monde, ce qui a permis la reconnaissance des activités de certification et de surveillance de chacune d'entre elles : cela a facilité l'acceptation internationale des produits et services aéronautiques de l'UE. Si l'AESA est à la pointe du développement et de la mise en œuvre de technologies innovantes (par exemple, les systèmes d'aéronefs sans pilote et l'aviation électrique), l'un de ses principaux défis consiste à trouver un équilibre entre les règles normatives et les nouvelles technologies, car une approche légaliste risque d'être rapidement dépassée. Une agence à l'échelle de l'UE permet d'avoir une vue d'ensemble plus large de l'environnement complexe et en évolution rapide de l'aviation européenne, ce qui ne serait pas possible dans la même mesure au niveau régional ou national.

L'intervention est-elle toujours pertinente ?

Les résultats de l'étude suggèrent que **les objectifs et le champ d'application du règlement (UE) 2018/1139 et de l'AESA sont toujours pertinents par rapport aux besoins du secteur de l'aviation** : selon 75 % des participants à l'enquête, le règlement (UE) 2018/1139 et les activités de l'AESA sont "très pertinents" ou "assez pertinents" par rapport aux problèmes et aux besoins actuels auxquels ils sont confrontés. Néanmoins, il a également été noté que si l'AESA est particulièrement adaptée pour servir les grandes parties prenantes, son approche devrait également faciliter les parties prenantes plus petites, plus innovantes et sortant des sentiers battus (par exemple les PME), soit par un soutien direct, soit en créant un système dans lequel leurs besoins sont satisfaits par d'autres autorités (par exemple les ANC). Un exemple où **la pertinence de l'AESA** a été jugée particulièrement importante est celui **de la réglementation des aéronefs sans pilote**, car dans ce cas, les exigences nécessaires ont été rédigées de manière ad hoc et en collaboration avec la plupart des parties prenantes, y compris l'industrie, ce qui a permis de mettre en place un cadre juridique dans un délai très court. Alors que le personnel de l'AESA est d'avis qu'elle devrait jouer un rôle de premier plan dans d'autres nouveaux domaines politiques, tels que l'écologisation et la numérisation du secteur de l'aviation, l'industrie aéronautique a fait part de ses préoccupations quant à l'orientation de l'AESA et à sa pertinence dans les tendances émergentes et les nouveaux sujets qui pourraient aller au-delà de son rôle principal dans la sécurité de l'aviation. Il est important de noter que tout élargissement du champ d'activités de l'AESA ne doit pas se faire au détriment de la sécurité, qui est une priorité essentielle. Ce débat s'inscrit dans le cadre d'une discussion plus large sur les priorités de l'AESA et sur le lien entre son mandat et ses objectifs principaux et les besoins actuels de l'aviation. En fait, l'innovation et les développements technologiques sont devenus de plus en plus fréquents dans le secteur de l'aviation, et ces développements ont des implications complexes pour l'environnement opérationnel de l'AESA. Par

exemple, de nouveaux outils utilisant l'apprentissage automatique et l'intelligence artificielle permettent une analyse plus efficace et plus rapide des données de vol collectées, ce qui pourrait avoir des implications possibles pour la sécurité aérienne qui doivent être prises en considération par l'AESA. À cet égard, l'AESA s'engage activement dans ces domaines par le biais d'initiatives telles que sa feuille de route sur l'IA, qui fournit une vision de la sécurité et de la dimension éthique en ce qui concerne les applications de l'apprentissage automatique dans l'aviation. Par conséquent, l'AESA devrait continuer à explorer de nouveaux moyens de se tenir au courant des principales innovations récentes et d'évaluer leur impact sur la sécurité aérienne, en établissant des synergies et en consultant d'autres agences de l'UE ou des parties prenantes internationales impliquées dans de telles avancées technologiques.

V. ZUSAMMENFASSUNG

Ziel dieser Studie ist es, die Europäische Kommission bei der Bewertung der Leistung der Europäischen Agentur für Flugsicherheit (EASA) in Bezug auf ihr Mandat, einschließlich der wichtigsten darin enthaltenen Ziele und Aufgaben, zu unterstützen. Insbesondere die jüngste Überarbeitung des Mandats, die in der Verordnung (EU) 2018/113 enthalten ist, spielt eine zentrale Rolle und führt zu einer Doppel-Evaluierung der Verordnung und der Agentur selbst. Diese evidenzbasierte Begleitstudie berücksichtigt, wie im Rahmen der Leitlinien für bessere Rechtsetzung gefordert, fünf Hauptbewertungskriterien (Relevanz, Wirksamkeit, Effizienz, Kohärenz und EU-Mehrwert). Die Studie kombiniert verschiedene Techniken der qualitativen und quantitativen Forschung und Analyse, einschließlich der Festlegung der Vergleichspunkte für die Bewertung, der Schreibtischforschung zur Erhebung relevanter Daten und der Feldarbeit zur Sammlung von Informationen aus erster Hand von Interessengruppen (z. B. Interviews, Umfragen und Workshops). Das wichtigste Ergebnis der Bewertung ist, dass die Agentur im Allgemeinen einen positiven Beitrag zur Flugsicherheit in der EU geleistet hat und in dieser Hinsicht weltweit führend ist. Sie wird auch von den Mitgliedstaaten und den Akteuren des Privatsektors sehr positiv bewertet. Allerdings sollten in Zukunft einige Schwerpunkte gesetzt werden, z. B. leistungsorientierte Regulierung, vorausschauende Planung für unvorhergesehene Ereignisse und Effizienz angesichts abnehmender Ressourcen und zunehmender Aufgaben.

VI. ZUSAMMENFASSUNG DER ERGEBNISSE

Das vorliegende Dokument ist der Abschlussbericht der **Studie zur Bewertung der Leistung der Europäischen Agentur für Flugsicherheit (EASA) in Bezug auf ihre Ziele, ihr Mandat und ihre Aufgaben, wie sie in der Verordnung (EU) 2018/1139 festgelegt sind**. Das Hauptziel der Verordnung (EU) 2018/1139 besteht darin, ein hohes, einheitliches Niveau der Sicherheit der Zivilluftfahrt in der gesamten EU zu gewährleisten und einen Beitrag zur umfassenderen EU-Luftfahrtpolitik zu leisten. Darüber hinaus zielt diese Verordnung darauf ab:

- Erleichterung des freien Verkehrs von Waren, Personen, Dienstleistungen und Kapital im Luftverkehrsbinnenmarkt;
- die Wettbewerbsfähigkeit der Luftfahrtindustrie der Union zu verbessern;
- die Förderung eines hohen Umweltschutzniveaus; und
- die Zusammenarbeit mit Drittländern und internationalen Organisationen zu fördern.

Die Verordnung zielt auch darauf ab, die Regulierungs-, Zertifizierungs- und Aufsichtsprozesse zu straffen, ein einheitlich hohes Sicherheitsniveau in der Zivilluftfahrt zu schaffen und aufrechtzuerhalten, die Mitgliedstaaten bei der Ausübung ihrer Rechte und der Erfüllung ihrer Verpflichtungen im Rahmen des Abkommens von Chicago zu unterstützen und Forschung und Innovation sowie die technische und betriebliche Interoperabilität und den Austausch bewährter Verwaltungsverfahren zu fördern, um das Vertrauen der Fluggäste in ein sicheres Umfeld der Zivilluftfahrt zu stärken.

Diese Studie, die von Juni 2022 bis März 2023 läuft, wurde von der Generaldirektion Mobilität und Verkehr (GD MOVE) der Europäischen Kommission an ein Konsortium vergeben, das von Ramboll Management Consulting geleitet wird und aus der Universität Antwerpen und einzelnen unterbeauftragten Experten besteht. Ziel ist es, die Kommission mit einer unabhängigen, **evidenzbasierten Bewertung der Verordnung (EU) 2018/1139, der EASA und ihrer Arbeitsweise bei der Schaffung eines hohen Sicherheitsniveaus in der Zivilluftfahrt zu unterstützen**. Die Bewertung erstreckt sich auf den Zeitraum von August 2018 bis Dezember 2022.

Diese Bewertung wurde gemäß der Better Regulation Guidelines Toolbox durchgeführt. Die Studie konzentrierte sich auf drei methodische Hauptaufgaben:

4. Festlegung und Umsetzung der **Vergleichspunkte für die Bewertung** auf der Grundlage der in der Folgenabschätzung der Kommission aus dem Jahr 2015 (im Folgenden als "Folgenabschätzung der Kommission" bezeichnet), die dem Vorschlag für die Verordnung (EU) 2018/1139 beigefügt ist, dargelegten Gründe für die Maßnahme;
5. Eine **Sekundärforschung** zur Erhebung qualitativer und quantitativer Informationen über die Leistung und die Aufgaben der EASA sowie über die Merkmale der Verordnung (EU) 2018/1139;
6. Eine Reihe von **Feldforschungsaktivitäten**, um qualitative und quantitative Informationen aus erster Hand von Interessenvertretern zu sammeln.

Zusammenfassung der Studienergebnisse und allgemeine Schlussfolgerungen

Inwieweit war die Intervention erfolgreich und warum?

Die EASA ist für ihr Fachwissen und ihre Aktivitäten im Bereich der Sicherheit weithin anerkannt. Die **Gesamtqualität der Sicherheitsstandards** in der EU wird von allen Akteuren innerhalb des EU-Luftfahrtsystems als sehr hoch eingeschätzt, obwohl es in Bereichen wie der konsequenten Harmonisierung von Vorschriften und Standardisierungsverfahren Verbesserungsmöglichkeiten gibt. Um die Effektivität der Agentur zu erhöhen, ist eine stärkere Nutzung flexibler,

leistungsbezogener Vorschriften (wie in der Verordnung (EU) 2018/1139 vorgeschrieben) und eine bessere Anleitung zu deren Umsetzung erforderlich. Obwohl ein allgemeiner Konsens darüber besteht, dass übermäßig präskriptive Vorschriften vermieden werden sollten, gibt es nach wie vor unterschiedliche Ansichten zwischen der Luftfahrtindustrie (die für flexiblere Vorschriften eintritt) und den Mitgliedstaaten (die strengere Definitionen fordern). Durch einen kooperativen Ansatz hat die EASA eine **positive Beziehung zu den Mitgliedstaaten und Interessengruppen** aufgebaut. Die EASA plant, ihren Ansatz für die Konsultation von Interessengruppen weiter zu verfeinern, indem sie außerhalb der beiden beratenden Gremien (d. h. des "Beratenden Gremiums der Mitgliedstaaten" (MAB) und des "Beratenden Gremiums der Interessengruppen" (SAB)) themenspezifische Ad-hoc-Aktivitätsgruppen einrichtet: Die Nutzung gezielter Konsultationen außerhalb der beratenden Gremien kann die Entscheidungsfindung der Organisation und die Einbeziehung der Interessengruppen weiter verbessern.

Die EASA hat **bewiesen**, dass sie wirksam auf **externe Schocks** wie die COVID-19-Pandemie reagieren kann, obwohl die Pandemie zu einem erheblichen Rückgang der Einnahmen der EASA aus Gebühren und Entgelten führte (d. h. dem Teil des EASA-Haushalts, der von der Luftfahrtindustrie finanziert wird). Der Haushalt der EASA wird in der Tat hauptsächlich durch Gebühren und Abgaben der Industrie finanziert (etwa 63 % des gesamten EASA-Haushalts), während die restlichen 22 % von der Europäischen Kommission als Zuschuss für die Regelsetzungstätigkeit kommen. Diese Finanzierungsstruktur könnte sich bei einem wirtschaftlichen Abschwung oder bei externen Faktoren, die die Branche betreffen, als problematisch erweisen. Daher sollte die EASA eine zusätzliche vorausschauende Planung für unerwartete Ereignisse in Betracht ziehen.

Diese Überlegungen zum Haushalt der EASA sind umso wichtiger, **als die Zahl der verfügbaren Vollzeitbeschäftigten (VZÄ) in der Agentur** trotz gestiegener Arbeitsbelastung und Anforderungen zurückgegangen ist. Dieser Rückgang der Vollzeitäquivalente hat die Flexibilität der EASA bei der Anpassung an den aktuellen Bedarf und der Erweiterung ihres Aufgabenbereichs eingeschränkt. Um das hohe Niveau der Flugsicherheit aufrechtzuerhalten, könnte die EASA mehr finanzielle und personelle Ressourcen benötigen, oder zumindest sollte die Agentur zusätzliche Aufgabenbereiche gegen die verfügbaren Ressourcen abwägen, um ein Gleichgewicht zwischen ihrem Aufgabenbereich und der finanziellen Machbarkeit zu erreichen.

Trotz der erheblichen Kosten, die mit der Einhaltung der Verordnung 2018/1139 und der EASA-Vorschriften verbunden sind, **stellen die meisten Interessenträger fest, dass die erzielten Vorteile**, wie z. B. ein insgesamt harmonisierter Rechtsrahmen, in einem angemessenen Verhältnis zu den getragenen Kosten stehen. Einige Interessenträger äußerten jedoch Bedenken hinsichtlich der Verhältnismäßigkeit und der administrativen Auswirkungen. Die EASA könnte die Verhältnismäßigkeit verbessern, indem sie die Arten von Interessengruppen und die Größe von Organisationen besser berücksichtigt, die Flexibilität erhöht und eine gründliche Bewertung der administrativen Auswirkungen vornimmt.

Die Interessenträger äußerten sich **positiv über die Kohärenz der Verordnung** (EU) 2018/1139, auch wenn es in gewissem Maße Überschneidungen zwischen den EASA-Vorschriften für Flugplätze und allgemeineren EU-Vorschriften gab, wie der NIS-Richtlinie über Netz- und Informationssysteme, die für kritische Infrastrukturen in ganz Europa und in allen Branchen gelten. Die Tätigkeiten der EASA und der Wortlaut der Verordnung ermöglichen die Kohärenz mit anderen einschlägigen EU-Politiken, wie der **Strategie für nachhaltige und intelligente Mobilität** (SSMS) und dem **Europäischen Green Deal**: Sowohl das Ziel der SSMS, bis 2035 große emissionsfreie Flugzeuge zu bauen, als auch die Anforderung an die EASA (Artikel 87), die Kommission beim Umweltschutz zu unterstützen, sind in die Tätigkeiten der EASA eingebettet. Dennoch könnte es sich lohnen, über die Notwendigkeit nachzudenken, das Mandat der EASA im Einklang mit der politischen Agenda der EU zu erweitern (z. B. durch eine Überarbeitung von Artikel 87 der Verordnung).

Wie hat sich die EU-Intervention ausgewirkt?

Mit der Verordnung (EU) 2018/1139 wurden **Änderungen eingeführt, um den jüngsten Trends und Herausforderungen in der Luftfahrt zu begegnen**, wie etwa der zunehmenden Nutzung **unbemannter Luftfahrzeuge** und Fragen des Umweltschutzes, um nur einige zu nennen. Darüber hinaus hat die Verordnung die Regeln und Anforderungen der vorherigen Verordnung (EG) 216/2008 weiter verbessert. **Insgesamt wurden mit der neuen Verordnung neue Fragen behandelt, die mit der vorherigen Verordnung nicht gelöst werden konnten.**

Es besteht ein breiter Konsens unter den Interessenvertretern, dass ein Rechtsrahmen auf EU-Ebene einem fragmentierten System mit unterschiedlichen Vorschriften auf nationaler/regionaler Ebene vorzuziehen ist. In der Tat **bietet die Verordnung den Beteiligten und Behörden, die in ganz Europa ein einziges übergeordnetes Regelwerk für die Flugsicherheit einhalten müssen, mehr Einfachheit.** Dies wurde als der Hauptvorteil einer EU-weiten Verordnung und einer EU-Agentur genannt.

Die EASA spielt eine entscheidende Rolle bei der Harmonisierung der Flugsicherheitsstandards in der EU. Darüber hinaus konnte die EASA **Beziehungen zu anderen Flugsicherheitsbehörden in der ganzen Welt aufbauen**, was zur gegenseitigen Anerkennung ihrer Zertifizierungs- und Aufsichtstätigkeiten geführt hat: Dies hat die internationale Akzeptanz von EU-Luftfahrtprodukten und -dienstleistungen erleichtert. Während die EASA bei der Entwicklung und Umsetzung innovativer Technologien (z. B. unbemannte Luftfahrtsysteme und Elektroflugzeuge) eine Vorreiterrolle spielt, besteht eine der größten Herausforderungen für die Agentur darin, ein Gleichgewicht zwischen präskriptiven Vorschriften und neuen Technologien herzustellen, da ein legalistischer Ansatz schnell veraltet sein kann. Eine EU-weite Agentur bietet einen umfassenderen Überblick über das komplexe und sich schnell verändernde europäische Luftfahrtumfeld, was auf regionaler oder nationaler Ebene nicht in gleichem Maße möglich wäre.

Ist der Eingriff noch relevant?

Die Ergebnisse der Studie deuten darauf hin, **dass die Ziele und der Anwendungsbereich der Verordnung (EU) 2018/1139 und der EASA für die Bedürfnisse des Luftfahrtsektors nach wie vor relevant sind**: 75% der Umfrageteilnehmer gaben an, dass die Verordnung (EU) 2018/1139 und die Tätigkeiten der EASA für ihre aktuellen Probleme und Bedürfnisse "sehr relevant" oder "einigermaßen relevant" sind. Dennoch wurde auch angemerkt, dass die EASA zwar besonders geeignet ist, größere Interessengruppen zu unterstützen, ihr Ansatz aber auch kleinere, innovativere und unkonventionelle Interessengruppen (z. B. KMU) fördern sollte, entweder durch direkte Unterstützung oder durch die Schaffung eines Systems, in dem ihre Bedürfnisse von anderen Behörden (z. B. nationalen Wettbewerbsbehörden) erfüllt werden. Ein Beispiel, bei dem die **Relevanz der EASA** als besonders hervorstechend angesehen wurde, war die **Regulierung unbemannter Flugzeuge**, da in diesem Fall die erforderlichen Anforderungen ad hoc und gemeinsam mit den meisten Interessengruppen, einschließlich der Industrie, ausgearbeitet wurden, was innerhalb eines kurzen Zeitrahmens zu einem Rechtsrahmen führte. Während die EASA-Mitarbeiter der Meinung sind, dass sie eine führende Rolle in anderen neuen Politikbereichen wie der Ökologisierung und der Digitalisierung des Luftfahrtsektors spielen sollte, äußerte die Luftfahrtindustrie ihre Bedenken hinsichtlich der Ausrichtung der EASA und ihrer Relevanz für aufkommende Trends und neue Themen, die über ihre Kernaufgabe der Flugsicherheit hinausgehen könnten. Es ist wichtig, darauf hinzuweisen, dass eine Ausweitung des Tätigkeitsbereichs der EASA nicht auf Kosten der Sicherheit als Hauptpriorität erfolgen sollte. Diese Debatte ist Teil einer breiter angelegten Diskussion darüber, welche Prioritäten die EASA setzen sollte und inwieweit ihr Kernmandat und ihre Ziele mit den aktuellen Bedürfnissen in der Luftfahrt verbunden sind. In der Tat haben **Innovation und technologische Entwicklungen im Luftfahrtsektor zunehmend an Bedeutung gewonnen**, und diese Entwicklungen haben komplexe Auswirkungen auf das

Arbeitsumfeld der EASA. So ermöglichen beispielsweise neue Tools, die maschinelles Lernen und künstliche Intelligenz nutzen, eine effizientere und schnellere Analyse der gesammelten Flugdaten, was mögliche Auswirkungen auf die Flugsicherheit haben könnte, die von der EASA berücksichtigt werden müssen. In dieser Hinsicht engagiert sich die **EASA** aktiv in solchen Bereichen durch Initiativen wie ihre **KI-Roadmap**, die eine **Vision für die Sicherheit und die ethische Dimension** bei Anwendungen des maschinellen Lernens in der Luftfahrt bietet. Daher sollte die EASA weiterhin nach neuen Wegen suchen, um über die wichtigsten aktuellen Innovationen auf dem Laufenden zu bleiben und ihre Auswirkungen auf die Flugsicherheit zu bewerten, indem sie Synergien schafft und andere EU-Agenturen oder internationale Interessenträger konsultiert, die an solchen technologischen Fortschritten beteiligt sind.

VII. LIST OF ABBREVIATIONS

Abbreviation	Definition
AAM	Advanced Air Mobility
ACF	Autocorrelation Function
AD	Airworthiness Directive
AI	Artificial Intelligence
AMS	Apron Management Services
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
AOC	Air Operator Certificate
ARIMA	Autoregressive Integrated Moving Average
ATC	Air Traffic Control
ATM	Air Traffic Management
ATFM	Air Traffic Flow Management
ATO	Approved Training Organisation
BRG	Better Regulation Guidelines
CAGs	Collaborative Analysis Group
CAMO	Continuous Airworthiness Management Organisation
CAAR	Consolidated Annual Activity Report
CAW	Continuing Airworthiness Directive
CIS	Common Information Services
CMA	Continuous Monitoring Activities
CAGs	Collaborative Analysis Groups
CS	Certification Specification
DOA	Design Organisation Approval

Abbreviation	Definition
EACCC	European Aviation Crisis Coordination Cell
EASA	European Aviation Safety Agency
EASO	European Aviation Suppliers Organisation
EATMN	European Air Traffic Management Network
EFTA	European Free Trade Association
EOSM	Emergency Oversight Support Mechanism
EPAS	European Plan for Aviation Safety
EQ	Evaluation Question
EU	European Union
FAA	US Federal Aviation Authority
FAR	Federal Aviation Regulation
FSTD(O)	Flight Simulation Training Devices (Organisation)
FTEs	Full-time Employees
GAO	US Government Accountability Office
GAT	General Air Traffic
GNSS	Global Navigation Satellite System
HICP	Harmonised Index of Consumer Prices
IA	Impact Assessment
IATA	International Air Transport Association
IAW	Initial Airworthiness
ICAO	International Civil Aviation Organisation
JAA	Joint Aviation Authorities
JAR	Joint Aviation Requirements
KPI	Key Performance Indicator

Abbreviation	Definition
LBA	Luftfahrt-Bundesamt
LHT	Lufthansa Technik
LSA	Light Sport Aircraft
MAB	Member States Advisory Board
MOA	Memorandum of Agreement
MTOA	Maintenance and Technical Operations Approvals
MS	Member States
NCA	National Competent Authority
NIS	Network and Information Security
NoAs	European Network of Analysts
NPA	Notice of a Proposed Amendment
OA	Organisation Approvals
ODA	US Organization Designation Authorization Office
PACF	Partial Autocorrelation Function
POA	Production Organisation Approval
RAM	Regional Air Mobility
RAT	Regional Air Transport
RSOO	Regional Safety Oversight Organisation
SAB	Stakeholder Advisory Board
SAF	Sustainable Aviation Fuel
SARP	ICAO Standard and Recommended Practices
SDGs	Sustainable Development Goals
SES	Single European Sky
SIS	Standardisation Information System

Abbreviation	Definition
SME	Small and Medium-sized Enterprise
SPD	Single Programming Document
SPO	Single Pilot Operations
SSD	Significant Standards Differences
SSMS	Sustainable and Smart Mobility Strategy
TCCA	Transport Canada Civil Aviation
TCO	Third-country Operator
TECO	Technical and Coordination Office
UA	Unmanned Aircraft
UAM	Urban Air Mobility
UAS	Unmanned Aircraft Systems
UK CAA	UK Civil Aviation Authority
US	United States
VLA	Very Light Aircraft
VTOL	Vertical Take-off and Landing

1. INTRODUCTION

This document forms the Final Report of the **Study supporting the evaluation of the European Union Aviation Safety Agency's (EASA) performance in relation to its objectives, mandate and tasks as set out in regulation (EU) 2018/1139**. The study, running from July 2022 until June 2023, was awarded by the Directorate-General for Mobility and Transport (DG MOVE) of the European Commission and has been carried out by a Consortium led by Ramboll Management Consulting further consisting of the University of Antwerp and individual subcontracted experts.

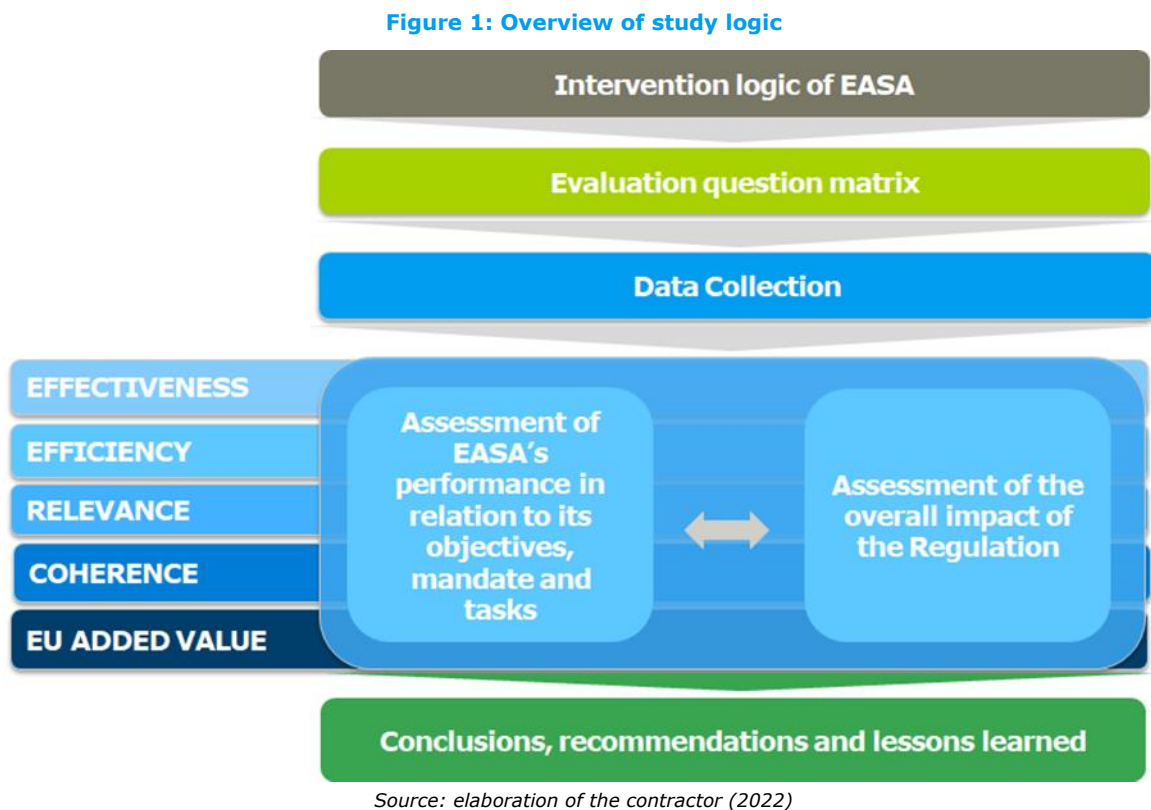
As required by Article 124 of Regulation (EU) 2018/1139, the Commission is carrying out an Evaluation of EASA for which this supporting study has been commissioned. Consequently, this study aims at supporting the Commission with an independent, evidence-based evaluation of Regulation (EU) 2018/1139, EASA and its working practices in establishing a high level of civil aviation safety. The evaluation covers the period from August 2018 until end-2022.

As evaluations are primarily ex-post, backward looking and summative, the focus of the study was on these aspects by collecting data and examining the extent to which the regulatory framework and EASA met the Regulation's objectives (i.e. ex-post evaluation of the performance since the Regulation entered into force in 2018). On the other hand, there will be some formative aspects to the study: as stipulated by Article 124 of Regulation (EU) No 2018/1139, this evaluation also has to address the potential need to modify the mandate of EASA. This implies the presentation of 'lessons learned' that will be covered by the conclusions deriving from the ex-post analysis (Section 5).

Moreover, as set out in the Terms of Reference (ToR), this evaluation has a twofold dimension in that it assesses:

- **EASA's performance in relation to its objectives, mandate and tasks according to the five evaluation criteria** (i.e. effectiveness, efficiency, relevance, coherence and EU added value): This dimension represents a comparative exercise: the objectives, mandate and tasks as set out in the Regulation are compared with the actual working practices of EASA. This leads to an assessment of whether and how EASA has met its obligations as set out in the Regulation.
- **Overall impact of the Regulation (EU) 2018/1139**: This dimension integrates the assessment of the performance of EASA with a consideration of relevant factors contributing to a high level of civil aviation safety, according to the five evaluation criteria (i.e. effectiveness, efficiency, relevance, coherence and EU added value). It analyses whether the EU common rules in all the different areas covered by Regulation have resulted in a better regulatory system compared to the previous situation, i.e. with Regulation (EC) 216/2008 in force, as amended by Regulation (EC) 1108/2009.

The figure below summarises the study logic:



This document is divided into the following chapters:

- Chapter 1. Introduction
- Chapter 2. What was the expected outcome of the intervention?
- Chapter 3. How has the situation evolved over the evaluation period?
- Chapter 4. Evaluation findings
- Chapter 5. What are the conclusions and lessons learnt?
- APPENDIX 1 - Methodology
- APPENDIX 2 – Evaluation matrix
- APPENDIX 3 – Rationale for the intervention
- Appendix 4 - The IA's preferred policy package and the changes introduced by the intervention
- APPENDIX 5 – EASA's KPIs
- APPENDIX 6 – Overview of costs and benefits
- Appendix 7 – CS-23 and CS-25
- APPENDIX 8 - Differences in certification and oversight between eu and US
- APPENDIX 9 – Structural break analyses
- Appendix 10 – EASA's Costs and revenues per category from 2013-2021 (in thousands)
- Appendix 11 – Technical details on Technological Developments
- APPENDIX 12 – List of sources

1.1 Overview of methodology

The study team's work has focused on three main methodological tasks:

1. The definition and the implementation of the evaluation points of comparison (Sections 2.6 and 3), based on the rationale for the intervention outlined in the 2015 Commission's Impact Assessment⁵ (henceforth referred to as the "Commission IA") accompanying the proposal for the Regulation;
2. A desk-based research to collect qualitative and quantitative information on the performance and the task of EASA and on the features of Regulation (EU) 2018/1139 (Section 3);
3. A set of fieldwork activities to collect first hand qualitative and quantitative evidence from stakeholders (a stakeholder consultation report presenting detailed outputs from the interviews, the survey, the workshops, the field visit and the Commission's Call for Evidence is presented as a separate document).

The results of each of these tasks are presented in the following sections of this report and are triangulated in Sections 4 and 5, where the overall findings of this evaluation and the conclusions are presented.

A detailed presentation of the methodology for the fieldwork is presented in Appendix 2, while an overview of the stakeholder groups participating to the different fieldwork activities is displayed in APPENDIX 1 - Methodology.

1.2 Study limitations

The study team undertook an assessment of the completeness of information for each of the evaluation questions since the inception phase of this study. As illustrated in APPENDIX 1 - Methodology, the study team indicated the tools used to answer each evaluation question and provided a dynamic assessment of the level of completeness, updated as new inputs were collected. In this way, the study team kept an overview of the data gaps from the early phases of the evidence collection and was able to target relevant stakeholders using the most effective research tools to fill the gaps. Despite the mitigation measures adopted to tackle the evidence gaps faced throughout the study, a few limitations to the robustness of the study findings remain: the following paragraphs outline the relevant caveats to weigh the study conclusions.

As a general remark, it is worth considering that a large part of the period since the entry into force of Regulation (EU) 2018/1139 has been characterised by the presence in Europe of the COVID-19 pandemic. As this external factor had implications on the overall aviation sector and market, the effects that the pandemic had on aviation represent a limitation of this evaluation study: these limitations are spelled out where relevant in this document, as the effects of the Regulation (as well as the impacts of EASA's activities) are all affected to some degree by the pandemic.

1.2.1 Limitations on the evaluation of the effectiveness of the intervention

The **effectiveness** criterion is the most complete in terms of evidence collected, however a remark needs to be made in relation with EQ3 (see APPENDIX 2 – Evaluation matrix), i.e. the actual observed effects (positive and negative impacts) that the Regulation had, and in particular the extent to which the Regulation and the work of EASA contributed to these effects. Despite the adequate number and type of sources having been analysed, a caveat on the validity of the findings for this evaluation question should be made, due to the nature of the intervention itself. In fact, to fully gauge the positive and negative impacts of the Regulation and of EASA's work, it is worth considering the "maturity" of the activities performed by EASA within its mandate. In fact, while safety is the core objective of EASA since it started its operations in 2002, the evolution of EASA's mandate to cover new responsibilities (e.g. environmental protection and research & innovation)

⁵ COM(2015) 613 final

took place only in 2018 with Regulation (EU) 2018/1139. Therefore, stakeholders flagged that any consideration on the impacts of EASA and Regulation (EU) 2018/1139 must acknowledge that all the activities included in the scope of EASA's work in 2018 (e.g. tasks related to sustainability or drones) might still be in the process of being fully implemented (e.g. ground handling, with the first Ground Handling Regulation foreseen only in 2024).

1.2.2 Limitations on the evaluation of the efficiency of the intervention

Moreover, significant caveats are required under the **efficiency** criterion. The evidence presented in relation to this criterion, due to the lack of availability of robust quantitative evidence, entailed the use of several approximations and assumptions. A lack of consistent and comparable cost and benefit data over the evaluation period was available on whether the regulatory costs (i.e. compliance costs, enforcement/implementation costs and administrative costs) of the Regulation are proportional with the achieved benefits showed, thus hindering a robust analysis.

This is due to several factors. First of all, the available information on costs was primarily of a qualitative nature, with stakeholders providing limited quantitative data despite multiple efforts by the evaluation team to gather such evidence. Furthermore, limited evidence was gathered on the links between the provisions of the Regulation and their benefits: most stakeholders reported that while the Regulation ensures an overall benefit in terms of aviation safety, a causal link between such safety benefits and a specific provision within the Regulation is not made. The main obstacle to the analysis was the lack of available/calculable Regulation-induced cost (or cost savings) data, primarily because such data are not recorded by stakeholders, and to a lesser extent because the exercise of reporting on cost estimates was perceived as too lengthy and burdensome by stakeholders.

To tackle this evidence gap, an additional data collection activity not originally foreseen in the contract was performed, in close cooperation with the Commission, to try to gather more targeted evidence on costs and benefits. A group of stakeholders identified with the advice of MAB, SAB and DG MOVE was asked to provide, as a minimum, an assessment of the percentage increase of costs/cost savings (after 2017), stemming from requirements of the Regulation. Stakeholders were also asked, depending on the availability of such data, to provide an estimate of costs/cost savings in EUR or in FTE. The aim of this exercise was to provide a qualitative comparison of the percentage increase in costs/cost savings for different stakeholder groups (or ideally a quantitative estimate of such costs/cost savings) to identify possible trends (at sectoral or geographical level).

Based on the data provided by NCAs and industry stakeholders, estimations have been generated and conclusions have been drawn. Despite the efforts made, the analysis of the proportionality of costs in relation to Regulation 2018/1139 has several caveats that must be considered when interpreting the data. Further details on these limitations are provided in Section 4.1.2.3 where these data are discussed in-depth, however these caveats mainly consist in a) the small sample size and b) self-reporting bias as the data provided were estimates made by the NCAs and the industry players themselves. Therefore, each of these caveats should be taken into account when interpreting the data on costs and benefits presented in this document.

2. WHAT WAS THE EXPECTED OUTCOME OF THE INTERVENTION?

This section explains the rationale for the intervention at the time it was prepared, i.e. the problem or the needs the EU was trying to address through Regulation (EU) 2018/1139 and the underlying causes for such problems and needs, what it expected to achieve and how that achievement was to be assessed (the intervention logic). This section also sets out the points of comparison against which the intervention is assessed.

2.1 Policy background preceding Regulation (EU) 2018/1139

The first common standards for aviation safety in Europe were developed by the Joint Aviation Authorities (JAA) based on the voluntary cooperation of Member States between 1970 and the early 2000s⁶⁷. The first regulatory framework for aviation safety in the EU was established with the creation of the European Aviation Safety Agency (EASA) in 2002. The aim was to achieve a high level of civil aviation safety in Europe while protecting the environment and facilitating the free movement of goods, persons, and organisations in the internal market.

Since its establishment in 2002 by means of Regulation (EC) 1592/2002, EASA has progressively taken over (for EU Member States) the responsibilities of the former JAA system, which ceased to exist on 30 June 2009⁸. Unlike its historical predecessor, which had no force of law to apply its harmonised Joint Aviation Requirements (JARs), the EASA regulatory framework is based on a set of common safety rules developed for uniform and mandatory application across the EU. EASA oversees, on behalf of the Commission, the implementation of these rules by national Competent Authorities (CAs). Regulation (EC) 216/2008, repealing Regulation (EC) 1592/2002, broadened the initial scope of EASA activities from airworthiness and environmental certification of aeronautical products to air operations, pilots' licences and the safety of third-country aircraft. Later, Regulation (EC) 1108/2009 amended Regulation (EC) 216/2008 covering the safety of aerodromes, air traffic management and air navigation services.

2.2 Rationale for the intervention

This section describes the needs and the problems faced by the EU aviation system at the time of the intervention that is the subject of this study, namely Regulation (EU) 2018/1139. Such needs are discussed in detail in the following paragraphs, as presented by the Commission IA, more than ten years after the creation of EASA.

The IA's objectives were twofold⁹. Firstly, to analyse the availability, efficiency and evolution of human resources and the financing needs and sources of the European aviation safety system, i.e., whether there was a need for EU action. Secondly, to propose and analyse possible options for improvement. The IA identified four main problems:

- The existing regulatory system might not have been sufficiently able to identify and mitigate safety risks in the mid to long-term;
- The existing regulatory system was not proportionate. It created excessive burdens, especially for smaller operators;

⁶ JAATO. (n.d.). <https://jaato.com/virtual-home/>

⁷ Notably, while the JAA included in its scope countries that are not part of the European Union, the scope of this evaluation focuses on aviation safety within the EU.

⁸ SKYbrary Aviation Safety. (2021). <https://skybrary.aero/articles/european-union-aviation-safety-agency-easa>

⁹ IA SWD (2015) 262, 2015

- The existing regulatory system was not sufficiently responsive to market developments;
- There were differences in organisational capabilities between Member States.

In addition, the impact of the intervention has been linked to the most relevant Sustainable Development Goals (SGDs) as per Tool#19 of the Better Regulation Guidelines Toolbox (see Section 2.3.1).

2.2.1 Problem 1: The existing regulatory system was not fit to mitigate safety risks in the medium to long term

The purpose of the IA was not to deal with specific operational issues which present a risk to EU aviation safety, as these are already within the scope of the Union's competence and dealt with by EASA and the Member States' aviation authorities¹⁰.

Thus, the IA looked at aviation safety from a systemic perspective. In this respect, the Commission identified two main *issues* related to aviation safety: the **shortages and inefficient use of resources by aviation authorities and the reactive nature of safety regulation and oversight**. The issues were considered system weaknesses which might have made it more challenging to maintain the safety record in conditions of expected traffic growth and increasing complexity of the aviation system. The main problem drivers underlying the first problem were (i) that the system was reactive because predominantly based on prescriptive regulations and compliance checking, and (ii) the inefficient use of resources was stemming from fragmentation.

A detailed discussion of the problem drivers is presented in APPENDIX 3 – Rationale for the intervention.

2.2.2 Problem 2: The disproportionate and excessive burden for smaller operators

According to the IA, the EU aviation safety system achieved good safety performance at a disproportionate cost. The high costs were attributed mainly to overregulation which affects SMEs and General Aviation¹¹. EASA pointed out that the regulatory framework for light aircraft, in particular, needed to be sufficiently differentiated from the commercial air transport framework¹², as the risks faced by light aircraft were different.

The disproportionate and overly complex regulation resulted not only in a high cost to demonstrate compliance, but also the resources of the operators and National Competent Authorities were diverted from operational and oversight work as well as from innovation towards administrative tasks¹³. Concerning SMEs, the following *issues* were identified:

- the former system, stemming from Regulation (EC) 216/2008, put **excessive requirements on SMEs compared to the achieved safety benefits**. Many contributors felt that regulations were beyond the ability of many SMEs to comprehend and stay abreast with the constant changes (mostly due to excessive prescriptiveness and language barriers faced by SMEs in understanding the legal text);
- **regulations were difficult to implement** by companies where a **single individual** performs roles which in an airline or a big manufacturer are the responsibility of multiple departments.

¹⁰ Nonetheless, the IA report identifies two relevant operational issues for which EU action is examined, i.e. ground handling and security aspects of aircraft and aviation systems' design. These two issues are discussed in Section 3.3

¹¹ General Aviation (GA) is defined by ICAO as "all civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire". The category is sometimes called 'General aviation and aerial work' (GA/AW)

¹² EASA Opinion 1/2015, p.7.

¹³ Support study on performance, Final Report, p. 17

2.2.3 Problem 3: The existing regulatory system was not sufficiently responsive to market developments

The **regulatory system needed to be sufficiently adapted to market developments**. The *issues* included the system's ability to: (i) quickly accommodate safety and efficiency-enhancing technologies, and (ii) respond to new operational practices of the industry, as described in APPENDIX 3 – Rationale for the intervention.

2.2.4 Problem 4: Discrepancies in resources across Member States

The fourth problem identified by the IA is linked to the availability of qualified personnel, an essential prerequisite for effective oversight and certification by EASA and national aviation authorities. The *issues* identified here relate to differences in the organisational capabilities of Member States which:

- created **potential safety risks**, as some Member States were not sufficiently capable of ensuring effective oversight of EU legislation;
- contributed to **mistrust between the Member States**. The support study on resources reported that four out of sixteen National Aviation Authorities interviewed stated that they do not automatically accept certificates issued by some other authorities due to a lack of trust in their compliance¹⁴;
- resulted in **varying interpretations of requirements by Member States**, negatively affecting the market's level playing field. Many organisations and National Aviation Authorities expressed concern over this issue.

The support study on resources indicated that discrepancies across Member States stem from the varying approaches of national authorities to oversight, availability of resources and qualification of staff, as well as differences in financing oversight (with some Member States recovering the costs through fees and some financed through Member State budgets)¹⁵.

2.3 The IA's preferred policy package

2.3.1 Specific objectives of the intervention and link to the SDGs

Before discussing the IA's preferred policy package, it is essential to look at the specific objectives of the intervention as set out in the IA. The specific objectives are five-fold:

7. Eliminate unnecessary requirements and ensure that regulation is proportionate to the risks associated with different types of aviation activities;
8. Ensure that new technologies and market developments are efficiently integrated and effectively overseen;
9. Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation;
10. Close the gaps in the regulatory system and ensure its consistency;
11. Create an effectively working system of pooling and sharing of resources between the Member States and the Agency.

Five independent policy option domains were developed by the Commission in the IA to cover all issues, problem drivers, and objectives mentioned in the IA¹⁶. The preferred policy package was

¹⁴ Support study on resources, Final Report, p. 121

¹⁵ Support study on resources, Final Report, p. 103-105

¹⁶ IA SWD (2015) 262, 2015

based on combining the preferred option from each of the five policy domains. The options that made up the preferred policy package tackled the problem-causing factors from many complementing policy angles. As a result, the options were coherent and were used concurrently. Table 1 shows the policy option domains and the related preferred policy options.

Table 1. Preferred policy package

Policy option domain	Policy option
Quality and management of resources	1.3(b) Emergency Oversight support mechanism
Proportionality and safety performance	2.2 Enablers for a proportional and performance-based safety system
Gaps and inconsistencies – ground handling	3.1(B) Ground handling (industry standards/no certification)
Gaps and inconsistencies - aviation security	3.2(C) Coordinated approach to safety and security-related matters
Gaps and inconsistencies - environmental protection	3.3(B) EU essential requirements for environmental protection concerning aeronautical products

Source: IA SWD (2015) 262, 2015, p. 69

The chosen options for all policy domains in the preferred policy package were primarily based on voluntary collaboration. Regulatory actions prioritised fostering cooperation within the European aviation safety system to increase resource utilisation and safety. In that regard, a regulatory structure was developed that offered a framework without imposing solutions, allowing aviation safety growth. The suggested measures did not broaden the scope of EU competence except on ground handling, emergency supervision mechanisms, and to a certain extent, security of the design¹⁷.

The regulatory system was made more proportionate under the final policy package by incorporating the concept of a risk hierarchy and performance-based standards. Increased use of performance-based regulation and industry standards would leave more room for technological developments in the market. Gains in safety would be made possible through cooperative safety management that connected organisations, Member States, and the EU level. By establishing a resource-sharing and pooling structure, oversight was predicted to improve and enable the delegation of responsibilities¹⁸.

The main operational objectives per policy option, as specified in the IA, are presented in APPENDIX 3 – Rationale for the intervention. The following Section 2.3.2 provides a description of the expected impacts of the package of measures displayed in Table 1.

¹⁷ IA SWD (2015) 262, 2015, p. 69-70

¹⁸ IA SWD (2015) 262, 2015, p. 70

SDG impact of the intervention

As per Tool #19 of the Better Regulation Guidelines Toolbox, it is possible to make a link between some of the Sustainable Development Goals (SDGs)¹⁹ and the intervention. This study identified two relevant SDGs that can be (indirectly) linked to the intervention: SDG 3 and 17.

SDG 3 concerns good health and well-being. Along with the health impacts of air pollution and radiation exposure, the aviation industry can have several other effects on global health. Indeed, the aviation sector must ensure that everyone involved in its operations, including passengers, crew, and ground staff, is safe and healthy. Through the Regulation, the European aviation system's safety and security are to be improved by better or more targeted oversight, reducing the number of accidents/incidents. By implementing this legislation, the European aviation sector may thus reduce risks, improve safety, and support SDG 3's overarching objective of ensuring everyone has access to healthy lives and well-being.

SDG 17 is focused on strengthening global partnerships. Although the Regulation does not directly relate to SDG 17, it indirectly promotes it by fostering worldwide coordination and collaboration in aviation safety oversight. The regulation intends to raise safety standards, lower the risk of accidents, and increase the effectiveness of aviation operations, all of which ultimately support sustainable development. It establishes standard safety requirements and oversight procedures for third-country operators (TCOs). In addition, the Regulation promotes third-country cooperation with the EU, which is crucial for attaining the SDGs in a globalised world.

2.3.2 Predicted impact of the preferred policy options

The IA divides the impacts concerning the options constituting the preferred policy package into nine categories. This study uses the same categories. The predicted impacts of the preferred policy package are described for each category. The categories considered are:

1. Internal market
2. Compliance costs and other operational costs for businesses
3. Small and Medium Sized Enterprises (SMEs) and light aviation
4. Innovation
5. Aviation safety
6. Competitiveness
7. Creating jobs
8. Implementation costs
9. Resource needs for EASA

A more detailed discussion of the predicted impacts for each category is presented in APPENDIX 3 – Rationale for the intervention. Moreover, on the basis of the problems identified by the IA (Section 2.2) this section, where applicable to the nine categories of impacts, summarises the main features and changes introduced by Regulation (EU) 2018/1139 affecting such categories.

Internal market

Positive impacts were expected in the IA on the level playing field in the internal market through **more uniform oversight**. Those impacts should have been enhanced by the more robust **pool of European inspectors** and **enhanced possibilities for Member States to delegate** and pool responsibilities for certification and oversight (Option 1.3).

Option 3.1 (b) of the preferred policy package was expected to positively impact the internal market's functioning by introducing common safety standards for ground handling services across

¹⁹ <https://sdgs.un.org/goals>

the EU. This option should have contributed to a level playing field for the operators: in fact, through the recognition of standards, market access for operators would become easier across the EU. The option also expected limited compliance costs due to the absence of new certification requirements and reliance on existing industry standards, already followed by most market operators.

In the IA, the Commission has further identified inconsistencies in the EU legislation concerning leasing third-country registered aircraft. To tackle those problems, Option 2.2 of the preferred policy package described that the elimination of overly prescriptive rules and the introduction of a broader range of possibilities to demonstrate compliance with essential requirements, should have stimulated economic activity and allowed for a broader range of technical solutions and, thus, choices on the market. Changes to Regulation 216/2008 should have enabled new methods for product certification, quality assurance from manufacturers and increased use of industry standards according to the risk involved. This should have reduced the complexity and length of administrative procedures. Simplifying leasing approvals should also have positively impacted the airline industry by increasing operational flexibility. Positive impacts were expected for new technologies such as drones.

To conclude, more consistent oversight by the National Aviation Authorities would **benefit a level playing field**. Market activity and choices on the market could benefit from a broad range of alternatives to demonstrate compliance, and there would be more emphasis on industry standards. Common ground handling regulations based on industry standards would reduce compliance costs while **facilitating market access and improving safety**. If a National Aviation Authority fails to remedy significant weaknesses in its oversight capabilities, the emergency oversight support mechanism (Option 1.3 (b)) will let complying operators carry on with their operations.

Compliance costs and other operational costs for businesses

For Option 1.3 (a), the IA expected additional costs for the industry in those Member States that used the pool of experts or delegated responsibilities to EASA. This included the initial AOC issuance and its continuous oversight. For Option 1.3 (b), the IA expected the same impacts as Option 1.3 (a), meaning additional costs for the industry. Most of these would have only applied in those cases where an organisation or a Member State responsible for oversight of the organisation expressed an interest in using these new possibilities. However, in exceptional cases where the emergency oversight support mechanism would be used, mandatory costs would be imposed on market operators to recover the costs of certification and oversight tasks exercised by EASA. This applied to AOC issuance and oversight. Overall impacts were expected to be harmful to operators affected by an emergency oversight support mechanism in terms of the additional cost. However, it must be pointed out that the mechanism would apply only in cases where the operation would have to be stopped entirely; and thus, the market operator would be put out of business.

Overall, the preferred policy package's effects on compliance and other business operational costs were expected to be positive. Those positive effects would result from a regulatory system that is more proportionate and performance-based, from the ability to satisfy requirements with **greater flexibility**, and from **greater dependence on industry standards**. The "user pays principle" would finance the emergency oversight support mechanism (Option 1.3 (b)) and measures related to pooling or sharing resources. These measures would primarily be implemented voluntarily by Member States, but they may have impacted businesses in those Member States where oversight was still funded by general tax revenue.

SMEs and light aviation

According to the IA, various measures would ease **the administrative burden on SMEs and light aviation players**. The regulatory environment for small business owners would also be improved.

To ensure that the supervision is proximate to the regulated entities, competent user organisations (such as national aeroclubs or light aviation associations) would be permitted to operate as qualified entities on behalf of the national aviation authorities under certain circumstances. It should be easier to tailor requirements to the risks involved in light aircraft and the operations of small organisations using a modular approach to certification of aviation activities and the elimination of unduly restrictive terminology from the framework of safety regulation. As many General Aviation (GA) organisations are SMEs, the impact on SMEs can be seen as impacting the GA industry. According to the IA, SMEs could gain from risk-based monitoring, which eliminates unnecessary restrictions, but they might benefit less from performance-based regulation than more prominent companies. The performance-based regulation could be favourable to SMEs, as it could provide them with a choice of applying prescriptive or performance-based rules on a case-by-case basis. The voluntary nature of the measures was seen as an advantage for SMEs as some of them may still prefer to use prescriptive rules, which clearly described what exactly was required from the operator.

2.3.2.1 Main changes introduced by the intervention: SMEs and light aviation

In response to the second problem identified by the IA (*The disproportionate and excessive burden for smaller operators*) (Regulation (EU) 2018/1139 brought changes in terms of **the scope of the regulatory framework**. Article 2 now includes a possibility to 'opt-out' from the requirements of the Regulation for Member States who want to exempt the design, production, maintenance and operation activities for a certain category of aircrafts²⁰.

Moreover, in terms of requirements for **airworthiness**, the main novelty introduced by Regulation (EU) 2018/1139 is the possibility to **declare compliance** instead of having a type certificate.

Innovation

The IA expected that new technologies would be more rapidly introduced thanks to the more efficient use of resources in the Member States and EASA under the preferred policy package. By removing the staffing cap on EASA resources financed from fees and charges, positive impacts on innovation were expected by making sure that new technologies could be certified according to market demand. Measures related to proportionality and performance would mostly have a favourable influence on innovation. Removing unduly prescriptive regulations, lowering compliance costs, and offering a variety of ways to show compliance, would **free up resources and make it easier to implement new technologies**. New technologies like electric engines or drones would be reflected in the updated regulatory framework. Improvements in solutions and better management of interdependencies and trade-offs between safety and security would result from the integrated assessment of safety and security concerns at the regulatory level. The ability of the EU to adopt solutions that are **more appropriate to the EU context** than a generic solution produced at the ICAO level might be facilitated by more flexibility in determining environmental standards for aeronautical products. This would further encourage innovation.

The preferred policy package also recommended essential requirements for cyber-protection and resilience of critical ATM infrastructure. Those systems were expected to **stimulate the development of innovative technical solutions** to meet these requirements. The more optimal solutions should be easier to choose, thanks to a better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis.

²⁰ <https://www.easa.europa.eu/en/opt-out-article-28-211>

2.3.2.2 Main changes introduced by the intervention: Innovation

In response to the third problem identified by the IA (*The existing regulatory system was not sufficiently responsive to market developments*), a change in the scope of the Regulation consists in the inclusion of all **unmanned aircraft** to the scope of the Regulation, irrespective of their operating mass (with the exception of small-tethered aircraft listed under Annex I to the Regulation). In fact, in the IA, the second part of the document separately addressed the problems stemming from the impact and risks stemming from unmanned aircrafts in the market, technologies that gradually became more widespread in the aviation sector. Therefore, the new change in the scope of the Regulation included resolving the problem identified in the IA²¹.

Aviation safety

Aviation safety was expected to improve under the preferred policy package. Gains in safety would be made possible through a collaborative safety management approach connecting the organisation, Member States, and EU levels and enhanced supervision due to **simpler resource sharing and pooling**. Additional benefits would result from addressing design security and ground handling safety shortcomings. The emergency support oversight mechanism (Option 1.3 (b)) would be a new last-resort tool to assist in **upholding a high safety standard** across the EU.

2.3.2.3 Main changes introduced by the intervention: Aviation safety

In response to the first problem identified by the IA (*The existing regulatory system was not fit to mitigate safety risks in the medium to long term*), ground handling services and Apron Management Services (AMS) have been added to the scope of the Regulation (both third party providers and airlines), as well as unmanned aircrafts and the certification of ATM/ANS equipment. Additionally, Member States can now exempt **smaller aerodromes** from the Regulation (as previously possible), but with additions in terms of the safety level to be ensured, clarifying previous requirements in this respect.

In the field of **air traffic management (ATM)** and **air navigation services (ANS)**, Regulation (EU) 2018/1139 strengthened EASA's role in the implementation of the Single European Sky (SES) by involving EASA in the European Aviation Crisis Coordination Cell (EACCC)²² as well as by EASA's role in providing technical assistance to the European Commission to implementing SES²³. In addition, Regulation (EU) 2018/1139 in its Art 139 (2) repealed the interoperability Regulation (EC) 552/2004 of the Single European Sky, transposing the essential requirements of ATM/ANS ground equipment contained in Regulation (EC) 552/2004 to Annex VIII of the Regulation (EU) 2018/1139, resulting in having both safety and interoperability requirements of ATM/ANS ground equipment under the same EASA framework. It also implied that a new conformity assessment framework would need to be established, including certification/attestation of ATM/ANS ground equipment (as per Article 45), and certification of the organisations involved in their design, production or maintenance (as per Article 42). All implementing rules stemming from Regulation (EC) 552/2004 would need to be adapted to the EASA framework (as per Article 140(2)).

²¹ Based on the IA, the problems identified were: (1) responsibilities for drone regulation are divided, leading to diverging requirements in the internal market; (2) Individual authorisations are too costly and too time and resource intensive; (3) the existing methods of civil aviation regulation are not always well suited to the specificities of drones; (4) the oversight and law enforcement authorities lack proper information and instruments.

²² Article 91 of Regulation (EU) 2018/1139.

²³ Article 93 of Regulation (EU) 2018/1139.

Moreover, another change brought by the intervention under the 'Aviation safety' category was EASA's role in establishing and managing a **repository of information** necessary to ensure effective cooperation EASA and NCAs in tasks of oversight, certification and enforcement²⁴.

Finally, **interdependencies between civil aviation safety and other areas** (i.e. research and innovation, environmental protection, security, health, and socio-economic factors) have been established and now formalised for the first time in a Basic Regulation. More specifically, Articles 86 to Article 89 establish this basis for the above-mentioned fields.

Competitiveness

With regard to the competitiveness of the EU's aviation industry, positive effects were expected, as the safety record of the EU aviation sector is a factor in its competitive ability. However, the extent to which the EU and Member States could effectively manage the interfaces involved in the horizontal and vertical transfers of responsibility for safety supervision would determine the final effects. Companies with several approvals in various Member States should benefit from combining approvals at the EU level, which would simplify oversight and lower administrative costs. This should also lead to a more straightforward consolidation process for the EU airline industry. Combining approvals at the EU level was also expected to benefit multinational companies because they could be represented by a single, internationally recognised authority (EASA). The emergency oversight support mechanism could be used as a last resort in exceptional safety oversight deficiencies in a Member State, resulting in even higher expected positive impacts.

Creating jobs

More appropriate regulations and a conducive environment for innovation were anticipated in the IA to have a **favourable influence on employment in the European aviation sector**.

Overall, the preferred policy package would help the EU aviation industry to expand safely and by encouraging innovation and new technology, as well as by reducing expenses that can be justified from a safety standpoint, particularly in the general aviation and SME sector. This would help create new employment in the European aviation industry.

Implementation costs

According to the IA, **additional cost savings** were expected for the **Member States** that make use of the developed **pool of experts** on the European level as opposed to developing their own expertise. Nevertheless, Member States, who already have minimal resources, were expected to need help to finance the utilisation of a central pool of specialists. Most of the expenses would only be borne by the Member States that have taken advantage of the opportunities provided.

In the preferred policy package, all EU Member States must set up and implement a State Safety Programme and report on the European Aviation Safety Plan implementation. Performance-based rulemaking should have significantly reduced the requirement for ongoing revisions and adjustments. However, the staff of the NCAs would require additional training, and oversight should have been adjusted.

Some Member States would need to develop **expertise in ground-handling and cyber security, as well as in innovative technologies as AI, Drones and greener technologies**. However, most of the suggested actions that would impact Member State resources would be voluntary and implemented by a Member State after conducting a favourable cost-benefit analysis. After some initial setup and training expenses, it was anticipated that **improvements in efficiency via**

²⁴ Article 74 of Regulation (EU) 2018/1139.

resource pooling and sharing and the transition to more targeted, **risk-based oversight** could have a favourable mid- and long-term impact on the resources of NCAs. According to the "user pays principle", fees and charges would be used to fund the pooling and sharing of resources. As there are no additional certification requirements under the recommended ground-handling and security alternatives, Member States' oversight costs are not anticipated to be very high.

2.3.2.4 Main changes introduced by the intervention: Implementation costs

In response to the fourth problem identified by the IA (*Discrepancies in resources across Member States*), the intervention brought changes in terms of **sharing responsibilities**. In fact, Regulation (EU) 2018/1139 indicated EASA's role in establishing, in cooperation with the NCAs, a mechanism for the **voluntary pooling and sharing of inspectors** and other personnel with expertise relevant in certification and oversight tasks under the Regulation²⁵. Moreover, the **reallocation upon request of the Member State**, either to EASA or to another Member State, of the responsibilities of oversight, certification and enforcement is now a possibility in the new regulatory framework²⁶.

Resource needs of EASA

The estimated resource needs of EASA under the preferred policy option are shown in Table 2.

Table 2. Estimated resource needs of EASA under preferred policy options

Policy option	Resources in FTE	One-off costs in EUR (Non-staff costs)	Annual costs in EUR (including staff costs)	NPV 2016-2030 in EUR
1.3(b): Emergency Oversight support mechanism	1 FTE (repository of certificates) 1 FTE (pool of experts) 1 FTE (accreditation scheme for training institutes and monitoring)	Central repository of certificates: 1.2 m Pool of experts: 0.4 m Development of virtual training academy: 0.1 m Additional training guidance material: 0.2 m Setting up of administrative and contractual framework for delegations: 0.7 m	Central repository of certificates annual maintenance: 0.5 m Pool of experts: 0.1 m Promotion of risk and performance based oversight methods: 0.2 m Accreditation scheme: 0.095 m	12.7 m (annual costs) 2.6 m (one-off costs)
2.2: Enablers for a proportional and performance-based safety system	Tasks are expected to be absorbed by present staff	No additional costs for EASA. Possibility for cost reduction due to increasing reliance on accreditation mechanisms and declarations of compliance for product certification should also reduce the costs of EASA in product certification etc.		
3.1(b) ground handling (industry standards/no certification)	1.5 FTE	n/a	set up and maintain the system of common requirements incl. initial rulemaking standardisation and implementation support: 0.142 m	2.05 m

²⁵ Article 63 of Regulation (EU) 2018/1139.

²⁶ Article 64 of Regulation (EU) 2018/1139.

Policy option	Resources in FTE	One-off costs in EUR (Non-staff costs)	Annual costs in EUR (including staff costs)	NPV 2016-2030 in EUR
3.2(c) Coord. approach to safety and security related matters	3 FTE	n/a	Support to rulemaking and inspections: 0.295 m	4.3 m
3.3(b) EU essential requirements for environmental protection with respect to aeronautical products	2 FTE	n/a	Update of environmental rules: 0.095 m IT equipment: 0.3 m European environmental report: 0.095 m	7 m
Total	9.5 FTE	2.6 m	1.822 m	28.65 m

Source: IA SWD (2015) 262, 2015, p. 72

2.3.2.5 Main changes introduced by the intervention: EASA's resource needs

Article 59 of Regulation EC 216/2008²⁷ set out EASA's **sources of revenue**: a contribution from the EU, a contribution from any European third country that the EU has agreements with, fees and charges²⁸, and any voluntary financial contribution from Member States, third countries or other entities (which respect the independence and impartiality of EASA). In light of one of the operational objectives of the preferred policy package, namely '*Introduce a more flexible framework for funding EASA activities*', Regulation (EU) 2018/1139 added one source of revenue to this list, which is represented by **grants to EASA's budget**.

2.4 Comparison between IA's preferred policy package and legal text of the intervention

This paragraph summarises the extent to which the preferred policy package of the IA (Section 2.3) was translated into Regulation (EU) 2018/1139.

Table 3 displays the links between the main operational objectives of the preferred policy package and the articles of the Regulation. An in-depth discussion on the main features and changes brought by the Regulation was presented in the previous Section 2.3.2.

Table 3. Gap analysis of IA's preferred policy package and Regulation (EU) 2018/1139

Policy option	Main operational objectives	Article(s) of Regulation (EU) 2018/1139
	Establish a pool of EU-accredited aviation safety inspectors with clearly defined privileges, common liability regime, and funded through fees	Article 63

²⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1474978980580&uri=CELEX%3A32008R0216>

²⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R2153>

Policy option	Main operational objectives	Article(s) of Regulation (EU) 2018/1139
1.3 (b) Emergency Oversight support mechanism	Establish an emergency oversight support mechanism to deal with weaknesses in safety oversight capabilities of Member States	Article 66
	Create a legal basis for Member States to transfer responsibilities to each other Member States or EASA on a voluntary basis	Article 64
	Enable allocation of certification and oversight tasks to competent users organisation in the general aviation sector	Article 69
	Establish a repository of information relevant for cooperation between authorities in certification, oversight and enforcement	Article 74
	Establish an accreditation scheme for aviation training institutes	Article 92
	Introduce a more flexible framework for funding EASA activities	Article 120
	Create a possibility of opt-in for state aircraft and Annex II aircraft produced in series	Article 2
	2.2 Enablers for a proportional and performance-based safety system	Ensure all Member States implement State Safety Programmes
Establish a formal process for the development and implementation of the European Aviation Safety Plan		Article 6
Review definitions and classifications of aircraft and operations in Regulation (EC) No 216/2008 to align them with risk hierarchy principles		Article 4
Introduce a broader range of possibilities for demonstrating compliance with essential requirements, in particular for product certification, based on risk assessment		Article 18
Introduce principles of risk hierarchy and risk assessment to the mechanism of exemptions and derogations under Regulation (EC) No 216/2008		Article 4
Simplify the regulatory framework for wet leasing of aircraft between EU operators		Article 12
Ensure greater reliance on recognised industry standards when developing Implementing Rules, Acceptable Means of Compliance, Guidance Material or Certification Specifications		Recitals (12) and (25), Articles 139 and 140
Develop a policy on performance-based regulations		Article 4
3.1 (b) Ground handling (industry standards/ no certification)	Establish essential requirements and a legal basis for oversight of ground handling service providers in the EU	Article 2
3.2 (c) Coordinated approach to safety and security related matters	Establish EU essential requirements for cyber-security	Not included in the text of the Regulation
	Establish a process for involvement of EASA in the work on aviation security where the Agency has relevant expertise	Article 88
	Clarify the competence of EASA to issue security directives	Not included in the text of the Regulation
3.3(B) EU essential requirements for environmental protection with respect	Establish EU essential requirements for environmental protection of aeronautical products	Article 87

Policy option	Main operational objectives	Article(s) of Regulation (EU) 2018/1139
to aeronautical products	Establish a legal basis for aviation environmental protection report	Article 87

As shown in the table, Regulation (EU) 2018/1139 addressed most of the operational objectives highlighted by the preferred policy package of the IA. It must be specified that there is not robust available evidence to draw conclusions on the impact of the non-inclusion (in the text of Regulation (EU) 2018/1139) of the two operational objectives specified in the table above. However, the lack of a clear specification of EASA's competences in terms of security (and in particular cybersecurity), seems to be reflected in some of the findings presented in Section 4.1.3 of this document (coherence of the intervention): overlaps were flagged by industry stakeholders between EASA's rules on aerodromes and the requirements of the broader EU regulatory framework, in particular the requirements of the NIS Directive on network and information systems applicable to critical infrastructures across all Europe and all industries (including airports).

Finally, as discussed in Section 2.3.2, one of the main elements of novelty of the Regulation addresses another issue mentioned in the IA (although not in the preferred policy package), namely the risks stemming from the growing presence of unmanned aircrafts in the aviation sector. A detailed technological discussion on unmanned aircraft is presented in Section 3.2.3.

2.5 The intervention logic

On the basis of the information presented in Section 2, Figure 2 below presents the combined intervention logic for Regulation (EU) 2018/1139 and EASA. Figure 2 provides a visual representation of the problems, inputs, outputs, results and impacts, and how these link to the objectives of the Regulation and EASA. This visualisation builds upon the legal text of Regulation (EU) 2018/1139, the Commission IA, as well as consultations with the Commission within the context of this support study. This intervention logic also follows the required structure presented in the Better Regulation Toolbox²⁹ (Tool #46, p. 390) while also taking into account the required structure of the evaluation report (Tool #49, p. 417).

The starting point to read the intervention logic consists in the four '**Problems**' (i.e. the four main issues identified by the IA, discussed in Section 2.2) justifying the EU intervention object of this evaluation, i.e. Regulation (EU) 2018/1139. Therefore, the '**Objectives**' of the intervention displayed in Figure 2: Intervention logic

Figure 2 below are directly linked to those problems.

As specified by the legal text of the Regulation, the general **objective** of Regulation (EU) 2018/1139 is to **establish and maintain a high uniform level of civil aviation safety in the EU**. Moreover, the IA identifies five **specific objectives** that the Regulation (and therefore EASA's activities) aims to pursue:

- **Eliminate unnecessary requirements** in favour of a **risk-based approach**;
- **Ensure efficient integration** and **oversight** of **new technologies** and **market developments**;

²⁹ https://ec.europa.eu/info/law/law-making-process/planning-and-proposing-law/better-regulation-why-and-how/better-regulation-guidelines-and-toolbox_en

- **Establish cooperative safety management** process **between EU** and **MS** to jointly identify and mitigate risks to civil aviation;
- **Close regulatory gaps** and ensure consistency;
- **Create an effective system** of **pooling** and **sharing** of **resources** between MS and EASA.

The intervention logic then illustrates how the monetary and non-monetary '**Inputs**' lead to concrete and measurable '**Outputs**' of EASA's activities. The intended outputs of the intervention, displayed in Figure 2: Intervention logic

Figure 2, are a synthesis of the work of the agency across the different domains and they consist in:

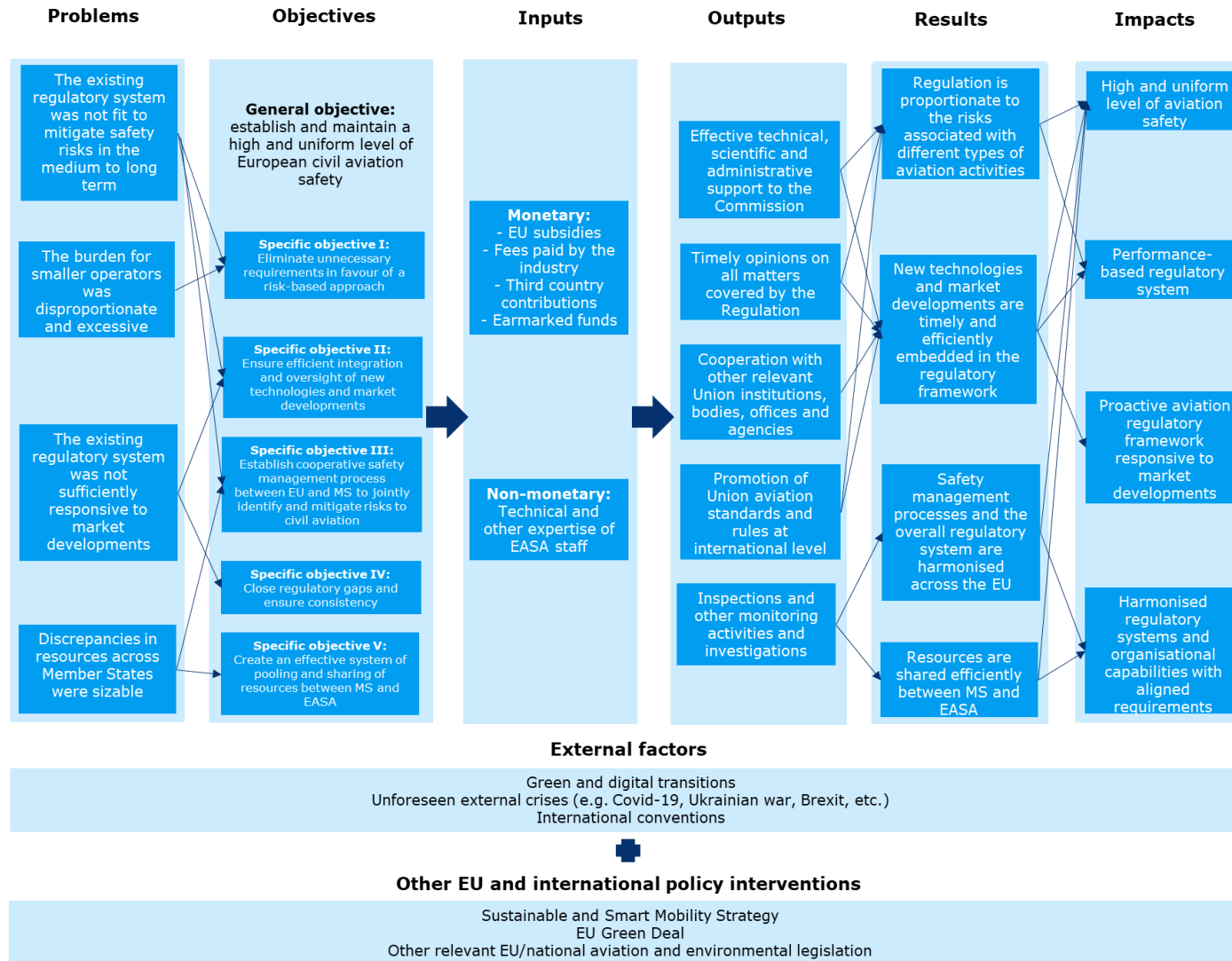
- providing technical, scientific and administrative support to the Commission;
- offering timely opinions on all matters covered by the Regulation;
- cooperating with other EU institutions, bodies, offices and agencies;
- promoting EU aviation standards and rules internationally; and
- conducting inspections, monitoring activities, and investigations.

Such outputs should lead to the desired '**Results**' of the EU intervention which, as illustrated by the intervention logic, reflect a **correspondence** with the **general** and **specific objectives** of the Regulation.

Moreover, the intervention logic presents the expected '**Impacts**' that Regulation (EU) 2018/1139 and EASA are supposed to have (under the activities of EASA and the objectives of the Regulation). Lastly, the intervention logic suggests as well that '**External factors**' (e.g. unforeseen crises and technological developments) and '**Other EU and international policy interventions**' (e.g. Sustainable and Smart Mobility Strategy, European Green Deal) could influence such expected impacts.

In addition to providing an understanding of what Regulation (EU) 2018/1139 and EASA sought to achieve and how, the intervention logic serves as a basis to assess whether the intended results of the intervention (both EASA and the Regulation) have indeed been achieved and identify any shortcomings/breaks in the causal chain. The intervention logic is consequently used as a basis for structuring the findings presented in this evaluation report.

Figure 2: Intervention logic



Source: elaboration of the contractor (2023)

2.6 Point(s) of comparison

This section presents the points of comparison that are used in evaluating the Regulation. The evaluation points of comparison define what would have happened over the period covered by the Regulation had it not been adopted. The IA baseline considered the evolution of the problems and the expected future resources and provided categories of points of comparison linked to the general objectives and needs of the Regulation.

The following table outlines the expected outcomes from the IA and the variables considered for each point of comparison. The progress on the points of comparison, measured through the variables, is presented in Section 3.1.

Table 4. Summary of the points of comparison and variables

Point of comparison	Expected outcomes from the Impact Assessment	Variables
Internal market (IA)	Positive impacts were expected on the level playing field in the internal market through more uniform oversight. These impacts should have been enhanced by a more robust pool of European inspectors and enhanced possibilities for Member States to delegate and pool responsibilities for certification and oversight.	<ul style="list-style-type: none"> ✓ Level playing field <ul style="list-style-type: none"> ○ Ratio of registered commercial aircraft to the number of thousands of intra-EU flights per country ○ Number of EASA Air Operator Certificates (AOCs) ✓ Leasing for aircraft <ul style="list-style-type: none"> ○ EASA as the gold standard ○ Degree of accessibility of EASA leasing process ✓ Manufacturers <ul style="list-style-type: none"> ○ Number of CS-23 and CS-25 amendments
Compliance costs and other operational costs for businesses (IA)	The Regulation was expected to have positive effects on compliance and other business operational costs. Those positive effects were foreseen to result from a regulatory system that is more proportionate and performance-based, from the ability to satisfy requirements with greater flexibility, and from greater dependence on industry standards.	<ul style="list-style-type: none"> ✓ Achieved level of quality and management of resources ✓ Achieved level of proportionality and safety performance ✓ Data on occurrences involving ground handling ✓ Achieved level of aviation security ✓ Achieved level of environmental protection
SMEs and light aviation	It was expected that the Regulation would ease the administrative burden on SMEs and light aviation players . The regulatory environment for small business owners would also be improved. The performance-based regulation could be favourable to SMEs, as it could provide them with a choice of applying prescriptive or performance-based rules on a case-by-case basis.	<ul style="list-style-type: none"> ✓ General aviation market growth ✓ Expected impacts of the Regulation <ul style="list-style-type: none"> ○ EASA tariffs for type certification
Innovation (IA)	The IA expected that new technologies would be more rapidly introduced thanks to the more efficient use of resources in the Member States and EASA under the Regulation. Removing unduly prescriptive regulations,	<ul style="list-style-type: none"> ✓ Share and number of electric aircraft projects ✓ Number of Sustainable Aviation Fuel (SAF) hubs

Point of comparison	Expected outcomes from the Impact Assessment	Variables
	lowering compliance costs, and offering a variety of ways to show compliance, were foreseen to free up resources and make it easier to implement new technologies .	<ul style="list-style-type: none"> ✓ Number of hydrogen technology patents ✓ Number of electric and hybrid-electric vertical take-off and landing (eVTOL) concepts ✓ Number of Significant Standards Differences between EU and US
Aviation safety (IA)	The IA expected that the Regulation would have a positive impact through improved training and qualification of staff and more uniform oversight. Gains in safety would be made possible through a collaborative safety management approach connecting the organisation, Member States, and EU levels and enhanced supervision due to simpler resource sharing and pooling	<ul style="list-style-type: none"> ✓ Incident and accident rate
Competitiveness (IA)	With regard to the competitiveness of the EU's aviation industry, positive effects were expected, as the safety record of the EU aviation sector is a factor in its competitive ability. It was foreseen that safety improvements and a more favourable environment for innovation would help the European aviation industry compete more successfully.	<ul style="list-style-type: none"> ✓ Airlines' market share ✓ Number of active and parked fleet by manufacturer ✓ Amount of confirmed orders
Creating jobs (IA)	More appropriate regulations and a conducive environment for innovation were anticipated to have a favourable influence on employment in the European aviation sector. The Regulation was foreseen to help the EU aviation industry to expand safely and by encouraging innovation and new technology, as well as by reducing expenses that can be justified from a safety standpoint, particularly in the general aviation and SME sector. This was anticipated to help create new employment in the European aviation industry.	<ul style="list-style-type: none"> ✓ Number of aviation employees in the EU
Implementation costs (IA)	State safety programmes were seen to be implemented by Member States that had not yet done so since the IA was published. The requirement for more training was expected to result in increased expenditures . After some initial setup and training expenses, it was anticipated that improvements in efficiency via resource pooling and sharing and the transition to more targeted, risk-based oversight could have a favourable	<ul style="list-style-type: none"> ✓ EASA's costs and revenues per category <ul style="list-style-type: none"> ○ Cost type explanation and the Regulation's possible impacts

Point of comparison	Expected outcomes from the Impact Assessment	Variables
	<p>mid- and long-term impact on the resources of NCAs. According to the "user pays principle", fees and charges would be used to fund the pooling and sharing of resources. As there are no additional certification requirements under the recommended ground-handling and security alternatives, Member States' oversight costs were not anticipated to be very high.</p>	
<p>Resource needs for EASA (IA)</p>	<p>See sectionSection 3.1.9.</p>	<ul style="list-style-type: none"> ✓ Number of staff at EASA ✓ EASA's revenues ✓ Number of organisational approvals

3. HOW HAS THE SITUATION EVOLVED OVER THE EVALUATION PERIOD?

The scope of this section is to present the developments that took place between 2018 and 2022 (i.e. the period analysed as part of this evaluation). This section therefore discusses:

- How the variables identified in Section 2.6, to measure the progress over the points of comparison, evolved during the period of the evaluation; and
- The recent economic, geopolitical and technological developments occurring in the aviation sector during the period of the evaluation.

The findings in this section provide a factual picture of the state of play in implementing the intervention, while any evaluative judgment on the basis of these findings is discussed in Section 5. More details on the legal implementation of the intervention and on EASA's KPIs on the different activities of the agency are presented in Appendix 4. The methodology employed and the number of sources analysed on the legal implementation of the intervention are presented in Appendix 2.

3.1 Evolution of the points of comparison

This section dives deeper into the above-described points of comparison by comparing the most relevant IA predictions with the current situation. To do so, this study combines qualitative and quantitative data based on internal and external sources.

3.1.1 Internal market

Level playing field

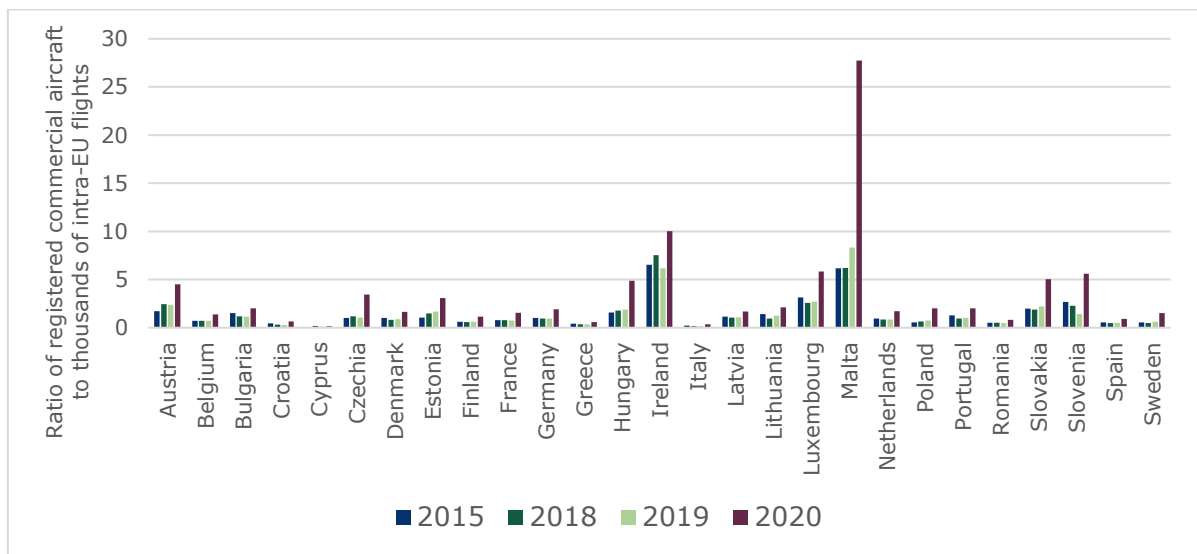
The expected impacts of the Regulation on level playing field are described in Section 2.6.2.3.2. This paragraph discusses how the level playing field evolved over the evaluation period.

The Regulation aimed to facilitate the free movement of goods, persons, services, and capital, thus providing a level playing field for all actors in the internal aviation market³⁰. As the possibility exists to register an aircraft in any Member State, a level playing field within the EU aviation is promoted. One might thus expect that most airlines register their aircraft in the Member State of their principal place of business due to the same language, closer contacts, easier work relationships, more accessibility to the work field, etc. However, the following graph shows that this is not the case and that some Member States have above-proportional numbers of aircraft registered.

Figure 3 presents the ratio of registered commercial aircraft to the number of thousands of intra-EU flights per country. The countries with the largest registered commercial aircraft in 2020 are Germany, Ireland, Spain, France, Malta, and Austria. Countries such as Malta and Ireland have considerably higher numbers of registered aircraft, compared to their aviation activity, with respectively 27.75 and 10.02 registered aircraft per thousand intra-European movements. Larger aviation countries such as Germany and France only have 1,90 and 1,54 registered aircraft per thousand intra-European movements. In 2019, 4,77% of the European fleet was registered in Malta and 12,57% in Ireland. While most countries saw their commercial fleet decrease from 2015 to 2020, both in absolute and relative terms, Malta's fleet increased significantly. These observations suggest that some aircraft operators prefer registering at least part of their fleet in other Member States; this trend has remained the same since the implementation of the Regulation.

³⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1139&from=EN>

Figure 3. Ratio of registered commercial aircraft to the number of thousands of intra-EU flights per country



Source: Own composition based on Eurostat [AVIA_EQ_ARC_TYPREG & AVIA_TF_ACC], 2022

Whilst there can be good reasons for registering aircraft in a different Member State than one of the principal places of business, such as³¹:

- higher service levels from the NCA (e.g. longer opening times, better advice)
- faster NCA throughput time for requests
- more favourable seizure law than in the home country (e.g. Italy)

the chart above suggests that not all Member States are seen as equal by the users. Although users' preferences in aircraft registration might not be driven directly by Regulation (EU) 2018/1139, it is worthwhile for EASA to monitor and better understand this significant difference in the choice of the competent NCA for aircraft registration.

Another interesting element to consider are the **Air Operator Certificates (AOCs)**³². These certificates allow an operator to perform specific commercial air transport operations: any European airline that wishes to operate must have an AOC issued by a Competent Authority. Each European country regulates the process for obtaining an AOC within the EASA regulatory framework, however national procedures are quite different from one another. Since 2018, **EASA can grant AOCs, allowing for more certification choices on the market and thus stimulating the internal market**. Currently, as reported by airlines approached during the fieldwork for this study, obtaining an AOC, for instance in Malta, is very easy, while in countries like Belgium or Italy, it is a highly complex process.

Three EASA AOCs had been approved at the time of writing: WIZZ Air Hungary Airlines Limited, LUXAVIATION E.A., S.A., and Wizz Air Malta Limited, suggesting that the option of applying for an EASA AOC is not commonly used. This (lack of) EASA AOCs can also be explained by the fact that this option is only open to some organisations. An organisation, such as air operators, can request

³¹ There are no tax reasons for registering an aircraft in a different Member State; the tax issue plays a role in the ownership of the aircraft, not in the registration. Additionally, there is no labour law directly involved in registering an aircraft in a different Member State.

³² All European Member States are also a member of the ICAO (International Civil Aviation Organization) and follow its directions, specifically the 8335 document³², that establishes the procedures of the Air Operator certification process. Therefore, each Member State has its guide for the future Air Operators in their country, based on European requirements (EASA) and the ICAO document 8335

that EASA acts as its competent authority responsible where that organisation has a substantial proportion of facilities and personnel located in one or more Member States than the Member States which has issued its certificate.

Moreover, a recent case in the Netherlands proved that the national court sometimes does not support the implementation of Regulation 2018/1139. The Dutch NCA ruled that the airport cannot ask for an exemption to the ICAO airport standards on airport facilities for economic reasons despite a compelling performance-based risk analysis. The airport has challenged this in court but also the court ruled that there cannot be any exemption to ICAO standards. Both decisions are clearly not in line with the intention of Regulation 2018/1139. This case indicates that its implementation in some Member States can be improved.

Case background

The Dutch court ruled that the NCA had no authority to deviate from international standards (ICAO) about airport operational facilities despite a compelling risk assessment from the airport³³. In this ruling, the court first assesses the plaintiff's appeal (Twente Airport) against the validity period of a temporary exemption granted to her from some requirements that apply to using Twente Airport for certain large aircraft types. It concerns the airport's requirements to have a runway turn pad, runway shoulders and taxiway shoulders for use by these aircraft. The court ruled that the defendant (the minister of infrastructure and water management) could reasonably have set the end date of the validity period at June 30, 2021, and that the choice of this date was not arbitrary. The temporary exemption was applied for and granted to enable the departure of several Boeing 747 aircraft of Lufthansa from Twente Airport.

Therefore, the defendant could reasonably decide to limit the validity of the temporary exemption to the period necessary for that purpose. Second, the court reviews the plaintiff's appeal against the rejection of its application for a permanent exemption from the requirement that the airport must have a runway turn pad to be used for certain types of large aircraft. The court agrees with the defendant that Section 8a.1(2) of the Aviation Act should be read to mean that an exemption can only be granted if it is not reasonably possible to comply with a rule. The specific signature of Twente Airport and the costs and time involved in constructing runway turn pads do not prevent runway turn pads from being built. Therefore, the District Court believes that the Respondent was right to take the position that no extraordinary circumstances warrant granting a permanent exemption and that the Respondent was right to reject the application.

To conclude, data shown in this section point to imbalances in the number of registered aircraft in proportion to aviation activity and country sizes. The possibility to choose EASA as Competent Authority to obtain an AOC provides additional options and, at least from a theoretical point of view, could lower barriers to entry for airlines.

Ground handling

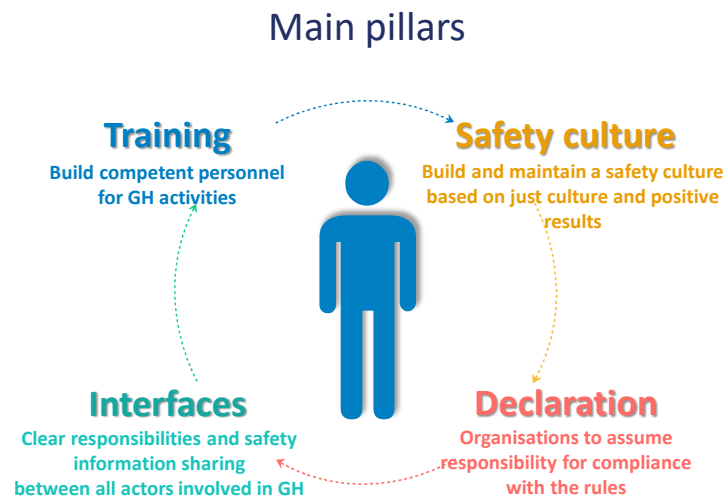
The expected impacts of the Regulation on ground handling are described in Section 2.6.2.3.2. As it was too early to uncover clear impacts during the evaluation period, this study opted to look into the possible future implications of the Regulation.

Regulation (EU) 2018/1139 included ground handling for third-party providers and airlines in its scope. 'Ground handling service' is defined by the Regulation as '*any service provided at aerodromes comprising safety-related activities in the areas of ground supervision, flight dispatch and load control, passenger handling, baggage handling, freight and mail handling, apron handling of aircraft, aircraft services, fuel and oil handling, and loading of catering; including the case where aircraft operators provide those ground handling services to themselves (self-handling).*' The Regulation also dedicated essential requirements for ground handling and apron management

³³ Rechtbank Overijssel 28-12-2022 (ECLI:NL:RBOVE:2022:3973) case nbr: ak_21_618 _ ak_21_1803

services, unlike the previous Regulation (EC) 216/2008. The Ground Handling Directive (96/67/EC) is predominantly about market access and does not include safety requirements at the EU level. As a result of Regulation 2018/1139, a new implementing Regulation is being developed, addressing ground handling safety. The main pillars of this new Regulation are shown in the following scheme:³⁴

Figure 4. Main pillars of forthcoming Ground handling Regulation



Leasing for airlines

This paragraph discusses the evolutions on leasing for airlines over the evaluation period.

The IA expected leasing for airlines to become more accessible. Due to the recent pandemic, the financial situation of airlines is precarious. The aircraft leasing community looks to EASA as the “gold standard”, based on our experience. In fact, for most leasing companies, the return of a lease must comply with EASA standards implying that all paperwork related to the airworthiness of the aircraft has to comply with EASA standards (i.e. EASA standard paperwork or EASA accepted standard, e.g. FAA, UK-CAA, TCCA,...). This requirement is reflected in the lease contracts.

Additionally, the EASA leasing process is sometimes used as a company marketing tool as it could make leasing and registration in Europe more accessible. For example, bringing a non-EASA registered aircraft onto any EASA Member State register is being promoted by Lufthansa Technik (LHT) on their website³⁵. The mechanism they encourage is to bring the aircraft first on the German register (D-XXXX), as the relationship and confidence level between LHT and the competent German authority (LBA) are excellent. Next, the aircraft is transferred to the EASA Member State register of destination and thus taking advantage of the intra-EASA procedures. The level playing field of the internal market of aircraft registration allows to choose where to register the aircraft. However, some registration may take longer than others, whereby specialised companies such as Lufthansa Technik can help to speed up and simplify the registration process .

Manufacturers

The expected impacts of the Regulation on manufacturers are described in Section 2.6.2.3.2. This paragraph aims at discussing how the situation evolved for manufacturers over the evaluation

³⁴ <https://www.easa.europa.eu/en/newsroom-and-events/events/webinar-eu-ground-handling-regulation>

³⁵ <https://www.lufthansa-technik.com/camo-insight>

period. As further explained in the sub-section on SMEs and light aviation (Section 3.1.3), there is currently no level-playing field between the SMEs and larger manufacturers. Smaller operators struggle to benefit from the licensing and certification procedures, as they are not as well equipped to comply with the Regulation's provisions.

Although it is very early to make concrete statements about the Regulation's impact on the manufacturers, amendments after the implementation of the Regulation might give insights into the changing manufacturing environment. The following paragraphs focus on the changes made by EASA in some certification specifications, namely the EASA CS-23 and CS-25 as they affect aircraft manufacturing. CS-23 focuses on the certification procedure for Normal, Aerobatic, and Commuter Category Aeroplanes, while CS-25 focuses on Large Aeroplanes. It is worth mentioning that a causal link between such changes in certification specifications and the revised provisions of Regulation (EU) 2018/1139 shall not be made. In fact, EASA could have also modified the two certification specifications on the basis of the text of the previous Basic Regulation, thus these changes might be simply explained by an updated technical approach by EASA.

EASA's Certification Specifications: CS-23 and CS-25

The amendment made to CS-23 in 2017 was a game-changer. Technical design-specific details were removed from the rules and moved to the Acceptable Means of Compliance, and in return, design objectives were provided. This way, new designs would not be hampered by prescriptive rules, red tape would be reduced, and time and certification costs for manufacturers would reduce³⁶. After this amendment, two more revisions followed in 2019 and 2020. Decision 2019/020/R³⁷ includes the following safety-related changes regarding spin/stall compliance and fuel management, while Decision 2020/006/R focuses on cybersecurity³⁸.

After the implementation of the Regulation, six amendments to CS-25 were made, with the latest on January 10th 2023. The Decisions' (2018/010/R, 2019/013/R, 2020/001/R, 2020/006/R, 2020/024/R, and 2021/015/R) impacts were estimated as 'light' and focused on unintended or inappropriate rudder usage³⁹, the installation of inflight recorders⁴⁰, the reduction of the number of runway excursions during landing⁴¹, mitigation of the potential cybersecurity threats on safety⁴², the availability and quality of data recorded by flight recorders & decrease the risk of a hazardous or catastrophic tyre failure⁴³, and the reduction of the number of large-aeroplane accidents and serious incidents⁴⁴ respectively.

It can be concluded that the Regulation did not significantly impact the CS-23 and CS-25 Regulations, and thus also the design requirements of the involved aircraft. For the CS-23, the amendment in 2017 was significant, which might explain why no major revisions were introduced after the Regulation's implementation. For the CS-25, several light amendments were introduced without significant design and safety changes for the manufacturers.

³⁶ <https://www.easa.europa.eu/en/domains/general-aviation/general-aviation-road-map/new-cs-23-%E2%80%93-smart-and-flexible-rules-support-innovation>

³⁷ <https://www.easa.europa.eu/en/downloads/104049/en>

³⁸ <https://www.easa.europa.eu/en/downloads/116273/en>

³⁹ <https://www.easa.europa.eu/en/downloads/65401/en>

⁴⁰ <https://www.easa.europa.eu/en/downloads/100570/en>

⁴¹ <https://www.easa.europa.eu/en/downloads/108352/en>

⁴² <https://www.easa.europa.eu/en/downloads/116273/en>

⁴³ https://www.easa.europa.eu/sites/default/files/dfu/explanatory_note_to_ed_decision_2020-024-r.pdf

⁴⁴ <https://www.easa.europa.eu/en/downloads/134261/en>

3.1.2 Compliance costs and other operational costs for businesses

Compliance costs refer to the expenses incurred by businesses to comply with regulatory requirements and standards. As part of the IA, the assessment on the compliance costs and operational costs from of Regulation (EU) 2018/1139 on businesses was mixed. The following subsections follow the evolution of the different elements which were targeted under the IA in relation to compliance and operational costs.

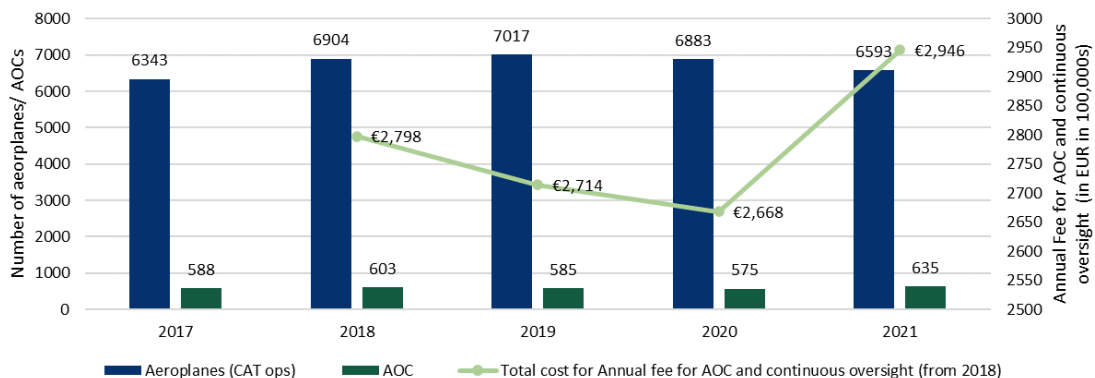
Quality and management of resources

Firstly, in relation to Option 1.3(b) on an **Emergency Oversight Support Mechanism (EOSM)**, overall impacts were expected to be negative, in terms of additional costs for operators affected by an emergency oversight support mechanism. However, it was noted that the mechanism would apply only in cases where otherwise the operation would have to be stopped entirely and thus the market operator put out of business.

The EOSM provided by EASA is designed to provide support and assistance to Member States in response to a significant aviation safety event or crisis. The purpose of the EOSM is to ensure that necessary measures are taken promptly to ensure the safety of air travel and to restore public confidence in aviation. The **EOSM is primarily funded by EASA**, and there are generally no direct costs to operators who are affected by the mechanism. However, in some cases, **operators may incur additional costs as a result of the safety event or crisis** that triggered the EOSM deployment. For example, if an operator's aircraft is grounded or subject to additional inspections or other safety measures, the operator may incur additional expenses related to maintenance, crew and staff management, or other operational costs. These **costs would be incurred regardless of whether the EOSM is deployed or not**, and they are not directly related to the mechanism itself.

Quantitative estimates were included in the Commission IA only for Air Operator Certificate (AOC) issuance and its continuous oversight for a mid-sized airline: initial AOC issuance totalling EUR 90,000, and an annual fee of EUR 464,000. In addition, an EASA fee for approval of a repair station would incur an annual fee of EUR 32,080 with a fee for technical ratings. The figure below presents the number of AOCs and the total annual cost (as per the estimates provided in the IA).

Figure 5. Numbers of Air Operator Certificates Aeroplanes and Commercial Air Transport aeroplanes in EASA MS⁴⁵



Source: EASA (2022). 2022 Annual Safety Review

⁴⁵ The figure outlines that in 2021, the number of AOC aeroplane holders was above the previous 4-year average and exceeded the numbers of previous years. The number of CAT aeroplanes further dropped and ended below the previous 4-year average, however still exceeding the lowest level of 2017.

Proportionality and safety performance

With regards to the **proportionality and safety performance** provisions under Regulation (EU) 2018/1139, the IA expected that a simplification of certification procedures. This was foreseen through an increased reliance on industry standards, simplification of leasing approvals and more extensive use of Qualified Entities⁴⁶ in the certification and oversight processes; thus reducing the compliance costs for businesses. **Data on the number of businesses that used qualified entities over the period 2018-2021 does not currently exist**, thus it is not possible to measure the degree to which the point of comparison evolved.

Ground handling

As part of the IA, gaps and inconsistencies with regards to safety aspects of ground handling aimed to be addressed through Option 3.1 (B) on Ground handling (industry standards, no certification). Under this provision, it was expected that **limited compliance costs** would be incurred, due to absence of new certification requirements and reliance on existing industry standards which are followed by the majority of the market operators.

In addition, **positive impacts** were expected for ground handling operators from harmonised EU standards which could lead to airlines not imposing their own standards when auditing ground handling providers, as well as for airlines by reducing the costs of ground handling related damage. It should be noted that **no quantitative estimates were provided for the expected positive impact to ground handling operators**.

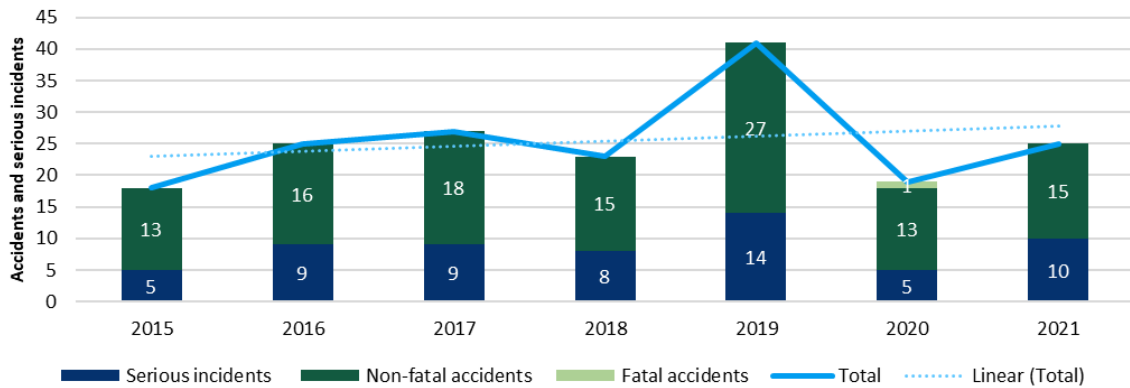
For the evolution of costs to airlines, the IA included the estimate for the worldwide cost of ground handling incidents for airlines to be in the region of EUR 9 billion damages and delay⁴⁷. Indeed, one estimate from the International Air Transport Association (IATA)⁴⁸, places the worldwide cost per incident to be approximately USD 275,000. The figure below provides an overview of the number of fatal accidents, non-fatal accidents and serious incidents per year involving aerodromes and ground handling. While there have been fluctuations year on year, the **overall linear trend in the number of incidents/accidents is increasing**. This suggests that while positive impacts were foreseen for airlines due to a reduction in the costs of ground handling related damage, the increasing trend in incidents/accidents suggests that **this cost saving may not have occurred as predicted in the IA**. It should be caveated however that **worldwide and EU-wide costs of ground handling incidents are challenging to quantify**, as they can vary widely depending on a number of factors such as the severity of the incident, the type of equipment or infrastructure involved, and the location of the incident. Thus, it is not possible to quantitatively estimate whether an actual cost saving has occurred.

⁴⁶ Qualified Entities (QEs) are third-party organizations that are authorized by regulatory authorities to perform specific functions related to the certification and oversight of aviation products, services, and operations. The use of QEs in the certification and oversight processes can help to enhance safety and efficiency by leveraging specialized expertise and resources.

⁴⁷ no EU specific information on these costs was available at the time of the IA

⁴⁸ <https://www.iata.org/contentassets/3ffbfefb489074675b43404340a29bdaf/airside-collision-avoidance-device-ascad.pdf>

Figure 6. Fatal accidents, non-fatal accidents and serious incidents per year involving aerodromes and ground handling



Source: EASA (2022). 2022 Annual Safety Review

Gaps and inconsistencies - Aviation security

To address gaps and inconsistencies in aviation security, the IA put forward option 3.2 (C) for a coordinated approach to safety and security related matters. Under this option, overall impacts were expected to be **neutral to positive** thanks to better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen.

There is **no quantitative data specifically on the assessment of safety and security trade-offs by EASA**. However, EASA has undertaken a range of activities since 2018 aimed at assessing and managing safety and security risks in aviation, and this includes considering trade-offs between safety and security. For example, EASA's safety and security risk assessment processes are designed to identify and prioritise risks based on their potential impact on safety and security. This includes considering trade-offs between safety and security risks and determining appropriate mitigation measures based on these trade-offs. Similarly, EASA's regulatory impact assessments (RIAs) are designed to evaluate the potential impacts of proposed regulatory changes on safety and security, as well as other factors such as economic and environmental impacts. In conducting these assessments, EASA considers trade-offs between safety and security and other factors and seeks to identify the most optimal solutions.

Gaps and inconsistencies - Environmental protection

To address gaps and inconsistencies in environmental protection the IA put forward option 3.3 (B) on EU essential requirements for environmental protection with respect to aeronautical products. Under this option, the cost-benefit analysis of deviating from minimum ICAO requirements would be done on a case-by-case basis, when the new flexibility envisaged would be actually used. The IA therefore was unable to estimate such impacts upfront. It was highlighted however that the cost-effectiveness analysis carried out by ICAO may not be the same as for the EU. Thus, the overall impact in terms of costs was not able to be estimated upfront, and was therefore considered as neutral under the IA.

3.1.3 SMEs and light aviation

For Option 1.3 (b) of the IA's preferred policy package (Section 2.6), the IA predicted positive impacts on SMEs by enabling delegation of certification and oversight to competent users' organisations in the general aviation sector (which contains many SMEs). In 2021, the global general aviation market attained a value of about USD 20.5 billion and was projected to grow at a

compounded annual growth rate of 3.20% between 2023 and 2028⁴⁹. This healthy growth would lead to a market value of nearly USD 24.8 billion by 2027. According to a study of EMR⁵⁰, the **key market drivers** guiding the industry's growth include growing spending on air travel for medical transportation, charter operations, and VIP transportation and the increasing use of air transport for tourism and to visit recreational activities. The market growth can be associated **with growing technological advancements in the aviation industry** and the rising awareness towards aircraft emissions, prompting manufacturers to build all-electric aircraft.

This research provides insights into possible impacts of the Regulation on SMEs and light aviation, based on a literature review and consultants' expertise, as it is too early to estimate real effects. First, **the regulatory burden for SMEs** could have increased since the Regulation's implementation due to the stricter requirements for aircraft certification, parts, and maintenance organisations. One such time- and labour-intensive requirement of the Regulation is the submission of numerous documents, reports, and records to the competent authorities. To manage their requirements for regulatory compliance, SMEs may need to allocate extra time or personnel, which can take away from other business operations. New guidelines for the oversight and certification of aircraft operators, including air taxis and other small operators, were introduced under the Regulation. Although these rules aim to level the playing field for all operators and raise industry safety standards, compliance can be complicated for smaller **firms with limited resources**. For instance, the Regulation mandates certification for all aviation appliances, parts, and products, which may require SMEs to hire costly third-party certification bodies. In order to comply with the legislation, SMEs may also need to make investments in new equipment, procedures, or staff, which will raise the cost of compliance. The Regulation does, however, also include provisions to help SMEs, such as the establishment of a dedicated SME desk at EASA, which can offer direction and support during the certification process.

Second, the **standardisation of certification** for light aviation is stimulated by new certificate and oversight provisions for new aircraft types, including Very Light Aircraft (VLA) and Light Sport Aircraft (LSA). As a result, there is now a more uniform approach to the certification and use of these aircraft types, which can be advantageous to small manufacturers and operators. This aligns with the **harmonisation of regulations** across the European Union, which can also benefit SMEs and small operators by reducing the complexity of complying with different regulations in different member states. Enhancing the regulatory framework's consistency and standardisation can also be advantageous to the sector as a whole. The Regulation, which addresses a variety of technical, operational, and administrative requirements, **is complex and comprehensive**. SMEs might not have the expertise, resources, or experience needed to fully comprehend and comply with the regulation. For instance, the regulation mandates the creation of a quality management system, which may be difficult for SMEs without a different department or staff dedicated to quality assurance.

Third, the Regulation also supports **innovation** and provides **more opportunities** for small operators. The Regulation has provisions to encourage industrial innovation, which can benefit SMEs and small manufacturers. In the design and operation of aircraft, for instance, the regulation permits using new technologies and alternative fuels. A new category of air operator certificate for small commercial air transport operations is one of the provisions in the Regulation that will increase prospects for small operators. This may contribute to **levelling the playing field** for small business owners and enhancing industry competition. Additionally, the more **streamlined certification** processes for new aircraft types, including Very Light Aircraft (VLA) and Light Sport Aircraft (LSA), can reduce the time and cost to certify new aircraft designs.

⁴⁹ <https://www.expertmarketresearch.com/reports/general-aviation-market>

⁵⁰ Idem

Fourth, the increased **safety requirements** for aircraft and parts imposed by the Regulation can increase the cost of certification and compliance for SMEs and small operators. However, these safety requirements also improve the overall safety of the aviation industry, which is beneficial for all stakeholders and, therefore, justifiable according to stakeholders. The EASA certification tariffs (EASA fees and charges) are modulated and cheaper for light aviation and SMEs.⁵¹: this highlights EASA's effort to foster SMEs by offering lower prices.

Overall, even if Regulation 2018/1139's implementation can be complex for SMEs and small operators, the Regulation includes tools to help these businesses expand their potential in the aviation sector.

3.1.4 Innovation

The expected impacts of the Regulation on innovation are described in Section 2.6.2.3.2. This paragraph discusses how the situation evolved in this domain over the evaluation period.

This paragraph provides some insights on the innovative performance of EASA with respect to its counterparts from other jurisdictions. When comparing EASA's efforts with those of e.g., the Federal Aviation Administration (FAA) in the US, the operating environment within which EASA operates is more complex, making innovation more difficult: **EASA needs to reflect the views of thirty-one EASA Member States, while the FAA in the United States is operating in a single-voice system. One innovation strategy might make things easier for manufacturers and investors.** This research looks at the newest technologies as the Regulation supports new technologies and fuels.

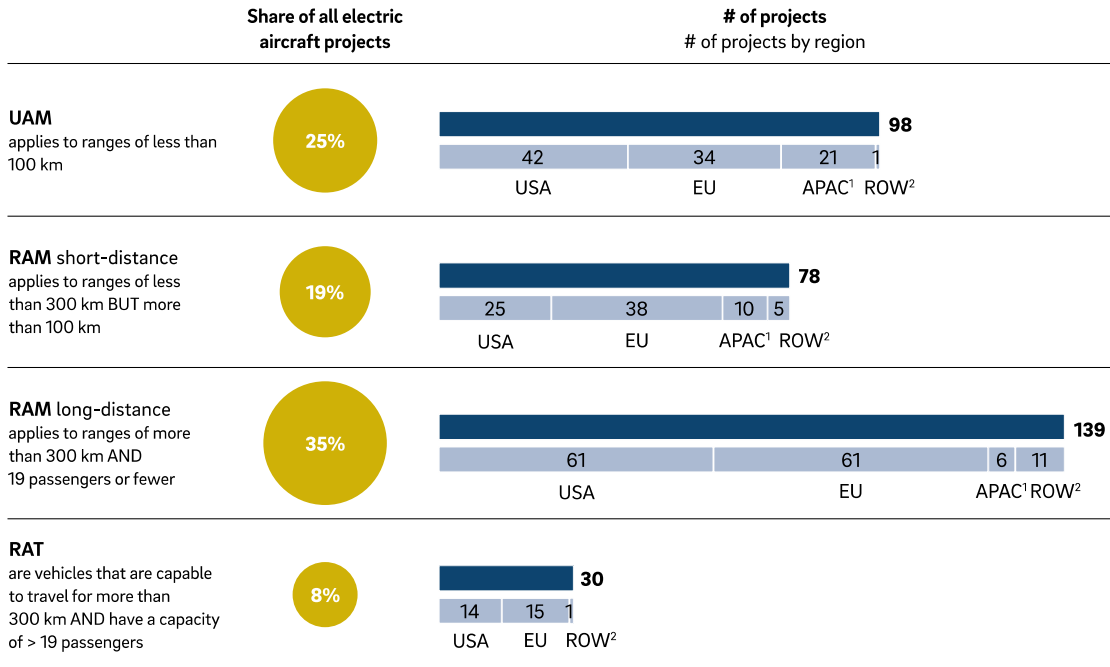
Nonetheless, there is **evidence that the current European regulation climate fosters new technology for aviation and keeps Europe in the lead or at pace with the rest of the world:** a leading role is played for instance by Europe in electric aircraft technology, or Advanced Air Mobility (AAM) R&D⁵². Figure 5 shows that the largest number of electric aircraft technology projects are in the Regional air mobility (RAM) long-distance category, followed by Urban Air Mobility (UAM) and RAM short-distance. The USA leads in the categories of UAM and RAM long-distance, while Europe is leading in RAM short-distance and Regional air transport (RAT).

⁵¹ <https://www.easa.europa.eu/en/downloads/116607/en>

⁵² Roland Berger : Regional Air Mobility : How to unlock a new generation of mobility

Figure 7. Evolution in electric aircraft technology

D Majority of electric aircraft projects focus on the regional air mobility market with up to 19 passengers
Share of electric aircraft projects globally by use case [%]



¹ Asia-Pacific ² Rest of World

Note: All projects as of January 31, 2022; numbers do not add up to 100% because some projects are missing important information for cluster allocation

Source: Roland Berger

A similar **leading role for Europe can be observed in the R&D and production of sustainable aviation fuel (SAF) and hydrogen technology for aviation**⁵³. On 14 July 2021, the European Commission presented a package of proposals to make the EU's climate, energy, land use, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55 % by 2030, compared with 1990 levels – the 'fit for 55' package. The package includes a proposal to ensure a level playing field for sustainable air transport, also known as the ReFuelEU Aviation initiative. Further details on the ReFuelEU Aviation initiative are presented in Section 4.1.13.2.2. Figure 6 (above) shows the SAF hubs worldwide, displaying the evolution towards greener fuel usage. Additionally, the largest SAF producing company, Nestle, is located in Finland and produces 100.000 tons of SAF and wants to expand this to 1.5 million tons at the end of 2023⁵⁴. The recent study of Rhodium Group states that the USA's SAF production is around 4.5 million gallons per year⁵⁵. In terms of **total SAF production volume, the European Union leads the world**, followed by the United States. The EU has a target of 2 million tonnes of SAF per year by 2030, which would account for 5% of jet fuel consumption^{56,57}. The US has set a more ambitious target of producing 3 billion

⁵³ KPMG - Sustainable Aviation Fuel Ready for lift off?, Nov 2022

⁵⁴ <https://earth.org/sustainable-aviation-fuel-companies/>

⁵⁵ <https://rhg.com/research/sustainable-aviation-fuels/>

⁵⁶ A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy

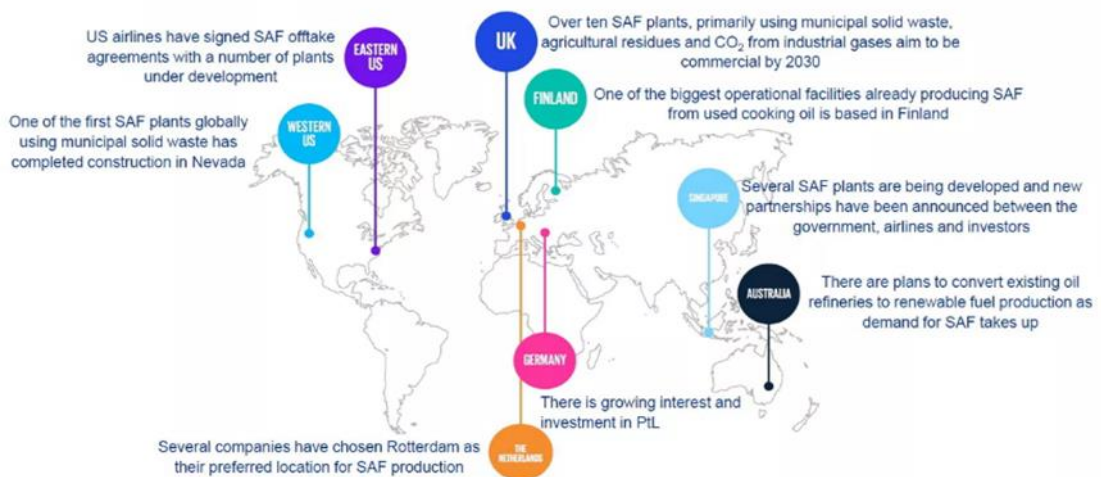
⁵⁷ Renewable Energy – Recast to 2030 (RED II)

gallons (approximately 11 million tonnes) of SAF per year by 2030, which would account for 30% of the aviation sector's fuel consumption⁵⁸.

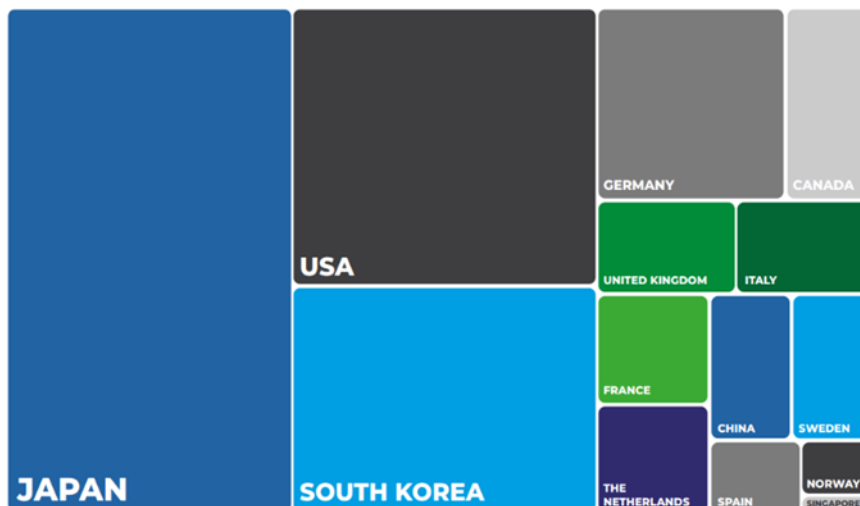
Regarding hydrogen technology, consolidation of EASA's Member States would outperform the United States, as shown in Figure 6 (below). This figure shows the relative amounts hydrogen aviation technology patents by country, proving that European countries are researching hydrogen technologies. Additionally, Airbus has announced three types of new commercial aircraft on liquid hydrogen by 2035. Boeing has yet to inform any such new development apart from ongoing investigations for hydrogen as a viable option.

Figure 8. Above: Evolution in SAF technology worldwide; Below: the hydrogen aviation technology patents by country

SAF hubs developing worldwide



Source: Roland Berger and KPMG

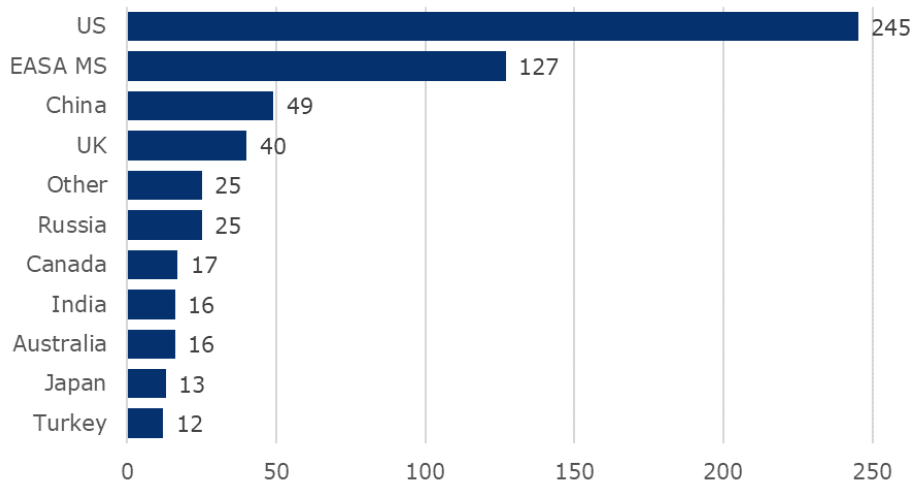


Source: Roland Berger and KPMG

⁵⁸ Clean Air Act: A Summary of the Act and Its Major Requirements

Another statistic regarding the innovation dimension is the number of official electric and hybrid-electric vertical take-off and landing (eVTOL) concepts in given countries. The following graph shows that the United States is leading by a large margin, with the EASA Member States, China, and the UK trailing behind. This is highly relevant as EASA added a dedicated set of technical specifications in the form of a Special Condition for VTOL aircraft⁵⁹.

Figure 9. Electric and hybrid-electric vertical takeoff and landing (eVTOL) concepts by country/region



Source: Own composition based on <https://evtol.news/aircraft>

As discussed earlier, the CS-23 and CS-25 certification specifications affect aircraft design and, thus, innovation. For this reason, a summary of the significant differences between EASA's CS-23 and CS-25 and their FAA counterparts is provided in Appendix 7. Section 3.1.6 on competitiveness discussed the differences between the FAA's and EASA's certification and oversight processes in more detail.

3.1.5 Safety

The expected impacts of the Regulation on safety are described in Section 2.6.2.3.2. This paragraph discusses how the situation evolved in this domain over the evaluation period.

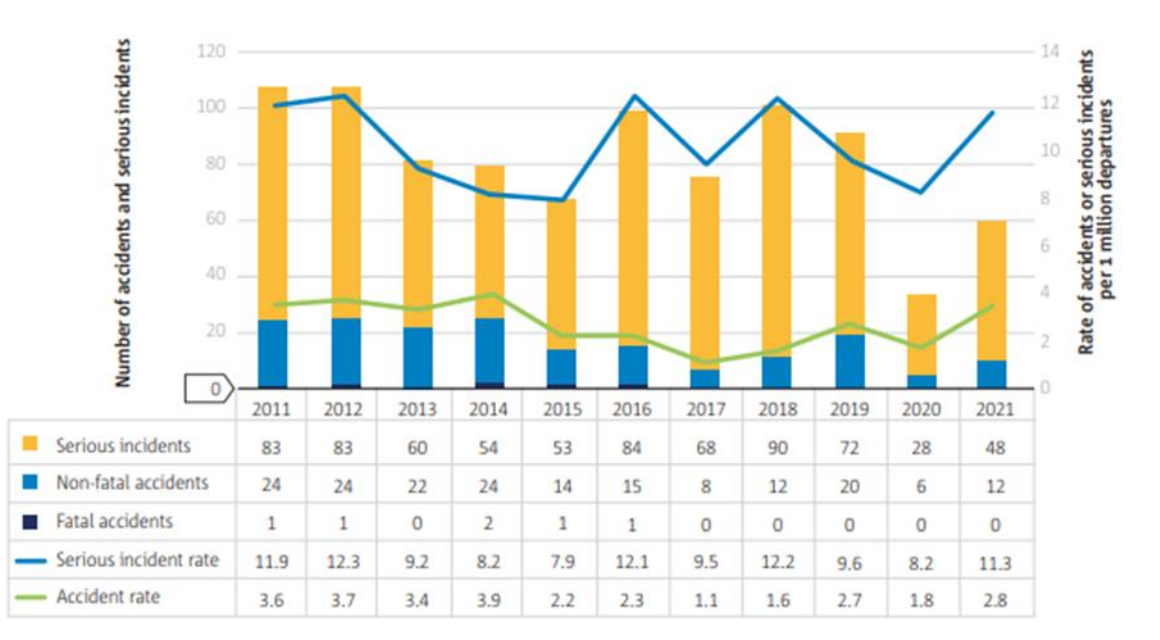
The IA's preferred policy package expected aviation safety to improve. The left axis of Figure 10 shows the number of (non-) fatal accidents and serious incidents of airlines registered to operate in EASA member states from 2011-2021. The **number of serious incidents decreased from 2013 until 2016**, then **increased to 90 in 2018**. The serious incident levels from 2019 onwards **remained below the levels of 2011 to 2019**. The number of **non-fatal accidents decreased** from 24 in 2011 to 12 in 2018. It increased to 20 in 2019 to then decrease to 12 in 2021. The number of fatal accidents represents infrequent events and in the last five years, no fatal accidents have been reported. The right axis describes the rate of serious incidents and non-fatal accidents per million departures: the rate of serious incidents, which typically have a higher probability of occurring compared to accidents, is similar to the period pre-pandemic. Both rates increased in 2021, however the increases are not a cause for concern as lower than past trends. A deeper analysis of the two safety rates is made by using structural break regression models to analyse the impact of the intervention on safety. This statistical technique is used to determine if there is a

⁵⁹ <https://www.easa.europa.eu/en/downloads/137443/en>

significant change in the underlying structure of a time series data at a specific point in time. APPENDIX 1 - Methodology provides a detailed explanation of the methodology, the assumptions and the limitations of structural break analysis, together with supporting charts.

Such breaks during the evaluation period could suggest that the Regulation has had a significant impact. However, the analysis ultimately suggests that there is no significant structural break to be observed in the data with regard to the serious incident rate. The evolution of the serious incident rate seems to be rather random with no outspoken trend over the period 2011 – 2021. With regard to the accident rate (see Figure 10), a significant breakpoint is observed in 2016. The accident rate follows a decreasing trend from 2011 until 2016. In 2017 there is a further drop in the accident rate, after which an increasing trend can be observed. The Regulation has not had an impact here, as the break point is before the evaluation period. In 2021, the accident rate is still below the highest point in the observed period.

Figure 10. Incident and accident rates

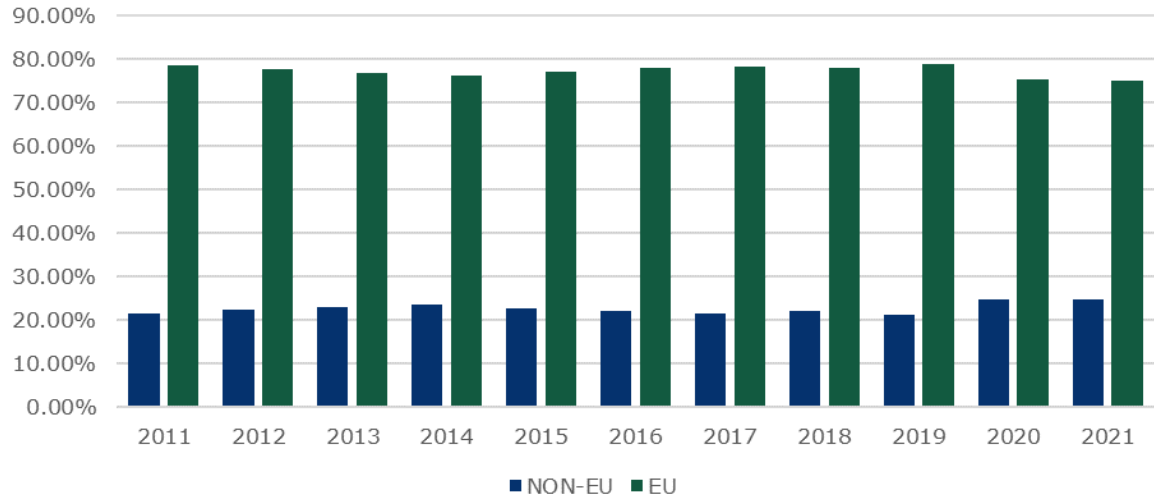


Source: Annual Safety Review, 2022

3.1.6 Competitiveness

The IA predicted that, under the preferred policy package (Section 2.6), the European aviation sector's competitiveness would improve due to the safety and innovation improvements discussed above. Figure 11 shows the market share of the flights from and to worldwide airports performed by non-EU compared with EU airlines. The **market share of EU airlines has been stable over the years**, although it has decreased slightly since the pandemic. This indicates that Europe is maintaining its competitiveness towards foreign airlines, although there has been a small decrease since COVID-19 started.

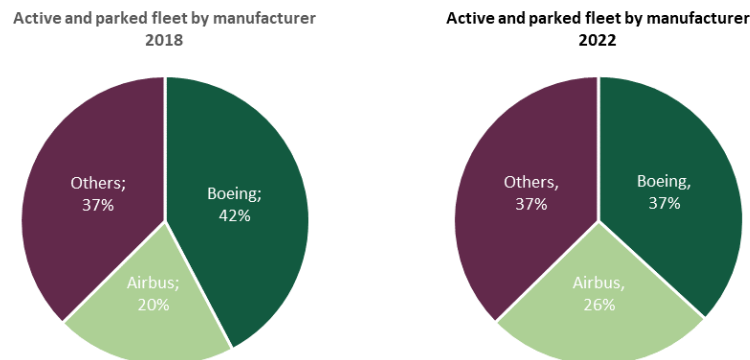
Figure 11. Airlines' market share



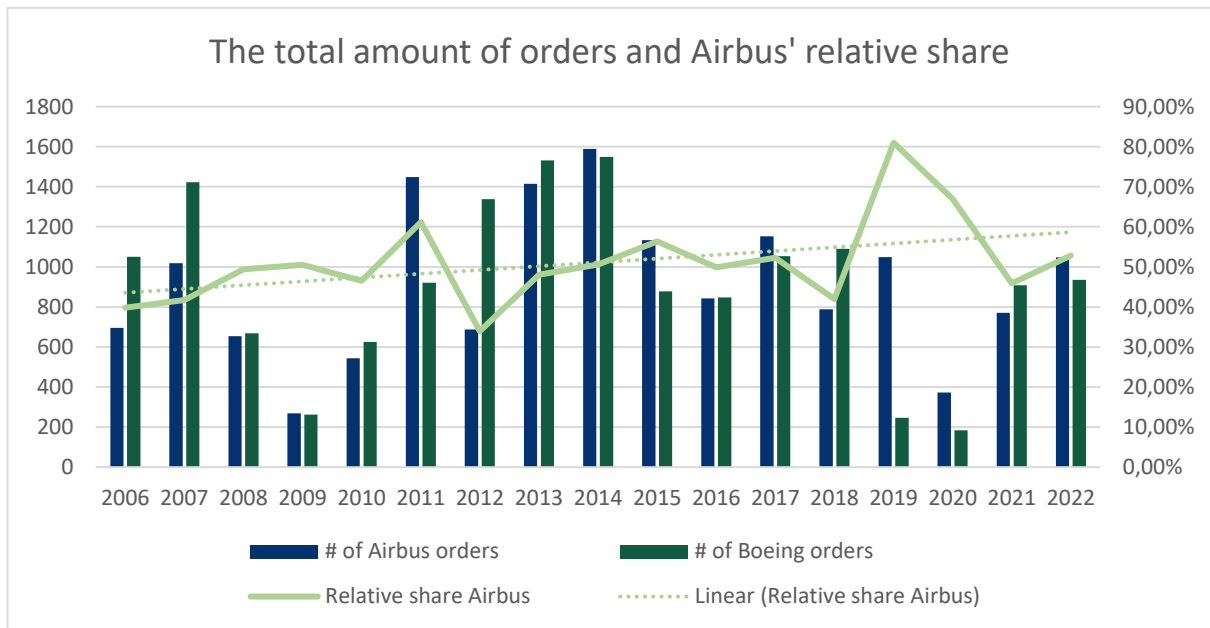
Source: Own composition based on Eurostat, 2022

The **fleet** (active and parked) of the two **leading aircraft manufacturers** – Boeing and Airbus - can also be examined to estimate their **competitiveness but also between EASA and the FAA** as they have their headquarters on different continents. Figure 11 (above) shows the percentage of active and parked aircraft for Airbus, Boeing, and others in the years 2018 and 2022. The percentage of others did not change. However, the market share of Boeing’s active and parked fleet dropped by 6%. This reflects a **positive change for the European manufacturer, Airbus**. The same positive trend can be seen in Figure 11 (below) where the confirmed orders (sales) from 2006-2022 are visualised. The structural break analysis showed no significant trend in the number of orders for Airbus and Boeing over time. However, a tiny significant upward trend in Airbus' relative share of aircraft orders can be found (for simplification, Airbus and Boeing were considered the only two manufacturers for this calculation). On average, Airbus' relative share is growing by 1% a year (although there are large fluctuations around this trend line). For Airbus in 2019, a significant break is discovered in the relative market share between Boeing and Airbus as an increase in share (81% compared to 42% in 2018) is found. However, this is probably due to the Boeing 737 MAX incidents. The significant opposite break was discovered for Boeing as their share dropped in 2019 and 2020. After 2020, Boeing regained relative share to 47%.

Figure 11: Above: Active and parked fleet by manufacturer. Below: The amount of confirmed orders



Source: Own composition based on Airfleet, 2022



Source: Own composition based on Boeing's and Airbus' order report, 2023

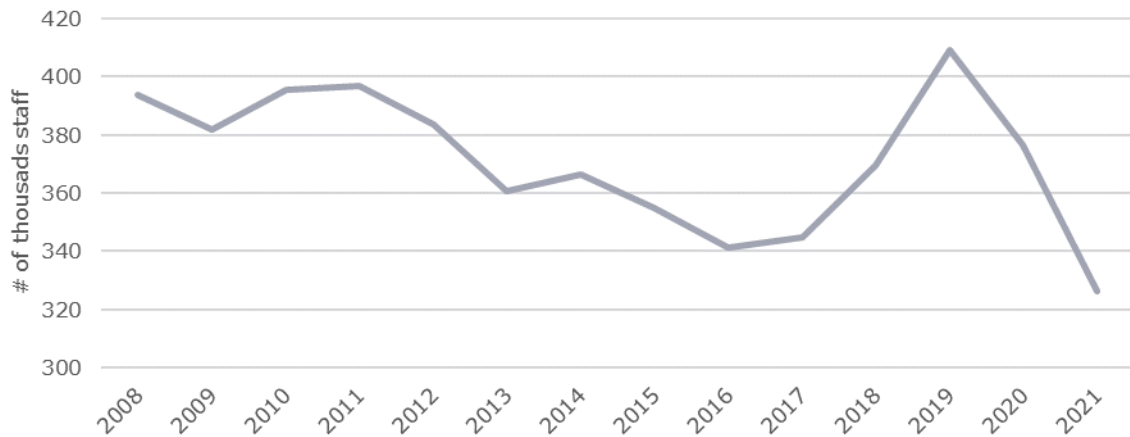
Stakeholders consulted suggested that the **EASA framework is used as a model in many countries**, contributing to the competitiveness of the aviation system. An example of this is the answer by EASA to the 737 Max accidents, demonstrating the criticalities of validating aircraft which should be certified by another authority. EASA responded with the creation of a body to assess whether issues from the accident could have spilt to the EU and based on our experience, **EASA** is now often seen as the **golden standard for the industry** (see Section 3.1.1).

To further analyse the potential impact on competitiveness of the differences in certification and oversight procedures between jurisdictions, a brief summary of the study of the United States Government Accountability Office (GAO) on the potential **differences between the FAA's and EASA's certification and oversight processes** can be found in Appendix 8.

3.1.7 Creating jobs

The preferred policy package of the IA should have contributed to the EU aviation sector continuing to grow, stimulating innovation and new technologies and cutting costs that are not justified from a safety perspective (See Section 3.1.5). This should have translated into additional jobs on the market. Figure 12 shows the employment levels in the aviation sector for the EU-27. The figure shows a stable situation before 2012 until a sudden drop in 2013, followed by another stable period. The large increase before 2019 was stopped by a significant reduction after 2019. In 2019, the layoffs caused by the pandemic brutally stopped the rise in employment levels witnessed over the period 2016 - 2019. However, this was an unexpected event which resulted in a negative evolution in employment levels, making it difficult to draw any conclusions relating to the implementation of the Regulation.

Figure 12. The evolution of employment in EU aviation



Source: Own composition based on Eurostat (ifsa_egan22d), 2022

3.1.8 Implementation costs

The preferred policy package of the IA expected additional costs for more training to develop ground handling and cyber security expertise. After the initial set-up and training expenses, improvements in efficiency via resource pooling and sharing were expected, resulting in decreased costs for Member States. The fees and charges fund the resource pooling and sharing system via the user-pays principle.

Table 5 shows that **funding to EASA through fees and charges has not increased over the period under review**; the same applies to the EU subsidy and third-country contributions. The table below shows the costs (in thousands) and revenues by category from 2013 to 2021 (except for 2015, where data is not comparable due to relevant methodological differences in reporting), as reported in the yearly activity reports of EASA. Appendix 10 presents the same table adjusted for inflation (based on the Harmonised Index of Consumer Prices (HICP)). The tables show a positive total in 2020 and 2021 from fees and charges. The total from subsidies and other contributions is always close to breaking even, except in 2020. When comparing the figures over time, some discussion points can be raised:

- Costs common to the profit centres 'product certification' and 'organisations approval' are allocated according to certain allocation keys, which can vary over time and are only known by EASA.
- A number of projects are financed by the fees and charges reserve. Those costs are allocated to the product certification profit centre, which might bias the results of the analysis below.
- Subsidy revenues are assigned to each profit centre based on costs when they are known.
- The implementation of the Easy Access Rules for Fees and Charges regulation (Regulation (EU) 2019/2153), effective from the first of January 2020, should be taken into account as it affects the costs and revenue streams.

Table 5. Costs and revenues per category from 2013-2021 (in thousands)

Cost category	Sub-cost category	2013	2014	2015	2016	2017	2018	2019	2020	2021
Activity category: Fees and charges										
Product certification	Revenue	€ 54,128.70	€ 61,305.80		€ 64,563.00	€ 70,164.00	€ 70,610.00	€ 69,792.00	€ 57,571.00	€ 61,216.00
	Subtotal costs	€ 55,653.60	€ 58,159.70		€ 71,643.00	€ 71,052.00	€ 74,599.00	€ 75,872.00	€ 65,330.00	€ 62,283.00
	Difference	€ -1,524.90	€ 3,146.10		€ -7,080.00	€ -888.00	€ -3,989.00	€ -608.00	€ -7,759.00	€ -1,067.00
Organisation approval	Revenue	€ 25,354.10	€ 28,673.60		€ 29,249.00	€ 33,848.00	€ 35,197.00	€ 40,220.00	€ 49,311.00	€ 52,074.00
	Subtotal costs	€ 23,169.60	€ 23,941.70		€ 29,828.00	€ 30,325.00	€ 33,954.00	€ 34,834.00	€ 32,157.00	€ 39,779.00
	Difference	€ 2,184.50	€ 4,731.90		€ -579.00	€ 3,523.00	€ 1,243.00	€ 5,386.00	€ 17,154.00	€ 12,295.00
Totals	Total revenue under fees & charges	€ 79,482.80	€ 89,979.40		€ 93,812.00	€ 104,012.00	€ 105,807.00	€ 110,012.00	€ 106,882.00	€ 11,329.00
	Total costs under fees & charges	€ 78,823.20	€ 82,101.40		€ 101,471.00	€ 101,377.00	€ 108,553.00	€ 110,706.00	€ 97,487.00	€ 102,062.00
	Difference	€ 659.60	€ 7,878.00		€ -7,659.00	€ 2,635.00	€ -2,746.00	€ -694	€ 9,395.00	€ 11,228.00
Activity category: Subsidy and other contributions										
Total contributions	EU subsidy Third country contributions other income	€ 39,386.50	€ 39,192.30		€ 46,046.00	€ 48,788.00	€ 42,103.00	€ 40,219.00	€ 40,993.00	€ 41,907.00
Total costs	Third country operators		€ 1,474.50		€ 2,921.00	€ 2,438.00	€ 2,219.00	€ 2,741.00	€ 2,353.00	€ 2,082.00
	Standardisation	€ 8,698.30	€ 9,297.30		€ 10,641.00	€ 10,675.00	€ 11,930.00	€ 11,842.00	€ 9,970.00	€ 10,900.00
	Safety Assessment of Foreign Aircrafts Rulemaking	€ 1,243	€ 1,215		€ 1,216	€ 1,045	€ 610	€ 689	€ 736	€ 665
	International cooperation	€ 20,025.20	€ 15,670.60		€ 14,179.00	€ 12,017.00	€ 15,351.00	€ 13,002.00	€ 12,174.00	€ 12,449.00
	Safety Intelligence & performance	€ 6,174.30	€ 9,179.30		€ 12,171.00	€ 16,747.00	€ 4,929.00	€ 4,731.00	€ 4,922.00	€ 5,503.00
		€ 2,991.20	€ 2,464.80		€ 6,573.00	€ 5,773.00	€ 6,403.00	€ 7,432.00	€ 7,630.00	€ 9,989.00

Cost category	Sub-cost category	2013	2014	2015	2016	2017	2018	2019	2020	2021
Totals	Total contributions	€ 39,386.50	€ 39,192.30		€ 46,046.00	€ 48,788.00	€ 42,103.00	€ 40,219.00	€ 40,993.00	€ 41,907.00
	Total costs	€ 39,131.90	€ 39,301.70		€ 47,701.00	€ 48,695.00	€ 41,441.00	€ 40,437.00	€ 37,785.00	€ 41,588.00
	Difference	€ 255	€ -109		€ -1,655	€ 93	€ 662	€ -218	€ 3,208.00	€ -228

Source: Own composition based on EASA yearly annual reports

The different revenue and cost categories are discussed together with the expected impact due to the implementation of the Regulation to the extent possible⁶⁰. **Product certification** contains EASA's responsibility for the airworthiness and the environmental certification of aeronautical products and parts. This responsibility involves acceptance of supplemental type certifications, modifications to the type certificate, and repair designs in addition to the initial type certification (IAW), operational suitability data, and several related certification operations. EASA takes all these measures to ensure the highest level of safety and environmental compatibility. The **Regulation** allowed for the **possibility to declare compliance instead of having a type certificate**, which could **possibly lower the product certification revenues for EASA and costs for the client**. EASA is in charge of all **design approvals** and a few other organisational approvals on the territory of the Member States (MS). The Network Manager and pan-European Air Navigation Service providers are also approved and supervised as part of the Organization Approvals (OA) activities. EASA performs certification, supervision, and enforcement duties in this regard, supervises the safe provision of services, and confirms that the applicable requirements are met. EASA approves and supervises design, production, maintenance, ongoing airworthiness management, maintenance staff training, training devices, flight crew training organizations, ATM/ANS providers, and air traffic controller training organizations in areas outside the borders of Member States.

The Regulation now includes a possibility to **'opt-out'** from the requirements of the Regulation for Member States who want to exempt the design, production, maintenance and operation activities for a certain category of aircrafts (certain small aircraft other than unmanned aircraft, and unless, in respect of those aircraft, a certificate in accordance with the Basic Regulation has been issued, or has been deemed to have been issued, or a declaration has been made) and small aerodromes (aerodromes with low volumes of traffic, provided that they meet the minimum common safety objectives laid down in the relevant essential requirements). Additionally, there is an **'opt-in'** possibility for Member States to include State aircraft, which are normally excluded under the Regulation. This should increase flexibility and lower costs for EASA and the Member States.

The **third-country operator costs** come from the fact that EASA is responsible for authorising any third-country operator who intends to perform commercial air transport operations into, within, or out of any of the EU and EFTA Member States' territories. Authorisations are granted based on data-driven analysis, constituting an application example of the data-driven safety plan for Europe. The Agency's **standardisation costs** stem from its activities that continuously monitor how Authorities apply the Basic Regulation and its Implementing Rules. Through continuous monitoring activities (CMA), the Agency assesses the ability of Authorities to discharge their safety oversight obligations. EASA's establishes and manages the repository of information necessary to ensure effective cooperation between EASA and NCAs in tasks of oversight, certification and enforcement, as newly added by the Regulation. Normally, **standardisation leads to cost decreases (after potentially increased start-up costs)**. Costs linked to foreign aircraft inspections are related to the EU Ramp Inspection Programme, a European programme regarding the performance of ramp inspections on aircraft used by third-country operators or used by operators under the regulatory oversight of another EU Member State. **Rulemaking** costs stem from EASA's task that contains the design of regulatory proposals transparently, based on evidence, easily accessible, understandable by those affected and backed by stakeholders' views. To further strengthen this, together with the MAB & SAB, EASA successfully embarked on a **review of the rulemaking process to make rulemaking more effective and flexible**. The Regulation aims to make rulemaking more performance-based, and such restructuring and review of rulemaking might have increased at least initially the implementation costs. For example, stakeholders might undergo

⁶⁰ Based on the Consolidated Annual Activity Reports (CAARs) of the last years, the Impact Assessment, and literature review on the Regulation.

additional training to ensure they are knowledgeable and competent in complying with the new rules.

Costs related to international cooperation stem from EASA's work with third-country aviation authorities and other international partners worldwide to promote European safety and environmental standards, policies, and technology and to provide a more compatible and open market for the EU aviation industry. EASA also develops and implements EU-funded civil aviation cooperation projects and assists the EU member states in fulfilling their ICAO obligations. The Additional costs in this cost category might lead to an increase in **cooperation**. Costs related to **safety intelligence and performance** stem from EASA's task to manage safety risks in aviation by identifying the systemic safety risks of the European aviation system, understanding where the safety issues are enabled and supporting EASA's transition towards an efficient, proactive and evidence-based safety system, which **might have resulted in a cost increase since those are part of the Regulation's primary goals**.

To analyse whether the Regulation could have had an impact on the revenue and cost streams, a structural break analysis on EASA's costs over the period 2013-2021 was conducted. The total profit of the cost categories (product certification and organisational approvals) increased since 2019 mainly due to the positive profit of the organisational approvals. The evolution of the total costs related to the fees & charges activity demonstrate a significant structural break in 2018. From 2013 to 2018, these costs show an increasing trend, while from **2019 onwards the costs tend to decrease**. The costs of standardisation, safety assessment of foreign aircrafts, rulemaking and international cooperation all show significant structural breaks after 2017. However, it is uncertain if the Regulation caused these breaks.

3.1.9 Resource needs of EASA

The resource needs of EASA are discussed by looking at two variables: staffing and budget.

On the one hand, the IA support study on resources at EASA pointed out that finding skilled people in the labour market would be difficult and that staff efficiency might be the preferred option. This indicated that no staff increase was needed as long as the resource efficiency increased. On the other hand, the continuous broadening of EASA's scope makes it hard to maintain the quality and efficiency of staff, notably due to the recent turnovers of several positions at EASA, according to our experience and the workshops. This could lead to an increase in the total workload at EASA. Additionally, the concept of resource pooling and sharing, stimulated by the Regulation, could lead to an increase in seconded national experts and the use of outsourcing/partnership with NAAs.

Figure 14 shows the evolution of the total staff at EASA from 2017 to 2021. Since the Regulation's implementation, EASA's **workforce** has slightly decreased.

Figure 14. Staffing at EASA

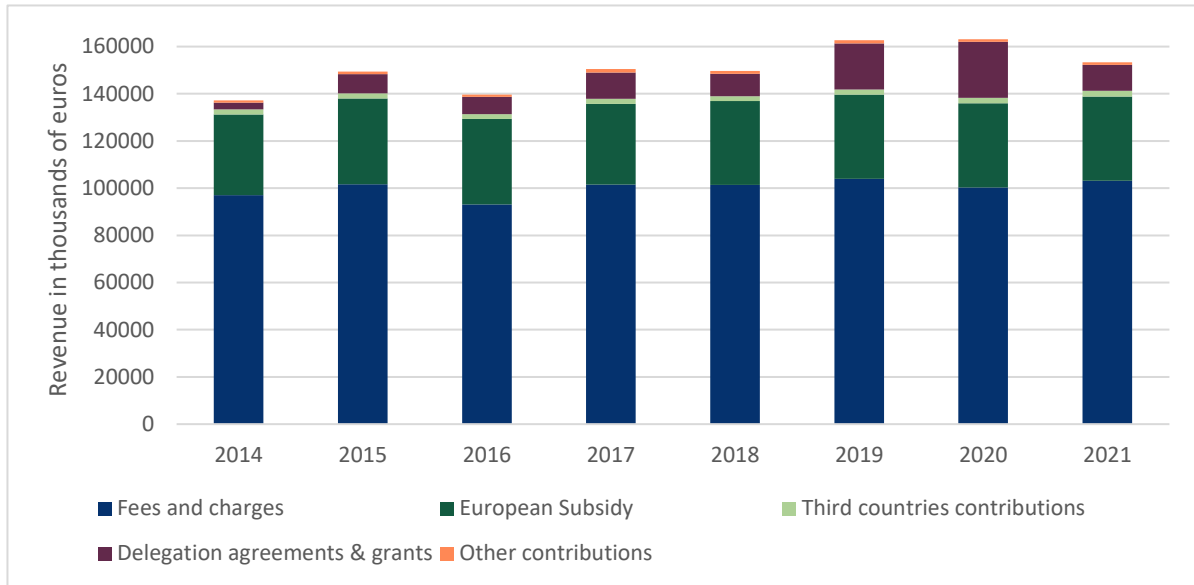


Source: Own composition based on EASA annual activity reports

The impact of the Regulation on the total staff at EASA can also be estimated using the structural break regression model. This research also analysed the division of the staff into different staff categories, as the Regulation might have (unintendedly) changed EASA's staff structure by broadening its scope. The Regulation's causality on number of staff cannot be estimated with the structural break analysis. However, this does not mean that the Regulation did not impact the number of EASA employees. The number of temporary agents increased significantly until 2007, followed by a more moderate increase until 2015. After 2015, the number of temporary agents at EASA decreased slowly. The number of contract agents at EASA grew from 2005 until 2015, after which a structural break emerged. In 2016, the number of contract agents dropped, and growth continued slower than before. The number of seconded national experts had a strong growth between 2008 and 2012, followed by a stable situation between 2013-2015. A significant jump in the number of seconded national experts was discovered in 2016, followed by a significant gradual decrease. No impact of the Regulation was found. Appendix 9 provides further details on the outcomes of the structural break regression model.

The support study and the IA stated that the budgetary pressures on Member States, national aviation authorities and EASA would likely continue. This was also considered a risk for the EASA system. The support study also indicated that the increase in EASA's **budget** was steeper during the initial period of its development, while it slowed down over the period following the extension to the EASA scope, where an increase in technical staff by about 50% resulted in a mere 25% increase in budget needs. The figure below shows EASA's revenues by source (in thousands of euros, adjusted with HICP) over the years, primarily obtained from fees and charges:

Figure 13. EASA revenues by source

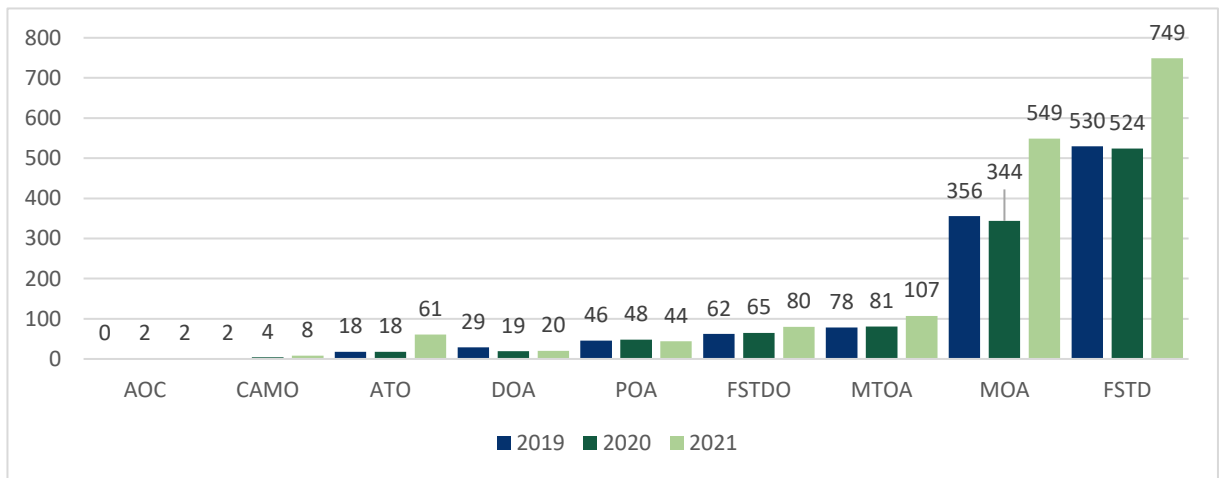


Source: Own composition based on EASA's Annual Reports, 2015-2021

The impact of the Regulation is analysed via structural break regression models for all of the revenue categories shown in the graph above. The Regulation's causality on the revenues cannot be estimated with the structural break analysis. However, this does not mean that the Regulation did not impact the revenue streams. The analysis suggests that the **Regulation did not significantly impact revenues, apart from the third countries' contributions.**

The broadening of EASA's scope could also result in an increased workload, especially since the staff amount at EASA did not increase. Figure 18 shows the rise of the organisational approvals of EASA, which indicates that the workload for EASA is rising when there is less staff available. The amount of Continuing airworthiness management organization (CAMO), Approved Training Organisation (ATO), Flight Simulation Training Devices (Organisation) (FSTD(O)), Maintenance and Technical Operations Approvals (MTOA), and Memorandum of Agreement (MOA) approvals increased over the period 2019-2021, indicating a workload increase. The Air Operator certificate (AOC), Design Organization Approval (DOA), and Production Organization Approval (POA) approvals have been stable or decreased slightly.

Figure 18. Organisational approvals under EASA oversight



Source: Own composition based on EASA yearly report, 2022

3.2 Recent developments

The points of comparison also need to consider external factors and other EU and international policy interventions, i.e., recent developments which are likely to have impacted the implementation and results of the Regulation and to have influenced the points of comparison. The recent developments are based on the IA and other recent events not accounted for at the time of the IA. This study considers recent developments from 2018 and classifies them into economic, geopolitical, and technological developments. The considered recent developments are described in the following section. Later, the impact of the recent developments on the points of comparison is explained and visualised.

3.2.1 Economic developments

The most important event since the entry into force of Regulation (EU) 2018/1139 that impacted the aviation sector was the COVID-19 pandemic. Since the outbreak of the pandemic, travel restrictions and lockdown measures have been implemented in many European countries to contain the spread of the virus. The biggest concern for the aviation sector was that air traffic decreased, which also led to a decline in passengers using air transport and to a decrease in revenues for airlines.

According to recent evidence investigating the impacts that the COVID-19 pandemic had on the aviation market, international commercial passenger traffic has been most negatively impacted by the pandemic. The economic impacts of the pandemic on a number of aviation segments, such as the impact that the pandemic had on airports, on airlines, on ground handling companies, on air navigation service providers (ANSP), as well as the impacts on passengers are presented in the following paragraphs.

Many **airlines** in Europe cancelled flights and reduced their workforce and reduced their fleet in use and had to take State aid in order to compensate for their losses given the decrease in demand⁶¹. **Airports** reported significant losses, specifically in 2020, while the support from State aid varied across Member States. For **ground handling** companies, State support schemes have been used where available depending on the Member State, with staff costs as the largest part of operating

⁶¹ The 2022 study identified that airlines have received a large part of this aid (EUR 38.8 billion).

costs for these companies. In relation to **ANSPs**, the reduced air traffic had a clear impact on the revenues of these types of providers, which required ANSPs to handle a gap in revenues by using their own resources and financial support from Member States. Costs associated to flight cancellations and increased prices for airplane tickets were the most significant impacts for passengers.

A large part of the period since the entry into force of Regulation (EU) 2018/1139 has been during the pandemic, therefore having implications to the overall aviation sector and market. The effects that the pandemic have on aviation is also a limitation of this evaluation study, as the effects of the Regulation on the points of comparison are all affected to some degree by the pandemic.

3.2.2 Geopolitical developments

In this section, recent geopolitical developments are briefly explained, followed by a description of their general impact on the points of comparison. Three main geopolitical developments are considered: The UK withdrawal from the EU, the invasion of Ukraine, the European Green Deal (and other related environmental initiatives).

UK withdrawal from the EU

Overall, **the UK withdrawal from the EU** has not significantly impacted the aviation sector. However, the UK withdrawal from the EU led to changes for EASA as UK operators are now considered third-country operators (TCOs). This affects the oversight and organisation approvals' workload and might change the revenue income distribution of EASA. For example, the UK's withdrawal from the EU has some consequences on the licensing for UK pilots and ATCOs. Since the UK's Civil Aviation Authority (CAA) is no longer operating under EASA, the licenses issued by the CAA no longer grant mutual recognition. Additionally, the UK was one of the main outsourcing partners for EASA; EASA outsourced tasks to (expensive) resources mastering the language.

Invasion of Ukraine

The ongoing **invasions of Russia on Ukraine's territory** have led to European and national decisions to avoid using the affected airspaces and mitigate Global Navigation Satellite System (GNSS) jamming and spoofing risks. This is to avoid unnecessary danger to any aeroplanes and passengers. A sudden shift in demand, higher fuel prices, restrictions for Russian operators to enter the Union's airspace, and an increased safety risk above several countries impacted the market and, thus, potentially, the points of comparison.

The European Green Deal and other environmental policy initiatives

The EU's long-term growth plan, the **European Green Deal**, aims to make Europe climate neutral by 2050 and consists of various regulations and initiatives intended to lower greenhouse gas emissions, increase the use of renewable energy sources, ensure sustainable forestry and agriculture practices, and safeguard biodiversity. To meet this goal, Europe must cut emissions by at least 55% from 1990 levels by 2030. The European Green Deal builds on previous policies and initiatives. such as the 2015 Paris Agreement against climate change, the 2020 European Climate Law to be climate neutral by 2050, the Circular Economy Action Plan (2020) to promote the circular economy, and others.

In December 2022, new rules were agreed on, an essential step in adopting the Commission's 'Fit for 55' legislative package to deliver the European Green Deal. It comes after three other recent agreements that aim to halt the sale of new CO₂-emitting vehicles in Europe by 2035, raise national emission reduction objectives for the waste, agriculture, buildings, and transportation sectors, and

improve carbon removal through land use, forestry, and agriculture. The EU must reduce transportation emissions, including aviation emissions, by 90% by 2050 if it wants to become climate neutral (compared to 1990 levels). The aviation industry's enhanced climate ambition will be essential for the EU to meet its climate goals under the Paris Agreement and make the European Green Deal a reality⁶². EASA has launched the "Environmental Labels for Aviation" programme to provide passengers with information about the environmental impacts of their flight choice, and aims to promote more sustainable aviation practices and encourage airlines to adopt greener technologies. Reducing non-CO2 emissions that are also air pollutants as well as noise from aviation are needed to contribute to the Commission's zero pollution targets set out in the Zero Pollution Action Plan⁶³. These new rules are too recent to impact the points of comparison in this study. However, the previous rules towards a greener Europe have influenced innovation, aircraft fleet, and costs linked to the environment.

The **Smart and Sustainable Mobility Strategy (SSMS)**⁶⁴ and **ReFuelEU Aviation**⁶⁵ proposals are part of the European Green Deal. The SSMS proposal aims to develop a more efficient air traffic management system while reducing costs, delays, and carbon emissions. Presently, national borders divide the European airspace, which can cause inefficiencies and delays. The SSMS concept seeks to standardise rules and regulations across European airspaces to improve air traffic management. The ReFuelEU Aviation proposal aims to cut greenhouse gas emissions from the aviation industry by making sustainable aviation fuel (SAF) blending into jet fuel used by airlines operating in the European Union mandatory. With the intention of ensuring a level playing field for airlines and airports and preventing additional emissions related to the extra weight of aircraft carrying excessive amounts of fuel, the proposal also includes obligations on airlines to limit the uptake of jet fuel before departing from EU airports to what is needed for safe operation of flights. The proposed Regulation requires EASA to receive and process reports from airlines' aviation fuel uplifts, aircraft operators' yearly report on purchases of sustainable aviation fuel and the characteristics of this fuel. EASA will have to report yearly to the Commission on the fulfilment by aircraft operators and aviation fuel suppliers of their respective obligations⁶⁶. Finally, by 2050 the required blending percentage would have increased to 63%. The proposal also includes steps to encourage the demand for low-carbon aviation fuels and to boost the development of SAFs.

All in all, the above-described geopolitical developments have had a less dramatic impact on the points of comparison compared to the COVID-19 pandemic. However, the effects of these developments must be considered. The UK withdrawal from the EU caused data collection problems as historical data sometimes contained UK data, which were resolved by excluding the UK from the datasets. The UK withdrawal from the EU also might cause some administrative burden for EASA as the UK is now considered a TCO. It is still too early to estimate the effects of ongoing Russian invasion into Ukrainian territory. However, the war has caused multiple flight routes to be redesigned, demand shifts, restrictions for Russian operators to enter the Union's airspace, and an increased safety risk above several countries impacted the market. Fuel prices also spiked after the invasion started, further increasing aviation players' costs. The European Green Deal is pushing the transportation industry, and thus, aviation, to get greener.

⁶² European Commission, 2022, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7609

⁶³ COM(2021) 400 final

⁶⁴ Sustainable and Smart Mobility Strategy, European Commission, 2023

⁶⁵ Sustainable aviation fuels – ReFuelEU Aviation, European Commission, 2023

⁶⁶ EASA, ReFuelEU Aviation initiative

3.2.3 Technological developments

In this section, recent technological developments are briefly explained, followed by a description of their general impact on the points of comparison. In the subsequent paragraphs, we present two main areas of technological developments: (1) sustainable technological developments and (2) Unmanned aircrafts.

Sustainable technological developments

An area of technological development is the role of EASA in the SESAR deployment framework and in **the Clean Aviation programme**. These two programmes have a role in the sustainable future for European aviation and require cooperation between industry and institutional stakeholders. EASA supports these two programmes with its safety and environmental protection expertise, notably in the domains of climate impact monitoring, noise/emission standards including assessment of non-CO₂ emission and policy impacts. The European Commission has established a framework for coordinating and funding the various SESAR projects in order to facilitate the implementation of SESAR. This framework contains Regulation (EU) 2021/116, which outlines the requirements for implementing Common Project 1 (CP1), a project involving the deployment of cutting-edge technology and practices for ATM, into action. The funding and implementation of certain SESAR projects and deliverables are covered by the Contribution Agreement with MOVE on SESAR Deliverables. The European Commission's DG MOVE is the SESAR Deployment Manager, which is in charge of organising and promoting the adoption of SESAR systems throughout Europe.

A core dimension considered by more recent sustainable technologies in aviation is the importance of lowering emissions and the impact aviation has on the environment. By lowering carbon emissions and improving fuel efficiency, green technologies like **hybrid-electric and hydrogen aircraft** have the potential to change the aviation sector (Section 3.1.4).

Hybrid-electric aircraft uses a combination of traditional fossil fuels and electric power to reduce fuel use and emissions. Compared to conventional aircraft, these aircraft have the potential to reduce emissions of greenhouse gases by up to 5%⁶⁷ as well as reducing noise and ensuring lower fuel consumption. Further details on hybrid-electric aircraft are presented in Appendix 11.

Electric aircraft, especially Vertical Take-off and Landing (eVTOLs), have a high potential to reduce the industry's carbon footprint and noise and make urban air mobility more accessible. Using electric aircraft and eVTOLs will save costs due to less maintenance and fuel costs than traditional aircraft⁶⁸. eVTOLs will also imply infrastructural and regulatory changes highly relevant to EASA. Regulatory agencies may need to adapt to new technologies and safety standards. These changes may require new certifications and training for pilots and maintenance crews and new air transportation regulations in urban areas. The eVTOL concepts were already discussed in Section 3.1.4.

Hydrogen fuel cells are incorporated into hydrogen aircraft to generate the electricity that powers the aircraft. Fuel cells use hydrogen stored in tanks to produce electricity, water, and heat. Only water vapour is released from hydrogen aircraft, which has the potential to cut greenhouse gas emissions by up to 90%⁶⁹. Hydrogen aircraft can reduce emissions and noise and increase efficiency as hydrogen fuel cells are more efficient than conventional combustion engines, resulting in lower fuel usage and operational expenses. The European efforts towards hydrogen were already discussed in Section 3.1.4.

⁶⁷ <https://www.airbus.com/en/newsroom/stories/2023-03-electrifying-the-sky>

⁶⁸ <https://www.carpenterelectrification.com/blog/benefits-electric-aircrafts>

⁶⁹ <https://www.clean-aviation.eu/h2-powered-aircraft>

Although the benefits have high potential, significant advancements in battery and fuel cell technology, infrastructure development, and safety measures are needed for these technologies to become viable alternatives to conventional aircraft. The regulatory environment for these newer technologies is still evolving and will continue to do so as these innovations will be needed to achieve climate goals.

Unmanned aircraft

Unmanned aircraft (UA) are now in the scope of Regulation (EU) 2018/1139, irrespective of their size (with the exception of small, tethered aircraft, as per Annex I to the Regulation). The further development of (civil) drones will change the marketplace as drones can deliver cargo or transfer passengers. In addition, the adoption of EU wide rules on the operations of civil drones, such as EU Regulations 2019/947 and 2019/945 are determining the development of the drone market. The risk-based approach does not distinguish between leisure or commercial civil drone activities. The drone regulations focus more on the weight and specifications of the civil drone and the operation it is intended to conduct. Regulation (EU) 2019/945 concerns predominantly unmanned aircraft that do not require an EASA certificate. Here the harmonisation of legislation in the EU market applies.

The development of the U-space regulation, adopted in 2021, is a step further toward integrating drones into European airspace alongside manned aircraft. U-space is a set of new services that provide safe, efficient, and secure airspace access for many drones by heavily automating certain activities and procedures. Since it addresses an appropriate interface with manned aviation and air traffic control, U-space is an enabling framework created to support any form of a routine mission in all classes of airspace and all kinds of environments, even the most congested. The U-space is deployed within the national airspace of the competent Member State. The U-space Regulation establishes and harmonises the requirements for manned and unmanned aircraft to operate safely in the U-space airspace to prevent collisions between aircraft and to mitigate air and ground risk. The U-space regulatory framework which is applicable since the 26th of January 2023 provide safe aircraft operations in all areas and all types of unmanned aircraft operations. In order to ensure a level playing field for the development of competitive U-Space services, this U-Space regulatory framework needs to be complemented by clear pricing rules for the Common Information Services (CIS) that are needed to enable safe air traffic management of drones, as well as on the pricing of and access to data necessary for such services. Those two aspects have been addressed by the Commission in the SES2+ proposal on the Single European Sky, which is currently under considerations of the co-legislators.

The new legislation on drones and the development of the U-space regulation should stimulate and change the drone market. The current EU legal framework already offers many possibilities for the operation of small drones used for recreational or professional purposes. However, the feedback received in the course of the preparation of the Drone Strategy 2.0 showed that new actions are needed at EU level, notably in urban areas, because the drone sector is developing rapidly with new innovative ways of using drones emerging at a fast pace requiring an assessment of the regulatory and enabling framework to ensure that these new services can thrive in the EU internal market and globally. Related technologies such as radiofrequency communication⁷⁰, Artificial Intelligence⁷¹, advanced sensors and improvements in power sources are opening new prospects. This will impact the aviation supply and demand for certain services, which will have consequences for EASA's resource needs.

Below is a summary of the impacts of the recent developments set out above on the points of comparison, classified using Harvey balls based on our expertise. The Harvey balls indicate the

⁷⁰ <https://eur-lex.europa.eu/legal-content/FR/TXT/?uri=celex%3A32014L0053>

⁷¹ <https://digital-strategy.ec.europa.eu/en/library/proposal-regulation-laying-down-harmonised-rules-artificial-intelligence>

estimated effect (the more filled in, the higher the impact). Green indicates a positive outcome, while red indicates a negative effect. The product is expected to be temporary if the colour is lighter, while a dark colour indicates a permanent result.

Figure 19. Impacts of the recent developments on the points of comparison



Source: Own composition based expertise

4. EVALUATION FINDINGS

This section presents the study's high-level, evaluation findings based on the data collected and analysed to date (i.e. as of February 17th 2023). The findings are presented at the level of the evaluation criteria of effectiveness, efficiency, relevance, coherence and EU added value outlined in the Tender Specifications for this evaluation.

The evaluation findings below are based on triangulated results from the points of comparison, desk research, online survey, targeted interviews, Commission's Call for Evidence, as well as the two workshops and the field visit to EASA. The full methodology presenting the different research tools used in this study is reported in APPENDIX 1 - Methodology.

Although this section of the (draft) final report presents triangulated answers to the evaluation questions (see APPENDIX 2 – Evaluation matrix), some of the findings presented in this section may still be subject to change based on further analysis and triangulation. This applies in particular to the findings presented under Section 4.1.2: in close cooperation with the Commission, an additional data collection activity is currently ongoing to gather further evidence on costs and benefits linked to Regulation (EU) 2018/1139 and EASA's tasks.

4.1 To what extent was the intervention successful and why?

As specified by Tool #47 of the Better Regulation Guidelines Toolbox⁷², 'success' is assessed in terms of the extent to which an intervention achieves its objectives:

- effectively;
- efficiently; and
- in coherent way.

This section presents the analysis of the three evaluation criteria, highlighting the main themes per criterion which, taken together, help to explain the extent to which the intervention was successful.

4.1.1 Effectiveness

As per the Better Regulation Guidelines, an assessment of effectiveness considers the progress made towards the achievement of the objectives of a policy intervention (for the purposes of this study, Regulation (EU) 2018/1139 and EASA), analysing evidence linked to questions of why, whether and how these changes are linked to the intervention. The assessment of effectiveness thus assesses whether the intended outcomes have been achieved (or, are likely to be achieved in the future). Concretely speaking, the analysis in this section considers how successful Regulation (EU) 2018/1139 and EASA have been in achieving or progressing towards their objectives (Section 2.5).

This section presents the **findings** structured according to three categories, in conjunction with the main evaluation questions under the effectiveness criterion (APPENDIX 2 – Evaluation matrix): [1] **Overall positive and negative impacts** of the Regulation and of EASA's activities, including in **response to external shocks** (EQ3, EQ4); [2] effectiveness of EASA's **product certification, rulemaking** and **standardisation (monitoring) tasks** (EQ1, EQ2) and [3] effectiveness of **stakeholder consultations and guidance material** provided by EASA (EQ1).

To properly assess the effectiveness of Regulation (EU) 2018/1139 and EASA, a general remark should be made on the different levels of "maturity" of the activities performed by EASA within its mandate. In fact, while safety is the core objective of EASA since it started its operations in 2002, the evolution of EASA's mandate to cover new responsibilities (e.g. environmental protection and

⁷² European Commission (2021). Better Regulation Guidelines, Toolbox, Tool#47

research & innovation) took place only in 2018 with Regulation (EU) 2018/1139. Therefore, any consideration on the effectiveness of EASA and Regulation (EU) 2018/1139 must acknowledge that "legacy" activities (e.g. rulemaking and certification) can be evaluated over a longer timeframe, whilst other activities included in the scope of EASA's work in 2018 (e.g. tasks related to sustainability or drones) might still be in the process of being fully implemented.

4.1.1.1 Overall positive and negative impacts of the Regulation and of EASA's activities, including in response to external shocks (EQ3, EQ4)

As stated in the latest EASA's Single Programming Documents (SPD) for the periods 2021-2023 and 2022-2024, EASA's strategy during these periods is underpinned by the following key drivers: "Safety, Sustainability, Competitiveness and Resilience". These drivers are translated into the key activities and areas of operation of the agency, and these reflect the specific objectives set out in Article 1 of Regulation (EU) 2018/1139.

Firstly, there is wide consensus within the aviation industry and the National Competent Authorities (NCAs) on the positive impacts of EASA's activities on aviation safety in Europe, generally speaking. Overall, the key message emerging from the fieldwork is that EASA and Regulation (EU) 2018/1139 have contributed to European integration in the area of air transport resulting in **benefits for safety and efficiency** for the aviation industry. EASA's staff and experts within EASA, specifically on the certification standards, are mostly perceived as "true experts" in their domains. Notably, most stakeholders⁷³ pointed out that even though the harmonisation of rules across countries is not yet fully consistent (more on this matter is presented in the following paragraphs) and that this does create frictions, ultimately this does not undermine the overall quality of safety standards at EU level.

Results from the survey targeting aviation industry players and NCAs on the effectiveness of Regulation (EU) 2018/1139, show that 22 out of 119 (18%) of respondents believed that the Regulation led to a reduction in the number of occurrences (i.e. accidents and incidents) compared to the previous Regulation (EC) 216/2008. Moreover, a total of 53 respondents (44%)⁷⁴ instead reported that the 2018 Regulation had at best a neutral impact on the reduction of occurrences, if not a small or no impact.

This finding, which might seem surprising in light of the positive views on EASA's impact on safety expressed in the paragraph above, is in fact consistent with another key message which emerged during the targeted interviews as explained in the next paragraphs. On the one hand, the existence of EASA was very much welcomed by all stakeholders: the pre-EASA scenario, where the regulatory framework coming from the international body of ICAO was directly transcribed by NCAs, resulted in less harmonised rules across the EU with more possibilities of different interpretations of the rules across Member States. On the other hand, this **result was achieved to a certain extent already** with the intervention which is the baseline for this evaluation (i.e. the **Regulation (EC) 216/2008**). Therefore, the chart above suggests that while most stakeholders recognise EASA's positive impacts on aviation safety since the entry into force of the 2008 Basic Regulation, a smaller share of stakeholders makes a clear additional link between the New Basic Regulation of 2018 and a further reduction in the number of occurrences.

Another element highlighted during the fieldwork is the role played by EASA in responding to external shocks and when facing political pressure. Overall, **widely positive** feedback was reported both from the aviation industry and the NCAs in relation to **EASA's proactivity** in ensuring safe flight operations during the **COVID-19 pandemic**, or in reaction to the current war in Ukraine. Increased flexibility in terms of requirements for standardisation visits were particularly welcome

⁷³ Further details on the types of stakeholders sharing this opinion are provided in the following paragraphs

⁷⁴ Sum of respondents who answered "neither to a great or small extent", "To a small extent" and "not at all".

by NCAs, and additional guidelines related to health standards during the COVID-19 pandemic were appreciated by the industry (although, a concern is that these improvements will disappear once the pandemic is over). Similarly, during February 2022 when the Russian invasion of Ukraine started, EASA staff noted during the field visit that more than ten alerts were issued by the agency even before the real hostilities started. And within only two hours after the first bomb was dropped, EASA was already able to publish a conflict zone bulletin recommending avoiding Ukrainian and Russian airspaces. These prompt reactions by EASA represent an improvement compared to the past, when EASA's response to the Boeing 737-MAX incidents was considered slow by some parts of the aviation industry, leading to different approaches across Member States. When it comes to The UK withdrawal from the EU, there is certainly willingness within EASA at the technical level to keep cooperating with the UK, however it is worth noting that the UK withdrawal from the EU had an impact from an administrative point of view. For instance, the UK operators are now considered as third-country operators (TCOs), affecting the oversight and organisation approvals' workload and having as practical consequence the fact that licenses issued by the CAA (no longer operating under EASA) do not benefit from mutual recognition within the EU.

However, there was wide consensus between the aviation industry and NCAs on a potential risk: **if EASA has to react effectively following the political momentum in view of lasting societal challenges** (e.g. not only external shocks, but also being more involved in wider EU policy objectives such as EU Green Deal), **it is essential for the agency to keep enough focus on its core mandate**. Notably, the core mandate of EASA not only involves aviation safety, but also environmental protection: **a clear link should be always made between the mandate of EASA, the prioritisation of its activities and an adequate level of financial resources, to ensure the highest possible level of aviation safety**. A further discussion on EASA's resources in relation to the expansion of the mandate with Regulation (EU) 2018/1139 is presented in Section 4.1.2.

Another topic which should be mentioned here is **innovation**, which forms a cross-cutting task for EASA activities. Advancing on **innovation requires** creating a **balance** between on the one hand **managing the current**, core tasks of EASA and on the other hand addressing the **need to prepare for future areas and tasks**. At strategic and political level, there are different levels of support for the balance between both approaches. Innovation also naturally means taking more risks and investing in the future which is in a way deviating from the traditional mindset of EASA. One solution which was proposed, by EASA and parts of the aviation industry, is the use of '**regulatory sandboxes**' to give industry the **possibility to innovate and experiment** whilst still ensuring the basic level of safety which is required. EASA notes that Article 71 is not fully fit for these purposes: a re-thinking of Article 71 could be considered, whereby EASA could have a leading role by allowing for testing innovative solutions in real life conditions (e.g. experimental flights), rather than providing guidance on exemptions⁷⁵. In addition, EASA also notes that new products are often closely linked with new operations, which creates issues with the current regulatory responsiveness to innovations (as rules on operational aspects require a longer timeframe to be amended). Finally, experimenting in real life conditions might allow regulatory learning, a quicker regulatory drafting process as well as the gathering of elements for more effective performance-based rules.

Based on the Commission IA (see points of comparison in Section 2.6), the expected impacts of the intervention were that, by removing unduly prescriptive regulations and offering a variety of ways to show compliance, it would have been **easier to implement new technologies**. Although it is not possible to establish a robust causal link between the intervention and the impacts on

⁷⁵ Currently, for certificates issued to aeronautical products, parts and non-installed equipment, aerodromes and their safety-related equipment, operators of aircraft and aerodromes, ATM/ANS systems and ATM/ANS constituents and ATM/ANS providers, exemptions can be granted only by Member States and are linked to urgent unforeseeable circumstances or urgent operational needs.

innovation, as previously displayed in Section 3.1.4, there is evidence that the current European regulatory framework at least does not hamper new technology for aviation: in fact, Europe is in the lead or at pace with the rest of the world in electric aircraft technology or Advanced Air Mobility (AAM) R&D. Finally, as previously mentioned in Section 3.2, a concrete application of EASA's role in innovation is linked to the environmental protection mandate of the agency. For instance, under **the SESAR deployment framework and the Clean Aviation programme**, EASA supports these programmes with its safety and environmental protection expertise, notably in the domains of climate impact monitoring and noise/emission standards, including the assessment of non-CO2 emission and their impacts.

4.1.1.2 Effectiveness of EASA's product certification, rulemaking and standardisation (monitoring) tasks (EQ1, EQ2)

Certification

According to the definition laid down in Article 3 of Regulation (EU) 2018/1139, the activity of 'certification' consists on:

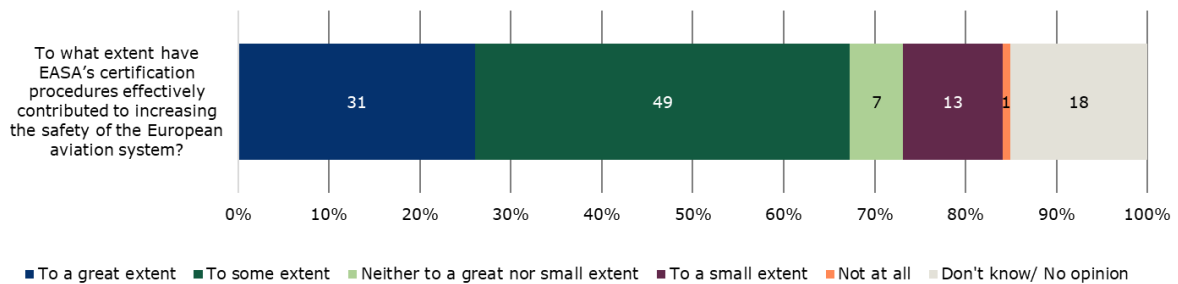
"...any form of recognition, through the issuance of a certificate attesting compliance, that a legal or natural person, product, part, non-installed equipment, equipment to control unmanned aircraft remotely, aerodrome, safety-related aerodrome equipment, ATM/ANS system, ATM/ANS constituent or flight simulation training device complies with the applicable requirements of the Regulation and of the delegated and implementing acts adopted on the basis thereof".

Looking at EASA's internal KPI reports⁷⁶, relevant information is available with regard to the progress encountered in product certification activities. Based on such KPI reports, in 2018, the outputs for certification were on-track, with delays in the technical acceptance of incoming occurrences. In 2019, delays were encountered in the occurrences backlog monitoring rate. Moreover, in the same year, EASA's KPI reports note that airworthiness directives have been delayed and the initial airworthiness (IAW) performance was lower than initial targets. However, EASA notes that the KPI considered to support this statement is measuring the gap between planned and performed hours, and not the effectiveness of the "final product", which is to ensure that the design of aviation products and parts is safe. Since 2020, delays in certification were still identified in relation to the occurrences backlog monitoring. Appendix 4 provides further information on EASA's KPIs for certification tasks.

Evidence from the survey with aviation industry players and NCAs shows that **EASA's effectiveness on product certification** is seen as **largely positive**: 31 respondents (26%) believed that EASA's certification procedures effectively contributed to increasing the safety of the EU aviation system to a great extent, while it was the case "to some extent" for 49 respondents (41%).

⁷⁶ EASA (2018). WP17b Historical KPI Timeline and EASA (2022). WP11 Status of EASA KPIs

Figure 14. To what extent have EASA's certification procedures effectively contributed to increasing the safety of the European aviation system? (n=119)



Rulemaking

Concerning the agency's **rulemaking activity**, as defined by EASA's SPDs, it ensures that⁷⁷:

"its regulatory proposals deliver maximum safety and environmental benefits at minimum cost to citizens, businesses and workers without creating unnecessary regulatory burdens for Member States and EASA itself. To that end, EASA designs regulatory proposals transparently, based on evidence, easily accessible; understandable by those who are affected, and backed by the views of stakeholders".

EASA issues the following types of rules: opinions, certification specifications, acceptable means of compliance, guidance material. These rules are defined in the following way:

- **Opinions:** EASA's suggestions in the form of *opinions* are evaluated by the European Commission and, subsequently, 'Implementing rules' are adopted by the Commission as legally binding law. Opinions are formulated by EASA after issuing terms of reference (ToR) for a rulemaking task and after the creation of the notice of a proposed amendment (NPA) and the consultation period that generates a comment-response document.
- **Certification specifications:** non-binding technical standards adopted by EASA allowing the industry to meet the essential requirements of the Basic Regulation.
- **Guidance material:** non-binding explanatory and interpretation material on how to achieve the requirements contained in the Basic Regulation, the implementing rules, the acceptable means of compliance, and the certification specifications.
- **Acceptable means of compliance:** non-binding rules where the responsibility to ensure compliance sits with the National Aviation Authorities. This type of rule serves as a means by which the requirements contained in the Basic Regulation and the implementing rules can be met.

A key element to properly understand EASA's rulemaking lies therefore in the different legal nature of 'implementing rules', 'delegated acts' and 'certification specifications'. While **certification specifications** are **non-binding technical standards** adopted by EASA, **implementing rules** and **delegated acts** are adopted by the Commission as **legally binding law** involving a political negotiation⁷⁸: EASA's **rulemaking** activities in all the **operational aspects of aviation** require consultations with EASA Member States within the EASA Committee, as Member States have to implement the activities stemming from such rules. Implementing rules and delegated acts are

⁷⁷ EASA's Single Programming Document 2021-2023, p.47

⁷⁸ This is particularly the case for delegated acts, in which the European Parliament takes part to the discussion

more cumbersome to be updated by their legal nature, **limiting** the **pace** at which **innovative technical solutions** are embedded into the legal framework.

Data on EASA's outputs on rulemaking were collected from the agency's past European Plans for Aviation Safety⁷⁹, presenting the most relevant publicly available information on the numbers and purpose of rulemaking tasks for the past years in each edition. These 5-year plans shed light in EASA's overall planning of its rulemaking tasks and they provide a holistic approach to the actual capacity of the regulatory system in a balance of hard law and soft law.

Evidence drawn from these plans show that **since 2019, EASA's regulatory framework has gone through a 'cool-down' period**, given the propositions of numerous stakeholders that expressed their view in relation to the burden on Member States and industry. This 'cool-down' in the rulemaking process is materialised by the **stabilisation and reduction of opinions** delivered every year. This shows that rulemaking since the entry into force of Regulation (EU) 2018/1139 was largely adapted to the implementation, but with considerations made to the burden that new rules may impose on the aviation sector. In addition, the **average duration of rulemaking tasks** was described as **'significantly above target'** in the **2019-2023** edition of the EPAS, which further identifies a **delay in rulemaking tasks**. Since 2020, the **pandemic** had also **impacted the delays in rulemaking activities**, in a period of extreme pressure on all aviation stakeholders, at all levels⁸⁰. Appendix 4 provides further details on EASA's KPIs for rulemaking tasks.

As recognised by EASA itself, as well as by NCAs and industry players, the **inclusive nature** and the thorough steps of the **rulemaking process** imply lengthy discussions, where EASA has to strike the balance between a wide range of stakeholders' views. In fact, according to EASA staff interviewed during the field visit, while stakeholders from the **aviation industry** often request **performance-based** and non-prescriptive rules, **Member States** tend to ask for **more prescriptive rules and clearer guidance** on implementation. Rulemaking by EASA (as required by Article 4 of Regulation (EU) 2018/1139) should be effectively performance-based and focusing on *'objectives to be achieved, while allowing different means of achieving compliance with those performance-based objectives'*. While this **objective is recognised by EASA** (in its programming document and other work plans as well as based on the inputs provided during the field visit), some stakeholders (i.e. some NCAs during the MAB workshop and industry players) warned against the tendency to overregulate on EASA's side.

An example made in this sense concerns the rules on certification of simulators, perceived by an industry player active in this domain as prescriptive. In fact, these are device-based rules, rather than being flexible in setting out principles which are independent from the device. During the field visit, EASA staff acknowledged this issue, where they mentioned that in some areas there is too much focus on certifying individual devices (e.g. flight simulators) or on separate locations, because right now the Regulation requires to inspect each individual simulator rather than the organisation which is as such responsible for the simulator.

EASA staff during the field visit argued that **more flexibility** in the **use of certification specifications, acceptable means of compliance** and **guidance materials** rather than implementing rules and delegated acts would increase the effectiveness of the agency. Overall, as highlighted by EASA staff within the context of the field visit, EASA by its nature is a consensus-seeking body: **rulemaking** by EASA has to ensure that **both aviation industry** and **Member**

⁷⁹ The EPAS is the instrument used to prioritise and manage actions to maintain and further improve aviation safety and environmental protection in Europe. It seeks to do this while ensuring efficiency, proportionality and level playing field at the same time. EPAS is a safety action plan derived from the main safety risks identified at European level. Description of EPAS available at: <https://www.easa.europa.eu/community/content/priorities-and-safety-actions>

⁸⁰ Rulemaking activities during the pandemic focused on targeting the urgent issues caused by COVID-19 at that time, such as validity of pilot licences, managing platform for Covid certificates, issuing recommendations for safe travel

States are on board with the standards proposed by the agency, as this ensures most effectively that a high level of safety is ensured across the EU. The rulemaking process is structured in a way that EASA puts forward draft Regulations⁸¹ following stakeholder consultations, then such drafts can still be amended by the EASA Committee or the Commission (following comitology procedures) until the final adoption by the Commission. While there is overall consensus from industry aviation stakeholders on the nature of rulemaking, they also recognise that it is structurally difficult to change these procedures which would require formal institutional negotiations at EU level.

Standardisation

Delays in standardisation activities (inspections) are discussed in detail in the EASA's internal KPI reports⁸². In fact, as identified in the first article of Regulation (EU) 2018/1139, EASA's standardisation (i.e. monitoring) activities refer to EASA's role in harmonising rules at European level and in achieving and maintaining a high and uniform level of safety in the EU through the monitoring of how National Competent Authorities apply the common EU rules on aviation safety. EASA is continuously assessing how NCAs implement rules, such as country status information on indicators based on data received from NCAs through the Standardisation Information System (SIS)⁸³.

As a **direct impact of the COVID-19 crisis** in relation to monitoring activities carried out by EASA, the **standardisation programme was significantly reduced** with only one third of planned inspections taking place in 2020 and as a result the number of findings having dropped dramatically compared to previous years. On the perceived effectiveness and quality of EASA's **standardisation activities**, general recognition of EASA's work was highlighted by most MAB members enquired during the MAB workshop: an **improvement** was flagged **in comparison to the previous Basic Regulation**. However, several MAB members also argued that the preparation and the composition of the inspection teams by EASA sometimes made cooperation with the agency hard: this was due to the very **different approaches being taken by inspectors**, with some of them for example providing more guidance and examples of best practices to accompany their assessment than others.

4.1.1.3 Effectiveness of stakeholder consultations and guidance material provided by EASA (EQ1)

One important task of EASA is to consult with stakeholders from the aviation sector, particularly with Member States and with the industry. For these activities, EASA has a number of bodies and groups⁸⁴:

- Advisory Bodies (Member States Advisory Body and Stakeholder Advisory Body, both having technical bodies per domain)⁸⁵;
- Collaborative Analysis Groups (CAGs);
- European Network of Analysts (NoAs);
- Stakeholder and NCA experts and representatives in rulemaking groups;

⁸¹ Notably, as regards environmental protection requirements, rulemaking process is driven by ICAO (as referenced in Article 9 of the Regulation). EASA would need to be enabled by a new legal basis to define European Environmental Standards (replacing the link from Article 9 to ICAO standards)

⁸² EASA (2018). WP17b Historical KPI Timeline and EASA (2022). WP11 Status of EASA KPIs

⁸³ The SIS is a website dedicated to NCAs to submit country status information: <https://www.easa.europa.eu/en/data-protection/standardisation-information-system-sis>

⁸⁴ European Plan for Aviation Safety (EPAS) 2020-2024.

⁸⁵ <https://www.easa.europa.eu/en/the-agency/other-easa-boards-and-bodies/advisory-bodies>

Additionally, EASA consults stakeholders through:

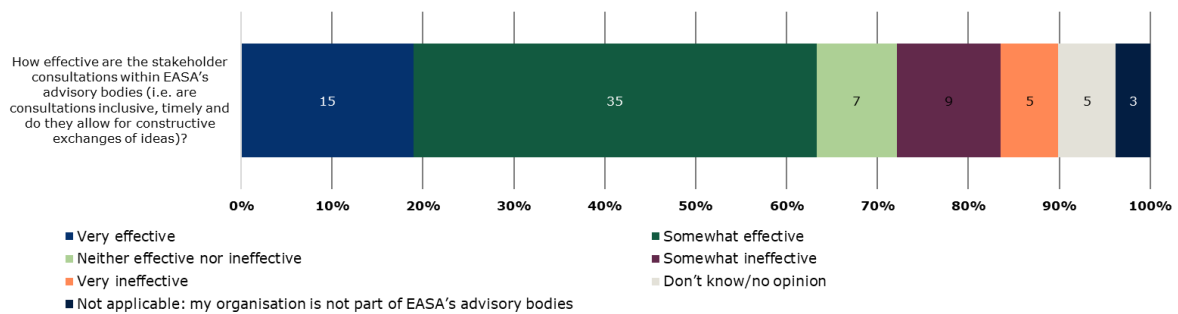
- Open public consultation on Notices of Proposed Amendments (NPAs);
- Targeted consultation to groups of affected stakeholders;
- Working groups of experts.

In the analysed documents that referred to EASA's stakeholder consultation activities, most often it was highlighted that the process was seen as crucial in ensuring that actors are consulted when relevant (i.e. Member States, stakeholders, experts etc.).

Analysed meeting minutes from the MAB and SAB have been most relevant in providing views on consultation activities since 2018 across all analysed documents. In addition to the frequently outlined importance of consultation activities, a recurring theme brought by members to MAB and SAB meetings is the pivotal role of EASA in respecting the due process when consulting all relevant stakeholders without ad hoc changes in procedures⁸⁶.

Overall, when asked about the **effectiveness of stakeholder consultations** within **EASA's advisory bodies** (i.e. the Member States Advisory Body, 'MAB', and Stakeholder Advisory Body, 'SAB'), survey respondents were **largely positive**: 35 respondents (44%) found these stakeholder consultations somewhat effective, while 15 respondents (19%) even believed these are very effective.

Figure 15. How effective are the stakeholder consultations within EASA's advisory bodies (i.e. are consultations inclusive, timely and do they allow for constructive exchanges of ideas)? (n=79)



These results are consistent with the opinions of interviews stakeholders, as noted in particular by a stakeholder active in the field of ANS that observed how the **advisory structure of EASA improved significantly through the years**: although there has been no specific change with Regulation (EU) 2018/1139 on this matter, the relationship with EASA improved after 2018. Similarly, EASA staff during the field visit noted that the relationship with Member States improved particularly, **shifting from a competitive to a more and more cooperative approach**.

Nevertheless, there is still room for more improvement: while both stakeholders from the industry and EASA itself acknowledge the value of having stakeholders involved at an early stage (i.e. through rulemaking groups and early consultation feedback), it might be **more efficient to have more targeted consultations with different stakeholder groups besides the Advisory Bodies**. With this goal in mind, as mentioned in the first EASA Management Board Decision of 2022⁸⁷, EASA launched a review of the Advisory Bodies aiming to create activity groups and

⁸⁶ Based on MAB and SAB meeting minutes.

⁸⁷ <https://www.easa.europa.eu/en/the-agency/management-board/decisions/easa-mb-decision-no-01-2022-rulemaking-procedure-repealing-mb>

communities with a limited timeframe of operativity related to a specific topic. Advisory and Technical Bodies will stay, but ad hoc activity groups will be created.

Industry players enquired during the fieldwork about the effectiveness of EASA's guidance materials and stressed the importance of the efforts EASA has to make to provide clear guidelines when it comes to its rulemaking. In fact, the potential shortcoming of non-prescriptive regulations lies in a potentially bigger leeway for NCAs in deciding how to understand and implement the rules. **Ground handling and requirements for air operators** are mentioned as clear **examples of discrepancies** across different EASA Member States. In fact, as previously mentioned in Section 3.1.1, a Ground Handling Regulation is foreseen only for the first quarter of 2024: thus, the current rules on ground handling are subject to very different national requirements. Therefore, **guidance by EASA in the implementation of regulations is key** to ensure a framework which is **performance-based** but also harmonised across countries.

In particular, the **effectiveness of Acceptable Means of Compliance** was a frequently debated topic by aviation industry players. 'AMCs' are **non-binding standards adopted by EASA** to illustrate means to establish compliance with the Regulation and its Implementing Rules: organisations can follow AMCs to demonstrate compliance with the Regulation, then CAs are in charge of recognising the compliance of such organisations with AMCs (and thus EU rules). Although there is an overall recognition of a **good quality of guidance materials** (including AMCs), as argued in particular by a stakeholder from the aerodrome segment, the **temporal gap between EASA's regulations** and the **publication of the related AMCs** is too wide. If AMCs are not created at the same time as the regulations, both NCAs and operators could struggle with the implementation of the regulations. This is particularly relevant when AMCs are published at the same time as the applicability date of the regulations these are referring to. However, the same stakeholder from the aerodrome segment also warned against the tendency of addressing this issue by being more prescriptive in the regulatory approach. If **implementing rules become too detailed**, rather than leaving space to guidance through soft law (i.e. the AMCs), the **risk** would be (as previously mentioned) ending up with **rigid rules** that would require a complex and burdensome political dialogue to be changed.

4.1.2 Efficiency

This section presents the **findings** concerning the efficiency of Regulation 2018/1139 and the Agency more generally. As per the Better Regulation Guidelines, an assessment of efficiency considers the relationship between the resources used by an intervention (in this case, Regulation 2018/1139 and EASA) and the changes generated by the intervention (both positive and negative). Differences in the way an intervention is approached and conducted can have a significant influence on the effects, thus the criterion of efficiency also explores whether other choices (e.g. as demonstrated via different Member States) achieved the same benefits at a lesser cost (or greater benefits at the same cost). The starting point for the assessment of efficiency is an assessment of costs, which is supplemented by qualitative evidence on costs and benefits collected through stakeholder consultation activities.

The following section is structured according to two broad categories, in conjunction with the two main evaluation questions under this criterion: [1] sufficiency and adequacy of the human and financial resources of EASA (EQ5) and [2] proportionality of the regulatory costs of Regulation 2018/1139 to stakeholders (EQ6).

This first section presents an analysis of whether the **additional human and financial resources allocated to the Agency were sufficient and adequate** to achieve its tasks. It should be noted that the temporal scope of the evaluation is from 2018 to 2021, thus the analysis of efficiency will specifically look at the developments over this period.

4.1.2.1 Financial resources in EASA

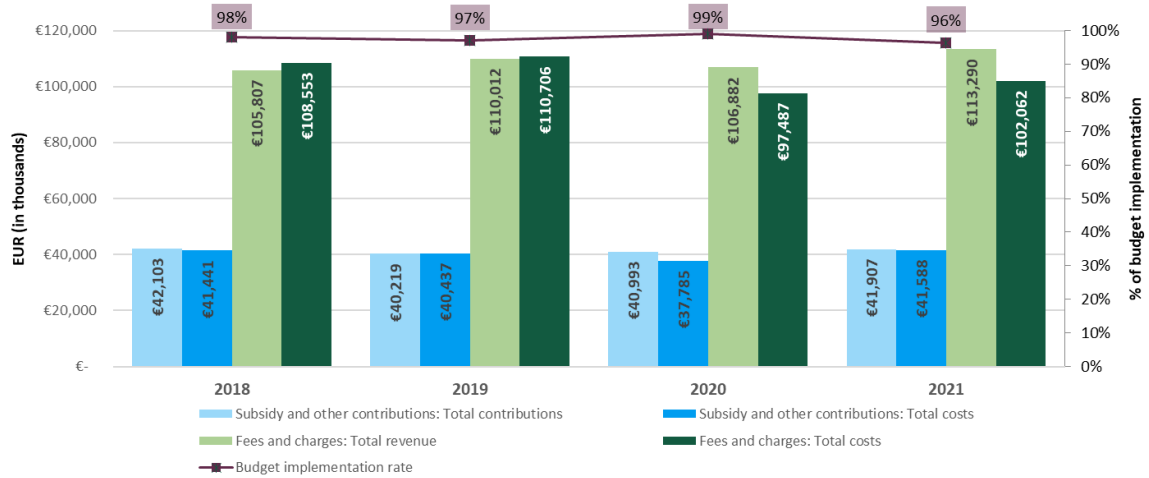
The first aspect of the analysis of efficiency pertains to the assessment of the financial resources of the Agency. The figure below outlines the total contributions (i.e. subsidies and fees and charges) and costs (e.g. through standardisation or rulemaking activities). Overall, the differences between each of the financial years remained stable. This was further set out in sections 3.1.8 and 3.1.9 in the evolution of the points of comparison analysis which noted that over the baseline period (2013-2017) costs and revenue streams displayed increasing trends, while the period 2018-2021 showed a more stable level of costs and contributions.

Indeed, as a result of comprehensive⁸⁸ in year budget monitoring conducted by EASA, the final budget implementation rate per year, remained high across the reference period, ranging from 96.3%-99%, surpassing the Commission target of 95%. While these results over the reference period do not speak directly to the efficiency of the Agency in terms of the efficiency of particular activities, they do **suggest that EASA has been efficient in adequately using the annual budget available, and that the Agency has been consistently successful in achieving a high budget implementation rate.**

At a more granular level, Figure 12 also presents the breakdown of the revenues over the period 2018-2021, accompanied by the main categories (in percentages) of revenue. The budget is funded from different sources, with fees paid by industry (i.e. through various fees and charges), accounting on average for around 63% of the total EASA budget. This is accompanied by the funding from the European Commission (i.e. through a subsidy) mainly used to perform rulemaking activities which accounts, on average for 22% of the total EU contribution revenues.

⁸⁸ As defined in each of EASA Final annual accounts, the word "comprehensive" refers to a thorough and complete analysis that was conducted by EASA when monitoring the budget in order to achieve a high implementation rate. This suggests that the monitoring process was rigorous and covered all aspects of the budget, leaving no gaps or oversights.

Figure 16. Total contributions and costs 2018-2021 (in thousands)



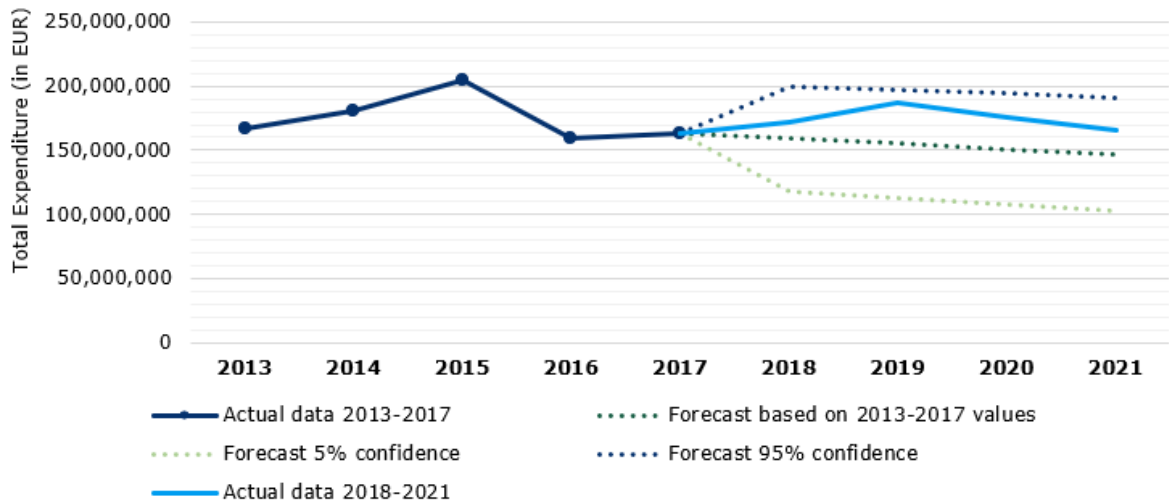
Source: Own composition based on EASA yearly annual reports

It is also worthy of note that the COVID-19 pandemic had a significant impact on the Agency's activities, as well as the aviation industry more generally. The challenges that many industry customers faced brought about several impacts on EASA's revenue from fees and charges, with reductions in the estimations from the originally planned EUR 125 million to EUR 106.5 million received in 2020 - a reduction of EUR 18.5 million⁸⁹. It is worthy of note that as a result of the pandemic, the revenues from fees and charges were increased from 2020 by around 25% in order to cover increasing costs. Subsidy revenue did not increase however to cover increasing costs for activities funded by subsidies.

As part of the Commission IA, as discussed in the points of comparison section (see section 2.6), it was foreseen that the Regulation would incur an additional 1.822 million in annual costs in EUR (incl. staff costs). The figure below presents the total expenditure by the Agency over the period 2013-2021, of which a forecast was generated to display the likely change in the budget, had the Regulation not been put into force. This outlines that the actual expenditure of the Agency was higher than what was foreseen as part of the Commission IA. This, however, does not necessarily point to efficiency losses within the Agency, but suggests that costs were greater than anticipated. This is because there may be various factors that led to the increased costs (such as changes in the market conditions, unexpected events or developments, the COVID-19 pandemic). Therefore, it cannot be concluded that the Agency was inefficient solely based on the costs being higher than anticipated in the IA.

⁸⁹ EASA (2020). 2020 Final Annual Accounts. Available at: https://www.easa.europa.eu/sites/default/files/dfu/easa_mb_decision_02-2021_on_the_2020_annual_accounts_-_annex.pdf https://www.easa.europa.eu/sites/default/files/dfu/easa_mb_decision_02-2021_on_the_2020_annual_accounts_-_annex.pdf

Figure 17. Total expenditure values and forecast (2013-2021)

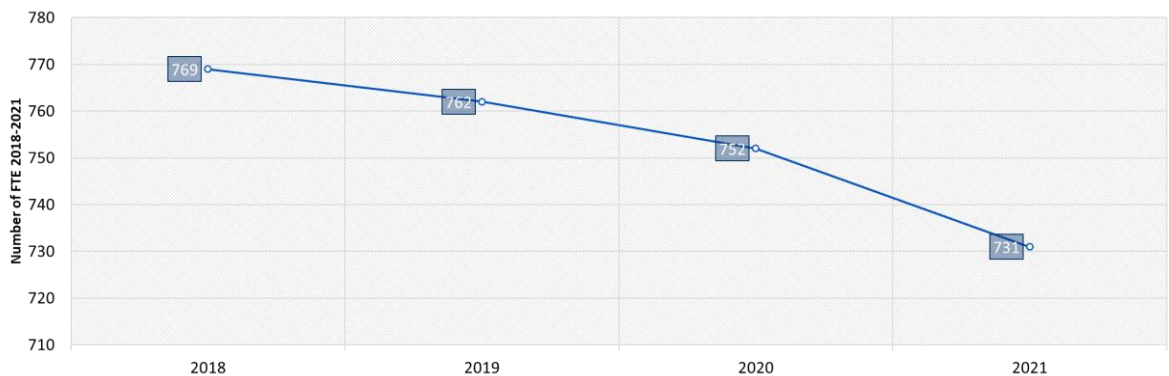


Source: EASA Final Annual Accounts 2013-2022.

4.1.2.2 Human resources in EASA

As a point of comparison (see section 3.1.9), the IA foresaw that the Regulation would require an additional 9.5 FTEs in total. The number of FTEs within EASA is presented in the figure below, of which it is worthy of note that there has been a **steady decrease in the total number of FTEs, falling from 769 FTEs in 2018 to 731 FTEs in 2021**. This fall in FTEs corresponds with a more general decrease in the number of staff within the Agency from 2020-2021.

Figure 18. Number of FTEs within EASA 2018-2021



Source: EASA 2018-2021 Consolidated Annual Activity Reports.

Nevertheless, the analysis from the desk-based review outlines that while the scope of EASA has expanded since the Regulation (EU) 2018/1139, there has been a steady decline in the time spent in terms of FTEs across each of the activities. This aspect was acknowledged in the 2018 CAAR report⁹⁰ which noted that within the context of a growing aviation sector, with new technologies and innovative products, EASA has enlarged its competencies with the entry into force of the new Basic Regulation. As such, the **increase in workload was accompanied by a relatively stable**

⁹⁰ EASA (2019). Annual Activity Report 2018, Cologne, June 2019. Available : <https://www.easa.europa.eu/en/downloads/99285/en>

level of resources resulting in a **large challenge for EASA** to fulfil all its tasks and objectives in 2018.

Indeed, analysis of the interviews conducted with EASA personnel uncovered similar observations regarding the efficiency of the allocation of resources. Eight out of the 14 EASA personnel that commented on the main costs and benefits associated with the activities performed noted that while the tasks and demands under each of the activities increased over the period 2018-2021, the budgetary planning and resources did not increase in parallel. One particularly **salient issue was the domain of innovation** where several EASA personnel emphasised how the Regulation may not have foreseen the resources required to perform the tasks and work required to enact activities in this domain. Another topic which was mentioned during the field visit with EASA concerns the organisational element of the **drones' department**, which currently falls within a small, horizontal team directly under the Executive Director. Going forward, several EASA staff argued that the **current resources would not be sustainable** in the future given the expected increase in the volume of EASA's tasks and activities in this domain, generating inconsistencies between roles and relevant tasks: these tasks would have to be split across the different existing Directorates, as is already the case with the other domains of the agency.

In line with the analysis from the desk research (see Appendix 3), EASA personnel also raised that there are discrepancies between the efficiency of domains and activities funded under EASA. Indeed, the **level of maturity of the certain activities/domains played a role in the efficiency of resources**, particularly in domains which were introduced following the introduction of the Regulation in 2018. Thus, as a potential mitigation against the differences between domains/activities, there was a suggestion for EASA to develop a more long-term approach to the allocation of resources. This was seen through enacting a **shift from a "domain-centric" standardisation approach to a "country-centric" approach**, increasing the alignment with ICAO. For example, it was suggested that the main focus of standardisation could be placed on NCAs' performance (e.g. safety management issues at organisation level) rather than diving deep at domain level. Indeed, it was further noted that the lack of a country-centric approach can limit the degree of effectiveness of inspections (e.g. in terms of scalability and a mixed approach). It should be caveated however that this point was only raised by two EASA personnel and may not be representative of a wider view from other staff members.

It should be noted that the impact of the COVID-19 pandemic was raised, echoing findings from the desk research which found that the COVID-19 pandemic had a significant impact on EASA's activities, as well as the aviation industry more generally. The aftermath of the pandemic was also seen by EASA personnel to have brought about **new challenges in the recruitment of new staff** to the agency. In particular, it was noted that the recruitment process when EASA was first established was seen to be comparatively simpler due to the experts' profile being higher (i.e. AD8) which helped to attract the 'right' profiles – something that was seen to be more challenging in recent years, with some of the vacancies being re-published with increased conditions.

While challenges in recruitment were specified by EASA personnel during the field visits, the **primary reason for limited recruitment in recent years can be more strongly attributed to the available financial capacity to hire additional FTEs**. This is in line with the analysis from the desk research, which found that EASA has been operating with a relatively stable level of resources despite an increase in workload and demands since the introduction of the new Basic Regulation in 2018. The analysis also notes that there have been several positions at higher levels (i.e., director level) and in certain AST grades that have consistently not been able to fill the authorised number of staff under the available budget.

As a result, over the period 2018-2021, the number of temporary staff recruited compared to the authorised amount fell, on average by 5%, with the rate of difference evolving from -2% in 2018 of placements to -8% of placements filled in 2021. To understand this decline, it should be noted

that the current structure of authorised posts within the Agency was noted by EASA personnel to not necessarily reflect current needs, thus there can be limitations in EASA's flexibility to adjust the establishment plan. It is also important to note that these numbers should be understood within the context of the COVID-19 pandemic which created a degree of uncertainty with regards to the hiring of new staff. Despite this, while the percentage of temporary staff being recruited was falling before the pandemic, it is likely that it the situation would have remained largely unchanged.

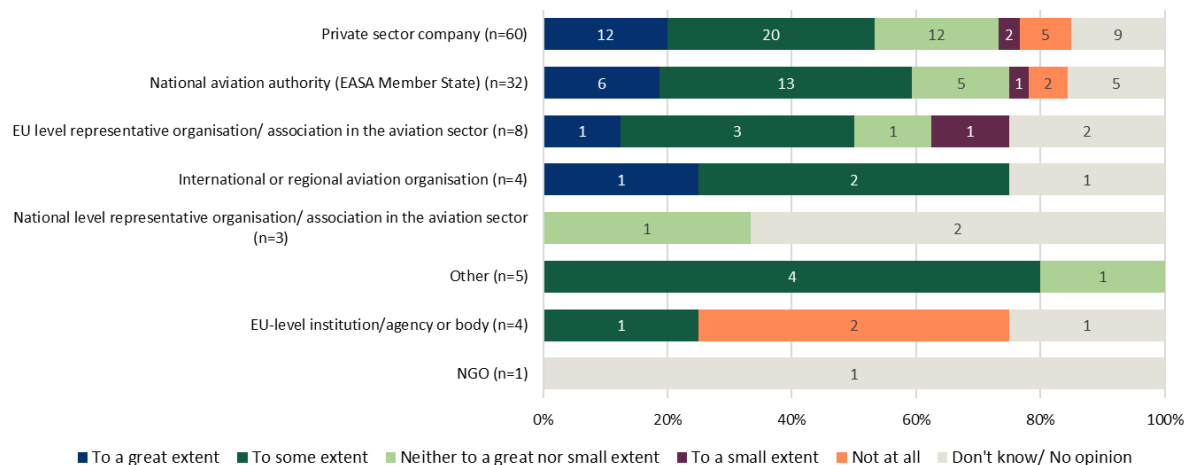
While EASA personnel did not see that this generated concrete problems in terms of the competence of the staff within the agency, there was an expectation that this issue would be addressed in the future, considering the general assumption that the job market would not only recover from the pandemic but also become more competitive and employee driven over time.

4.1.2.3 Proportionality of the regulatory costs of Regulation 2018/1139 to stakeholders (EQ6)

As a core part of its Better Regulation agenda, the European Commission is committed to achieving the best possible results for EU citizens at achieving policy goals at a minimum cost while delivering the best maximum benefits to citizens, businesses and workers. As such, it is important to assess the (types of) costs⁹¹ imposed by the Regulation 2018/1139 and the Agency more generally on all relevant stakeholders, and how these compare to the benefits the Regulation has achieved to date.

To start, results from the stakeholder survey uncovered that 54% of stakeholders⁹² believed that the introduction of Regulation (EU) 2018/1139 led to increased costs for their organisation to a great/ some extent. It is worth noting that this increase was impacted (in part) by the COVID-19 pandemic, due to the increase in activities by EASA in order to respond to the increase in aviation risks. Inputs from the interviews and the stakeholder survey uncovered further details on the type of costs and driver of costs following the implementation of the Regulation.

Figure 19. To what extent has the introduction of Regulation (EU) 2018/1139 led to increased costs for your organisation? (n=117)

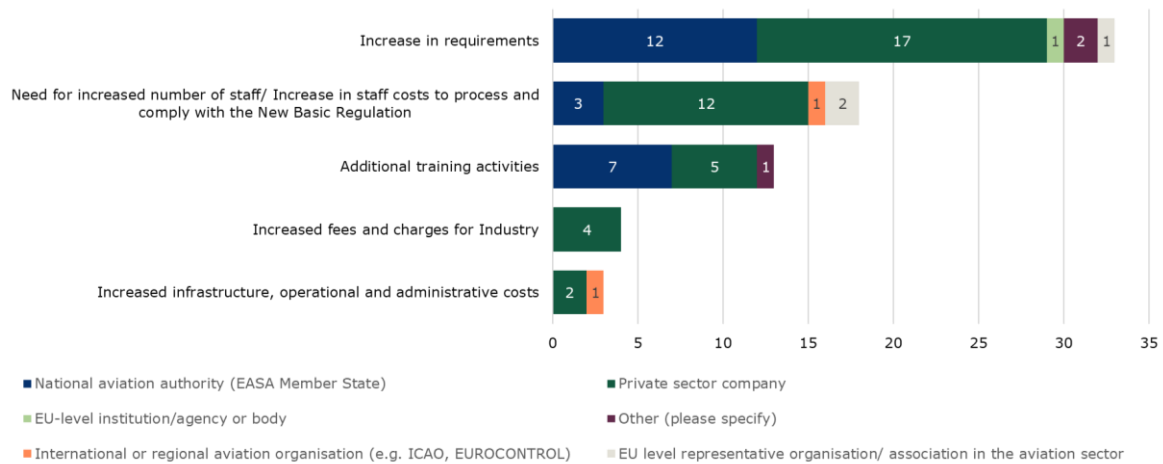


⁹¹ It should be noted that the types of costs covered as part of the Better Regulation Guidelines is: Direct and in-direct [1] Compliance costs (which includes administrative and adjustment costs), [2] Enforcement costs (including information and monitoring, complaint handling, inspections and adjudication costs), and [3] Hassle costs.

⁹² 64 out of 118 respondents

Overall, the analysis points to a predominant focus from stakeholders on the **increase in requirements** (administrative costs⁹³) that were brought about following the inception of the Regulation (as emphasised in the figure below). From the perspective of NCAs, the time required to document their procedures and results of their work in a rather detailed way, resulted in increased required for personnel/resources and costs. This was also raised by private sector organisations which primarily indicated that the introduction of the new Regulation, along with the volume of implementing regulations and requirements (particularly for certification and oversight activities), meant that additional staff was required to process this information. In addition, the increase in internal staff costs was seen to exacerbate this issue further.

Figure 20. Stakeholder survey: Please specify the nature of these costs? (n=73)



The following sections present further analysis, grouped according to the two overarching stakeholder categories (NCAs and Industry), on the qualitative nature of the costs identified above, as well as quantitative estimates where possible on the basis of data having been provided.

4.1.2.3.1 Costs to national aviation authorities and industry

National Aviation Authorities

Out of the 24 EASA Member countries⁹⁴ which answered to the stakeholder survey, 15 National Aviation Authorities (NCA) answered that their costs had increased as a result of the introduction of Regulation (EU) 2018/1139⁹⁵. While NCAs were invited as part of the survey to provide estimates of these cost increases in EUR and FTE, meaningful estimates were only provided by the NCAs in Spain and Belgium⁹⁶. Based on the data provided, estimations have been generated and interpolated to other EASA Member countries where possible.

⁹³ Costs borne by an organisation as a result of administrative activities performed to comply with administrative obligations included in the Regulation

⁹⁴ These included Austria, Belgium, Bulgaria, Cyprus, Denmark, France, Germany, Greece, Ireland, Lithuania, Luxembourg, Netherlands, Slovakia, Slovenia, Spain

⁹⁵ It should be noted that Figure 19 presents the number of respondents that answered, of which numerous respondents answered per NCA. Thus in total 24 Member countries were represented.

⁹⁶ It should be noted that NCAs in all EASA member countries were invited to provide cost estimates as part of the survey. In addition to this, a further targeted consultation was sent to seven selected Member States (Spain, France, Sweden, Austria, Greece, Belgium and Hungary) in an effort to gather more granular level cost data. Despite repeated efforts, data was only provided by Spain, Belgium and Austria, of varying quality. Official responses were provided by the French and Greek NCAs stating that they would not be able to provide data, while no response was provided by the NCA in Sweden.

However, the analysis of the proportionality of costs in relation to Regulation 2018/1139 has several caveats that must be considered when interpreting the data. One of the main qualitative limitations is the small sample size, as only two EASA member countries provided data on cost increases resulting from Regulation 2018/1139. This small sample size makes it challenging to generalise the findings to all EASA member countries. Furthermore, while the two member countries which provided data may be representative of other EASA member countries, the data should not be considered as truly representative, and their experiences may differ significantly from those of other member countries. Moreover, self-reporting bias may also skew the estimates as the data provided were estimates that were calculated by the two NCAs. Therefore, each of these caveats should be taken into account when interpreting the following data.

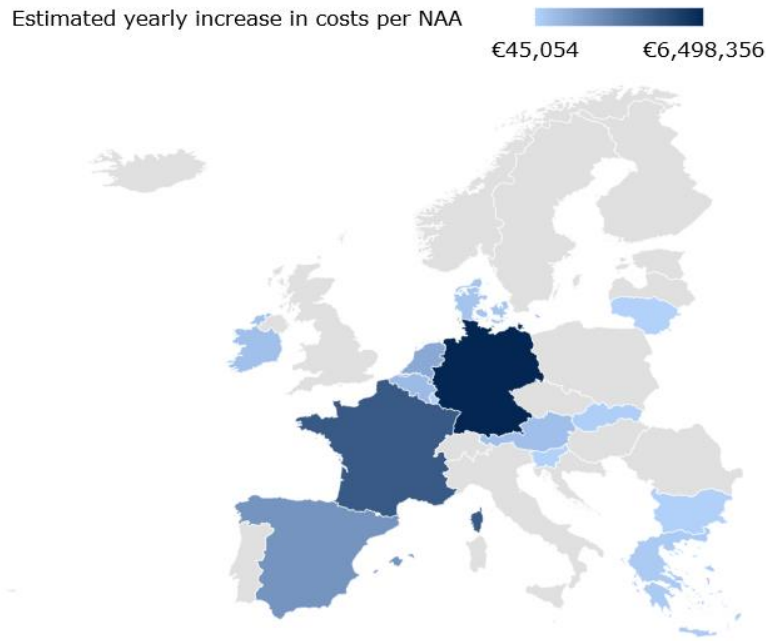
As part of the Commission Impact Assessment⁹⁷, the future resource needs of NCAs under the baseline scenario was calculated (p.125). From this calculation, it was estimated that the projected gap in NCA budgets, compared to the current budget levels of approximately EUR 1 billion, would be EUR 21-26 million in 2020 and EUR 49-61 million in 2030 (annually). Based on the data from Spain and Belgium on the increase in labour costs alone, the data was interpolated for all EASA member countries⁹⁸, with an estimated total annual increase in all NCA budgets (average from 2018-2022) of **between €26.6 - €29.8million**.

Notwithstanding that this estimate does not include other costs that could be attributed to the introduction of Regulation 2018/1139 (due to a lack of meaningful data being available), the estimates are consistent with the estimates provided in the Commission IA. The following figure provides an estimation of the increase in labour costs for each of the NCA which answered in the stakeholder survey that their costs had increased, with the annual yearly labour costs ranging from EUR 45,000 (shown in light blue) to EUR 6.5 million (shown in dark blue), depending on the size and complexity of the country.

⁹⁷ European Commission (2015). Commission Staff Working Document Impact Assessment; Accompanying the document: Proposal for a Regulation of The European Parliament and of The Council on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and repealing Regulation (EC) No 216/2008 of the European Parliament and of the Council {COM(2015) 613 final}

⁹⁸ To calculate the estimated yearly increase (in EUR) in labour costs for each NCA, the following approach was used. The following data was provided by the Belgian and Spanish NCAs for the average increase in labour costs, per year (2018-2021): Spain (EUR 3,112,907), Belgium (EUR 473,000). Through utilising the total budgets of the Spanish and Belgian NCAs, respectively, the proportion of the increase compared to the total NCA budgets was calculated. Using 2022 GDP values per country, the ratio between the increase in labour costs and the NCA budget was divided by the country's GDP, thus providing a value which estimates the proportion of the increase in labour costs within a country's GDP. Through averaging the values from Spain and Belgium (known values), the average proportion of the increase in labour costs was then applied to all EASA member countries. As the data provided by Spain and Belgium were averages over the period 2018-2021, the impact of the pandemic was taken into account.

Figure 21. Estimated yearly labour cost increases per NCA



Source: Extrapolation by the contractor by interpolating cost data from Belgium and Spain NCAs. The graph only presents the estimates for the countries which answered in the survey that their costs had increased.

Interviews with NCAs⁹⁹ provided qualitative insights into why these costs have increased. They pointed to the burden that was caused by the number and frequency of implementing regulations and requirements that originated from EASA as a result of Regulation 2018/1139. In particular, concerns were raised in relation to the difficulty of complying with some of the implementation requirements. New areas such as ground handling and cybersecurity were noted by NCAs as having an impact on increasing the costs of compliance. This was paired with the view that new implementing regulations can often be over prescriptive in their requirements, thus having an impact on administrative costs, and potentially making compliance more challenging for operators with limited resources.

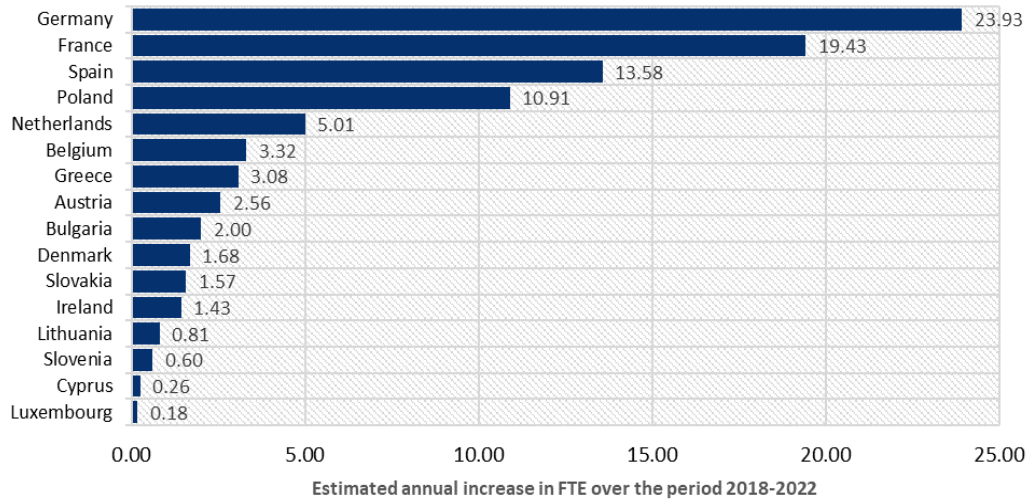
In addition to the estimates on the budget for NCAs, the Commission IA⁹⁷ also estimated that the need for additional staff to carry out the workload would increase by roughly 7.6–9.3% by the year 2020 of the base figure of around 5,100 total NCA staff in 2013, amounting to between 5,487 to 5,572 total staff needed (p.126). This roughly amounts to an increase of between 387 and 472 NCA staff by the year 2020. Utilising estimates of the average annual staff increases in the Belgian and Spanish NCAs¹⁰⁰, the **total estimated number of additional FTEs required in 2020 across all EASA member countries was found to be 532**. This thus suggests that the estimates of the actual increase in FTE in NCAs is above what was forecasted in the Commission IA by 60 FTE. The

⁹⁹ Four In-depth interviews with four respective NCAs, and 26 NCAs as part of the Member States Advisory Bodies workshop

¹⁰⁰ To calculate the estimated yearly increase in FTE for each NCA, the following approach was used. The following data was provided by the Belgian and Spanish NCAs for the average increase in FTE, per year (2018-2021): Spain (2.3FTE), Belgium (6FTE). Through utilising the total number of staff working in Spanish and Belgian NCAs, respectively, the proportion of the increase in FTE with the number of staff was calculated. Using 2022 population values per country, the ratio between the increase in FTE and the number of staff in each NCA was divided by the country's population size, thus providing a value which estimates the proportion of the increase in FTE within a country's population. Through averaging the values from Spain and Belgium (known values), the average proportion of the increase in FTE was then applied to all EASA member countries. As the data provided by Spain and Belgium were averages over the period 2018-2021, the impact of the pandemic was taken into account.

figure below presents the estimated annual increase in FTEs (based on the data from Spain and Belgium) for the 15 NCAs which in the stakeholder survey stated that their costs had increased.

Figure 22. Estimated annual increase in FTE in NCAs over the period 2018-2022



Source: Extrapolation by the contractor interpolating FTE data from Belgium and Spain NCAs. The graph only presents the estimates for the countries which answered in the survey that their costs had increased.

In addition to the estimated increase in labour costs, estimates of other costs were provided by the NCA in Spain, however it should be noted that this information was limited and could not be interpolated to all EASA member countries. For example, it was estimated that the total costs (over the period 2018-2021) related to the increase in investment in equipment, IT and machinery as a result of Regulation 2018/1139 amounted to approximately EUR 10.1 million, while increased certification requirements amounted to an additional EUR 7.3 million. However, these estimates should not be considered as representative but more as indicative examples, due to the likely variation between the different needs of NCAs in terms of equipment, IT and machinery.

It should be noted that the Commission IA foresaw that Regulation 2018/1139 would have a positive effect on compliance costs. Those positive effects were foreseen to result from a regulatory system that is more proportionate and performance-based, from the ability to satisfy requirements with greater flexibility, and from greater dependence on industry standards. Despite this, NCAs noted that greater considerations could be taken into account by the Agency with regards to the impact of new implementing regulations on stakeholders of different sizes and capacities. This primarily concerned implementation costs for which additional staff, resources and equipment were needed to fully comply and respond to the changes within in the Agency (e.g. increase in thematic domains covered, increase and frequency of implementing regulations to be reviewed and implemented). For example, it was noted that varying resources available across Member States and operators should be proportionally assessed, while weighing it against the safety concerns involved while simplifying regulations where possible. It is difficult to evaluate whether compliance costs would decrease overtime given that many countries continue to be in the process of implementing the new basic Regulation.

Costs to industry stakeholders

This section assesses the proportionality of the regulatory costs of Regulation 2018/1139 to industry stakeholders¹⁰¹. Out of the 62 respondents who answered as a private organisation in the stakeholder survey, only 11 organisations provided estimates on costs. As in the case of the NCAs, an additional attempt was made to gather cost data from industry stakeholders¹⁰², of which only three additional organisations provided information. For context, it is important to note that out of the 14 organisations that provided data in total, ten answered that they have more than 250 staff, two between 50 and 250 staff, and two between 10 and 50 staff.

It should be caveated that using such small samples of cost estimates to assess the costs for industry in complying with EASA has many limitations. Namely, small samples of private organisations do not represent the vast array of private organisations in operation in EASA member countries. Therefore, the estimates provided may overestimate or underestimate the costs of complying with Regulation 2018/1139. Similarly, the small sample size does not allow for meaningful statistical analysis. Without a large sample size, it is not possible to conduct statistical tests to determine the significance of the estimates. This makes it difficult to generalise the findings to the entire industry sector. Taking into account these caveats, the following assessment is based on the data provided from this limited sample of industry stakeholders.

As part of the Commission IA, the administrative burden for businesses was anticipated to be minimal compared to the baseline, however no cost assessments were provided, thus no comparison can be made between what was expected and actual data from businesses. Despite this, quantitative data from 13 of the 14 private organisations that provided data as part of this study pointed to administrative costs both in EUR and in FTE. For example, one Airport in Belgium and one Air carrier/aircraft operator in Denmark (both with over 250 staff) estimated an additional yearly cost of EUR 350,000 due to the additional time required to comply with Regulation 2018/1139 as well as an increased level of oversight being necessary, thus requiring additional FTE support.

Indeed, eight private organisations noted an increase in FTE per year to comply with the new basic Regulation. For example, four airports with over 250 staff respectively estimated an increase between 3 and 50¹⁰³ FTE per year, while one large airline in Germany noted an increase of 150 FTE per year and one aerodrome operator in Denmark estimated an increase of 25 FTE.

Furthermore, an example from one drone operator estimated an increase in 16% in their labour costs, which has been estimated to be an increase of 33 FTE. It should be noted that the drone operator was not able to differentiate the costs which originated from Regulation 2018/1139, and it was acknowledged that increase in costs was primarily due to the additional requirements brought about through the Regulation (EU) 2021/664¹⁰⁴ and not Regulation 2018/1139 per se.

¹⁰¹ This includes Airlines, Air carriers or aircraft operators, Airports, Aviation manufacturers, producers and suppliers of aeronautical products, Drone manufacturers, Aircraft or engine or parts maintenance organisations, Air Traffic Management (ATM) /Air Navigation Service Providers (ANP), Training organisations, Aerodrome operators, Ground handling service providers, Association representing unions and staff in the aviation field.

¹⁰² In total, the contractor contacted the following stakeholders in an attempt to gather more quantitative estimates: one International or regional aviation organisations, one unmanned aircraft manufacturer, two ATM and navigation services, two Airlines, one manufacturer and three professional associations

¹⁰³ The estimate of 50 FTE was based on 15 additional resources to monitor safety operation H24 for 2 airports in one country.

¹⁰⁴ European Commission (2021). Commission Implementing Regulation (EU) 2021/664 of 22 April 2021 on a regulatory framework for the U-space

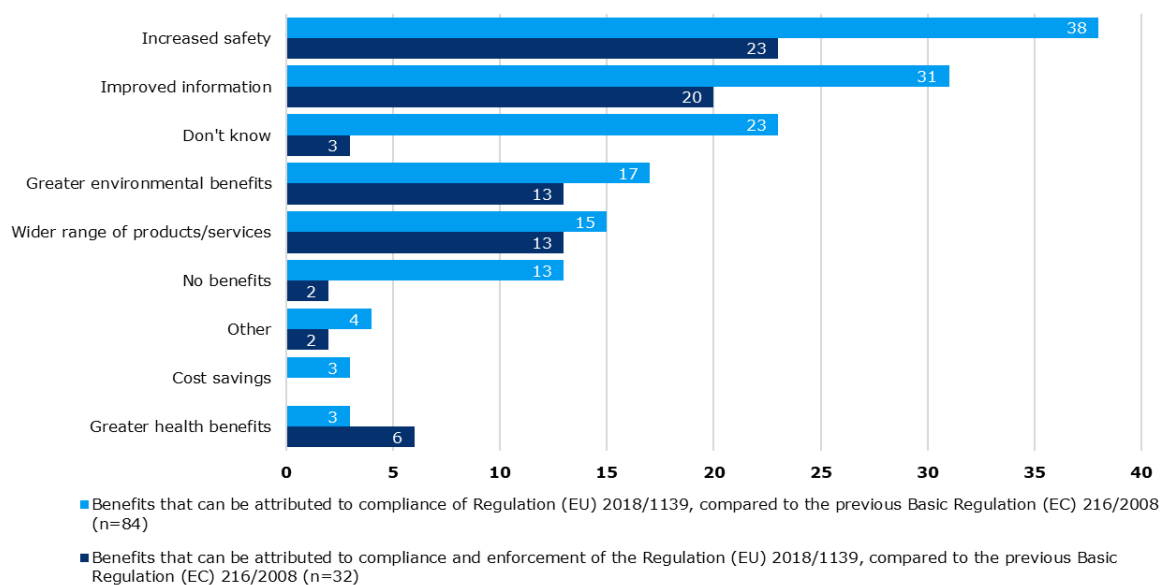
These quantitative estimates were accompanied by qualitative assessments from airports¹⁰⁵, airlines¹⁰⁶ and EU level representative organisations¹⁰⁷ which collectively were of the view that additional costs were generated as a result of difficulty in complying with some of the implementation requirements. For airlines and airports, the cost of training operators was seen as an additional cost that arose with the introduction of new implementation regulations. Moreover, implementing new rules and systems were noted to lead to possible increased staff costs due to the need to re-define job descriptions and roles, as well as increased administrative tasks and the need to invest in new infrastructure or IT systems. For example, the recent revision to the 2022 Regulation (EU) No 139/2014 on Easy Access Rules for Aerodromes was said to have led to increased costs related to the training of operators within each relevant national airport operator. These administrative and adjustment costs were seen to be influenced further by new and emerging areas and activities which the Agency has begun to work on in recent years.

Thus, while acknowledging that the limited sample of quantitative data available provides a limited perspective on the potential cost impact on private sector organisations, it is notable that administrative and adjustment costs have appeared to have increased because of the introduction of Regulation 2018/1139. This is important to note given that the Commission IA had foreseen no substantial increases in costs for businesses.

4.1.2.3.2 Overall benefits to stakeholders

While the majority of stakeholders were of the view that the introduction of the Regulation in 2018 had led to increased costs for their organisation, benefits attributed to compliance and enforcement of the Regulation compared to the previous Basic Regulation (EC) 216/2008 were uncovered. It should be noted that, despite numerous efforts through the survey and targeted consultations to attempt to fill gaps, no meaningful data was gathered from stakeholder consultations on the monetary benefits.

Figure 23. Stakeholder survey: Q. Please indicate which type(s) of benefits, if any, can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139, compared to the previous Basic Regulation (EC) 216/2008? (n=116)



¹⁰⁵ Two in-depth interviews

¹⁰⁶ Two in-depth interviews and five personnel as part of the Stakeholder Advisory Board workshop

¹⁰⁷ Five in-depth interviews and 10 EU level organisations as part of the Stakeholder Advisory Board workshop

Overall, the **stakeholders identified increased safety and improvements in information** as being the greatest benefits that can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139 (see Figure 23). Greater environmental benefits were also acknowledged as benefits, along with a wider range of products and services. While it was caveated that on the whole, the activities of EASA and the Regulation do contribute to increasing safety, it was more challenging to establish a causal link between the implementing regulations and requirements and the benefit of increased safety.

4.1.2.3.3 Cost benefit ratio

In conclusion, the **costs** for stakeholders to comply with EASA, as well as Regulation 2018/1139 are **significant**, but the **benefits achieved** are **equally considerable**. EASA and Regulation 2018/1139 have proven to provide a harmonised regulatory framework for aviation safety across Europe, which facilitates a high level of safety and ensures that all operators adhere to the same standards. EASA has also contributed to the standardisation of regulations across Europe, leading to greater cooperation and coordination between NCAs. Regulation 2018/1139, on the other hand, has introduced several new requirements for operators, including enhanced safety management systems, better reporting mechanisms, and more stringent aircraft certification standards.

In examining the proportionality of the identified costs against the benefits of complying with Regulation 2018/1139, there was a diversion of views across stakeholders who responded to the survey, with 23% (27 out of 117) holding the view that costs related to Regulation 2018/1139 *were* proportionate to the benefits, while 24% answered that they *were not* proportionate¹⁰⁸.

Interviews with stakeholders reiterated this point, emphasising that the proportionality could be increased through EASA conducting greater assessments of the administrative impact of future requirements and implementing regulations for stakeholders. For example, in practical terms stakeholders emphasised that EASA should **take into account the stakeholder type and size of organisations**, as well as the **timing of implementing regulations**. This was also paired with a general view that increasing the flexibility for stakeholders within the requirements and implementing regulations (e.g. through **more flexibility in the timely distribution and expected implementation timings of new requirements and regulations**) could also help to better distribute costs and increase the perceived benefits from complying with the Regulation and EASA's work as a whole.

While qualitative insights from interviews with NCAs found a majority view that compliance and administrative costs increased as a result of new implementing regulations put in force by EASA, it is also the case that these stakeholders put forward amendments and rationale for some of the implementing regulations to be put in place. Thus, stakeholders' views on the cost-benefit ratio of each specific implementing regulation is dependent on the degree to which the regulation directly meets the needs in each of the stakeholders' respective sectors.

While the **costs of compliance** with EASA and Regulation 2018/1139 have been significant, they are **overall evaluated as being proportional to the benefits achieved**. Indeed, while the costs of compliance may be challenging for some stakeholders, they are also a necessary part of ensuring that the industry remains safe and sustainable for the long term – an aspiration which is shared by all stakeholders.

It should be caveated that while the analysis suggests that the costs of EASA and Regulation 2018/1139 are generally proportional to the benefits achieved, there are limitations to the small

¹⁰⁸ It should be caveated that 20% of respondents answered that the costs were neither proportionate nor disproportionate to the benefits, while 32% answered that they didn't know. The question stated: *To what degree are the costs associated with Regulation (EU) 2018/1139 proportionate to the benefits of EASA's activities for your organisation?*

sample size of quantitative estimates from stakeholders and challenges in determining proportionality.

4.1.3 Coherence

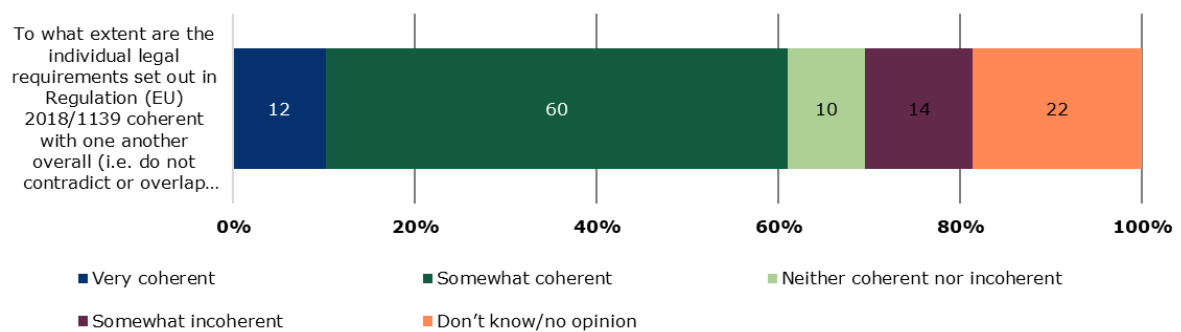
As per the Better Regulation Guidelines, evaluating coherence requires looking at how well or not different actions – be they internal or external to an intervention – work together. Such an assessment may highlight areas where there are synergies which improve overall performance, or it may point to tensions which are causing inefficiencies.

This section presents the **findings** structured according to two categories, in conjunction with the main evaluation questions under the coherence criterion (APPENDIX 2 – Evaluation matrix): [1] **internal coherence** between the requirements and provisions set out in Regulation (EU) 2018/1139 (EQ9) and [2] **external coherence** between the Regulation, EASA's tasks and other EU regulatory instruments under the air transport acquis (and within other domains of the EU regulatory framework) and with international agreements (EQ10).

4.1.3.1 Internal coherence (EQ9)

When asked about the **internal coherence** of Regulation (EU) 2018/1139, survey respondents were **overall positive**: 60 respondents (51%) found the legal requirements set out in the Regulation somewhat coherent, while 12 respondents (10%) even believed these were very coherent.

Figure 24. To what extent are the individual legal requirements set out in Regulation (EU) 2018/1139 coherent with one another overall (i.e. do not contradict or overlap with each other)? (n=118)

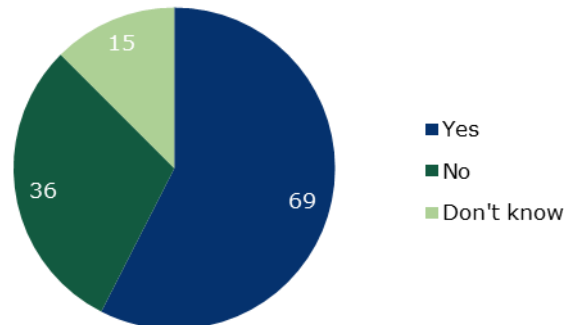


The analysis of the extent to which the Regulation's provisions are coherent with one another is limited by the fact that **none of the stakeholders** consulted during the fieldwork were able to **provide examples of why internal coherence was overall met**. In fact, stakeholders commented only on those aspects in which they perceived a lack of coherence: all these aspects were however related to external coherence, as they were examples of how the Regulation's requirements and EASA's tasks show some inconsistencies with the requirements of the broader EU regulatory framework/the tasks of other authorities/international bodies in the aviation sector.

4.1.3.2 External coherence (EQ10)

When asked about the **external coherence** of Regulation (EU) 2018/1139, a mixed picture emerges based on survey responses: 69 respondents (57%) found that EASA's tasks as set out in the Regulation were complementary and did not overlap with other regulatory bodies at international or national level, while 36 respondents (30%) believed there to be overlaps and inconsistencies.

Figure 25. In your opinion, are EASA's tasks complementary to (i.e. do not overlap with, duplicate or contradict) those of other regulatory bodies at international, national (e.g. civil aviation authorities), or regional level? (n=120)



Coherence between the Regulation, EASA's tasks and other actors and international agreements under the air transport acquis

Most of the survey comments flagging **coherence issues** related to one of the key elements mentioned in Section 4.1.1 on effectiveness: namely the **different interpretations of EASA's rules by National Competent Authorities** (e.g. the requirements for Air Operator Certificates, as mentioned in Section 4.1.1.3) which at times create incoherences across Member States and a lack of clarity. As noted by EASA, synergies in the domain of drones could also be taken more advantage of since, at present, the regulatory framework for smaller drones and low-risk operations is part of Member States' responsibility, while the design safety of all other drones is a responsibility of the Certification Directorate. Since the implementation of the unmanned aircraft regulations is a shared responsibility between EASA and the Member States, in order to ensure a high and uniform level of safety, safety continuum and level playing field, there is a need to have increased cooperation between the competent authorities of the Member States and EASA.

Nonetheless, the evidence gathered shows that **EASA has been forming ever closer relationships with NCAs**, logistically and technically speaking. Compared to ten years ago, these relationships have improved considerably and one of the interviewed NCAs spelled out how their role is coherent with EASA's activities. **EASA** is no longer seen only as an inspector, but more as a **constructive partner** where EASA is also relying on NCAs to perform some tasks on behalf of EASA (i.e. in 10% of the cases). This is also good from the perspective of risk distribution.

Box 1. Actors within international air transport: ICAO

Context: ICAO is a United Nations' Agency funded and directed by 193 national governments to support their diplomacy and cooperation in air transport as signatory states to the Chicago Convention¹⁰⁹.

ICAO's mission is to serve as the global forum of States for international civil aviation. ICAO develops policies and standards, undertakes compliance audits, performs studies and analyses, provides assistance and builds aviation capacity through many other activities and the cooperation of its Member States and stakeholders.

Notably, ICAO standards never supersede the primacy of national regulatory requirements. It is always the local, national regulations which are enforced in, and by, sovereign states, and which must be legally adhered to by air operators making use of applicable airspace and airports¹¹⁰.

¹⁰⁹ <https://www.icao.int/about-icao/History/Pages/default.aspx>

¹¹⁰ <https://www.icao.int/about-icao/Pages/default.aspx>

ICAO is not an international aviation regulator, therefore should a country transgress a given international standard adopted through ICAO, ICAO's function in such circumstances is to help countries conduct any discussions, condemnations, sanctions, etc., they may wish to pursue, consistent with the Chicago Convention and the Articles and Annexes it contains under international law.

Several survey respondents perceived a mismatch between their understanding of ICAO standards (not directly applicable) and the EU rules adopted to comply with such standards (e.g. two examples of lack of clarity were reported by an aircraft maintenance organisation and by an aircraft manufacturer, namely Annex 19 of ICAO on safety management and ICAO standards on CO2 emissions). Finally, on the relationship with **actors at international level, primarily ICAO**, this was perceived as a significant obstacle by EASA staff at all levels. EASA does not officially exist within the ICAO system, even though it is one of the major contributors to ICAO technical work. It has to be highlighted in this regard that EASA, as an agency, does not have an observer status within ICAO. However, the EU has an observer status through which EASA is then represented. This is perceived as an anomaly preventing EASA to act effectively when reaching out for ICAO cooperation: according to feedback received during the field visit with EASA, this resulted in less smooth interactions and slow responsiveness by ICAO. On the other hand, it is worth noting that EASA has a representative to ICAO through the EU office in ICAO's headquarters, as well as the fact that ICAO recognises EASA as a Regional Safety Oversight Organization (RSOO).

Box 2. Actors within international air transport: EUROCONTROL

Context: EUROCONTROL is a pan-European, civil-military organisation dedicated to supporting European aviation. **EUROCONTROL's mission is to support European aviation by delivering technical and civil-military expertise across the full spectrum of air traffic management. EUROCONTROL's activities touch on operations, service provision, concept development, research, Europe-wide project implementation, performance improvements, coordination with key aviation players at various levels as well as providing support to the future evolution and strategic orientations of aviation¹¹¹.**

The awareness of potential overlaps between EASA and EUROCONTROL was well known by EASA and the Commission, as demonstrated by the report published in 2014¹¹² by the Management Board Sub-Group on the Future of the European Aviation Regulatory System¹¹³. This report emphasised the need to clarify overlaps and to avoid duplication of efforts and costs between EASA and EUROCONTROL.

The field visit with EASA and our desk research showed there are examples of **concrete cooperation** on many issues (e.g. secondment and expert) **between EASA and EUROCONTROL**. In fact, not only Regulation (EU) 2018/1139 clarifies EASA's responsibilities in the ATM domain, but also thanks to the **joint EASA-EUROCONTROL Technical and Coordination Office (TeCO)** opening in 2020, both organisations forged **closer relationships** regarding **aviation safety** and the **environment** to improve the two organisations' joint activities, further **enhancing cooperation and avoiding duplication**¹¹⁴. Since 2020, EASA and EUROCONTROL jointly publish guidelines on:

¹¹¹ <https://www.eurocontrol.int/what-we-do>

¹¹² <https://www.easa.europa.eu/sites/default/files/dfu/Sub-Group%20Report%20on%20the%20Future%20of%20the%20European%20Aviation%20Regulatory%20System.pdf>

¹¹³ The group is composed of a restricted group of EASA Management Board members, the Agency and the Commission

¹¹⁴ <https://www.easa.europa.eu/en/newsroom-and-events/press-releases/new-joint-unit-cements-cooperation-between-easa-and-eurocontrol#:~:text=EASA%20acts%20as%20the%20European,playing%20a%20central%20coordination%20role.>
<https://www.easa.europa.eu/en/newsroom-and-events/press-releases/new-joint-unit-cements-cooperation-between-easa-and-eurocontrol#:~:text=EASA%20acts%20as%20the%20European,playing%20a%20central%20coordination%20role.>

- air traffic controllers and operational staff vaccinations;
- a step-by-step guide to measure, reduce, and report ANSP's carbon footprint¹¹⁵; and
- a critical review of ATM/ANS environmental performance measurements¹¹⁶.

This enhanced cooperation is also embedded in EASA's advisory bodies, as EUROCONTROL also has a seat in the MAB (as an observer) and in the SAB as a service provider of ATFM services, and other network functions as regulated by Regulation (EU) 2019/123¹¹⁷.

Nonetheless, it takes time for changes in responsibilities to be fully understood by stakeholders, which can lead to some of them pointing to duplication of activities between EASA and EUROCONTROL: in fact, a few survey respondents flagged that EASA's responsibilities on ATMs could be "*more coherent*". This comment was somewhat confirmed during the field visit with EASA, as it was mentioned in this context that the **relationship** between **EASA** and **EUROCONTROL** is still not perceived as entirely clear by stakeholders. This is due to the fact that in the past, the EU delegated many tasks to the implementation of the Single European Sky (SES)¹¹⁸ to EUROCONTROL, and that later some of these tasks were allocated to EASA. Due to the **legacy of the past system**, in which for decades it was EUROCONTROL interacting with industry and Member States on the domain of ATMs, the "*cultural change*" (i.e. a **full acknowledgement of the responsibilities transferred to EASA**) **has not yet been fully achieved**, even though the Regulation sets out clear roles and responsibilities for EASA in this domain.

Box 3. International agreements within international air transport: Single European Sky

Context: The **Single European Sky** (SES) framework is a legislative framework having the main objective of reforming ATM in Europe in order to cope with sustained air traffic growth and operations under the safest, most cost- and flight-efficient and environmentally friendly conditions. This implies de-fragmenting the European airspace, reducing delays, increasing safety standards and flight efficiency to reduce the aviation environmental footprint, and reducing costs related to service provision¹¹⁹. The SES framework covers the provision of air navigation services (ANS), the organisation and use of airspace and the interoperability of the European Air Traffic Management Network (EATMN)¹²⁰.

Another potential element causing a lack of coherence consists in the different scope of Regulation (EU) 2018/1139 and of the Single European Sky regulatory framework. In fact, while the Regulation does not apply to State aircraft, the SES framework applies to State aircraft when flying as General Air Traffic (GAT)¹²¹.

The Regulation (Art. 139 (2)) repealed the interoperability with Regulation (EC) 552/2004 of the Single European Sky, transposing the essential requirements of ATM/ANS ground equipment contained in Regulation (EC) 552/2004 to Annex VIII of the Regulation (EU) 2018/1139: this led to safety and interoperability requirements of ATM/ANS ground equipment under the same EASA framework. Therefore, all implementing rules stemming from Regulation (EC) 552/2004 would need

¹¹⁵ <https://www.easa.europa.eu/en/document-library/general-publications/easa-eurocontrol-step-step-guide-measure-reduce-and-report>

¹¹⁶ <https://www.easa.europa.eu/en/document-library/general-publications/easa-eurocontrol-critical-review-atmans-environmental>

¹¹⁷ EUROCONTROL acts as Network Manager under Regulation (EU) 2019/123, which governs its role in executing ATFM services and network functions over the EU

¹¹⁸ Established by Basic Regulations N° 549/2004, 550/2004, 551/2004 and 552/2004, and then revised in 2009 with Regulation (EC) n° 1070/2009.

¹¹⁹ https://transport.ec.europa.eu/transport-modes/air/single-european-sky_en

¹²⁰ Idem

¹²¹ General Air Traffic (GAT) refers to all movements of civil aircraft, as well as all movements of State aircraft (including military, customs and police aircraft) when these movements are carried out in conformity with the procedures of ICAO

to be adapted to the EASA framework (as per Article 140(2)). However, as Regulation (EU) 2018/1139 cannot apply to State aircraft (as per its Article 2 (3)), thus the requirements that applied under Regulation (EC) 552/2004 and its implementing rules ceased to apply to State aircraft. This is resulting in some requirements for the use of airspace to cease to apply to State aircraft as soon as the interoperability implementing rules are repealed and adapted to the EASA framework. It is however worth noting that this potential element of overlap was not mentioned by any of the stakeholders consulted in this study.

Finally, to conclude on the coherence between EASA's tasks and other actors within the air transport sector, EASA staff also highlighted that there is a need to ensure consistency in the future of all the activities in the area of drones across all relevant stakeholders working in this domain (Member States, industry, other agencies such as SJU and EUROCONTROL). For example, EASA believes that **further synergies** could be exploited with the **maritime sector** or **border control**, for example by letting agencies which already interact with EASA (like FRONTEX) benefit from EASA's experience in relevant areas (such as the intelligence gathered through the Data4Safety Programme).

Coherence between the Regulation, EASA's tasks and other EU regulatory instruments within other domains of the EU regulatory framework

The analysis of external coherence also considers the relationship between the Regulation, EASA's activities and other domains of the EU regulatory framework. Three key domains are particularly relevant for the purposes of this study, namely **cybersecurity, the Sustainable and Smart Mobility Strategy¹²² and the European Green Deal¹²³.**

Box 4. Other domains of the EU regulatory framework: NIS Directive

Context: The Directive (EU) 2016/1148¹²⁴ concerning measures for a high common level of security of network and information systems across the Union (hereinafter, the NIS¹²⁵ Directive) **lays down measures with a view to achieving a high common level of security of network and information systems within the EU, to improve the functioning of the internal market.**

This Directive also concerns the aviation sector as in Annex II lists some 'operator of essential services' within air transport which are within the scope of the Directive, namely:

- air carriers;
- **airport managing bodies**, airports and entities operating ancillary installations contained within airports; and
- traffic management control operators providing air traffic control (ATC) services

As mentioned by a stakeholder from the aerodrome segment during the interview programme, a lack of external coherence relates to the different requirements which apply to the topic of **cybersecurity**. This matter concerns the topic of security of network and information systems as the NIS Directive applies to critical infrastructures¹²⁶ across all Europe and all industries, including

¹²² <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0789>

¹²³ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

¹²⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L1148&rid=1>

¹²⁵ NIS stands for 'Network and Information Security'.

¹²⁶ As per the definition provided by Article 2 of the Council Directive 2008/114/EC, a 'critical infrastructure' is an asset, system or part thereof located in Member States which is essential for the main tendance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions.

airports. According to this interviewee, the provisions in the area of security contained in the Directive overlapped with national regulations and with EASA's rules in the domain of aerodromes, creating frictions or duplications. Notably, a **regulatory** step forward to clarify **cybersecurity requirements** in the **aviation** sector is represented by Implementing Regulation (EU) 2023/203¹²⁷, which sets out the requirements to:

- **identify** and **manage information security risks** with potential impact on aviation safety, which could affect information and communication technology systems and data used for civil aviation purposes;
- **detect information security events** and identify those which are considered information security incidents with potential impact on aviation safety; and
- **respond** to, and **recover** from, those **information security incidents**.

In particular, recital 12 of this Implementing Regulation **addresses specifically the potential lack of coherence with the NIS Directive**. In fact, recital 12 states that: *"to provide legal certainty, the interpretation of the term 'information security' as defined in this Regulation, reflecting its common use in civil aviation globally, should be considered as being consistent with that of the term 'security of network and information systems' as defined in Article 4(2) of Directive (EU) 2016/1148¹²⁸".*

However, given the novelty of this Implementing Regulation (it will apply from February 2026), at this stage it is only possible to highlight that, on paper, this legal text could be suitable to improve coherence between the Regulation/EASA's tasks and the EU framework for cybersecurity. It is also worth noting that Directive (EU) 2016/1148 has just been recently replaced by Directive (EU) 2022/2555 (entered into force in January 2023) replacing Directive (EU) 2016/1148. Further considerations and a proper assessment of the coherence of Regulation (EU) 2018/1139 with Implementing Regulation (EU) 2023/203 will be possible only in the future.

Box 5. Other domains of the EU regulatory framework: Sustainable and Smart Mobility Strategy

Context: The **Sustainable and Smart Mobility Strategy¹²⁹** is a **Commission's** strategy laying the foundation for how the EU transport system can achieve its green and digital transformation and become more resilient to future crises. This strategy fits within the European Green Deal¹³⁰, which aims to achieve a 90% cut in emissions by 2050, delivered by a smart, competitive, safe, accessible and affordable transport system.

In particular, among the 10 key areas for action of the Sustainable and Smart Mobility Strategy, the Strategy aims to boost the uptake of zero-emission aeroplanes, renewable & low-carbon fuels and related infrastructure.

As discussed in Section 2.3.2 about the changes introduced by the Regulation, Article 87 (3) of the **Regulation formalises EASA's role in assisting the Commission** with *'the **definition and coordination of civil aviation environmental protection policies and action**'*. Moreover, the Regulation also introduced **EASA's task to publish an environmental review** (i.e. the European Aviation Environmental Report). Thus, the Regulation proved to be forward-looking: in fact, it enabled EASA's mandate to be definitely coherent with the objectives of the European Green Deal and of the Sustainable and Smart Mobility Strategy ('SSMS' hereinafter).

¹²⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R0203>

¹²⁸ I.e. the NIS Directive.

¹²⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0789>

¹³⁰ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

In particular, the **Green Deal's objectives** of achieving sustainable transport by significantly reducing carbon emissions and the **SSMS' goal** of large zero-emission aircraft by 2035 are **embedded in EASA's activities**. In fact, **EASA is developing** (as mandated by the SSMS) together with the aviation industry an **environmental labelling programme** for aviation. Moreover, **EASA's tasks** are **coherent** with the goal of **emissions reduction** as EASA is involved in the approval process of Sustainable Aviation Fuel (SAF), by ensuring that these fuels meet the required airworthiness standards. As mandated by Article 87, EASA assisted the Commission in the **RefuelEU Aviation** initiative¹³¹, resulting in a proposal for a Regulation which, pending approval of the Council and the Parliament, as of 2024 will require the uptake of sustainable aviation fuels by aircraft operators and the distribution of sustainable aviation fuels at EU airports.

To what extent was the intervention successful? A summary

The box below provides a summary of the key findings in answering the question of how the intervention was successful and why:

Box. 1. Summary of findings relating to the question of how the intervention was successful and why.

Our evaluation findings show that the intervention was overall successful by contributing to safety, efficiency and a level playing field for the EU aviation industry. This result is due to a widely positive assessment of EASA's rulemaking and certification activities, together with a timely and effective response to external shocks (e.g. COVID-19 pandemic, Ukraine crisis, Boeing 737-MAX accident). The effectiveness of stakeholder consultations between EASA, the aviation industry and NCAs increased over the years, while still some overlaps remain between the activities of the agency and other bodies like Eurocontrol. EASA was also largely efficient in adequately using the annual budget available achieving a high budget implementation rate.

Further details on the extent of the success of the intervention and why are provided below:

Findings linked both to the performance of the Regulation and of EASA:

- Overall, both EASA and Regulation (EU) 2018/1139 have contributed to European integration in the area of air transport resulting in very large benefits for safety, efficiency and creating a level playing field for the aviation industry.

Findings linked to the performance of the Regulation:

- A clear link between the mandate of EASA, the prioritisation of its activities and an adequate level of financial resources is not always spelled out in the Regulation. For instance, the agency's mandate on innovation requires a balance between managing the current, core tasks of EASA and the need to prepare for future areas and tasks. The Regulation currently does not foresee the use of 'regulatory sandboxes' to allow the industry to innovate and experiment whilst still ensuring the required level of safety.
- Although rulemaking tasks by EASA (as required by Article 4 of Regulation (EU) 2018/1139) should be performance-based, the 'inclusive' nature of the rulemaking process (i.e. balancing the needs and the preferred approaches of the industry and of the NCAs) leads in some cases to a tendency towards over-prescriptive rules. More flexibility (spelled out in the Regulation) in the use of certification specifications, acceptable means of compliance and guidance materials rather than implementing rules and delegated acts would increase the effectiveness of EASA. It is also worth noting that the more flexible is the regulatory framework, the less prescriptive it becomes: the key challenge is to strike the right balance between flexibility and legal certainty.

¹³¹ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12303-Sustainable-aviation-fuels-ReFuelEU-Aviation_en

- The relationship between EASA and EUROCONTROL used to be characterised by overlaps and duplications of efforts and costs. Regulation (EU) 2018/1139 clarified EASA's responsibilities in the ATM domain and today there are examples of concrete cooperation on many issues (e.g. secondment and expert) between EASA and EUROCONTROL. However, due to the legacy of the past system, in which EUROCONTROL used to interact with industry and Member States on the domain of ATMs, a full acknowledgement (by industry players and NCAs) of the responsibilities transferred to EASA has not yet been fully achieved. Although the Regulation sets out clear roles and responsibilities for EASA in this domain, it takes time for changes in responsibilities to be fully understood by stakeholders.
- An issue of external coherence between the Regulation and the broader EU regulatory framework relates to the different requirements on cybersecurity. Overlaps are visible on the topic of network and information systems, as the provisions included in the NIS Directive overlap with national regulations and with EASA's rules in the domain of aerodromes, creating uncertainty or duplications.

Findings linked to the performance of EASA:

- Looking at the number of accidents as an indicator to assess the safety performance of the intervention, the positive results are mostly due to the long-standing effectiveness of the activities of EASA since its creation, rather than the impact of Regulation (EU) 2018/1139.
- EASA plays a very important role in responding to external shocks and when facing political pressure. Overall, widely positive feedback was reported in relation to EASA's proactivity in ensuring safe flight operations in the aftermath of the Boeing 737-MAX accident, during the COVID-19 pandemic, or in reaction to the current Russian invasion on Ukraine's territory.
- Overall, EASA's performance on certification and rulemaking tasks is widely positive. As a general remark, as shown in the EASA KPI report, the pandemic impacted the Agency's performance causing delays in rulemaking, certification and standardisation activities. On the other hand, the Agency was ready to swiftly assist the Commission in designing emergency rules for COVID management (including safe return of operations post-COVID-19).
- The Agency was largely found to have been efficient in adequately using the annual budget available and was consistently successful in achieving a high budget implementation rate.
- The introduction of Regulation (EU) 2018/1139 was perceived as having led to increased costs for a majority of stakeholders, primarily due to the increase in requirements and implementing regulations. These costs were broadly found to be in line, however, with the estimated impacts under the Commission IA. Despite this, stakeholders identified benefits in terms of increased safety, improvements in information, and greater environmental benefits, but there was a divergence of views regarding the proportionality of costs to benefits.
- The effectiveness of stakeholder consultations within EASA's advisory bodies (i.e. the Member States Advisory Body, 'MAB', and Stakeholder Advisory Body, 'SAB') is widely positive. The advisory structure of EASA improved significantly through the years, thanks to a more and more cooperative approach: this is due mostly to a process of mutual understanding between NCAs and EASA and between the aviation industry and EASA over the past 20 years, rather than linked to any specific change stemming from Regulation (EU) 2018/1139.

4.2 How did the EU intervention make a difference?

Besides the general difference that Regulation (EU) 2018/1139 and EASA have had, as discussed under the effectiveness criterion in Section 4.1.14.1.1, this Section presents the findings concerning the EU added value of Regulation (EU) 2018/1139 and EASA more generally: EU added value is one of the five criteria of an evaluation as specified in the Better Regulation Guidelines. This Section thus considers the added value of this being an EU-level intervention, as opposed to Member States working alone, bilaterally or multilaterally.

4.2.1 EU added value

This section presents the conclusions and lessons learnt in relation to the evaluation criterion of EU added value (EQ 11 and EQ 12). The conclusions and lessons learnt under this criterion address the added value resulting from EU intervention and the consequences of stopping/withdrawing the intervention. Conclusions are based on the triangulated data that have been collected through desk research, interviews, workshops, survey, and field visits to EASA.

Added value resulting from EU intervention (EQ 11)

Data collection activities concerned both the added value of having the Agency as well as of Regulation (EU) 2018/1139.

As highlighted in the findings related to the effectiveness criterion (Section 4.1.1), stakeholders more easily recognise EASA's positive impacts over those of the Regulation (EU) 2018/1139 specifically.

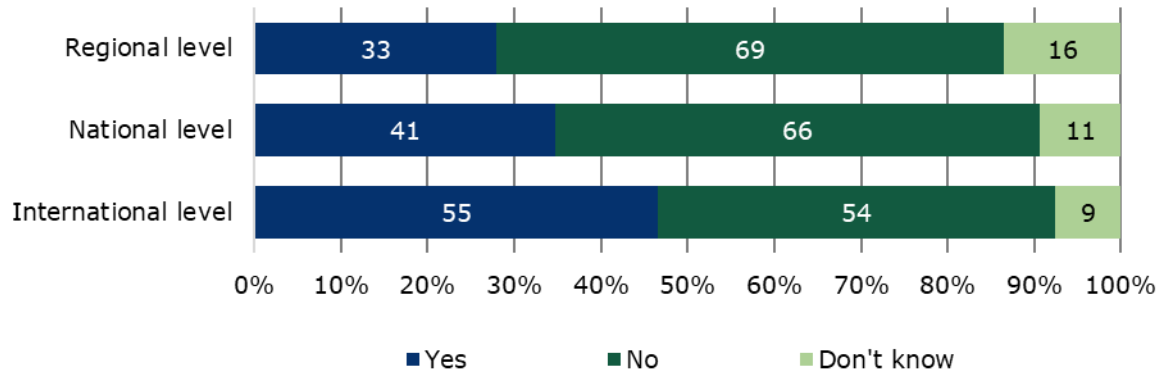
On the **added value of Regulation (EU) 2018/1139**, the key finding based on the results of all data collection activities carried out is that the Regulation sets out a single EU-level regulatory framework for aviation safety at European level, which has been identified by most stakeholders as essential in having a common ground as opposed to a more fragmented system of rules.

Insights on the added value of Regulation (EU) 2018/1139 were identified in most interviews with stakeholders across various sectors in aviation. Having a harmonised regulatory framework that is up to date with developments in the aviation sector was seen as the key role of the Regulation. In view of new technologies and innovations, five interviewees identified that having uniform requirements for unmanned aircrafts at European level promotes the single market in a rapidly evolving sector that has been previously unregulated.

On the **added value of EASA**, the main finding across all the data collection activities is that the Agency is perceived to be its role in applying common rules and standards for aviation safety in Europe and its role in international cooperation.

Results from the survey on the EU added value of the Agency show that more respondents were of the opinion that actors at regional, national and international level could not have carried out the activities undertaken by EASA (on average across all three categories: 53%, corresponding to 63 respondents out of a total of 118 participants to the survey) than respondents who thought that this could have been the case (on average across all three categories: 36%, corresponding to 43 respondents).

Figure 26. Could the activities carried out by EASA have been performed at regional, national (by each Member State acting alone), or international level? (n=118)



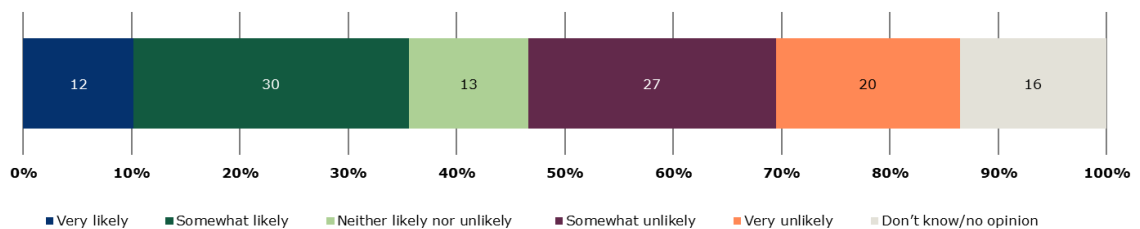
An important topic which was discussed in most interviews is the increased weight of a centralised EU level agency and that no NCA from any European country could be recognised as an equally influential and important authority on the international stage. Benefits of having such an agency at EU level were identified by interviewees to be, among others, the increased cooperation with third country operators, a more efficient certification process (i.e. manufacturers do not have to get aircrafts certified from all individual NCAs), and that it ensures the application of a single set of rules across Europe.

Consequences of stopping or withdrawing (EQ 12)

Question 12 of the evaluation framework for this study addressed the **consequences of a hypothetical situation of not having the EU intervention in the field of aviation safety** (that of introducing Regulation (EU) 2018/1139). In answering this question, survey results, desk research, and interviews were the main methods of data collection that had relevant information for this question.

As part of the survey with aviation industry players and NCAs, one question asked whether the same effects and impacts of Regulation (EU) 2018/1139 would have been achieved if the previous Regulation (EC) 216/2008 was still in force instead. The results show that somewhat more respondents thought that the effects and impacts could not have been reached without the Regulation having been in place (40%, corresponding to 47 respondents) compared to respondents who mentioned that this could have happened (35%, corresponding to 42 respondents).

Figure 27. How likely is it that the effects and impacts of Regulation (EU) 2018/1139 would have been achieved without having the Regulation in place (i.e. with only the previous Basic Regulation (EC) 216/2008 in force)? (n = 118)

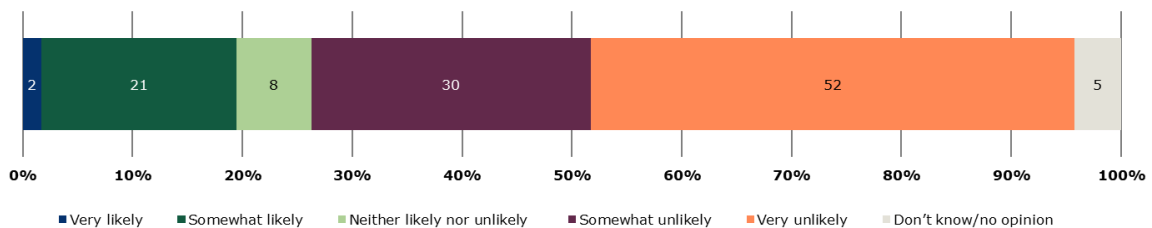


Evidence collected during this study shows that the same results would have not been achieved without EU intervention in the field of aviation safety. No consulted stakeholder mentioned any opinion in favour of abolishing EASA or ending EU intervention in the area of aviation safety. On the contrary, most stakeholders spontaneously mentioned they would not wish for this to occur. This is

supported by the literature review where no mention was found arguing to stop or withdraw European intervention in the area of aviation safety.

Results from the survey targeting aviation industry players and NCAs on the EU added value of the Agency show that there is strong support for the statement that the same results could not have been reached without EASA (69%, corresponding to 82 respondents).

Figure 28. How likely it is that the same results would have been achieved at international, national or regional level without an agency such as EASA? (n=118)



Part of the interview discussions, there was a wide consensus from stakeholders in different sectors of aviation that EASA brings clear added value as compared to a hypothetical situation where the Agency would not exist.

Box 6. Summary of findings on how the EU intervention made a difference

Our evaluation findings show that the EU intervention **made a difference** by building on the framework created by the previous Regulation (EC) 216/2008 including in the scope key technological developments such as unmanned aircrafts. Overall, the EU intervention continued to achieve (as the previous Regulation) safety results that would have not been achieved at national level or through other international bodies.

Findings linked to the added value of Regulation (EU) 2018/1139:

Overall, stakeholders consulted for this study considered that the same impacts that the Regulation has had could not have been achieved by the previous Regulation (EC) 216/2008. While the New Basic Regulation continues many of the rules from the previous Regulation, stakeholders identified that having this EU intervention covered some of the recent developments such as unmanned aircrafts which are now under the scope of the Regulation. Regulation (EU) 2018/1139 sets out a single EU-level regulatory framework for aviation safety at European level which has been widely recognised as bringing added value as compared to a more fragmented system of rules and requirements.

Findings linked to the added value of EASA:

EASA continues to play an important and preponderant role in harmonising rules and supporting all actors in European aviation. Stakeholders stated that the tasks of EASA could have not been better performed by other actors at regional, national or international level.

4.3 Is the intervention still relevant?

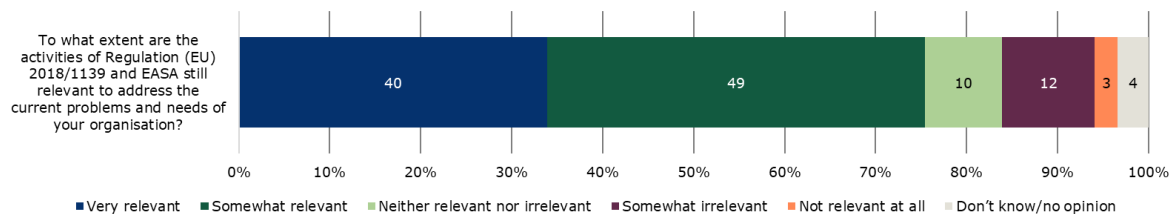
This section presents the evaluation findings concerning the relevance of Regulation 2018/1139 and EASA. The assessment of relevance explores the degree to which the objectives of Regulation (EU) 2018/1139 and EASA’s tasks are still in line with the current needs or problems of the EU aviation sector, and whether the original objectives and activities of EASA correspond to the foreseeable future needs of the aviation sector in the EU.

4.3.1 Relevance

The objectives and scope of the Regulation and of EASA corresponding to the needs of the aviation sector (EQ 7)

The findings suggest that the objectives and scope of Regulation (EU) 2018/1139 and of EASA are still relevant to the needs of the aviation sector, according to the stakeholder groups that have been consulted in this study. A majority of respondents to the survey answered that Regulation (EU) 2018/1139 and the activities of EASA are still relevant to the current problems and needs they face, with 75% of the participants (i.e. corresponding to 89 out of the total of 118 respondents) who answered with 'very relevant' or 'somewhat relevant'.

Figure 29. To what extent are Regulation (EU) 2018/1139 and the activities of EASA still relevant to address the current problems and needs of your organisation? (n=118)



The field visit and interviews shed light on more insights in relation the relevance of EASA in addressing current needs of the aviation sector. The field visit showed that EASA staff that was interviewed by the study team widely agreed that the Agency is especially well-placed to serve large pan-European stakeholders that have a business model which benefits from an EU-wide regulator. In this sense, EASA was perceived as a key enabler of a competitive European aviation industry. At the same time, an area of attention for the Agency is that its approach should also serve smaller, more innovative and out-of-the box stakeholders (e.g. SMEs) or, at least, it should create a system where these needs are served by other authorities (e.g. NCAs).

An example where the relevance of EASA was seen as particularly prominent was in relation to the regulation of unmanned aircrafts, as in this instance the necessary requirements were drafted ad-hoc and together with most stakeholders, including the industry, leading to a legal framework within a short timeframe. In terms of other new policy developments such as the greening and digitalisation of the aviation sector, the field visit showed that according to its staff, EASA should have a leading role on the safety-related aspects of these areas, whilst also contributing to the wider debate on these developments.

Ten interviewees highlighted that the Agency is still relevant for achieving its established objectives and scope. One key point of discussion, however, was the mandate of the Agency from the core role it has in certification. While most of the industry stakeholders agreed on the role that EASA could play on environmental issues and on the topic of digitalisation, there was a wide concern linked to efficiency considerations: any expansion of the scope of EASA's activities to include emerging trends and new topics cannot take place at the expense of safety as a key priority. EASA's financial and human resources somewhat concern most stakeholders as well, as they fear that a lack of prioritisation of resources and activities will be even more pronounced in the future, given the political pressure on EASA to deliver on its extended mandate as well as on new upcoming (political) priorities.

New emerging issues and needs in aviation (EQ 8)

A key emerging issue that was highlighted in the interviews related to emerging new technologies and innovation in aviation. Automation, artificial intelligence, and digitalisation are increasingly present in the aviation sector, with various developments in terms of new products and aircrafts (e.g. hydrogen-powered aircrafts), increasingly digitalised ATM infrastructure, training, maintenance, repair and overhaul, the movement of cargo using autonomous vehicles, revenue management, and other areas.

EASA is addressing this emerging trend in aviation. In the field of artificial intelligence (AI) and aviation, the AI Roadmap¹³² presents EASA's vision on the safety and ethical dimension of AI in the aviation sector. The initial 2020 version of the document addressed the impact of machine learning on aviation, trustworthiness of AI, as well as challenges that EASA encounters by the introduction of machine learning in aviation. The AI Roadmap has five key objectives (to develop a human-centric AI trustworthiness framework, to make EASA a leading certification authority for AI, to support European aviation leadership for AI, to contribute to an efficient European AI research agenda, and to actively contribute to EU AI Strategy and initiatives) and a timeline between 2019-2035 with corresponding deliverables. The EASA 'Concept Paper: First usable guidance for level 1 and level 2 machine learning applications' (2023)¹³³, marks another step in implementing the EASA AI Roadmap. In all areas covered by Regulation (EU) 2018/1139, it intends to provide aviation stakeholders with guidelines when incorporating artificial intelligence and machine learning technologies into systems designed for use in safety- or environment-related applications. In the process entailed by the AI Roadmap, consultations with stakeholders are envisioned as part of each deliverable.

The role of EASA in the COVID-19 pandemic was discussed in interviews and during the SAB workshop, with most stakeholders agreeing that EASA managed all the coordination of information and support needed during the health crisis in a timely and efficient manner, taking on a role that has not previously been part of EASA's responsibilities.

Box 7. Summary of findings on the relevance of the EU intervention

Our evaluation findings on the relevance of the EU intervention can be summarised as follows.

Findings linked to the relevance of the Regulation and of EASA:

Regulation (EU) 2018/1139 and EASA are both perceived to still be relevant for the current needs of the aviation sector. One key discussion brought by stakeholders was the expansion of EASA's scope in areas that go beyond its core objectives.

New technologies in aviation, digitalisation, artificial intelligence have been identified by stakeholders as emerging needs that impact aviation safety more since the adoption of the Regulation.

¹³² <https://www.easa.europa.eu/en/newsroom-and-events/news/easa-artificial-intelligence-roadmap-10-published>

¹³³ <https://www.easa.europa.eu/en/downloads/137631/en>

5. WHAT ARE THE CONCLUSIONS AND LESSONS LEARNT?

This section draws conclusions in relation to the evaluation of EASA's performance in relation to its objectives, mandate and tasks as set out in Regulation (EU) 2018/1139. These conclusions are related to the five evaluation criteria of relevance, effectiveness, efficiency, coherence and EU added value and provide an answer to the three evaluation questions of Tool #49 of the Better Regulation Guidelines Toolbox:

- To what extent was the intervention successful and why?
- How did the EU intervention make a difference?
- Is the intervention still relevant?

Where relevant, this section provides lessons learned that could inform the Commission's future policymaking in this domain: as specified by Article 124 of Regulation (EU) 2018/1139, this evaluation also has to address the potential need to modify the mandate of EASA.

5.1 To what extent was the intervention successful and why?

As specified by Tool #47 of the Better Regulation Guidelines Toolbox¹³⁴, 'success' is assessed in terms of the extent to which an intervention achieves its objectives: effectively, efficiently, and in coherent way.



EASA and Regulation (EU) 2018/1139 have contributed to European integration in the area of air transport, resulting in benefits for safety and efficiency for the aviation industry.

EASA's expertise and activities are **perceived worldwide as a 'gold standard'** in terms of **safety**. Despite some areas for improvement across the EU regulatory framework, due to a **not yet fully consistent harmonisation of rules across all domains of aviation safety**, the **overall quality of safety standards** at EU level is recognised as **high** by all the actors in the EU aviation system. This is explained by positive feedback on EASA's core tasks within its mandate as prescribed by Regulation (EU) 2018/1139: product certification, rulemaking and standardisation activities are perceived as effective overall with some caveats (e.g. length of rulemaking process with respect to the pace of technological developments, or some discrepancies in standardisation procedures).

Moreover, EASA's effectiveness is demonstrated by the role played by the agency in response to external shocks and political pressure: **widely positive feedback** was reported in relation to EASA's proactivity in ensuring **safe flight operations** during the **COVID-19 pandemic**, or in reaction to the current Ukraine crisis.

However, EASA faces challenges insofar as it has to maintain the highest possible level of aviation safety in the future, with a not yet fully implemented data-driven approach and within the broad mandate of Regulation (EU) 2018/1139.

¹³⁴ European Commission (2021). Better Regulation Guidelines, Toolbox, Tool#47

Lessons learnt:

- **Enhance EASA's mandate in line with EU policy priorities:** In order to maintain EASA's capability of reacting effectively to external shocks and to be involved in wider EU policy objectives (e.g. environmental objectives), it is essential for the agency to have (specified in the Regulation) a clear definition of its mandate, with a corresponding prioritisation of its activities within the mandate and an adequate level of financial resources to execute said mandate.
- **Consider revision of Art.87 of the Regulation:** For instance, EASA's mandate on the domain of environmental protection, Art. 87 of the Regulation, may need to be enhanced to maintain EASA's effectiveness (e.g. in view of the "Fit for 55" package and the proposed ReFuelEU Aviation initiative). A clear mandate in the Regulation for EASA to develop a methodology for aviation environmental impact assessments might empower EASA with the required tools to serve broader EU policy objectives, such as the assessment of aviation environmental performance against the Green Deal objectives.
- **Foster effectiveness through data-driven insights:** EASA's effectiveness in ensuring the highest possible standards in terms of aviation safety should be further sustained with more data-driven insights, on the one hand to allow it to react to external shocks in a timely way, on the other hand, to ensure that the agency's core tasks are supported by the most accurate available information.



EASA's performance-based approach is recognised as an effective way forward to meet the objectives of Regulation (EU) 2018/1139. However, the right balance between legal certainty and over-prescriptiveness of the rules has not yet been fully achieved.

The **performance-based approach** of the agency, as defined in Article 4 of Regulation (EU) 2018/1139, is **essential to ensuring the effectiveness of the activities of EASA**. In fact, the issue of over-prescriptive rules was one of the key problems identified at the time of the Commission IA for this intervention. Such prescriptiveness led in the past to some areas of the aviation industry slowing down in adopting technological safety and efficiency improvements, even though it provided clear guidance to users and compliance with the rules was straightforward.

Although there is wide consensus across stakeholders (and within EASA itself) on the need to pursue a performance-based and less prescriptive approach, there are still some resistances due mostly to the different needs of the aviation industry and NCAs: while stakeholders from the **aviation industry** often request **performance-based** and non-prescriptive rules, **Member States** tend to ask for **more prescriptive rules and clearer guidance** on implementation. This friction still translates in some cases into prescriptive rules, e.g. the rules on certification of flight simulators being device-based rather than being flexible in setting out principles which are independent from the device.

Lessons learnt:

- **Increase the use of soft law and enhance guidance on implementation of performance-based regulations:** The introduction of more flexibility (spelled out in the Regulation) in the use of certification specifications, acceptable means of compliance and guidance materials (i.e. 'soft law') rather than implementing rules and delegated acts (i.e. 'hard law') would increase the effectiveness of EASA. Guidance by EASA in the implementation of regulations is key to ensure a framework which is performance-based but also harmonised across countries.



The stakeholder consultations within EASA's advisory bodies are largely effective and EASA plays a pivotal role in respecting the due process when consulting all relevant stakeholders without ad hoc changes in procedures.

Stakeholders' feedback highlighted that the **advisory structure of EASA has improved significantly over the years**: although there has been no specific change introduced with Regulation (EU) 2018/1139 in this regard, several stakeholders noted that the relationship between EASA and Member States had improved, particularly **shifting from a competitive to a more and more cooperative approach**. To further improve the effectiveness of stakeholder consultation activities, in 2022 EASA launched a review of the Advisory Bodies aiming to create activity groups and communities with a limited timeframe of operativity related to a specific topic: Advisory and Technical Bodies (described in Section 4.1.1) will stay, but some topic-specific activity groups will be created ad hoc.

Lessons learnt:

- **Improve decision making via ad hoc working groups:** While the value of having stakeholders involved at an early stage (i.e. through rulemaking groups and early consultation feedback) is recognised by EASA, NCAs and aviation sector stakeholders, more targeted consultations (e.g. topic-wise) outside the Advisory Bodies might further improve the effectiveness of EASA's decision making as well as stakeholder engagement.



Overall, the Agency was successful in implementing the financial resources made available, however external shocks (primarily through the COVID-19 pandemic) highlighted challenges in operating with a reliance on revenues from fees and charges from industry.

Overall, EASA has been efficient in adequately using the budget available, achieving a consistently high budget implementation rate and stable levels of costs and contributions over the period 2018-2021. The budget is mainly funded by industry fees and charges, accounting for around 63% of the total EASA budget, with the remaining 22% coming from the European Commission as a subsidy for rulemaking activities. However, the COVID-19 pandemic had a significant impact on EASA's revenues from fees and charges, resulting in a reduction of EUR 18.5 million in 2020 compared to 2019.

Indeed, the analysis of the breakdown of the revenues from different sources outlined that the Agency is highly dependent on fees and charges from industry, which may pose a risk in the event of an economic downturn or other external factors affecting the aviation industry. This was highlighted in the wake of the COVID-19 pandemic when EASA's fees and charges were increased relative to 2020 by around 25% in order to cover increasing costs. It should be noted that it is not possible to draw conclusions on the efficiency of the Agency solely based on the costs being higher than anticipated in the IA. There may be various factors that led to the increased costs, such as changes in the market conditions, unexpected events, or developments, as evidenced by the impact of the COVID-19 pandemic on the aviation industry.

Lessons learnt

- **Efficient use of the annual budget:** In terms of financial resources, the Agency has demonstrated its ability to efficiently use its annual budget and generate revenue through

its activities, but it should also strive to continually improve the efficiency of different activities and domains. In addition, the actual expenditure of the Agency was higher than what was foreseen in the Commission IA. Therefore, it is crucial for the Agency to continue monitoring and using its budget efficiently, while ensuring that the budget is used effectively for its specific activities.

- **Additional foresight planning for unexpected events:** The COVID-19 pandemic had a significant impact on the Agency's activities and revenue from fees and charges. It is therefore necessary for the Agency to plan and prepare for unexpected events that may impact its operations and revenue streams.



The scope of EASA has expanded (and continues to expand), however the available FTEs across activities has declined, resulting in a challenge for EASA to fulfil its tasks and objectives.

Irrespective of the COVID-19 pandemic, the Agency has faced a steady decline over time in its number of full-time employees (FTEs), despite an increase in workload and demands since the introduction of the new Basic Regulation in 2018. This has resulted in a decline in the time spent on each activity. Indeed, compared to the IA which estimated that introduction of the Regulation would require an additional 9.5 FTEs in total, the total number of FTEs within EASA has decreased, falling from 769 FTEs in 2018 to 731 FTEs in 2021. Moreover, the current structure of authorised posts within the Agency was found to not necessarily reflect current needs, thus there can be limitations in EASA's flexibility to adjust the establishment plan. These factors are particularly pertinent considering the expansion of EASA's scope since Regulation (EU) 2018/1139.

Thus, while the number of tasks under each of the activities increased over the period 2018-2022, the budgetary planning and resources were not found to have increased in parallel to the degree required. Therefore, the degree to which the Agency has the ambition to work across a wider thematic scope should be weighed up against the financial sustainability of the Agency going forward, recognising the additional resources, both financial and human, that would be required to maintain a high level of safety in the European airspace.

Lessons learnt

- **Stability in resources:** Due to the increase in the scope of EASA, there should be an increase in resources to efficiently carry out tasks and meet its objectives, as it is challenging for EASA to fulfil all tasks and objectives with a relatively stable level of resources.
- **Long-term approach to the allocation of human resources:** The Agency could consider shifting from a domain-centric standardisation approach to a country-centric approach, increasing the alignment with ICAO, and develop a more long-term approach to the allocation of human resources.
- **Weighing up additional domains against available resources:** Future considerations should be made with regards to the balance between the scope of the Agency and the financial feasibility, with the recognition that to provide and maintain a high level of safety in the European airspace, there should be adequate budgetary means provided to allow for an increase in scope beyond this core area of the Agency.



Compliance with EASA and Regulation 2018/1139 is essential for ensuring safety and sustainability in aviation, and while the costs of compliance are significant, they are proportional to the benefits achieved, however greater support/ guidance could be provided to stakeholders to maintain this proportionality.

The costs of complying with the EASA recommendations and Regulation 2018/1139 are significant but are considered proportional to the benefits achieved, such as the harmonised regulatory framework for aviation safety across Europe and the standardisation of regulations, leading to greater cooperation and coordination between NCAs. There is a divergence of views across stakeholders regarding the proportionality of the costs against the benefits, with some stakeholders suggesting that greater flexibility and assessments of the administrative impact of future requirements and implementing regulations could increase proportionality. It is worth noting, however, that the estimated cost increases for NCAs (for labour costs) was broadly found to be in line with what was anticipated as part of the Commission IA.

Based on the analysis, the Agency could consider taking into account stakeholder types and size of organisations, as well as the timing of implementing regulations, to increase proportionality. Increasing the flexibility for stakeholders within the requirements and implementing regulations could also help to better distribute costs and increase the perceived benefits from complying with the Regulation and EASA's work as a whole. Additionally, conducting greater assessments of the administrative impact of future requirements and implementing regulations for stakeholders could also increase proportionality. These actions could help to address concerns raised by some stakeholders and ensure that compliance costs remain proportional to the benefits achieved.

Overall, it is crucial for the aviation industry to maintain a high level of safety and sustainability for the long term, and compliance with EASA recommendations and Regulation 2018/1139 is an essential part of achieving this goal. While the costs of compliance are significant, the benefits achieved are equally considerable. The Agency should continue to work with stakeholders to address concerns and ensure that compliance costs remain proportional to the benefits achieved.

Lessons learnt

- **Greater assessment of impact towards stakeholders.** The Agency could consider conducting additional assessments of the administrative impact of future requirements and implementing regulations for stakeholders, taking into account the stakeholder type and size of organisations, as well as the timing of implementing regulations.
- **Additional guidance and support to stakeholders.** The Agency could consider providing additional guidance and support to stakeholders, particularly smaller organisations, to help them meet the requirements of EASA and Regulation 2018/1139.



Although the intervention is overall both internally and externally coherent, there are some areas for improvement in relation to external coherence. In fact, the Regulation's requirements and EASA's tasks show some overlaps with cybersecurity requirements within the broader EU regulatory framework. While EASA's mandate and activities are well defined and coherent with the tasks of EUROCONTROL, EASA's new responsibilities in the domain of ATMs are still not fully acknowledged by the entire aviation sector.

Stakeholders' feedback on the **internal coherence** of Regulation (EU) 2018/1139 was **overall positive** about the complementarity and the coherence of the legal requirements set out in the Regulation. To a certain extent, a **lack of coherence** is however perceived in the external dimension: some overlaps are present between EASA's rules on aerodromes and the requirements of the broader EU regulatory framework, such as for the requirements of the NIS Directive on network and information systems applicable to critical infrastructures across all Europe and all industries (including airports).

Nonetheless, the text of the Regulation allows EASA to be coherent overall with other relevant EU policies, such as the Sustainable and Smart Mobility Strategy (SMSS) and the European Green Deal. Both the **SSMS' goal** of large zero-emission aircraft by 2035 and the requirement for EASA (Article 87) to assist the Commission are **embedded in EASA's activities**.

Despite EASA and EUROCONTROL actively cooperating on several topics (e.g. review of ATM/ANS environmental performance measurements), the **recent introduction of ATMs within EASA's mandate is still not fully acknowledged by stakeholders**: this is due to the "legacy" of the past responsibilities on ATMs (dealt with by EUROCONTROL, actively involved in the implementation of the Single European Sky framework) and to the need for stakeholders to adapt to the new regulatory framework.

In sum, the novelty of the new domains covered by the Regulation (e.g. drones, ground handling) that had not been covered before, still requires some fine tuning in terms of the legal interpretation of EASA's role. On the other hand, these issues are due to the inherently complex system of responsibilities across the aviation sector, which involves shared responsibilities at EU (EASA) and national level (NCAs).

Lessons learnt:

- **Enhance stakeholders' understanding of EASA's tasks in the domain of ATMs:** Although EASA's scope of activities, especially in the new domains included under Regulation (EU) 2018/1139 (e.g. ATM/ANS), is clear enough from a regulatory perspective, it will be essential to continue promoting common working practices and forms of cooperation between EASA and EUROCONTROL. This would facilitate stakeholders' full understanding of the transfer of responsibilities in the domain of ATMs to EASA and it would help the transition to the new system.

5.2 How did the EU intervention make a difference?



The same effects that Regulation (EU) 2018/1139 achieved could not have been achieved by the previous Regulation (EC) 216/2008 as the New Basic Regulation introduced changes in line with the recent trends and challenges facing aviation.

Although many requirements and standards set out in Regulation (EU) 2018/1139 are similar to what was previously in force under Regulation (EC) 216/2008, the New Basic Regulation has introduced changes that address the increase in the market use of unmanned aircrafts, issues with regards to environmental protection, among others, and has further improved rules and requirements from the previous legal text. Thus, the New Basic Regulation addressed emerging issues which could have not been achieved through the previous Regulation.

Lessons learnt:

- Having a flexible, less prescriptive legal framework is key to allowing the possibility for it to adapt to a rapidly changing environment with new technologies, where a legalistic approach may risk being outdated by the speed of change.



EASA plays an essential role in harmonising rules and supporting European aviation and the European market, which would have not been possible at regional, national or international level.

In relation to added value of having an EU intervention, there is general agreement that having an EU-level regulatory framework constituted by this Regulation is preferable to a more fragmented system with different set of rules at different levels. For instance, having Regulation (EU) 2018/1139 provides more simplicity to many stakeholders and authorities who have to comply with a single high-level set of aviation safety rules and standards all across Europe. This was identified as the key benefit of having an EU-wide Regulation that provides common standards.

As an EU-wide agency, EASA plays a critical role in harmonising aviation safety standards across the EU. Moreover, EASA has been able to establish relationships with other aviation safety agencies around the world, resulting in the recognition of each other's certification and oversight activities. This has facilitated the international acceptance of EU aviation products and services. EASA is at the forefront of the development and implementation of innovative technologies, such as unmanned aircraft systems and electric aviation, among others. This enables the EU to maintain its competitiveness in the global aviation industry. An EU-wide Agency promoting all these areas provides for a wider overview across the complex and rapidly changing European aviation environment, something which would not be possible to the same extent at regional or national level.

Lessons learnt:

- In its effort to harmonise rules and the different views and interests of a variety of stakeholder groups, EASA is navigating a complex and rapidly changing environment.

5.3 Is the intervention still relevant?



Regulation (EU) 2018/1139 and EASA are relevant to the current needs of the aviation sector. However, the new responsibilities taken on by EASA risk diverting its work away from its core area of aviation safety unless additional resources are invested.

Regulation (EU) 2018/1139 and EASA are perceived to be relevant to the current needs of the aviation sector. While the Regulation was widely seen as still relevant with the new provisions it introduced in 2018, EASA is still perceived as relevant with the activities it performs. However, the 'trajectory' of EASA and its relevance in areas that may move beyond its core role in aviation safety was discussed: EASA is broadening its role in environmental protection, security, research and innovation. The main concern is linked to efficiency considerations: any expansion of the scope of EASA's activities to include emerging trends and new topics cannot take place at the expense of safety as a key priority. Moreover, this concern was also shared in relation to overlaps with other EU-level authorities. This leads to a larger discussion about what should be the prioritisation of activities made by EASA, and how linked the core mandate and the objectives of the agency are to the current relevant needs it addresses through its activities.

Lessons learnt:

- Additional resources would be needed for EASA to continue to be relevant in light of current and emerging needs in the aviation sector.



Digitalisation, automation and other recent technological developments are increasingly more present in the aviation sector, with implications for the future role of EASA.

Innovation and technological developments have become the norm in the aviation sector, and these developments have intricate implications for the complex environment that EASA operates in. The use of machine learning and artificial intelligence are at the core of many new tools that, for instance, provide a more efficient and fast analysis based on collected flight data. Such developments also have possible implications for aviation safety and thus need to be taken into consideration by EASA, e.g. by ensuring it has the necessary technical expertise in these new technologies.

Lessons learnt:

- EASA could explore new ways to be up to date and move forward on key recent innovations and assess their impact on aviation safety by establishing synergies and consulting other EU agencies or international stakeholders with more involvement in such technological advancements.

In conclusion, the main outcome of this evaluation is that, generally speaking, EASA has positively contributed to aviation safety within the EU and is a worldwide leader in this regard. It is also viewed very positively by both Member States and private sector stakeholders. However, some areas of focus should be considered going forward, such as performance-based regulation, foresight planning for unexpected events and efficiency considering declining resources and increasing tasks.

APPENDIX 1 - METHODOLOGY

By means of an introduction to the general methodology employed for this study, we first present the Evaluation and its place in the Better Regulation Guidelines, followed by a discussion of the structured evaluation approach, and the different study phases and tasks.

Evaluation and its place in the Better Regulation Guidelines

Evaluation can be defined as a 'judgement of interventions according to their results, impacts and needs they aim to satisfy'.¹³⁵ The key notion in this definition is that it is a process that culminates in a judgement (or assessment) of an intervention in terms of its achievements against its objectives. Evaluations are carried out on the basis of the 'evaluate first' principle (i.e. before any revisions to EU legislation).

While we understand this evaluation of EASA to be a classical evaluation assignment, it is particular in the sense that it is an organisational evaluation and not a policy, programme or project evaluation. An organisational evaluation will need to look into all aspects of the Agency, including its objectives, mandate, governance structure, organisational set-up, working modalities, tasks, environment and stakeholders, to assess its relevance, effectiveness, efficiency, coherence and EU added value, and ultimate impact on safety in the air transport sector. Such an evaluation is often more complex than a classical programme evaluation (a programme has a defined budget and a timeline, with overall and specific objectives to achieve).

Evaluations in the BRG¹³⁶ are considered **evidence-based assessment** of the extent to which an intervention is **effective** in fulfilling expectations and meeting its objectives, **efficient** in terms of cost-effectiveness and proportionality of actual costs to benefits, **relevant** to current and emerging needs, **coherent** (internally and externally with other EU interventions or international agreements) and providing **EU added value** (i.e. produces results beyond what would have been achieved by Member States acting alone). In general, all evaluations need to assess these **five evaluation criteria**, but additional criteria can be added. The table below outlines the five main criteria used in evaluations according to the 2021 Better Regulation Guidelines, as well as details of the aim of these for this particular assignment and proposed methods to carry out the analysis.

¹³⁵ Communication on Evaluation, SEC (2000) 1051, Focus on Results: Strengthening Evaluation of Commission Activities (26 July 2000).

¹³⁶ <https://www.smartreg.pe/reportes/Better%20Regulation%20Guidelines%202015.pdf>

Table 6: Approach to the evaluation criteria

Evaluation criterion	EU Definition (BRG)	Aim	Method	Challenges/ Limitations	Mitigations
Effectiveness	<p>The effectiveness criterion considers how successful EU action has been in achieving or progressing towards its objectives.</p> <p>To this end, the criterion seeks to identify the factors driving or hindering progress and how these are linked (or not) to the EU intervention. If the objectives have not been achieved, or things are not on track, an assessment is made of the extent to which progress has fallen short of the target and what factors have influenced this.</p>	<p>The assessment of effectiveness is largely concerned with the degree to which the Regulation and the Agency have achieved (or have made progress towards achieving) their objectives, along with a focus on the effects associated with both the Regulation's implementation and the Agency's work, and on potential obstacles to their implementation.</p>	<p>This assessment was based on the review of a range of documentation, including reports and studies commissioned by the EU, international organisations, research institutes or stakeholder associations.</p> <p>Moreover, it relied on targeted interviews with stakeholders, as well as the targeted survey addressed at EASA Members States and industry representatives. This combination of desk-based research and stakeholder consultations led to the gathering a comprehensive combination of qualitative and quantitative data, allowing to capture the extent to which the objectives have been achieved and its effects.</p>	<p>Limited quantitative evidence about the effectiveness of EASA and of the Regulation was available, based on desk research activities and the fieldwork. In particular, such challenges relate to quantitative indicators linked to the performance-based approach of the Regulation.</p>	<p>Through stakeholder consultations, qualitative evidence has been gathered to obtain a rough approximation of the indicators considered.</p>
Efficiency	<p>The efficiency criterion considers the relationship between the resources used by an intervention and the changes generated by the intervention (which may be positive or negative).</p> <p>Efficiency analysis thus always looks closely at both the costs and benefits of the EU intervention as these accrue to different stakeholders.</p>	<p>The assessment of efficiency on the one hand concerned the degree to which the financial and human resources allocated to the Agency are adequate to undertake its functions. On the other, the efficiency assessment concerned the extent to which the regulatory costs (i.e. compliance costs, enforcement/implementation costs, etc.) of the</p>	<p>This assessment was initially based on the review of a range of relevant documents, including reports and studies commissioned by the EU and EASA, as well as by stakeholder organisations and national authorities. Stakeholder consultations complemented the information gathered through desk research. The survey was also used to</p>	<p>Limited quantitative data was provided through the survey to stakeholders. As such the analysis was limited by the degree to which accurate estimates could be provided for costs.</p>	<p>Additional targeted stakeholder consultation was conducted in order to gather more quantitative data. Only a small sample of data was provided, however this data allowed for the basis of quantitative estimates where possible.</p>

Evaluation criterion	EU Definition (BRG)	Aim	Method	Challenges/ Limitations	Mitigations
	<p>Efficiency also analyses the implementation processes and the relationships between key stakeholders.</p>	<p>Regulation are proportional with the achieved benefits. Lastly, the assessment explored the unnecessary regulatory burdens or inefficiencies resulting from the Regulation and the Agency's provisions, with specific attention dedicated to the possibility to achieve the same results at a lower cost.</p>	<p>collect data on the main costs and benefits associated with the implementation of the Regulation. Targeted interviews were used to further explore these aspects, while also relying on EASA staff specifically to obtain an overview of the resources required for the tasks carried out by the Agency, as well as of the cost-efficiency of the Agency's internal organisational structure.</p>		
<p>Relevance</p>	<p>The relevance criterion analyses the relationship between societal needs and problems and the objectives of the intervention. It also looks at the needs of the specific target groups.</p> <p>Relevance analysis also requires a consideration of how the objectives of an EU intervention correspond to wider EU policy goals and priorities.</p>	<p>The assessment of relevance involved the analysis of the degree to which the Regulation and the Agency's objectives and functions as they were identified at the time of adoption are still adequate in the current context, along with the extent to which they still correspond to the current problems and needs of the European civil aviation sector.</p>	<p>This assessment was initially based on the desk-based review of reports and studies, as well as of relevant legislative and policy documents. This allowed the study team to gain an understanding of problems and needs within the sector and subsequently assess how far the intervention in question is placed to alleviate/meet these.</p> <p>Moreover, the assessment of the relevance criterion relied on targeted stakeholder interviews, as well as the survey addressed at EASA Members States and industry representatives. Stakeholder consultations lead to the refinement our understanding of current and future problems and needs within the sector, as</p>	<p>Limited sources of information about the relevance of EASA and of the Regulation from the desk research activities.</p>	<p>Part of the stakeholder consultation, we centred our analysis of relevance on the basis of the stakeholder consultation.</p>

Evaluation criterion	EU Definition (BRG)	Aim	Method	Challenges/ Limitations	Mitigations
			well as to gauge how far the Regulation and the Agency are perceived as still relevant by the main stakeholders.		
Coherence	The coherence criterion involves looking at how well or not different actions work together. This involves looking both at how parts of the intervention relate to other parts of it (i.e. internal coherence) as well as to other interventions/ initiatives (i.e. external coherence).	The assessment of coherence was twofold. Firstly, it consisted of an assessment of the internal coherence of the Regulation's requirements and provisions. Secondly, it consisted of an assessment of the degree of coherence of the Regulation and the Agency's tasks with both other EU regulatory instruments and the internal (air) transport acquis and other relevant international agreements.	A desk-based review was carried out to assess similar interventions in the area. The main sources used for this assessment were legislative and policy/strategy documents. In addition, targeted interviews, as well as the survey with stakeholders was used to explore both the internal and external coherence of the Regulation and the Agency. Specifically, stakeholder consultations were useful to gather more detailed data on exactly how an intervention fits into a broader policy framework and social ecosystem.	Limited qualitative evidence about the coherence of EASA and of the Regulation was available, based on the fieldwork activities. In particular, such challenges relate to stakeholders' capability of providing anecdotal evidence of the issues raised	Through desk research and the study team's sectoral expertise, an analysis has been made to properly understand stakeholders' generic feedback.
EU added value	The criterion of EU-added value considers which impacts can reasonably be argued are due to the EU intervention, over and above what could reasonably have been expected from national actions by the Member States acting alone.	The assessment of EU-Added Value included an analysis of the positive/negative impacts which have been achieved resulting from EU intervention (namely, EU level regulation of the civil aviation sector and EASA) and the extent to which this could have been achieved at the national level without EU intervention. Particular attention was also placed on assessing what the consequences of stopping	This assessment was based on the review of a range of documentation, including reports and studies commissioned by the EU, international organisations, research institutes or stakeholder associations. In addition, targeted interviews, as well as the survey with Member States and industry stakeholders was used to obtain an estimation of the EU-added value that different stakeholders associate with the Regulation and the Agency.	EQ11 (what is the added value resulting from having an EU intervention?) provided no initial separation between answers regarding the added value of EASA and the added value of the Regulation.	In order to separate between the views received from the stakeholder, we added a question part of the interviews with stakeholders that would facilitate a more clear separation between views about the added value of EASA and views on the added value of the Regulation.

Evaluation criterion	EU Definition (BRG)	Aim	Method	Challenges/ Limitations	Mitigations
		or withdrawing the existing EU intervention would be.			

Source: Elaboration of the Consortium (2022) based on the Better Regulation Guidelines

Study phasing and tasks

To implement the general methodology described above, the study will follow the main phases presented below:

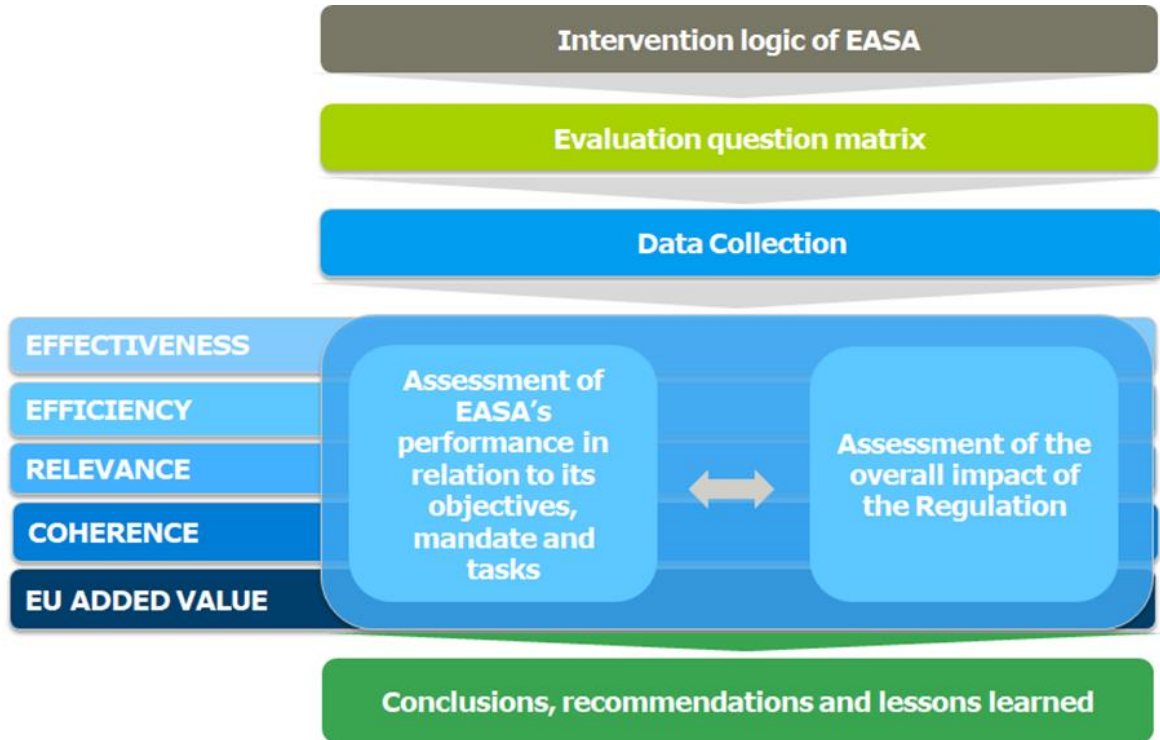
- **Design phase:** in this phase, the intervention logic and EQM, which were developed during the tendering phase, were refined and acted as the building blocks of the evaluation. In addition, preliminary research was conducted through the form of desk research and exploratory interviews. Finally, draft versions of all the data collection tools were developed.
- **Evidence collection phase:** this phase was the core of the evaluation process and included a full desk review (data review and literature review), targeted online survey, workshops, targeted interviews, a field visit of the Agency and analysis of the activities conducted by DG MOVE. The evidence gathered in this phase fed into the evidence analysis phase and synthesis phase and sought to answer the evaluation questions.
- **Evidence analysis phase:** this phase included the assessment of the implementation, the analysis of the evaluation baseline and the cost-benefit analysis. The output from this phase further defined the causal links between the evaluation questions and the analytical and data collection tools carried out in the evidence collection phase.
- **Synthesis phase:** this phase triangulated the findings from the previous phases and form the basis of the evaluation report.

Moreover, as set out in the Terms of Reference (ToR), this evaluation has a twofold dimension in that it assesses:

- **EASA's performance in relation to its objectives, mandate and tasks according to the five evaluation criteria** (i.e. effectiveness, efficiency, relevance, coherence and EU added value): This dimension represents a comparative exercise: the objectives, mandate and tasks as set out in the Regulation are compared with the actual working practices of EASA. This leads to an assessment of whether and how EASA has met its obligations as set out in the Regulation.
- **Overall impact of the Regulation (EU) 2018/1139:** This dimension integrates the assessment of the performance of EASA with a consideration of relevant factors contributing to a high level of civil aviation safety, according to the five evaluation criteria (i.e. effectiveness, efficiency, relevance, coherence and EU added value). It analyses whether the EU common rules in all the different areas covered by Regulation have resulted in a better regulatory system compared to the previous situation, i.e. with Regulation (EC) 216/2008 in force, as amended by Regulation (EC) 1108/2009.

The figure below summarises the study logic:

Figure 30: Overview of study logic



Source: elaboration of the contractor (2022)

The table below presents a short assessment of evidence completeness for each evaluation question. Where completeness remains limited in relation to given areas of the study, detailed caveats were added in Section 1.2 to explain the limitations of this study and the extent to which these limitations impact the robustness of the evaluation findings and the conclusions presented in Sections 4 and 5.

Table 7. Assessment of data completeness

Evaluation criterion	Relevant EQ	Tools used	Assessment of data completeness
Effectiveness	EQ 1: To what extent has the Agency achieved its objectives and tasks supporting the Commission as a rulemaking body? To what extent has EASA delivered its opinions in time? Is the stakeholder consultation procedure efficient and effective? As part of the Agency's role, how effective is the monitoring by the Agency of national aviation authorities?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 2: To what extent has the Agency achieved its objectives and tasks as a certifying body and in achieving the objectives at both European and worldwide levels as established by Article 1 of the Basic Regulation?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 3: What actual observed effects (positive and negative impacts) has the Regulation had? To what extent has the Regulation and the work of	<ul style="list-style-type: none"> • Desk research 	There is adequate evidence to

Evaluation criterion	Relevant EQ	Tools used	Assessment of data completeness
	the Agency contributed to these effects? What were the main drivers and hindrances to the effectiveness of the Regulation?	<ul style="list-style-type: none"> • Points of comparison • Interviews • Survey • Workshops • Field visit 	respond to the evaluation question
	EQ 4: To what extent does the work of the Agency cover all the real needs of aviation in Europe, also considering the huge impact of the COVID-19 pandemic in the European and worldwide aviation safety system?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
Efficiency	EQ 5: Were the additional human and financial resources allocated to the Agency sufficient and adequate to achieve its new tasks? Which aspects/means/actors/stakeholders or processes render the Agency more or less efficient?	<ul style="list-style-type: none"> • Desk research • Points of comparison • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 6: To what extent are the regulatory costs (i.e. compliance costs, enforcement/implementation costs and administrative costs) of the Regulation proportional with the achieved benefits? Could the same results have been achieved at a lower cost? Could the use of other policy instruments or mechanisms have provided for better efficiency?	<ul style="list-style-type: none"> • Desk research • Points of comparison • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
Relevance	EQ 7: To what extent are the objectives and scope which were identified at the time of adoption of the Regulation still adequate in the current context, and how do they still correspond to the problems and needs of the aviation safety system that is currently in place?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 8: Which issues that arose after the adoption of the Regulation require further attention in view of the objectives pursued?	<ul style="list-style-type: none"> • Desk research • Points of comparison • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
Coherence	EQ 9: Are the requirements and provisions set out in the Regulation coherent and consistent with one another? If not entirely, what are the differences, overlaps or inconsistencies?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 10: To what extent are the Regulation and the Agency's tasks coherent and consistent with other EU regulatory instruments under the air internal transport acquis and with international agreements? If not entirely, what would be the	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question

Evaluation criterion	Relevant EQ	Tools used	Assessment of data completeness
	differences, overlaps or contradictions or inconsistencies?		
EU added value	EQ 11: What is the added value resulting from EU intervention in regulating each one of the several aviation safety domains under EU/EASA competence? Could the same results be achieved at international, national or regional level without EU intervention?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question
	EQ 12: What would be the consequences of stopping or withdrawing the existing EU intervention?	<ul style="list-style-type: none"> • Desk research • Interviews • Survey • Workshops • Field visit 	There is adequate evidence to respond to the evaluation question

Moreover, the IA provided a list of indicators to measure the success of the intervention. The following table displays these indicators and the extent to which each indicator has been covered by the evidence presented in this study:

Table 8. Indicators for monitoring and evaluation of the final policy package (Specific Objective 1)

Eliminate unnecessary requirements and ensure that regulation is proportionate to the risks associated with different types of aviation activities	
Main indicators	Available evidence
Positive feedback from stakeholders and aviation authorities	Sections 4.1.1 and 4.1.2
Reducing number of questions of interpretation concerning the revised rules	Information not available
Number of operators using performance-based rules for demonstrating compliance with essential requirements	Information not available
Number of General Aviation Private Pilot Licences	Information not available
Reduced costs for operators	Section 4.1.2

Table 9. Indicators for monitoring and evaluation of the final policy package (Specific Objective 2)

Ensure that new technologies and market developments are efficiently integrated and effectively overseen	
Main indicators	Available evidence
Number of new rules which make reference to recognised industry standards	Information not available

Reduced age of the general aviation fleet in EU	Information not available
Reduced costs of aircraft certification and production	Information not available
Number of new certifications	Appendix 3

Table 10. Indicators for monitoring and evaluation of the final policy package (Specific Objective 3)

Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation	
Main indicators	Available evidence
Accident rate in relation to traffic growth	Section 3.1.5
Improving results of EASA standardisation and continuous monitoring activities	Section 4.1.1
State Safety Programmes implementation level in Member States	Information not available
Risk bearing occurrences involving ground-handling	Section 3.1.1

Table 11. Indicators for monitoring and evaluation of the final policy package (Specific Objective 4)

Close the gaps in the regulatory system and ensure its consistency	
Main indicators	Available evidence
Positive feedback from stakeholders and aviation authorities	Sections 4.1.1 and 4.1.3
Reducing number of questions of interpretation concerning the revised rules	Information not available

Desk research

Purpose of the desk-based research

Desk-based research was conducted to assess documentary sources and statistical information. This research allowed for the collection of information on the developments within the normative context of aviation safety in Europe since the entry into force of Regulation (EU) 2018/1139, as well as to supply the study with relevant sources for the purpose of answering the evaluation questions.

A combination of qualitative and quantitative data led to an assessment on the completeness of existing information, enabling data gaps to be singled out and, subsequently, to be coherently filled

through the fieldwork for this study. The output of the desk research is available in Section 0 describing the developments in the activities carried out by EASA, based on the relevant information analysed.

The two sections below describe the methodology used for the qualitative review and the quantitative data review.

Qualitative review

The qualitative review consisted of an analysis of **178 documentary sources** (see Appendix 5), in order to determine the overall fitness of aviation safety rules in the EU and, more specifically, to assess the mandate, the resources and the work of the Agency in relation to its objectives before and after the entry into force of Regulation (EU) 2018/1139. Sources were drawn from Commission Regulations, Commission Delegated and Implementing Acts, Opinions and Decisions by EASA, Reports adopted by EASA (in particular the Consolidated Annual Activity Reports and the Single Programming Documents), and by other aviation actors such as ICAO and Eurocontrol, Member States, industry and from the Material from the meetings of the EASA Management Board, as well as from the EASA Member State Advisory Body and from the Stakeholder Advisory Body. The temporal scope of sources ranged from 2006 to 2022.

After selecting the relevant sources (178), the analysis focused on assessing the documents in search for the information that would help answering the evaluation questions for this study. The inputs found in the different sources were recorded under their relevant section in the same Excel database used to classify sources.

Subsequently, the text stored in Excel underwent concept coding through the coding software NVivo®. To this end, a coding tree was developed. While the codes developed under a coding tree were aligned with the evaluation themes and questions, they specified in more depth various facets of the evaluation questions. For instance, the criterion of efficiency was converted in two evaluation questions: EQ 5, (whether the additional human and financial resources allocated to the Agency were sufficient and adequate to achieve its new tasks, and what aspects/means/actors/stakeholders or processes rendered the Agency more or less efficient), and EQ 6 (whether regulatory costs of the Regulation were proportional with the achieved benefits, and whether the same results could have been achieved at a lower cost).

In the case of EQ 5, the coding tree developed followed identifying information about: Main costs; Aspects/means/actors/stakeholders or most costly processes; Agency managed to stay within budget; Tasks not taken up in practice because of budgetary issues; Organisation and management been cost-efficient for EQ 5. A similar procedure was followed for all other criteria and their respective evaluation questions. Eventually, this analytical process allowed to organise the data on a set of codes to better describe its content, and to extrapolate transparent and accessible information.

A further step in the qualitative analysis involved validating the information from the sources in order to understand their reliability. Validation required understanding the methodology used to draft the documentary evidence. Finally, the information extracted from sources was also scanned in search for linkages, in order to map-out patterns and collect accurate evidence for the purpose of providing a comprehensive qualitative review.

Quantitative review

The quantitative review consisted of an analysis of **166 sources of data** in relation to provisions of the Agency, with a view to understand the performance of the Agency and the impacts of Regulation (EU) 2018/1139 for the achievement of a high and uniform level of civil aviation in Europe.

The same sources were used for this review as for the qualitative review. However, the main difference was the emphasis on the type of data to be collected (in this case, quantitative data). Once selected, the data was saved in an Excel database, where sources were firstly classified on the basis of 24 indicators describing various quantifiable aspects of the impacts of Regulation (EU) 2018/1139, such as the number of decisions and opinions planned versus the actual ones, the average duration of and resource use for inspections and continuous monitoring activities, the hours spent per main project category as a percentage of the planned hours and the evolution of the Agency's expenses overtime.

After selecting the relevant sources, the analysis turned to an assessment of the data that would help corroborating the answers in line with the evaluation questions by using statistical evidence. The inputs found in the different quantitative sources were recorded under their relevant section in the same Excel database used to classify sources. Prior to the analysis of data, a screening process was conducted to establish the most useful sources which could provide data for each of the indicators identified in the EQM. Once, screened, relevant data was extracted, processed and analysed using excel.

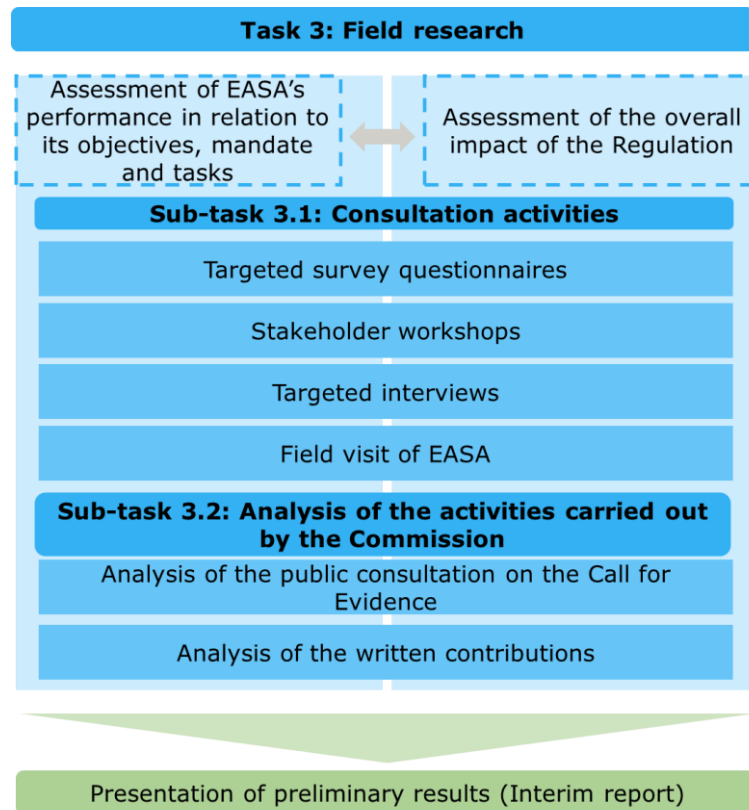
Fieldwork

The field research for this study is structured around two sub-tasks, each described in more detail below:

- Sub-task 3.1: Consultation activities (consisting of four further data collection tools: a targeted survey questionnaire; two stakeholder workshops with the EASA Member States' Advisory Body (MAB) and the EASA Stakeholder Advisory Body (SAB); targeted interviews and a field visit of EASA);
- Sub-task 3.2: Analysis of the activities carried out by the Commission.

The figure below presents an overview of the different consultation activities and how these interlink:

Figure 31. Overview of the different elements of the consultation activities



Source: Elaboration of the Consortium (2022)

Consultation activities

As shown in the figure above, the consultation activities consisted of four main tools. Through these tools, the study team gathered primary data on the performance of EASA in relation to its objectives, mandate and tasks, as well as in relation to the impact of Regulation (EU) 2018/1139. Primary data referred to first-hand sources from all of the consulted stakeholders through surveys targeted interviews, workshops and the field visit (see the sections below).

Given the deep interlinkages between the two dimensions of the evaluation, each of the tools were designed in a way that allows to adequately cover the two dimensions, while being tailored to the stakeholder type consulted.

The following table provides an overview of the interlinkages between the consultation activities and the different stakeholder groups. As shown below, each stakeholder group was covered by at least two consultation activities, thus adding to the robustness of the data collection.

Table 12. Overall stakeholder consultation strategy

Stakeholder group	Targeted interviews	Member State level survey	Industry level survey	Stakeholder workshops	Field visit to EASA	Call for Evidence
European level public authorities	✓				✓	✓
National level public authorities	✓	✓		✓		✓
International level public authorities	✓					✓
Business/industry organisations and other private organisations	✓		✓	✓		✓

Source: Elaboration of the Consortium (2022)

The stakeholder consultation strategy followed a so-called 'snowballing approach', i.e. the study team approached identified EU associations and asked them to forward the online survey to their members. The Commission supported the study team by sending an introductory email to the EU associations, raising their awareness on the upcoming survey and encouraging them to respond to it. The associations assisted the study team in disseminating the survey to their members and provided assistance by keeping track of how many members they sent the survey to and sending reminders/follow-ups as required.

Table 13 below provides an overview of all the categories of stakeholders consulted during the fieldwork:

Table 13. Overview of stakeholder consultation activities

Interviews		
Stakeholder category	Stakeholder group	Total
Public sector organisations	International and regional level organisations	2
	EU-level Institutions and Agencies	5
	National Competent Authorities from EASA Member States	4
	National Competent Authorities from third countries	
Private sector organisations	Airlines	2
	Airports	2
	Aviation personnel organisations	2
	Manufacturers	1
	EU-level representative organisations and associations	8
Sub-total # of interviews with public sector organisations		12
Sub-total # of interviews with private sector organisations		15
Total # of interviews		27
Online survey		
Public sector organisation	EU level representative organisation/association in the aviation sector	8
	EU-level institution agency/body	4
	International or regional aviation organisation	4
	National Competent Authority	32
	National level representative organisation/association in the aviation sector	3
Civil society	Non-governmental organisation	1
	Research institute/Academia	1

Interviews		
Private sector organisation	Private sector businesses	62
Other		5
<i>Sub-total # of public sector respondents</i>		51
<i>Sub-total # of private sector respondents</i>		62
<i>Sub-total # of civil society respondents</i>		2
<i>Sub-total # of other respondents</i>		5
<i>Total # of respondents</i>		120
Stakeholder workshops		
MAB		
Public sector organisations	National Competent Authorities	26
<i>Sub-total # of public sector participants</i>		26
<i>Total # of MAB participants</i>		26
SAB		
Private sector associations	EU-level representative organisations and associations	14
	Non-EU or international representative organisations and associations	3
	Manufacturers	1
	Aviation personnel organisation	4
Civil society	Non-governmental organisation	1
	Umbrella organisation	1
<i>Sub-total # of private sector participants</i>		22
<i>Sub-total # of civil society participants</i>		2
<i>Total # of SAB participants</i>		24
<i>Total # of participants to MAB and SAB</i>		50
EASA Field Visit		
Executive Directorate		5
Certification Directorate		9
Flight Standards Directorate		2
Strategy & Safety Management Directorate		5
Resources and Support Directorate		3
<i>Total # of EASA interviewed staff</i>		24
Call for Evidence		
Private sector	Company/Business organisation	4
	Business Association	8
Civil society	Trade Union	13
	NGO	2
	EU Citizen	44
Other		7
<i>Sub-total # of private sector respondents</i>		12
<i>Sub-total # of civil society respondents</i>		59
<i>Sub-total # of other respondents</i>		7
<i>Total # of respondents</i>		78

Targeted survey questionnaires

A targeted online survey questionnaire was developed, launched and analysed with the aim of gathering both quantitative and qualitative information from EASA Member States and industry representatives. The online survey focused on EASA and its performance, in relation to its objectives, tasks and mandate, as well as on the overall impact of Regulation (EU) 2018/1139. As

such, the survey aimed to ensure an accurate understanding of the EASA functions, contributing to the assessment of the effectiveness, efficiency, relevance, coherence and EU added value of the Regulation in establishing an EU common civil aviation regulatory system.

Targeted interviews

In addition to the online survey, targeted interviews played a crucial role in gaining an in-depth and more individualised understanding of both EASA's performance and the overall impact of Regulation (EU) 2018/1139. The interviews were implemented through a series of steps, starting with the identification of the relevant interviewees, followed by the drafting of the interview guides and, finally, conducting and analysing the interviews. The interviewees aimed to ensure a balanced representation of **different stakeholder types, geographical mix** and the **need for gap filling** of the information which was unlikely to be covered through desk research.

Stakeholder workshops

As part of the consultation activities during the evidence collection phase, the study team organised two targeted stakeholder workshops that were hosted by EASA at its premises. The Commission closely followed these workshops by assisting the study team and attending the two events. The two workshops were organised respectively with the members of the EASA Member States' Advisory Body (MAB) and the EASA Stakeholder Advisory Body (SAB). The organisation of the two stakeholder workshops ensured an adequate coverage of EASA Member States and industry representatives, while creating a framework for them to provide high quality and technical contributions by integrating the study team's activity of data gathering on one hand, and by providing validation to the evidence collected on the other hand.

Field visit to EASA

On top of the data collection tools required in the ToR, the study team organised a field visit of EASA in Cologne on the 23rd and 24th of November 2022. The aim of the field visit was to gather information from agency staff on a first-hand basis and allowing the core research team to gain a practical, "on-the-ground" understanding of the activities EASA carries out on a daily basis. At the same time, the field visit allowed for a large number of additional (group) interviews with key staff of EASA.

Analysis of the activities carried out by the Commission

This sub-task consists of the analysis of the public consultation from the Call for Evidence and the analysis of the written contributions, described below. The Call for Evidence¹³⁷, run by the Commission between 21 April and 19 May 2022 was analysed by the study team, with its results providing inputs to integrate in Tasks 2 (desk research) and 3 (Field research).

Whilst the results from this stakeholder consultation exercise were used to the extent possible and wherever relevant, the study team assessed carefully those stakeholders' views featuring elements which do not fall within the scope of this evaluation, or those views reflecting over-represented perspectives from certain stakeholder groups. For instance, a critical assessment was undertaken to those responses coming from campaigns (i.e. such responses are more likely to have been given according to a particular interest or agenda) rather than freely and openly as the Call for Evidence is intended to be used.

¹³⁷ https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13404-EU-Aviation-Safety-Agency-evaluation_en

Figure 32. Overview of coordinated answers

No.	Coordinated answer	Stakeholders
1	<p><i>AMC/GM draft pushes for too excessive restrictions on drone trafficking, despite the fact that authors of the draft state in section (e) of GM5 Article 3(1) that UAS have lower hazards than conventional aircraft</i></p> <p><i>U-space should be regulated according to regulation 2021/664 and EASA should delegate more U-Space regulation to Member States</i></p>	<p>Business Association (2)</p> <p>Other (1)</p>
2	<p><i>EASA is transparent and inclusive towards stakeholders, e.g. in listening to differing position in the field of tension of UAS (unmanned aircraft systems) operations between "segregation" and "integration"</i></p> <p><i>EASA presents measures hindering drone economy growth and contradicting EU intentions as stated in the Warsaw Declaration (2016) "...the swift development of a drone ecosystem that is simple to use, affordable, commercially and operationally friendly..." and in the Helsinki Declaration (2017) "... digitize procedures as much as possible, to ensure transparency and reduce administrative burdens for both authorities and operators..."</i></p>	<p>Business Association (1)</p> <p>Other (1)</p>
3	<p><i>AMC safety surcharge risks to increase financial burden too, mining the development of the drone economy. Overregulation and too strict requirements from GM and AMC lead to slow and complicated SORA (Specific Operation Risk Assessment) processes even for low risk UAS</i></p> <p><i>EASA emphasises operational safety in the field of UAS (unmanned aircraft systems) disproportionately over economic considerations despite that the EU approach on the matter focuses on risk, safety and also economic viability of operations.</i></p>	<p>Business Association (2)</p> <p>Other (1)</p>
4	<p><i>1) EASA should involve ECA (European Cockpit Association) when evaluating industry proposals on how to train pilots for new aircraft or variants</i></p> <p><i>2) EASA disregards Art.89 by not taking enough actions for safety-socioeconomic factors. For instance, scientific studies reporting the impact of atypical forms of employment's impact on crew's safety were discarded as mere perceptions.</i></p> <p><i>3) The Agency overfocuses on economic, commercial and competitiveness issues, for instance it allocated significant resources to Reduced Crew Operations (eMCO & SiPO) which does not enhance safety but benefit manufacturers. The Agency also supports Crew Interoperability which favours social dumping</i></p>	<p>Trade union (3)</p> <p>Other (2)</p> <p>EU citizen (1)</p>
5	<p><i>1) EASA has failed to fulfil its task laid down in Article 89 of Regulation (EU) 2018/1139 with regard to flight safety and socio-economic factors, by ignoring the elements contained in investigation reports, inter alia, by the EASO.</i></p> <p><i>2) EASA promotion of SPO (Single Pilot Operations) signals that the Agency prioritises profitability of airlines over improving safety. There is no study conducted on SPO with regards to safety and pilots have not been consulted on the matter.</i></p>	<p>Trade union (1)</p> <p>EU citizen (6)</p>

Evaluation points of comparison

This section describes the methodology used for the points of comparison and builds further on the information on the expected outcome of the intervention. First, the three scenarios that are considered for each indicator (see Section 2.6) are described. Next, the selection process of the indicators is explained. After the indicators, the intervention impact analysis is discussed. Finally, a possible visualisation of all three scenarios is provided to help understand the methodology used.

The three points of comparison

This research considers three scenarios to measure the potential impact of the adoption of Regulation (EU) 2018/1139. First, the situation with a no-policy option used in the IA is used as the baseline of this research. Next, the preferred policy option of the IA is used as a second point of comparison. This allows for measuring the difference between the no-policy option and the situation with the preferred option applied. Lastly, the actual situation is represented by the third and final point of comparison. This allows for comparing the situation with the preferred and current policy options. The three points of comparison are described in more detail below. All indicators used in this research are based on existing indicators in the IA or on crucial objectives of the Regulation, not yet covered by the seven categories of the IA (see Section 2.6). The selection procedure of the indicators will be explained later.

The no-policy baseline

This scenario, also called the no-policy baseline, reflects a situation of no EU action, as described in the IA. Concretely, this scenario represents the case in which Regulation (EU) 2018/1139 had not been adopted and Regulation 216/2008, amended by 1108/2009, would still be in place. This option means that:

- The distribution of roles and responsibilities between EASA and the Competent Authorities (CAs) of the EASA Member States remains as they were. The same applies to the distribution of roles and responsibilities between EASA, ICAO and Eurocontrol;
- Cooperation mechanisms and levels between CAs do not change in comparison to what they were;
- The system evolves based on existing interaction mechanisms between MS and EASA.

The preferred policy scenario

This scenario reflects the intervention's expected impact based on the IA's preferred policy option. The expected outcome of the IA preferred policy option study was already discussed in the expected outcome section. In the IA, the preferred policy option focused on seven categories of variables, this report's point of comparison. The present study adds one additional category, confidence, linked to an objective of the Regulation, i.e. support to passengers' confidence in civil aviation. The considered eight IA categories (points of comparison):

- Internal market;
- Resources for EASA;
- Small and Medium Sized Enterprises (SMEs) and light aviation;
- Innovation;
- Aviation safety;
- Competitiveness of the European aviation sector;
- Creating new jobs;

The expected outcome for each variable under the preferred policy option is described in the section on the expected outcome of the points of comparison.

The actual outcomes scenario

The third and final scenario reflects the current situation as it is today. This means that the predictions of the baseline and the expected outcome scenario are comparable to the actual situation. This should give insights into the impact of adopting the Regulation.

The selection process of the indicators

The indicators went through multiple steps to ensure relevance and alignment with the objectives of this research. The steps of the selection process, briefly explained, are as follows:

12. Desk research on the IA

The Commission IA was critically reviewed as described in Toolbox #46. The Commission IA provided an insight into the state of play before implementing the Regulation. The indicators, methodology, sources, and predictions were considered and reviewed. All relevant information was used to support this research.

13. Desk research on Regulation EU (2018)/1139

Extensive desk research has been conducted to analyse the changes brought by the Regulation. The changes in the objectives of the Regulation were reviewed. These insights were needed to select additional key indicators that might be in play.

14. Selection of relevant indicators based on the IA/the Regulation's objectives

Relevant indicators were selected based on the desk research on the IA. By doing this, the IA was the basis for this research and is represented everywhere throughout this study. The indicators were also linked to the relevant objectives of the Regulation.

15. The proposed list of indicators

The proposed list of indicators (Section 2.6) was reviewed and shortened.

16. Confirmation of the variables

Variables were discussed and finalised with the Commission

Intervention impact analysis

After the definition of the variables and points of comparison, the impact of the policy intervention (the adoption of Regulation (EU) 2018/1139) on each variable with time series data available was assessed. This quantitative assessment is based on univariate time series methods. Two methods were considered: time series regression analysis and an ARIMA approach to intervention analysis. The selection of the method may vary depending on the variable.

Both methods assume that the observed values x_t of the considered variable at time t , are realisations of an underlying stochastic process, meaning that they are drawn from a collection of random variables. A policy intervention influences this underlying stochastic process, i.e. the adoption of Regulation (EU) 2018/1139, which happened at time $t = T = 2018$. The objective of the analysis is to estimate how much the intervention has influenced the underlying stochastic process, if there was any influence at all.

In what follows, we describe each of these methods in more detail.

Timeseries regression analysis

Regression analysis is a method that allows the examination of relationships between two or more variables using dependent and independent variables. In this research, the regression analysis aims

to measure the impact of the intervention (the adoption of Regulation 2018/1139) on the observed variables. The underlying assumption is that a structural break in the time series regression can be observed at time T , the time of the intervention. The model, therefore, incorporates a dummy variable D_T which has a value of 0 before and 1 after the intervention. The intervention can influence both the intercept and the slope of the regression. This is shown in the following formula:

$$x_t = (\alpha + \delta_T D_T) + (\beta + \gamma_T D_T)t$$

With

- x_t representing the observed variable to be analysed
- α representing a constant
- δ_T representing the coefficient of the dummy variable
- D_T representing the dummy variable
- β representing a constant
- γ_T representing the coefficient of the dummy variable
- t representing an index reflecting the year of observation.

The equation above results in two time series regressions:

- The no-policy baseline, with $D_T = 0$
- The actual outcome scenario, with $D_T = 1$

After estimating the time series regressions, we test whether δ_T and γ_T are statistically significant to answer the research question.

Similarly, this method allows us to incorporate other dummy variables in the model to account for the influence of other recent developments on the observed variables, such as the COVID-19 pandemic.

ARIMA approach to intervention analysis

In the ARIMA approach, we measure how the mean level of the time series changes after the intervention, assuming that the same Autoregressive Integrated Moving Average (ARIMA) structure for the series x_t holds both before and after the intervention. The model is used to understand past data or predict future data in a series.

The ARIMA model for variable x_t without the intervention can be estimated based on historical data and be specified theoretically as

$$x_t - \mu = \frac{\Theta(B)}{\Phi(B)} w_t$$

in which μ represents the expected value of x_t , $\Theta(B)$ is the moving average polynomial, $\Phi(B)$ the autoregressive polynomial and w_t the error time series.

If B is the lag operator used to express lagged values, so that $Bx_t = x_{t-1}$, $B^2x_t = x_{t-2}$, etc., the moving average polynomial can be written as

$$\Theta(B) = 1 + \sum_{j=1}^q \theta_j B^j$$

while the autoregressive polynomial can be written as

$$\Phi(B) = 1 - \sum_{j=1}^p \phi_j B^j$$

with the θ_j 's and ϕ_j 's parameters to be estimated in the ARIMA model via maximum likelihood estimation.

If we assume that z_t represents the amount of change at time t in the observed variable that can be attributed to the intervention, the model can be rewritten as follows

$$x_t - \mu = z_t + \frac{\Theta(B)}{\Phi(B)} w_t$$

By definition, $z_t = 0$ before $t = T$ (time of the intervention), however z_t can have different values after T .

From a theoretical standpoint, z_t , which is a time series, can follow four main patterns starting from the time of the intervention:

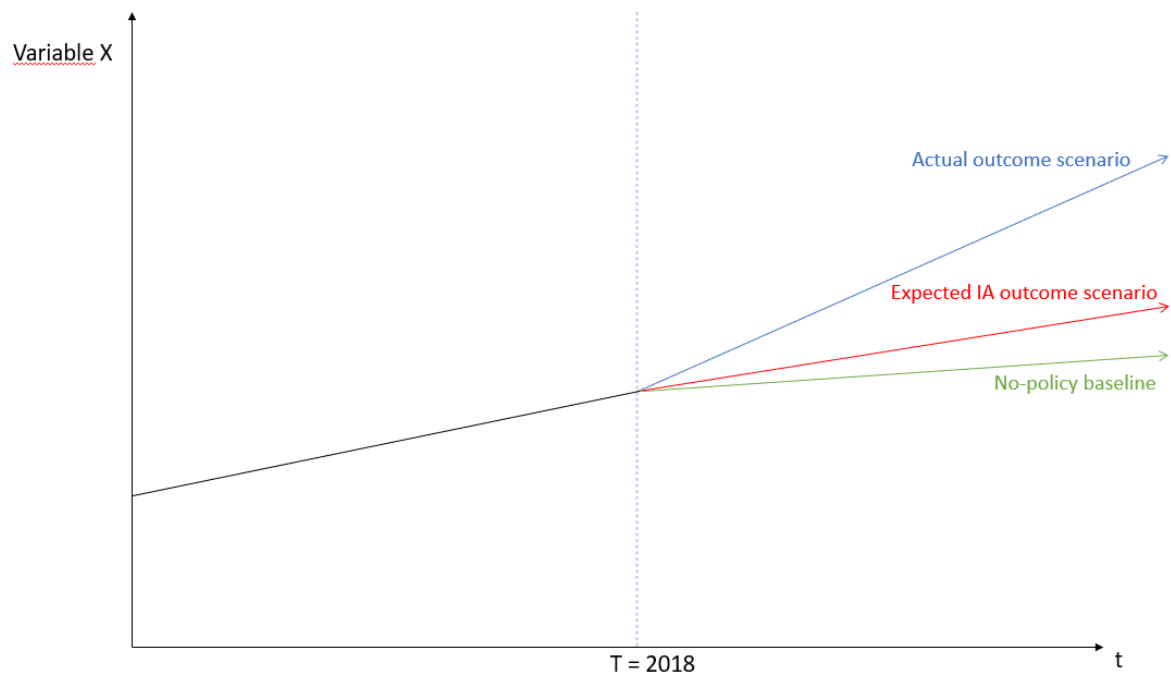
1. A permanent constant change to the mean level of x_t . For each time period after the intervention, a constant value is added or subtracted from the evolution of the variable as it would have been under the no-policy scenario.
2. A brief constant change to the mean level of x_t . The intervention might temporarily affect the evolution of the considered variable, after which the effect disappears immediately.
3. A gradual increase or decrease in the mean level of x_t . The intervention might increase or decrease the mean level gradually compared to the no-policy scenario, eventually stabilising at a new level.
4. An initial change in the mean level of x_t followed by a gradual return to the no-policy scenario level, as opposed to (2) where the return is immediate.

The approach, which consists of five main steps, is then as follows.

1. Use historical data before the time of the intervention to determine the parameters of the ARIMA model based on the observed autocorrelation (ACF) and partial autocorrelation function (PACF) and maximum likelihood estimation.
2. Use the calibrated ARIMA model to forecast values for the period after the intervention. This forecast corresponds to the no-policy baseline.
3. Calculate the differences between the observed actual outcomes after the intervention and the forecasted values for the no-policy baseline.
4. Examine the differences in step 3 and compare their pattern with the theoretical intervention impact pattern possibilities described above, to determine the model for the intervention effect.
5. Estimate the overall model, incorporating the ARIMA for the time series and the intervention model.

Outcome visualisation

The three scenarios will be compared and visualised on a graph, allowing a more straightforward interpretation of the different outcomes. The following figure represents a possible, fictive visualisation of the different scenarios per variable X .



Methodological caveats: structural break analysis

This paragraph explains the benefits of structural break analysis and what this methodology can (not) estimate.

Structural break analysis is a statistical method used to detect changes in the underlying structure of a time series. It entails looking for changes in a time series mean, variance, or other parameters, and it might reveal changes in the root factors that drive the series. Overall, structural break analysis can offer insightful information about changes in a time series structure and the factors causing those changes. Analysts and decision-makers can make more accurate predictions, gain a deeper understanding of economic trends, and make better choices by taking structural breaks into account.

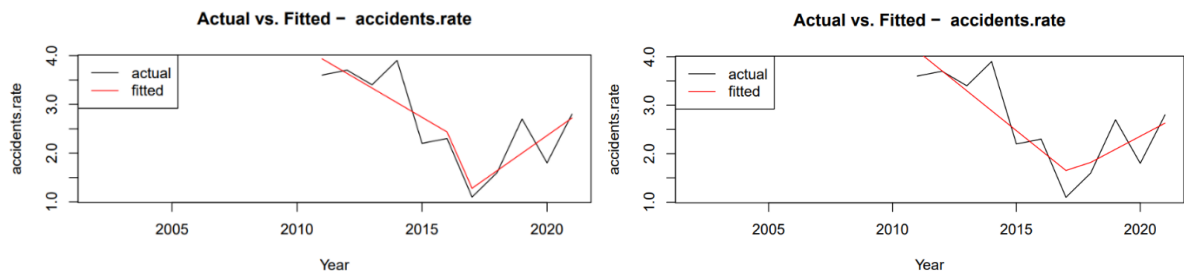
It's crucial to remember that a structural break analysis does not offer definitive evidence of causality. However, suppose a structural break analysis indicates an abrupt change in the relationship between variables following a particular event. In that case, it may show that the event caused the difference in the relationship and might be seen as proof of causation. This study uses this method to find the impact of implementing the Regulation (event) on the variables of the points of comparison. This research decided never to state that a causal relationship was found. The main reason is that the aviation environment was unstable and unpredictable during the evaluation period, making clear causalities near impossible as multiple variables could have an impact. For example, the Boeing 737 Max crashes led to severe safety concerns. Next, the COVID-19 pandemic dramatically decreased air travel demand, changed working conditions, and caused financial losses for airlines. Later, the United Kingdom's exit from the European Union in 2020 required regulatory changes. Last, the ongoing war in Ukraine led to differences in airspace use and higher fuel costs.

Additional charts on structural break analysis

The Commission IA preferred policy package expected the aviation safety to improve by a more collaborative safety management approach, resource pooling and sharing. The emergency support oversight mechanism would assist in upholding a high safety standard across the EU. A deeper analysis of the two safety rates is made by using structural break regression models to analyse the

impact of the intervention on safety. The **analysis suggests that there is no significant structural break to be observed in the data with regard to the serious incident rate**. The evolution of the serious incident rate seems to be rather random with no outspoken trend over the period 2011 – 2021. However, with regard to the accident rate (see 3.1.5), a significant breakpoint is observed in 2016. The **accident rate follows a decreasing trend from 2011 until 2016**. In 2017 there is a further drop in the accident rate, **after which an increasing trend can be observed**. However, the current accident rate is still below the highest point in the observed period.

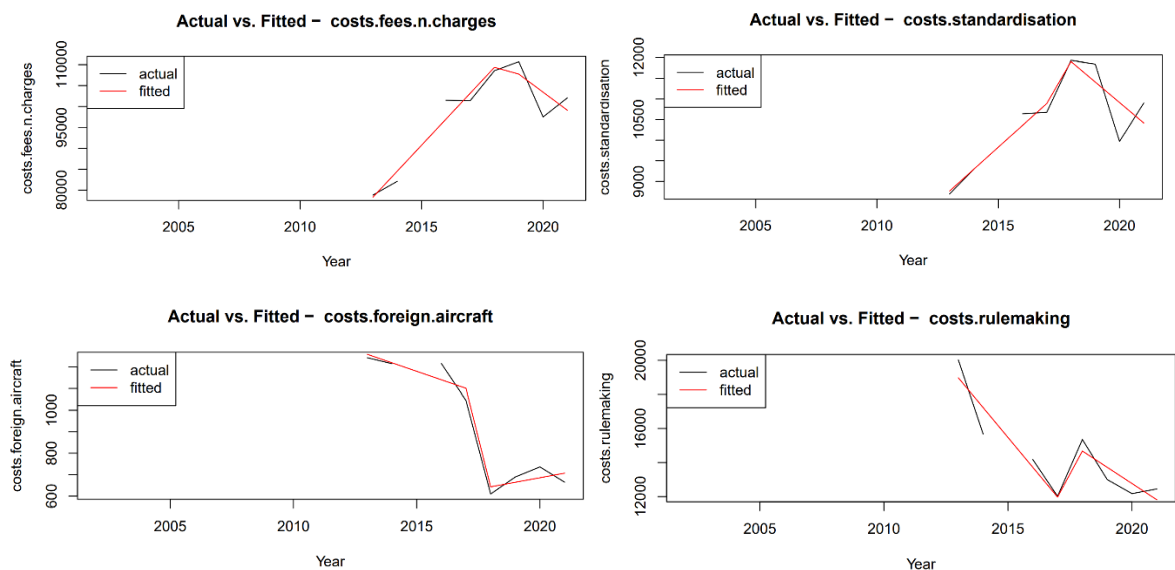
Figure 33. Structural break analysis of the accident rate (left: optimal breakpoint in 2016, right: breakpoint in 2018)

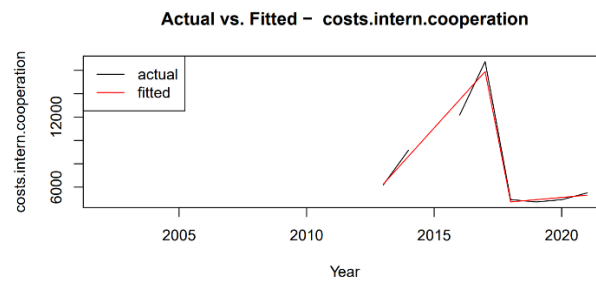


Source: Own composition based on Eurostat, 2022

The **costs linked to standardisation show an increasing trend from 2013 to 2017, while a decreasing trend occurs from 2018 to 2021**. When looking at the costs linked to the safety assessment of foreign aircrafts, a large drop is to be observed between 2017 and 2018, while before and after this drop the level was more or less stable over time. A similar pattern emerges when looking at the costs linked to international cooperation. From 2013 to 2017, the costs of international cooperation demonstrate an increasing trend, followed by a sharp drop in 2018 after which the cost level stabilises. Finally, the costs linked to rulemaking follow a decreasing trend from 2013 to 2017, followed by an increase in level in 2018 after which the decreasing trend continues. A one-off cost increase in 2018 is found, which might be due to the implementation of the regulation. However, the regression coefficients are not significant and causality cannot be estimated via structural break analysis.

Figure 34. Structural break analysis of EASA's cost components





Source: Own composition based on EASA yearly annual reports

APPENDIX 2 – EVALUATION MATRIX

Table 14. Evaluation Questions Matrix (EQM)

Evaluation questions	Operational questions	Indicators	Data sources & methods
EFFECTIVENESS: How successful have Regulation (EU) 2018/1139 and the European Air Safety Agency been in reaching their objectives?			
1. EQ 1: To what extent has the Agency achieved its objectives and tasks supporting the Commission as a rulemaking body? To what extent has EASA delivered its opinions in time? Is the stakeholder consultation procedure efficient and effective? As part of the Agency's role, how effective is the monitoring by the Agency of national aviation authorities?	1.1: To what extent has the Rulemaking Procedure been effective in framing the issuing of opinions, certification specifications, means of compliance and guidance material by the Agency?	Qualitative indicators: <ul style="list-style-type: none"> Stakeholder views on the degree to which the Rulemaking Procedure has contributed to a swift delivery of opinions, certification specifications, means of compliance and guidance material Qualitative assessment from EASA staff on the extent to which the Rulemaking Procedure has been working effectively 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. EPAS, CAARs) Targeted interviews with stakeholders (in particular, Commission representatives, EASA staff)
	1.2: To what extent has the Rulemaking Programme been followed and implemented timely and effectively?	Quantitative indicators: <ul style="list-style-type: none"> Average time required to prepare and deliver opinions, certification specifications, means of compliance and guidance material Number of opinions planned vs actuals Number of Decisions planned vs actuals Number of notices of proposed amendment planned vs actuals Qualitative indicators: <ul style="list-style-type: none"> Comparison between the foreseen Rulemaking Programme and the documents delivered 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation, (e.g. EPAS, monitoring reports, CAARs) Analysis of statistical and quantitative data Targeted interviews with stakeholders (in particular, Commission representatives, EASA staff)
	1.3: To what extent is the stakeholder consultation procedure within EASA's advisory bodies effective in ensuring an adequate and balanced contribution by Member States and the Industry?	Quantitative indicators: <ul style="list-style-type: none"> Total number of yearly stakeholder consultations Average duration of and number of participants in stakeholder consultations Qualitative indicators:	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g., stakeholder consultation reports, minutes) Analysis of statistical and quantitative data

Evaluation questions	Operational questions	Indicators	Data sources & methods
		<ul style="list-style-type: none"> Stakeholders' views on the degree to which their input was taken into consideration Stakeholders' views on the effectiveness and efficiency of the stakeholder consultation procedure Qualitative assessment from EASA staff on the extent to which the stakeholder consultation procedure has been working effectively and efficiently 	<ul style="list-style-type: none"> Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
	<p>1.4: In what ways has the Agency been implementing its monitoring activities with respect to Member States national authorities? To what extent has national level implementation of the Regulation improved as a result of the Agency's monitoring activities?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Total number of yearly inspections Average duration of and resource use for inspections and continuous monitoring activities Rate of improvement in MS' level of implementation on the basis of monitoring procedures' results Change in the total number of findings raised against Regulations that have been applicable for more than 2 years Percentage of standardisation reports issued after the standardisation visit <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which monitoring procedures have contributed to achieving a certain level of implementation 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. monitoring reports, CAARs) Analysis of statistical and quantitative data Targeted interviews with stakeholders (in particular, EASA staff, MS) Targeted survey questionnaire (with MS)
<p>EQ 2: To what extent has the Agency achieved its objectives and tasks as a certifying body and in achieving the objectives at both European and worldwide levels as established by Article 1 of the Basic Regulation?</p>	<p>2.1: To what extent has the Agency been effective in certifying 1) aircrafts; 2) organisations; 3) engines; 4) propellers; 5) specific parts to be installed on aircrafts; 6) specific non-installed equipment?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of yearly certifications and final reports issued per product category (1) aircrafts; 2) organisations; 3) engines; 4) propellers; 5) specific parts to be installed on aircrafts; 6) specific non-installed equipment) Hours spent per main project category as a percentage of the planned hours 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. certification reports, CAARs) Analysis of statistical and quantitative data Targeted interviews with all stakeholders

Evaluation questions	Operational questions	Indicators	Data sources & methods
		<ul style="list-style-type: none"> • Number of applications received and number of certificates issued in the area of initial airworthiness of type design • Percentage of stakeholders who agree/disagree that the Agency's certification role has contributed to increasing products' airworthiness and consequently safety of the European aviation system <p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Evidence from secondary sources that the certification role of the Agency has contributed to improving products' airworthiness • Stakeholders' views on the extent to which the Agency's certification procedures are effective and have contributed to increasing the safety of the European aviation system 	<ul style="list-style-type: none"> • Targeted survey questionnaire (with MS and Industry)
	<p>2.2: Are there any noticeable differences in certification procedures across products and/or countries?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> • Comparison of the hours spent per main project category as a percentage of the planned hours in different countries <p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Evidence from final certification reports and other related relevant documentation regarding the details of the procedure • Stakeholders' views and explanation of the certification procedure • Evidence from previous EQ 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation (e.g. CAARs, certification reports) • Analysis of statistical and quantitative data • Targeted interviews with stakeholders (in particular, EASA staff, MS, Industry) • Targeted survey questionnaire (with MS and Industry)
	<p>2.3: What obstacles were observed in carrying out the certification procedures?</p>	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' views on the main obstacles faced during certification procedures 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation (e.g. certification reports) • Targeted interviews with stakeholders (in particular, EASA staff, MS, Industry)

Evaluation questions	Operational questions	Indicators	Data sources & methods
<p>EQ 3: What actual observed effects (positive and negative impacts) has the Regulation had? To what extent has the Regulation and the work of the Agency contributed to these effects? What were the main drivers and hindrances to the effectiveness of the Regulation?</p>	<p>3.1: What positive and negative effects can be associated with the Regulation?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> • Number of accidents and incidents • Number of occurrence reports received and closed and number of airworthiness directives (ADs) published regarding continued airworthiness of type design • For a detailed list of indicators covered in the points of comparison analysis, see Table 4 <p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' views and evidence from desk research on the degree to which the provisions of the Regulation achieved actual positive/negative observed effects • Evidence from desk research on the degree to which the provisions of the Regulation achieved actual positive/negative observed effects • Degree to which the positive/negative effects identified differ according to the stakeholder type • For a detailed list of indicators covered in the points of comparison analysis, see Table 4 	<ul style="list-style-type: none"> • Targeted survey questionnaire (with MS and Industry) • Desk research • Evaluation criterion assessment • Analysis of statistical and quantitative data • Targeted interviews with all stakeholders • Targeted survey questionnaire (with MS and Industry)
	<p>3.2: To what extent can these effects be attributed, directly or indirectly, to the Agency's work?</p>	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' views on the degree to which the effects associated with the Regulation can be attributed to the Agency's work • EASA staff and Commission's qualitative assessment of the degree to which the effects associated with the Regulation can be attributed to the Agency's work • Assessment of relevant KPIs 	<ul style="list-style-type: none"> • Targeted interviews with all stakeholders • Targeted survey questionnaire (with MS and Industry)

Evaluation questions	Operational questions	Indicators	Data sources & methods
	3.3: What were the main underlying drivers to the effective implementation of the Regulation?	Qualitative indicators: <ul style="list-style-type: none"> Stakeholders' views on the main drivers behind the implementation of the Regulation EASA staff and Commission's qualitative assessment on the main drivers behind the implementation of the Regulation 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. CAARs) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
	3.4: What impacts has the Regulation had on its main stakeholders (i.e. Member States, Industry)?	Qualitative indicators: <ul style="list-style-type: none"> Stakeholders' views on the main impacts derived from the Regulation Evidence from secondary sources on the main impacts derived from the Regulation Stakeholders' views on the degree to which the impacts of the Regulation were positive/negative 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. MAB/SAB meeting minutes) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
	3.5: What were the main hindrances to the effective implementation of the Regulation?	Qualitative indicators: <ul style="list-style-type: none"> Evidence from secondary sources on the main obstacles within the civil aviation sector Evidence from secondary sources on the main obstacles having hindered the implementation of the Regulation Stakeholders' views on the extent to which each obstacle hindered the implementation of the Regulation 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. CAARs) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
EQ 4: To what extent does the work of the Agency cover all the real needs of aviation in Europe, also considering the huge impact of the COVID-19 pandemic in the European and worldwide aviation safety system?	4.1: What are the primary current and upcoming needs within the aviation sector in Europe?	Qualitative indicators: <ul style="list-style-type: none"> Stakeholders' views on the main current challenges and needs within the aviation sector in Europe Evidence from secondary sources on the main current challenges and needs within the aviation sector in Europe 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. SPDs, EPAS) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)

Evaluation questions	Operational questions	Indicators	Data sources & methods
		<ul style="list-style-type: none"> Stakeholders' views on the degree to which each of these challenges/needs affects the sector 	
	<p>4.2: To what extent are such needs adequately covered by the Regulation and by the activities of the Agency?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders agreeing that the Regulation and the Agency adequately address current needs and challenges within the aviation sector in Europe <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which the Regulation and the Agency's activities adequately cover current needs and challenges within the European aviation sector 	<ul style="list-style-type: none"> Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
	<p>4.3: To what extent has the Agency been able to effectively undertake its activities during and in the aftermath of the Covid-19 pandemic?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders agreeing that the Agency was able to adequately undertake its activities during and in the aftermath of the Covid-19 pandemic <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which the Agency was able to adequately undertake its activities during and in the aftermath of the Covid-19 pandemic 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. EASA survey to MS and Industry on the new or emerging aviation safety issues arising as a result of the pandemic, COVID-19 Safety Risk Portfolio) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
	<p>4.4: To what extent has the Agency been able to effectively undertake its activities during and in the aftermath of The UK withdrawal from the EU?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders agreeing that the Agency was able to adequately undertake its activities during and in the aftermath of The UK withdrawal from the EU <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which the Agency was able to adequately undertake its 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. EPAS) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)

Evaluation questions	Operational questions	Indicators	Data sources & methods
	4.5: To what extent is the Agency able to effectively undertake its activities, considering the ongoing crisis in Ukraine?	activities during and in the aftermath of The UK withdrawal from the EU Quantitative indicators: <ul style="list-style-type: none"> Percentage of stakeholders agreeing that the Agency is able to effectively undertake its activities, considering the ongoing crisis in Ukraine Qualitative indicators: <ul style="list-style-type: none"> Stakeholders' views on the extent to which the Agency is able to effectively undertake its activities, considering the ongoing crisis in Ukraine 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. EASA Review of Aviation Safety Issues Arising from the war in Ukraine) Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
EFFICIENCY: What is the relationship between the resources and the impacts (positive and/or negative) generated by the Agency? How cost effective has the Agency's work been?			
EQ5: Were the additional human and financial resources allocated to the Agency sufficient and adequate to achieve its new tasks? Which aspects/means/actors/stakeholders or processes render the Agency more or less efficient?	5.1: What are the main costs (in terms of human and financial resources) associated with the Agency's activities?	Quantitative indicators: <ul style="list-style-type: none"> Cost overviews from EASA budgets Qualitative indicators: <ul style="list-style-type: none"> Insights from EASA staff on available resources Evidence on available resources based on relevant documentation 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g., EASA annual budget, SPDs, CAARs) Targeted interviews with stakeholders (in particular, EASA staff, European Commission)
	5.2: Which aspects/means/actors/stakeholders or processes are most costly for the Agency to address/undertake?	Quantitative indicators: <ul style="list-style-type: none"> Comparison of the costs related to different activities undertaken by the Agency (based on EASA budgets) Qualitative indicators: <ul style="list-style-type: none"> Evidence from relevant documentation on the resources required by different aspects/means/actors/stakeholders or processes EASA staff overview of the resources needed for different types of activities 	<ul style="list-style-type: none"> Desk research Analysis of relevant documentation (e.g. EASA budget, SPDs, CAARs) Analysis of quantitative data Targeted interviews with stakeholders (in particular, EASA staff)

Evaluation questions	Operational questions	Indicators	Data sources & methods
	5.3: Has the Agency managed to stay within its budget during the past years?	Quantitative indicators: <ul style="list-style-type: none"> • Analysis of the evolution of the Agency's expenses over time • Comparison of the Agency's expenses with the yearly budget 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation (e.g. EASA annual budget, SPDs, CAARs) • Analysis of quantitative data
	5.4: Were any tasks that could be taken up not taken up in practice because of budgetary issues?	Qualitative indicators: <ul style="list-style-type: none"> • Comparison of initially planned activities with activities undertaken in practice • Insights from EASA staff on undertaken activities as opposed to foreseen activities 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation (e.g. EASA annual budget, SPDs, CAARs) • Targeted interviews with stakeholders (in particular, EASA staff)
	5.5: To what extent has the organisation and management of the Agency been cost-efficient?	Qualitative indicators: <ul style="list-style-type: none"> • Degree to which the administrative and management structures of the Agency been cost-efficient • EASA staff qualitative assessment of the degree to which the administrative and management structures of the Agency have been efficient 	<ul style="list-style-type: none"> • Targeted interviews with stakeholders (in particular, EASA staff) • Efficiency assessment
EQ 6: To what extent are the regulatory costs (i.e. compliance costs, enforcement/implementation costs and administrative costs) of the Regulation proportional with the achieved benefits? Could the same results have been achieved at a lower cost? Could the use of other policy instruments or mechanisms have provided for better efficiency?	6.1: What are the main costs and benefits associated with the compliance/implementation/administration of the Regulation?	Quantitative indicators: <ul style="list-style-type: none"> • Costs data from stakeholders on the compliance/implementation/administration of the Regulation • Benefits from the points of comparison (for a detailed list of indicators, see Table 4) Qualitative indicators: <ul style="list-style-type: none"> • Stakeholders' views on the main costs and benefits associated with compliance/implementation/administration of the Regulation 	<ul style="list-style-type: none"> • Desk research • Analysis of quantitative data • Targeted interviews with stakeholders (in particular, MS and Industry) • Targeted survey (with MS and Industry)
	6.2: Are implementation costs proportionate to the benefits	Quantitative indicators: <ul style="list-style-type: none"> • Estimations of the costs associated with identified benefits 	<ul style="list-style-type: none"> • Desk research • Analysis of quantitative data

Evaluation questions	Operational questions	Indicators	Data sources & methods
	brought to the Agency's stakeholders?	<ul style="list-style-type: none"> • Comparison between the positive benefits and the direct costs from the different activities for different stakeholders • Percentage of stakeholders who agree/disagree that the positive benefits outweigh the direct costs <p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' qualitative assessment of the degree to which the positive benefits outweigh the direct/enforcement costs • Stakeholders' qualitative assessment of the degree to which the costs are reasonable 	<ul style="list-style-type: none"> • Targeted interviews with stakeholders (in particular, EASA staff, MS and Industry) • Targeted survey (with MS and Industry)
	6.3: What efficiency gains could potentially still be made?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' views on potential additional areas for improvement and increased efficiency gains • EASA staff qualitative assessment of areas where efficiency could be improved 	<ul style="list-style-type: none"> • Targeted interviews with stakeholders (in particular, EASA staff, MS and Industry)
	6.4: Are there any other policy instruments/mechanisms or sources of funding that could be used to achieve the same objectives? Are these more cost-efficient?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Evidence from secondary sources and relevant stakeholders on other policy instruments/mechanisms or sources of funding available in the aviation sector • Qualitative assessment of the potential use of other instruments to achieve the same objectives in a more cost-efficient way 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation • Targeted interviews with all stakeholders
<p>RELEVANCE: To what extent are the Regulation's objectives and the Agency's tasks still aligned with the current and emerging needs or problems in the aviation sector? To what extent do the original objectives and activities of the Agency correspond to the current and future needs of the aviation sector in the European Union?</p>			
	7.1: What are the current problems and needs within the aviation safety system (i.e. both for Member States and industry)?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> • Stakeholders' views on the current needs and problems within the aviation safety system, per stakeholder type 	<ul style="list-style-type: none"> • Desk research • Analysis of relevant documentation • Targeted interviews with all stakeholders

Evaluation questions	Operational questions	Indicators	Data sources & methods
<p>EQ 7: To what extent are the objectives and scope which were identified at the time of adoption of the Regulation still adequate in the current context, and how do they still correspond to the problems and needs of the aviation safety system that is currently in place?</p>	<p>7.2: To what extent are the objectives of the regulation relevant to the current problems and needs of the aviation system in place?</p>	<ul style="list-style-type: none"> Evidence from secondary sources on the current needs and problems within the aviation safety system <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' qualitative assessment of the degree to which the objectives of the Regulation remain relevant Qualitative assessment based on previous relevance questions 	<ul style="list-style-type: none"> Targeted surveys (with MS and Industry) Desk research Evaluation criterion assessment Analysis of relevant documentation Analysis of statistical and quantitative data Targeted interviews with all stakeholders Targeted survey questionnaire (with MS and Industry)
<p>EQ 8: Which issues that arose after the adoption of the Regulation require further attention in view of the objectives pursued?</p>	<p>8.1: Are there any newly emerged or increasingly important needs which are currently not (adequately) covered by the Regulation?</p>	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which the problems and needs originally addressed by the Regulation evolved Evidence from secondary sources on newly emerged needs and problems within the aviation safety system Stakeholders' qualitative assessment of the extent to which newly emerged needs are adequately covered by the Regulation 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation Targeted interviews with all stakeholders Targeted survey 2 (with MS and Industry)
<p>COHERENCE: To what extent has the Agency's intervention been internally and externally coherent (with other EU interventions or international agreements)?</p>			
<p>EQ 9: Are the requirements and provisions set out in the Regulation coherent and consistent with one another? If not entirely, what are the differences, overlaps or inconsistencies?</p>	<p>9.1: To what extent are there inconsistencies among the requirements and provisions of the Regulation?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders who agree/disagree that there are inconsistencies among the requirements and provisions of the Regulation Number of inconsistencies from desk research (our own analysis) Number of inconsistencies from literature review <p>Qualitative indicators:</p>	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. Regulation 2018/1139) Analysis of statistical and quantitative data Targeted interviews with all stakeholders

Evaluation questions	Operational questions	Indicators	Data sources & methods
		<ul style="list-style-type: none"> Stakeholders' views on the degree to which inconsistencies (i.e. overlaps, contradictions, gaps) exist among the requirements and provisions of the Regulation 	
	<p>9.2: To what extent are there synergies among the requirements and provisions of the Regulation?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders who agree/disagree that there are synergies between among the requirements and provisions of the Regulation Number of synergies from desk research (our own analysis) Number of synergies from literature review <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the degree to which inconsistencies (i.e. overlaps, contradictions, gaps) exist among the requirements and provisions of the Regulation 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation (e.g. Regulation 2018/1139) Analysis of statistical and quantitative data Targeted interviews with all stakeholders
	<p>9.3: Are there any synergies which could be further exploited between the different provisions?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of synergies from desk research (our own analysis) Number of synergies from literature review <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on the extent to which certain synergies might be further exploited Qualitative assessment of the extent to which certain synergies could be further exploited (based on previous EQs) 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Targeted interviews with all stakeholders
	<p>9.4: Are there any real overlaps?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of overlaps from desk research (our own analysis) Number of overlaps from literature review <p>Qualitative indicators:</p>	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Targeted interviews with all stakeholders

Evaluation questions	Operational questions	Indicators	Data sources & methods
		<ul style="list-style-type: none"> Stakeholders' views on the degree to which overlaps exist across the Regulation's requirements and provisions Qualitative assessment of the extent to which overlaps exist across the Regulation's requirements and provisions 	
<p>EQ 10: To what extent are the Regulation and the Agency's tasks coherent and consistent with other EU regulatory instruments under the air internal transport acquis and with international agreements? If not entirely, what would be the differences, overlaps or contradictions or inconsistencies?</p>	<p>10.1: Are there any potential synergies or overlaps between the Regulation and other regulatory instruments in the framework of the European transport acquis (e.g. delegated acts and implementing acts, for instance, related to the ICAO standards)?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of synergies or overlaps from desk research (our own analysis) Number of synergies or overlaps from literature review <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which there are synergies or overlaps between the objectives and actions of the Regulation and other regulatory instruments in the framework of the European transport acquis 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation Targeted interviews with stakeholders
	<p>10.2: Are there any potential synergies or overlaps between the Regulation and other international regulatory instruments?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of synergies or overlaps from desk research (our own analysis) Number of synergies or overlaps from literature review <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which there are synergies or overlaps between the objectives and actions of the Regulation and other international regulatory instruments in the framework 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation Targeted interviews with stakeholders
	<p>10.3: Are there any potential synergies or overlaps between the Agency's tasks and other regulatory instruments in the framework of the European transport acquis?</p>	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of synergies or overlaps from desk research (our own analysis) Number of synergies or overlaps from literature review <p>Qualitative indicators:</p>	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation Targeted interviews with stakeholders

Evaluation questions	Operational questions	Indicators	Data sources & methods
	10.4: Are there any potential synergies or overlaps between the Agency's tasks and other international regulatory instruments?	<ul style="list-style-type: none"> Degree to which there are synergies or overlaps between the Agency's tasks and other regulatory instruments in the framework of the European transport acquis <p>Quantitative indicators:</p> <ul style="list-style-type: none"> Number of synergies or overlaps from desk research (our own analysis) Number of synergies or overlaps from literature review <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which there are synergies or overlaps between the Agency's tasks and other international regulatory instruments in the framework 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Analysis of relevant documentation Targeted interviews with stakeholders
EU ADDED VALUE: To what extent have the Regulation and the Agency allowed to produce results that would not have been achieved by Members States acting alone?			
EQ 11: What is the added value resulting from EU intervention in regulating each one of the several aviation safety domains under EU/EASA competence? Could the same results be achieved at international, national or regional level without EU intervention?	11.1: To what extent could the Regulation's effects have been achieved without EU intervention?	<p>Quantitative indicators:</p> <ul style="list-style-type: none"> Percentage of stakeholders (per group) that agree that the same results could have been achieved at without EU intervention <p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which there is evidence that the same results could be achieved without EU intervention, based on secondary sources Stakeholders' views on the degree to which there is evidence that the same results be achieved without EU intervention 	<ul style="list-style-type: none"> Desk research Evaluation criterion assessment Targeted interviews Targeted survey questionnaire (with Member States and Industry) Efficiency assessment Task 5 outcomes
	11.2: Could the activities carried out by EASA have been achieved by each Member State acting alone? If yes, are there any	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> Member States' view on their capacity and resources to carry out the activities currently undertaken by EASA 	<ul style="list-style-type: none"> Targeted interviews Targeted survey questionnaire (with Member States) Efficiency assessment Task 5 outcomes

Evaluation questions	Operational questions	Indicators	Data sources & methods
	efficiency/effectiveness gains by doing so at EU level?		
	11.3: To what extent is EU level coordination needed in each of the areas covered by the Regulation?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which there is evidence that EU level coordination is needed to achieve European targets in the areas covered by the Regulation 	<ul style="list-style-type: none"> Targeted interviews Targeted survey questionnaire (with Member States and Industry) Task 5 outcomes
<p>EQ 12: What would be the consequences of stopping or withdrawing the existing EU intervention?</p>	12.1: What would be the consequences of stopping or withdrawing the existing EU intervention?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> Stakeholders' views on what the consequence of stopping or withdrawing the existing EU intervention would be 	<ul style="list-style-type: none"> Targeted interviews Targeted survey questionnaire (with Member States and Industry) Task 5 outcomes
	12.2: In what ways would the services provided by the Agency be carried out by other actors (e.g. Member States, other EU and/or international bodies, etc.)?	<p>Qualitative indicators:</p> <ul style="list-style-type: none"> Degree to which other actors would be able to provide the services currently undertaken by the Agency 	<ul style="list-style-type: none"> Targeted interviews Targeted survey questionnaire (with Member States and Industry) Task 5 outcomes

Source: Elaboration of the Consortium (2022)

APPENDIX 3 – RATIONALE FOR THE INTERVENTION

As discussed in Section 2.2, the IA identified four main problems justifying the EU intervention. A more detailed discussion of each problem and its related problem drivers is presented in this appendix.

Problem 1: The existing regulatory system was not fit to mitigate safety risks in the medium to long term

The purpose of the IA was not to deal with specific operational issues which present a risk to EU aviation safety, as these are already within the scope of the Union's competence and dealt with by EASA and the Member States' aviation authorities¹³⁸.

Thus, the IA looked at aviation safety from a systemic perspective. In this respect, the Commission identified two main *issues* related to aviation safety: the **shortages and inefficient use of resources by aviation authorities and the reactive nature of safety regulation and oversight**. The issues were considered system weaknesses which might have made it more challenging to maintain the safety record in conditions of expected traffic growth and increasing complexity of the aviation system. The main problem drivers underlying the first problem were (i) that the system was reactive because predominantly based on prescriptive regulations and compliance checking, and (ii) the inefficient use of resources was stemming from fragmentation.

Concerning the *first problem driver*, the **EU aviation safety system was primarily based, in some areas, on prescriptive rules, usually developed following lessons learned from accidents**, and controlled through periodic audit-type checks focusing on procedures and manuals¹³⁹. On the one hand, this prescriptive and reactive approach allowed the EU to achieve a good safety record and had many other advantages, such as legal certainty and straightforward compliance checking. On the other hand, because the causes of accidents have become operator-unique, compliance with detailed technical or prescriptive standards will, in the future, be less and less effective in ensuring a satisfactory level of safety in all cases¹⁴⁰. Controlling such unique threats through generic legislation is very difficult¹⁴¹.

To further achieve safety improvements, a new business-like approach (efficient way without wasting time) to managing safety risks was mandated by the EU in the Implementing Rules¹⁴² in 2013. The IA report noted that although progress had been made in implementing this new approach, the work was far from complete:

- In 2015, the EU had **not yet established a fully operational European Aviation Safety Plan**, which constitutes the regional aviation safety plan for EASA Member States, sets out strategic priorities, strategic enablers, the main risks affecting the European aviation system, and the necessary mitigation actions¹⁴³. The Plan would allow to identify and address risks collectively as a region. This was partly due to the fragmentation of the safety

¹³⁸ Nonetheless, the IA report identifies two relevant operational issues for which EU action is examined, i.e. ground handling and security aspects of aircraft and aviation systems' design. These two issues are discussed in Section 3.3

¹³⁹ Support study on performance, Final Report, pp. 9-10

¹⁴⁰ EASA Opinion 1/2015, p.4

¹⁴¹ SMICG, 'A systems Approach to Measuring Safety Performance: the regulator perspective', (2014), pp. 5-6

¹⁴² This approach is based on the Annex 19 to the Chicago Convention (drafted in 2013) containing safety management requirements for industries and States.

¹⁴³ <https://www.easa.europa.eu/en/domains/safety-management/european-plan-aviation-safety#:~:text=EPAS%20constitutes%20the%20regional%20aviation,to%20further%20improve%20aviation%20safety.>

management process at the EU level, where **safety information was scattered, in certain respects incomplete or of sub-standard quality**¹⁴⁴.

In relation to the *second problem driver*, the inefficiencies of the EU aviation system stemmed largely from institutional fragmentation and the high number of actors involved. Fragmentation could be seen as a significant bottleneck in improving the performance of the European aviation system¹⁴⁵. At the time, this issue was having an impact at several levels:

- overlaps in tasks, resources and costs between EUROCONTROL and EASA were identified;
- there was a need to develop a practical framework for sharing resources between National Aviation Authorities and between National Aviation Authorities and EASA¹⁴⁶;
- additionally, the existing system obliged National Aviation Authorities to be competent in each aviation safety domain, even when the aviation activities in such a domain were limited. This hampered the specialisation of National Aviation Authorities, limiting economies of scale.

It might have been that the system collectively disposed of enough resources, but due to fragmentation, there was a perceived shortage¹⁴⁷. For this reason, the **IA emphasised the need to increase the efficiency in utilising existing resources rather than increasing the available staff**.

Problem 2: The disproportionate and excessive burden for smaller operators

According to the IA, the EU aviation safety system achieved good safety performance at a disproportionate cost. The high costs were attributed mainly to overregulation which affects SMEs and General Aviation¹⁴⁸. EASA pointed out that the regulatory framework for light aircraft, in particular, needed to be sufficiently differentiated from the commercial air transport framework¹⁴⁹, as the risks faced by light aircraft were different.

The disproportionate and overly complex regulation resulted not only in a high cost to demonstrate compliance, but also the resources of the operators and National Competent Authorities were diverted from operational and oversight work as well as from innovation towards administrative tasks¹⁵⁰. Concerning SMEs, the following *issues* were identified:

- the former system, stemming from Regulation (EC) 216/2008, put **excessive requirements on SMEs compared to the achieved safety benefits**. Many contributors felt that regulations were beyond the ability of many SMEs to comprehend and stay abreast with the constant changes (mostly due to excessive prescriptiveness and language barriers faced by SMEs in understanding the legal text);

¹⁴⁴ Support study on performance, Final Report, pp.18-19

¹⁴⁵ High Level Group for the Future European Aviation Regulatory Framework (2007), Final Report, p. 7

¹⁴⁶ The IA support study on resources (pp.104 – 124) highlighted a lack of common working procedures hampering resource sharing, differences in funding of NCAs, a lack of standardisation in training and qualification of staff, as well as practical issues related to the recovery of costs, language barriers, and questions associated with the liability of aviation authorities.

¹⁴⁷ Support study on resources, Final Report, p. 46

¹⁴⁸ General Aviation (GA) is defined by ICAO as "all civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire". The category is sometimes called 'General aviation and aerial work' (GA/AW)

¹⁴⁹ EASA Opinion 1/2015, p.7.

¹⁵⁰ Support study on performance, Final Report, p. 17

- **regulations were difficult to implement** by companies where a **single individual** performs roles which in an airline or a big manufacturer are the responsibility of multiple departments.

The main *problem drivers* associated with problem 2 were (i) the level and type of regulation did not sufficiently correspond to the risks associated with different aviation activities, and (ii) the system was reactive and predominantly based on prescriptive regulations and compliance checking. The latter has already been described above.

Even though the preamble to Regulation (EC) No 216/2008 recognised that rules should consider the risk related to the different types of operations and complexity of aircraft, this principle was not well reflected in the actual provisions of this regulation, which, for example, subjects all aircraft to a type certification procedure irrespective of the risk involved. Additionally, the absence of an adequate distinction between acceptable levels of risk had led to a "one-size-fits-all" approach that was especially disproportional for smaller organisations. Many regulations were blanket regulations that attempted to cover all conceivable dangers, even though a limited group of recurrent issues caused the great majority of fatalities. The second reason for excessive burdens was that the EU overly relied on legislative instruments to address safety risks while not sufficiently exploring other tools (using industry standards, training and safety promotion), providing more flexibility in managing risks.

Problem 3: The existing regulatory system was not sufficiently responsive to market developments

The **regulatory system needed to be sufficiently adapted to market developments**. The *issues* included the system's ability to: (i) quickly accommodate safety and efficiency-enhancing technologies, and (ii) respond to new operational practices of the industry, as described below.

Aspects related to technologies

The previous system was based mainly on prescriptive regulations, which often described the required technical solutions to be used. This approach led to some areas of the aviation industry slowing down in adopting technological safety and efficiency improvements, even though it provided clear guidance to users and compliance with the rules was straightforward. This is because acceptance of new technologies and certification methods necessitates frequent changes in the requirements. Additionally, the approach restricted choices for obtaining compliance and discouraged innovation.

Moreover, on the promotion of environmentally friendly technical solutions and technologies, the regulatory system based on Regulation (EC) 216/2008 had not evolved since the adoption of the predecessor of this regulation in 2002, while the attention paid by the EU and citizens to 'greening' of air transport has significantly increased over the years. Regulation (EC) 216/2008 embedded an automatic link with ICAO environmental requirements - which did not exist for safety rules - hampering the EU's possibility to consider possible better alternatives to minimum international standards, weakening the negotiating position of Member States and the EU in ICAO¹⁵¹. The emergence of electric engines was also not reflected in Regulation (EC) 216/2008, which defined 'complex aircraft' by referring to turbine-powered engines only.

Finally, the manufacturing industry voiced concerns regarding the certification system stating that, due to lengthy procedures and minimal availability of resources at EASA, it might not be able to

¹⁵¹ Article 6 of Regulation (EC) No 216/2008.

respond to future industry demand for product certification promptly. This could lead to financial penalties and, more generally, to a competitive disadvantage for European industry.

Aspects related to operational practices of the industry

The restrictions placed on the airline sector by Air Services Agreements¹⁵², have been lifted since the creation of the single aviation market: airlines may conduct business inside the EU as if there were no national borders. This liberalisation also resulted in new employment practices and business models: this included multinational airline alliances which hold multiple Air Operator Certificates (AOCs) to satisfy ownership and control requirements of Air Services Agreements of individual Member States with third countries¹⁵³. However, the necessity to hold separate AOCs from multiple Member States prevented such consortia from operating as a single airline which would allow for the interoperability of assets and associated safety benefits.

The emergence of transnational business models and operators with multiple principal places of business was a new challenge that needed to be addressed by the oversight authorities and for which standardised implementation of the regulations required to be a good solution on its own, according to the 2013 EASA Annual Standardization Report¹⁵⁴. The regulators' procedures and oversight methodologies were however not adapted to the developments in business models, and there was insufficient guidance on cooperative oversight¹⁵⁵.

The main *problem drivers* related to problem 3 are (i) the level and type of regulation that did not sufficiently correspond to the risks associated with different aviation activities, (ii) the system that was reactive and predominantly based on prescriptive regulations and compliance checking, and (iii) the shortages of resources impacting safety oversight and certification. The first two problem drivers have been described above, and the latter is briefly described below.

According to the IA support study on resources, **to maintain the safety standards, the resource allocation needed to be more efficient and, if required, later increased to cope with the industry's yearly growth**¹⁵⁶. Since 2005, the industry's growth had outpaced the increase in workforce and budget of aviation authorities, which at the same time have not yet significantly changed working methods. Additionally, the transition to the EU regulatory framework had created transition costs for the authorities and, in some cases, increased workload due to the more demanding and complex regulatory framework and standardisation requirements¹⁵⁷. Furthermore, budget constraints and divergences in the authorities' funding come into play, as demonstrated by the support study on resources: mainly the small authorities funded through government contributions found it challenging to attract competent personnel from the job market¹⁵⁸. The shortages of resources concerned not only the availability of staff but also the level of qualifications which have been found sub-optimal in several Member States¹⁵⁹.

¹⁵² I.e. international agreements governing the conditions and procedures for the conduct of international commercial air transport operations

¹⁵³ Y. Jorens, D. Gillis, L. Valcke and J. De Coninck, 'Atypical forms of employment in the aviation sector', European Social Dialogue, European Commission, (2015).

¹⁵⁴ EASA, 'Annual Standardisation Report', (2013)

¹⁵⁵ EASA, Developing Business Models in Aviation: Report from the RAG Working Group (2015), p.4

¹⁵⁶ Support study on resources, Final Report, p. 105

¹⁵⁷ Support study on resources, Final Report, p. 100

¹⁵⁸ Support study on resources, Final Report, p. 111

¹⁵⁹ Insufficient training and qualification of inspecting staff as one of the two main elements contributing to inadequate oversight in EU Member States in the field of Air Operations, Air Traffic Management/Air Navigation Services and Aircrew. Support study on resources, Final Report

Although EASA planned to implement new performance-based working methods, it expected a constant rise in initial certification and ongoing supervision operations due to the expansion of operational aircraft fleets and the increase in type certifications granted¹⁶⁰. An analysis of manufacturer forecasts, which projected that the EU fleet would nearly treble in size by 2033, confirmed this conclusion¹⁶¹.

Problem 4: Discrepancies in resources across Member States

The fourth problem identified by the IA is linked to the availability of qualified personnel, an essential prerequisite for effective oversight and certification by EASA and national aviation authorities. The *issues* identified here relate to differences in the organisational capabilities of Member States which:

- created **potential safety risks**, as some Member States were not sufficiently capable of ensuring effective oversight of EU legislation;
- contributed to **mistrust between the Member States**. The support study on resources reported that four out of sixteen National Aviation Authorities interviewed stated that they do not automatically accept certificates issued by some other authorities due to a lack of trust in their compliance¹⁶²;
- resulted in **varying interpretations of requirements by Member States**, negatively affecting the market's level playing field. Many organisations and National Aviation Authorities expressed concern over this issue.

The support study on resources indicated that discrepancies across Member States stem from the varying approaches of national authorities to oversight, availability of resources and qualification of staff, as well as differences in financing oversight (with some Member States recovering the costs through fees and some financed through Member State budgets)¹⁶³.

At the time of the IA, the EU already had several tools for addressing deficiencies identified in the safety oversight capabilities of a Member State. These included infringement procedures to be launched by the Commission, the possibility to suspend recognition of certificates under Article 11 of Regulation (EC) 216/2008, and imposing full or partial operating restrictions on operators certified by an EU Member State using Regulation (EC) 2111/2005.¹⁶⁴ However, these **measures** either took a **long time to be implemented** (which is the case for infringements) or stopped the entire operation **without resolving the underlying problems** of inadequate national oversight.

The main *problem driver* related to problem 4 was the inefficient use of resources stemming from fragmentation, as previously described.

Operational objectives of the preferred policy package

As discussed in Section 2.3, five policy option domains were developed by the Commission in the IA to cover all issues, problem drivers, and objectives mentioned in the IA¹⁶⁵. The preferred policy package was based on combining the preferred option from each of the five policy domains. The

¹⁶⁰ EASA, Work Programme, (2015), p. 5

¹⁶¹ Airbus, Global Market Forecast, 2014-2033, p. 111, Boeing, Current Market Outlook, 2014-2033, p. 2, & Embraer, Market Outlook 2014-2033, p.32

¹⁶² Support study on resources, Final Report, p. 121

¹⁶³ Support study on resources, Final Report, p. 103-105

¹⁶⁴ OJ L 344, 27.12.2005, p. 15

¹⁶⁵ IA SWD (2015) 262, 2015

table below displays the operational objectives for each of the policy options under the preferred policy package:

Table 15. Main operational objectives of the preferred policy package

Policy option	Main operational objectives and measures
1.3 (b) Emergency Oversight support mechanism	<ul style="list-style-type: none"> • Establish a pool of EU-accredited aviation safety inspectors with clearly defined privileges, common liability regime, and funded through fees; • Establish an emergency oversight support mechanism to deal with weaknesses in safety oversight capabilities of Member States; • Create a legal basis for Member States to transfer responsibilities to each other Member States or EASA on a voluntary basis; • Enable allocation of certification and oversight tasks to competent users organisation in the general aviation sector; • Establish a repository of information relevant for cooperation between authorities in certification, oversight and enforcement • Establish an accreditation scheme for aviation training institutes; • Introduce a more flexible framework for funding EASA activities; • Create a possibility of opt-in for state aircraft and Annex II aircraft produced in series.
2.2 Enablers for a proportional and performance-based safety system	<ul style="list-style-type: none"> • Ensure all Member States implement State Safety Programmes; Establish a formal process for the development and implementation of the European Aviation Safety Plan; • Review definitions and classifications of aircraft and operations in Regulation (EC) No 216/2008 to align them with risk hierarchy principles; • Introduce a broader range of possibilities for demonstrating compliance with essential requirements, in particular for product certification, based on risk assessment; • Introduce principles of risk hierarchy and risk assessment to the mechanism of exemptions and derogations under Regulation (EC) No 216/2008; • Simplify the regulatory framework for wet leasing of aircraft between EU operators; • Ensure greater reliance on recognised industry standards when developing; • Develop a policy on performance-based regulations.
3.1 (b) Ground handling (industry standards/ no certification)	<ul style="list-style-type: none"> • Establish essential requirements and a legal basis for oversight of ground handling service providers in the EU.
3.2 (c) Coordinated approach to safety and security related matters	<ul style="list-style-type: none"> • Establish EU essential requirements for cyber-security. • Establish a process for involvement of EASA in the work on aviation security where the Agency has relevant expertise; • Clarify the competence of EASA to issue security directives.
3.3(B) EU essential requirements for environmental protection with respect to aeronautical products	<ul style="list-style-type: none"> • Establish EU essential requirements for environmental protection of aeronautical products; • Establish a legal basis for aviation environmental protection report.

Source: IA SWD (2015) 262, 2015, p. 75

Predicted impact of the preferred policy options

The IA divides the impacts concerning the options constituting the preferred policy package into nine categories. This study uses the same categories. The predicted impacts of the preferred policy package are described for each category. The categories considered are:

10. Internal market
11. Compliance costs and other operational costs for businesses
12. Small and Medium Sized Enterprises (SMEs) and light aviation
13. Innovation
14. Aviation safety
15. Competitiveness
16. Creating jobs
17. Implementation costs
18. Resource needs for EASA

Internal market

Positive impacts were expected in the IA on the level playing field in the internal market through **more uniform oversight**. Those impacts should have been enhanced by the more robust **pool of European inspectors** and **enhanced possibilities for Member States to delegate** and pool responsibilities for certification and oversight (Option 1.3).

Option 3.1 (b) of the preferred policy package was expected to positively impact the internal market's functioning by introducing common safety standards for ground handling services across the EU. This option should have contributed to a level playing field for the operators: in fact, through the recognition of standards, market access for operators would become easier across the EU. The option also expected limited compliance costs due to the absence of new certification requirements and reliance on existing industry standards, already followed by most market operators. Positive impacts were expected for ground handling operators from harmonised EU standards which could lead to airlines not imposing their standards when auditing ground handling providers. Positive results were expected for airlines by reducing the costs of ground handling-related damage. Regarding the administrative burden of businesses, the absence of a certification scheme would not lead to new reporting obligations for ground handling companies. Only a low/medium number of ground handling companies were expected to be SMEs. The implementation of industry standards was not expected to negatively impact SMEs. Positive impacts were expected for airlines by reducing the costs of ground handling related damage and associated delays. On the other hand, additional costs were expected for ground handling service providers to ensure compliance with the new essential requirements.

In the IA, the Commission has further identified inconsistencies in the EU legislation concerning leasing third-country registered aircraft. This issue was previously identified in 2013 in the context of the EU internal aviation market 'fitness check'. Regarding dry lease-in of foreign registered aircraft, the EU safety legislation allowed for such arrangements, subject to several conditions. In contrast, the internal market legislation (Regulation (EC) No 1008/2008) did not clarify whether they were allowed or not, leading to legal uncertainty. Concerning wet lease arrangements between EU operators, while Regulation (EC) No 1008/2008 required a prior safety approval from the relevant authority, the EU safety legislation did not impose on such arrangements any lease-specific conditions in addition to the need for the lessor (AOC holder) to comply with usual EU requirements for flight operations and aircraft maintenance.

To tackle those problems, Option 2.2 of the preferred policy package described that the elimination of overly prescriptive rules and the introduction of a broader range of possibilities to demonstrate compliance with essential requirements, should have stimulated economic activity and allowed for

a broader range of technical solutions and, thus, choices on the market. Changes to Regulation 216/2008 should have enabled new methods for product certification, quality assurance from manufacturers and increased use of industry standards according to the risk involved. This should have reduced the complexity and length of administrative procedures. Simplifying leasing approvals should also have positively impacted the airline industry by increasing operational flexibility. Positive impacts were expected for new technologies such as drones.

To conclude, more consistent oversight by the National Aviation Authorities and the promotion of EU-wide training standards would **benefit a level playing field**. Market activity and choices on the market could benefit from a broad range of alternatives to demonstrate compliance, and there would be more emphasis on industry standards. Similar effects for the voluntary opt-in options for state and Annex II aircraft were expected. Common ground handling regulations based on industry standards would reduce compliance costs while **facilitating market access and improving safety**. If a National Aviation Authority fails to remedy significant weaknesses in its oversight capabilities, the emergency oversight support mechanism (Option 1.3 (b)) will let complying operators carry on with their operations. **Airlines would have more flexibility in leasing aircraft.**

All policy options considered in the IA would better stimulate the development of the internal market compared to the baseline, where the fragmentation hinders the swift development of the drone market. The market for small (civil) drones is expected to evolve rapidly with robust figures in the coming years, estimated between a few hundreds of millions to billions per year. The considered policy options would all set the frame for internal market for drone manufacturing and services and hence constitute an improvement as compared to the fragmented market that would result under the baseline. The difference lies in the efficiency and speed with which the objectives can be achieved.

It was not anticipated that the selected policy package's adoption would increase consumer expenses. In the long run, it was expected that the efficiency-improving initiatives that have been recommended would help customers pay less.

Compliance costs and other operational costs for businesses

For Option 1.3 (a), the IA expected additional costs for the industry in those Member States that used the pool of experts or delegated responsibilities to EASA. This included the initial AOC issuance and its continuous oversight. By ensuring proximity of the authority and streamlining oversight, it was anticipated that delegating certification and oversight responsibility from Member States to competent users' organisations (i.e., a national aeroclub) would have lowered the compliance costs for non-commercial aviation. The removal of the staffing cap on EASA resources financed from fees and charges was not expected to create additional costs for the manufacturing industry, as the certification work was in any way subject to fees and charges. In the domain of product certification, it was estimated that in the mid to long term, the number of EASA staff was expected to increase by around 12%, compared to the 2015 Multiannual Staff Policy Plan, which is about 30 posts.

For Option 1.3 (b), the IA expected the same impacts as Option 1.3 (a), meaning additional costs for the industry. Most of these would have only applied in those cases where an organisation or a Member State responsible for oversight of the organisation expressed an interest in using these new possibilities. However, in exceptional cases where the emergency oversight support mechanism would be used, mandatory costs would be imposed on market operators to recover the costs of certification and oversight tasks exercised by EASA. This applied to AOC issuance and oversight. Overall impacts were expected to be harmful to operators affected by an emergency oversight support mechanism in terms of the additional cost. However, it must be pointed out that the

mechanism would apply only in cases where the operation would have to be stopped entirely; and thus, the market operator would be put out of business.

Overall, the preferred policy package's effects on compliance and other business operational costs were expected to be positive. Those positive effects would result from a regulatory system that is more proportionate and performance-based, from the ability to satisfy requirements with **greater flexibility**, and from **greater dependence on industry standards**. For high-performing organisations, risk-based oversight would result in cost savings. More instances of cost reductions while maintaining a suitable degree of safety would include **streamlined certification processes for small aircraft**. **Streamlining lease approvals** and **potential consolidation of certificates** held by the same entity in many Member States would benefit airlines. The "user pays principle" would finance the emergency oversight support mechanism (Option 1.3 (b)) and measures related to pooling or sharing resources. These measures would primarily be implemented voluntarily by Member States, but they may have impacted businesses in those Member States where oversight was still funded by general tax revenue.

SMEs and light aviation

According to the IA, various measures would ease **the administrative burden on SMEs and light aviation players**. The regulatory environment for small business owners would also be improved. For light aircraft utilised in low-risk activities, a procedure other than a type certification was suggested for certification. If they choose so, manufacturers of Annex II aircraft would also be permitted to have their goods governed by standard rules and enjoy unrestricted circulation inside the internal market. To ensure that the supervision is proximate to the regulated entities, competent user organisations (such as national aeroclubs or light aviation associations) would be permitted to operate as qualified entities on behalf of the national aviation authorities under certain circumstances. It should be easier to tailor requirements to the risks involved in light aircraft and the operations of small organisations using a modular approach to certification of aviation activities and the elimination of unduly restrictive terminology from the framework of safety regulation. As many General Aviation (GA) organisations are SMEs, the impact on SMEs can be seen as impacting the GA industry. According to the IA, SMEs could gain from risk-based monitoring, which eliminates unnecessary restrictions, but they might benefit less from performance-based regulation than more prominent companies. The performance-based regulation could be favourable to SMEs, as it could provide them with a choice of applying prescriptive or performance-based rules on a case-by-case basis. The voluntary nature of the measures was seen as an advantage for SMEs as some of them may still prefer to use prescriptive rules, which clearly described what exactly was required from the operator.

Innovation

The IA expected that new technologies would be more rapidly introduced thanks to the more efficient use of resources in the Member States and EASA under the preferred policy package. Adding en route charges as a source of income for EASA was expected to ensure the necessary resources to support the deployment of new SESAR technologies. By removing the staffing cap on EASA resources financed from fees and charges, positive impacts on innovation were expected by making sure that new technologies could be certified according to market demand. Innovation was also predicted to be sparked by eliminating too restrictive regulations, reducing compliance costs, and introducing more options for proving compliance with fundamental requirements. Notably, increased dependence on industry standards was anticipated to shorten the time for new technologies to reach the market (e.g., electric engines or drones). Furthermore, increased use of performance-based regulation that defined a desired outcome without prescribing how to achieve it would give the industry more flexibility in developing new technologies.

The preferred policy package also recommended essential requirements for cyber-protection and resilience of critical ATM infrastructure. Those systems were expected to **stimulate the development of innovative technical solutions** to meet these requirements. The more optimal solutions should be easier to choose, thanks to a better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis. Adapting to EU rules should also be more accessible, thus allowing a more rapid response to benefits from innovation. If the EU opted for higher stringency than the minimum ICAO requirements, this would have created a market incentive that would stimulate innovation and potentially give the EU industry an advantage over other parts of the world, allowing it to export its knowledge.

To conclude, the measures related to proportionality and performance would mostly have a favourable influence on innovation. Removing unduly prescriptive regulations, lowering compliance costs, and offering a variety of ways to show compliance, would **free up resources and make it easier to implement new technologies**. New technologies like electric engines or drones would be reflected in the updated regulatory framework. Improvements in solutions and better management of interdependencies and trade-offs between safety and security would result from the integrated assessment of safety and security concerns at the regulatory level. The ability of the EU to adopt solutions that are **more appropriate to the EU context** than a generic solution produced at the ICAO level might be facilitated by more flexibility in determining environmental standards for aeronautical products. This would further encourage innovation.

Aviation safety

The IA expected that Option 1.3 (b) would have a positive impact through improved training and qualification of staff and more uniform oversight. In addition, the possibility of delegating certification and oversight responsibility from Member States to competent users' organisations was expected to free up resources in NCAs, which could then be shifted to oversight of higher-risk activities, bringing safety benefits. Providing a mechanism for dealing with safety oversight deficiencies at the Member State level would improve the expected positive impact even more.

The overall safety performance of the EU aviation safety sector should improve, according to preferred policy option 2.2, by strengthening the capacity to detect and mitigate safety risks through a collaborative safety management approach. Each Member State's ability to reach agreements with their organisations about the safety performance of their Safety Management Systems would be enhanced by the adoption of a State Safety Program in each Member State. The safety management systems should help to detect and mitigate interdependencies between measures. Additionally, it should help Member States to carry out risk-based oversight. The efficacy of the European risk identification and mitigation processes would also be improved by monitoring the execution of the EASA activities. In general, setting safety performance objectives that were progressively increasingly ambitious was a good fit for a performance-based approach to aviation safety regulation. The performance-based strategy should enable operators to adjust more easily to various circumstances to satisfy safety goals since it is data-driven. The preferred policy package also expected to positively affect aviation safety by enabling the EU better to protect aviation against security-related risks, particularly cyber-security threats.

To conclude, aviation safety was expected to improve under the preferred policy package. Gains in safety would be made possible through a collaborative safety management approach connecting the organisation, Member States, and EU levels and enhanced supervision due to **simpler resource sharing and pooling**. Additional benefits would result from addressing design security and ground handling safety shortcomings. The emergency support oversight mechanism (Option 1.3 (b)) would be a new last-resort tool to assist in **upholding a high safety standard** across the EU.

Competitiveness

With regard to the competitiveness of the EU's aviation industry, positive effects were expected, as the safety record of the EU aviation sector is a factor in its competitive ability. However, the extent to which the EU and Member States could effectively manage the interfaces involved in the horizontal and vertical transfers of responsibility for safety supervision would determine the final effects. Companies with several approvals in various Member States should benefit from combining approvals at the EU level, which would simplify oversight and lower administrative costs. This should also lead to a more straightforward consolidation process for the EU airline industry. Combining approvals at the EU level was also expected to benefit multinational companies because they could be represented by a single, internationally recognised authority (EASA). The emergency oversight support mechanism could be used as a last resort in exceptional safety oversight deficiencies in a Member State, resulting in even higher expected positive impacts.

The safety record of air carriers and the sector's ability to innovate impact the European industry's competitiveness. Accidents erode the customer's confidence in the safety of the transportation system, which is especially true for aviation since accidents frequently result in high fatalities. Accidents affect the market value of the involved organisation and the demand for tickets sold by the involved airline. The anticipated increase in aviation safety by this preferred policy package that results from a more collaborative safety management approach should, at the very least, helped the EU sector maintain, if not increase, its level of competitiveness. Regulation would become less costly to comply with, should have encouraged innovation, and should have benefited competitiveness if overly prescriptive laws were eliminated and a risk-based approach and performance components were included.

By lowering the costs of damage due to ground handling and related delays, positive effects were expected for airlines. Neutral impacts were also anticipated regarding the security aspects of aircraft airworthiness. This was because EASA had addressed aircraft design security in practice, but the legal justification for doing so needed to be clarified. Regarding ATM, innovative solutions created by the EU industry to achieve the safety goals and performance outlined by the new necessary standards might enhance the EU sector's competitiveness. On the other hand, it was expected that the increased expenses associated with ANSPs' implementation of the new requirements would be reflected in air navigation fees.

To conclude, the above-described safety improvements and favourable environment for innovation would help the European aviation industry compete more successfully.

Creating jobs

More appropriate regulations and a conducive environment for innovation were anticipated in the IA to have a favourable influence on employment in the European aviation sector. Implementation of performance-based regulation in some regions should necessitate employee training, thereby elevating the quality of employment. The streamlining of certification processes ought to have particularly beneficial effects on lowering costs in the general aviation industry, which could result in new employment. The implementation of minimum training requirements as well as minimum quality standards for operational safety should have improved working conditions and lower injury rates.

The impact, whether favourable or unfavourable, would only be felt if it was decided to utilise the extra freedom that this preferred policy package provides. This package should assist in the sustainable growth of the aviation industry, which was expected to increase the quantity as well as the quality of jobs.

Overall, the preferred policy package would help the EU aviation industry to expand safely and by encouraging innovation and new technology, as well as by reducing expenses that can be justified from a safety standpoint, particularly in the general aviation and SME sector. This would help create new employment in the European aviation industry.

Implementation costs

According to the IA, additional cost savings were expected for the Member States that make use of the developed pool of experts on the European level as opposed to developing their own expertise. Nevertheless, Member States, who already have minimal resources, were expected to need help to finance the utilisation of a central pool of specialists. Most of the expenses would only be borne by the Member States that have taken advantage of the opportunities provided.

In the preferred policy package, all EU Member States must set up and implement a State Safety Programme and report on the European Aviation Safety Plan implementation. Performance-based rulemaking should have significantly reduced the requirement for ongoing revisions and adjustments. However, the staff of the NCAs would require additional training, and oversight should have been adjusted. It should also be less costly for EASA to oversee and accredit products in the general aviation industry due to increasing dependence on accreditation processes and compliance declarations. And last, streamlining lease approvals ought to save Member States cost on administrative expenses.

As a certification procedure would be set up at the qualified aviation authority, there would be a medium to high-cost effect on national aviation authorities in terms of implementation costs and some additional expenses for EASA and Member States. Additionally, drafting the EU regulations would cost more to implement because the ICAO Annex 16 references needed to be updated. The chance of an outcome that negatively impacts the EU could be reduced by deviating from ICAO requirements. Hence, there could be less needed to invest resources in the ICAO process.

Overall, state safety programmes must be implemented by Member States that have not yet done it since the IA was published. The requirement for more training should result in increased expenditures. Some Member States would need to develop **expertise in ground-handling and cyber security, as well as in innovative technologies as AI, Drones and greener technologies**. However, most of the suggested actions that would impact Member State resources would be voluntary and implemented by a Member State after conducting a favourable cost-benefit analysis. After some initial setup and training expenses, it was anticipated that **improvements in efficiency via resource pooling and sharing** and the transition to more targeted, **risk-based oversight** could have a favourable mid- and long-term impact on the resources of NCAs. According to the "user pays principle", fees and charges would be used to fund the pooling and sharing of resources. As there are no additional certification requirements under the recommended ground-handling and security alternatives, Member States' oversight costs are not anticipated to be very high.

Resource needs of EASA

The estimated resource needs of EASA under the preferred policy option are shown in Table 16.

Table 16. Estimated resource needs of EASA under preferred policy options

Policy option	Resources in FTE	One-off costs in EUR (Non-staff costs)	Annual costs in EUR (including staff costs)	NPV 2016-2030 in EUR
1.3(b): Emergency Oversight support mechanism	1 FTE (repository of certificates) 1 FTE (pool of experts) 1 FTE (accreditation scheme for training institutes and monitoring)	Central repository of certificates: 1.2 m Pool of experts: 0.4 m Development of virtual training academy: 0.1 m Additional training guidance material: 0.2 m Setting up of administrative and contractual framework for delegations: 0.7 m	Central repository of certificates annual maintenance: 0.5 m Pool of experts: 0.1 m Promotion of risk and performance based oversight methods: 0.2 m Accreditation scheme: 0.095 m	12.7 m (annual costs) 2.6 m (one-off costs)
2.2: Enablers for a proportional and performance-based safety system	Tasks are expected to be absorbed by present staff	No additional costs for EASA. Possibility for cost reduction due to increasing reliance on accreditation mechanisms and declarations of compliance for product certification should also reduce the costs of EASA in product certification etc.		
3.1(b) ground handling (industry standards/no certification)	1.5 FTE	n/a	set up and maintain the system of common requirements incl. initial rulemaking standardisation and implementation support: 0.142 m	2.05 m
3.2(c) Coord. approach to safety and security related matters	3 FTE	n/a	Support to rulemaking and inspections: 0.295 m	4.3 m
3.3(b) EU essential requirements for environmental protection with respect to aeronautical products	2 FTE	n/a	Update of environmental rules: 0.095 m IT equipment: 0.3 m European environmental report: 0.095 m	7 m
Total	9.5 FTE	2.6 m	1.822 m	28.65 m

Source: IA SWD (2015) 262, 2015, p. 72

APPENDIX 4 - THE IA'S PREFERRED POLICY PACKAGE AND THE CHANGES INTRODUCED BY THE INTERVENTION

Main features and changes brought by Regulation (EU) 2018/1139

On the basis of the needs identified by the IA and on the basis of the main operational objectives of the preferred policy package described in Section 2.3, this section summarises the new features and changes introduced by Regulation (EU) 2018/1139, adopted in July 2018 to address such objectives.

The primary role of a common regulatory framework (in the form of a Basic Regulation) at European level is to ensure a high and uniform level of civil aviation safety by setting out requirements and conditions through which EASA assists the European Commission in implementing the Regulation. EASA continues to assist the implementation of relevant EU legislation by the European Commission through technical expertise and documentation provided in the form of acceptable means of compliance, certification specifications, special conditions, and guidance materials. EASA assists the Commission in the preparation of proposals for amendments to the Regulation by developing opinions.

Article 59 of Regulation EC 216/2008¹⁶⁶ set out EASA's **sources of revenue**: a contribution from the EU, a contribution from any European third country that the EU has agreements with, fees and charges¹⁶⁷, and any voluntary financial contribution from Member States, third countries or other entities (which respect the independence and impartiality of EASA). Currently, Regulation (EU) 2018/1139 added one source of revenue to this list, which is represented by grants to EASA's budget.

Regulation (EU) 2018/1139 brought changes in terms of **the scope of the regulatory framework**. Article 2 now includes a possibility to 'opt-out' from the requirements of the Regulation for Member States who want to exempt the design, production, maintenance and operation activities for a certain category of aircrafts¹⁶⁸ (*Problem 2 of the IA: The disproportionate and excessive burden for smaller operators*). Additionally, there is an 'opt-in' possibility for Member States to include State aircraft, which are normally excluded under the Regulation¹⁶⁹. Moreover, ground handling services and Apron Management Services (AMS) have now been added to the scope of the Regulation (both third party providers and airlines), as well as unmanned aircrafts and the certification of ATM/ANS equipment (*Problem 1 of the IA: The existing regulatory system was not fit to mitigate safety risks in the medium to long term*).

Another change in the scope of the Regulation was in including all **unmanned aircraft** to the scope of the Regulation, irrespective of their operating mass (with the exception of small-tethered aircraft listed under Annex I to the Regulation) (*Problem 3 of the IA: The existing regulatory system was not sufficiently responsive to market developments*). In the IA, the second part of the document separately addressed the problems stemming from the impact and risks stemming from unmanned aircrafts in the market, technologies that gradually became more widespread in the aviation sector.

¹⁶⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1474978980580&uri=CELEX%3A32008R0216>

¹⁶⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019R2153>

¹⁶⁸ <https://www.easa.europa.eu/en/opt-out-article-28-211>

¹⁶⁹ <https://www.easa.europa.eu/en/opt-article-26>

Therefore, the new change in the scope of the Regulation included resolving the problem identified in the IA¹⁷⁰.

In terms of requirements for **airworthiness**, the main novelty introduced by Regulation (EU) 2018/1139 is the possibility to declare compliance instead of having a type certificate (Problem 2 of the IA: The disproportionate and excessive burden for smaller operators). In terms of **environmental protection**, similar to the previous Regulation (EC) 216/2008, ensuring a high uniform level of environmental protection remained one of the objectives in the text of Regulation (EU) 2018/1139. Previously, Art. 6 of Regulation (EC) 216/2008 presented the essential requirements for environmental protection and Article 20 addressed airworthiness and environmental certification. Currently, through Art. 87¹⁷¹, the Agency has a clear role with regards to emissions and noise in its certification of the design of products (Art. 87(1) of the Regulation). Moreover, the article indicates that the Commission, EASA as well as other EU bodies or institutions should cooperate on environmental matters with a view to ensuring interdependencies between environmental protection, human health and other technical domains of civil aviation. Moreover, this article of the Regulation formalises EASA's role in assisting the European Commission with 'the definition and coordination of civil aviation environmental protection policies and action' (Art. 87(3) of Regulation (EU) 2018/1139¹⁷²). Lastly, Regulation (EU) 2018/1139 introduced EASA's task to publish an environmental review (*European Aviation Environmental Report*¹⁷³), report that provides high-level recommendations for aviation stakeholders.

Since the entry into force of the Regulation, EASA carried out a series of actions in the field of environmental protection and sustainable aviation. In 2020, EASA launched the Sustainable Aviation Programme¹⁷⁴ in line with Article 87 of Regulation (EU) 2018/1139 and in line with the EU Green Deal. This programme has more streams of actions aimed supporting to achieve EU environmental objectives: robust certification & green standards; operational efficiency & sustainable aviation fuels; air transport decarbonisation, electric & hydrogen powered aircraft solutions; environmental impact of Drones and Air Taxis; research towards zero emissions aviation. A vital aspect important for mitigating aviation's contribution to climate change is represented sustainable aviation fuels, area for which EASA publishes informative materials and figures with regard to the supply and use of these types of fuels. Finally, part of the Sustainable Aviation Programme is also EASA's Environmental Label initiative with the aim of informing passengers of the environmental impact of their flights¹⁷⁵.

Regulation (EU) 2018/1139 has dedicated essential requirements for **ground handling and apron management services**, as opposed to the previous Regulation (EC) 216/2008. Additionally, Member States can now exempt **smaller aerodromes** from the Regulation (as previously possible), but with additions in terms of the safety level to be ensured, clarifying previous requirements in this respect.

In the field of **air traffic management (ATM)** and **air navigation services (ANS)** (Problem 1 of the IA: The existing regulatory system was not fit to mitigate safety risks in the medium to long term), Regulation (EU) 2018/1139 strengthened EASA's role in the implementation of the Single

¹⁷⁰ Based on the IA, the problems identified were: (1) responsibilities for drone regulation are divided, leading to diverging requirements in the internal market; (2) Individual authorisations are too costly and too time and resource intensive; (3) the existing methods of civil aviation regulation are not always well suited to the specificities of drones; (4) the oversight and law enforcement authorities lack proper information and instruments.

¹⁷¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R1139>

¹⁷² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32018R1139>

¹⁷³ <https://www.easa.europa.eu/eco/eaer>

¹⁷⁴ <https://www.easa.europa.eu/en/light/topics/easas-sustainable-aviation-programme>

¹⁷⁵ <https://www.easa.europa.eu/en/light/topics/easas-sustainable-aviation-programme>

European Sky (SES) by involving EASA in the European Aviation Crisis Coordination Cell (EACCC)¹⁷⁶ as well as by EASA's role in providing technical assistance to the European Commission to implementing SES¹⁷⁷. In addition, Regulation (EU) 2018/1139 in its Art 139 (2) repealed the interoperability Regulation (EC) 552/2004 of the Single European Sky, transposing the essential requirements of ATM/ANS ground equipment contained in Regulation (EC) 552/2004 to Annex VIII of the Regulation (EU) 2018/1139, resulting in having both safety and interoperability requirements of ATM/ANS ground equipment under the same EASA framework. It also implied that a new conformity assessment framework would need to be established, including certification/attestation of ATM/ANS ground equipment (as per Article 45), and certification of the organisations involved in their design, production or maintenance (as per Article 42). All implementing rules stemming from Regulation (EC) 552/2004 would need to be adapted to the EASA framework (as per Article 140(2)).

The new Regulation brought changes in terms of **sharing responsibilities** (Problem 4 of the IA: Discrepancies in resources across Member States). Regulation (EU) 2018/1139 indicated EASA's role in establishing, in cooperation with the NCAs, a mechanism for the voluntary pooling and sharing of inspectors and other personnel with expertise relevant in certification and oversight tasks under the Regulation¹⁷⁸. Moreover, the reallocation upon request of the Member State, either to EASA or to another Member State, of the responsibilities of oversight, certification and enforcement is now a possibility in the new regulatory framework¹⁷⁹.

Another change was EASA's role in establishing and managing a **repository of information** necessary to ensure effective cooperation EASA and NCAs in tasks of oversight, certification and enforcement¹⁸⁰. (Problem 1 of the IA: The existing regulatory system was not fit to mitigate safety risks in the medium to long term)

Interdependencies between civil aviation safety and other areas (i.e. research and innovation, environmental protection, security, health, and socio-economic factors) have been established and now formalised for the first time in a Basic Regulation. More specifically, Articles 86 to Article 89 establish this basis for the above-mentioned fields. (Problem 1 of the IA: The existing regulatory system was not fit to mitigate safety risks in the medium to long term).

¹⁷⁶ Article 91 of Regulation (EU) 2018/1139.

¹⁷⁷ Article 93 of Regulation (EU) 2018/1139.

¹⁷⁸ Article 63 of Regulation (EU) 2018/1139.

¹⁷⁹ Article 64 of Regulation (EU) 2018/1139.

¹⁸⁰ Article 74 of Regulation (EU) 2018/1139.

APPENDIX 5 – EASA'S KPIS

EASA's rulemaking

The procedure of developing regulatory material by EASA is presented in more detail in the EASA Management Board Decision No 01-2022¹⁸¹. Rulemaking refers to the development and issuing of rules for the implementation of Regulation (EU) 2018/1139. Through rulemaking, EASA contributes to the production of EU legislation and implementation material in the area of civil aviation and environmental compatibility.

EASA issues the following types of rules: opinions, certification specifications, acceptable means of compliance, guidance material. These rules are defined in the following way:

- **Opinions:** EASA's suggestions in the form of *opinions* are evaluated by the European Commission and, subsequently, 'Implementing rules' are issued as legally binding law. Opinions are formulated by EASA after issuing terms of reference (ToR) for a rulemaking task and after the creation of the notice of a proposed amendment (NPA) and the consultation period that generates a comment-response document.
- **Certification specifications:** non-binding technical standards adopted by EASA to meet the essential requirements of the Basic Regulation.
- **Guidance material:** non-binding explanatory and interpretation material on how to achieve the requirements contained in the Basic Regulation, the implementing rules, the acceptable means of compliance, and the certification specifications.
- **Acceptable means of compliance:** non-binding rules where the responsibility to ensure compliance sits with the National Aviation Authorities. This type of rule serves as a means by which the requirements contained in the Basic Regulation and the implementing rules can be met.

The European Plan for Aviation Safety¹⁸² presents the most relevant publicly available information on the numbers and purpose of rulemaking tasks for the past years in each edition. These 5-year plans are important in EASA's overall planning of its rulemaking tasks as they provide a more holistic approach to the actual capacity of the regulatory system in a balance of hard law and soft law.

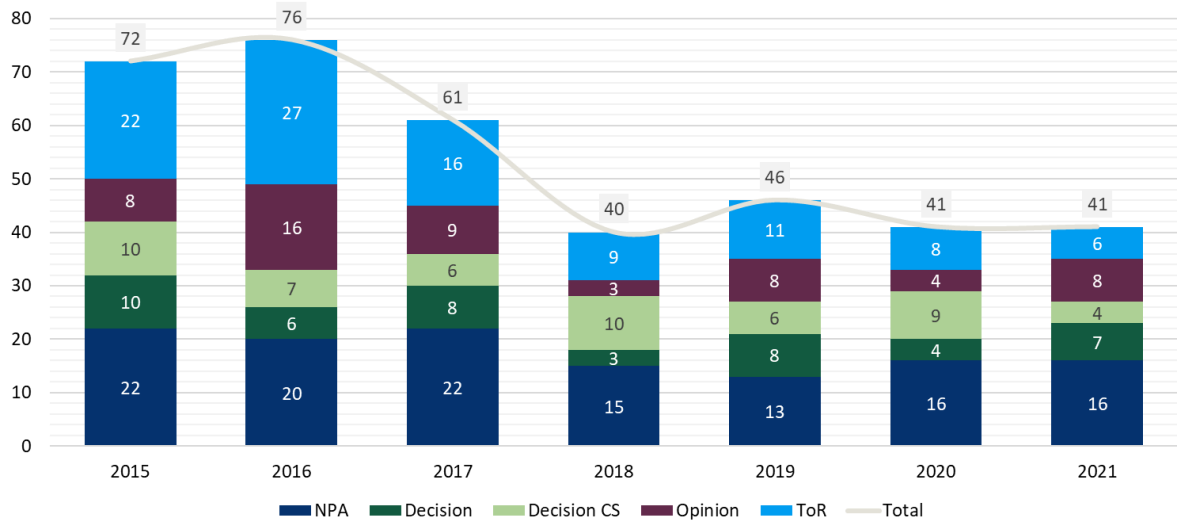
In terms of the outputs of the rulemaking activities, between 2015-2016, the number of deliverables has been relatively high (Figure 32 below)¹⁸³.

¹⁸¹ Management Board Decision No 01-2022 on the rulemaking procedure. Available at: <https://www.easa.europa.eu/en/the-agency/management-board/decisions/easa-mb-decision-no-01-2022-rulemaking-procedure-repealing-mb>

¹⁸² The EPAS is the instrument used to prioritise and manage actions to maintain and further improve aviation safety and environmental protection in Europe. It seeks to do this while ensuring efficiency, proportionality and level playing field at the same time. EPAS is a safety action plan derived from the main safety risks identified at European level. Description of EPAS available at: <https://www.easa.europa.eu/community/content/priorities-and-safety-actions>

¹⁸³ EASA presentation of the Historic KPI Timeline that presents the status of EASA activities.

Figure 35. EASA Rulemaking outputs per year (2015-2021)



Source: EASA (2021). *European Plan for Aviation Safety (EPAS) 2021–2025*. Available at: <https://www.easa.europa.eu/en/downloads/123562/en>. N.B. NPA: Notices of Proposed Amendments, Decision CS: Decision on certification specifications, ToR: Terms of Reference

While the 2015-2016 period had a high number of rulemaking outputs, this has also been influenced by a backlog of rulemaking tasks from previous years¹⁸⁴. As presented in the figure above, the number of rulemaking outputs decreased from 2016 until 2018.

Since 2019, EASA’s regulatory framework has gone through a ‘cool-down’ period, given the propositions of numerous stakeholders that expressed their view in relation to the burden on Member States and industry; this ‘cool-down’ in the rulemaking process is materialised by the stabilisation and reduction of opinions delivered every year. This shows that rulemaking since the entry into force of Regulation (EU) 2018/1139 was largely adapted to the implementation, but with considerations made to the burden that new rules may impose on the aviation sector. In addition, in 2019, the average duration of rulemaking tasks was described as ‘significantly above target’ in the 2019-2023 edition of the EPAS which further identifies a delay in rulemaking tasks. Since 2020, the pandemic had also impacted the delays in rulemaking activities, in a period of extreme pressure on all aviation stakeholders, at all levels.

Table 17 below the key performance indicators (KPIs) in relation to the rulemaking tasks for the period 2015-2022, aggregating data from more reports.

Table 17. EASA’s rulemaking KPIs 2015-2022

Rulemaking	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022 – Q1
Quality of published NPAs	%	N/A	N/A	N/A	N/A	N/A	N/A	1% ¹⁸⁵	On track
Timely Progress on Rulemaking Programme -	%	N/A	N/A	N/A	N/A	N/A	N/A	64%	Attention required

¹⁸⁴ Historic KPI timeline EASA.

¹⁸⁵ Number of feedback received, which rates the quality of published NPAs as not or not at all satisfactory, vs total number of commentators.

Rulemaking	Measure unit	2015	2016	2017	2018	2019	2020	2021	2022 – Q1
Strategic actions planned vs. actual									
Timely Progress on Rulemaking Programme - Opinions planned vs actuals	%	55%	50%	54%	55%	100%	80%	75%	N/A
Timely Progress on Rulemaking Programme - Decisions planned vs actuals	%	55%	50%	54%	55%	81%	58%	82%	N/A
Timely Progress on Rulemaking Programme - NPAs planned vs actuals	%	N/A	N/A	N/A	N/A	59%	73%	94%	N/A
Rulemaking Process Efficiency - Average time with standard procedure	Years	3.6	3.6	3.9	3.43	3.5	3.2	4.4	3.31
Rulemaking Process Efficiency - Average time with Art.15/16	Years	N/A	N/A	N/A	N/A	1.70	1.16	1.2	N/A
Rulemaking Process Efficiency - Average time at the EC	Years	N/A	N/A	N/A	N/A	1.9	1.7	0.9	N/A
Best Intervention Strategy (BIS) Coverage	%	N/A	N/A	N/A	N/A	100%	100%	N/A ¹⁸⁶	N/A
Number of evaluations published yearly ¹⁸⁷	Number	N/A	N/A	N/A	N/A	N/A	2	2	1
Timely answer to exemption requests (as defined by regulation)	%	N/A	N/A	91%	93%	84%	97%	95%	96%

Source: EASA (2018). WP17b Historical KPI Timeline, EASA (2022). WP11 Status of EASA KPIs. N.B. The colours denote the distance to the target. Green = On track, Yellow = Delayed, Red = Attention required, Grey = Not Measurable/ Not available). It should be noted that not all data for 2022 is available/measurable to date.

Based on the KPI Report of 2020, one reason for delays in rulemaking tasks after the COVID-19 pandemic started was caused by issues in on-site inspections and the need to shift remote inspections, which created delays in collecting the necessary information for the tasks. Moreover, the pressure that the pandemic had on the industry and delays in payments were also important for the delays in the rulemaking activities.

The EPAS also presents the list of evaluations used to assess whether aviation regulations and related initiatives are delivering the expected results at minimum cost.¹⁸⁸ Evaluations draw conclusions on whether the rules/actions continue to be justified or they should be modified to improve their effectiveness and/or eliminate excessive burden. These evaluations respond to the evaluation criteria based on the Better Regulation Guidelines. The table below shows the number

¹⁸⁶ It should be noted that for the years 2021-2022 no new Rule Making Tasks were created.

¹⁸⁷ Cover domains with ex post evaluations of rules (3 year moving average)

¹⁸⁸<https://www.easa.europa.eu/en/downloads/122936/en#:~:text=Hence%2C%20EPAS%20is%20developed%20as,with%20a%20dedicated%20stakeholder%20consultation.>

of EASA evaluations between 2018 and 2022, based on all the available information we found in the documentation:

Table 18. Number of EASA evaluations of existing rules

	2018	2019	2020	2021	2022
Number of evaluations	6	2	7	5	4

Source: EASA (2021). European Plan for Aviation Safety (EPAS) 2018-2022, 2019-2023, 2020-2024, 2021-2025.

The data collected through desk research regarding the developments on EASA's rulemaking procedure in recent years highlights the important changes that took place since Regulation (EU) 2018/1139 both in terms of external events (i.e. the impact of the pandemic) and in terms of the delays and reduction in rulemaking (to avoid regulatory burden on the aviation sector).

Product certification

As of 2003, EASA has had the competence for the certification of aircraft for which EASA discharges the State of design responsibilities, as well as of aircraft to be registered in the EU Member States. Certification refers to the process of certifying that the types of products (e.g. aircrafts, engines etc.) meet EU safety requirements. Product certification takes place under the Certification Directorate of EASA¹⁸⁹.

Regulation (EU) 2018/1139 brought certain changes in relation to airworthiness and environmental protection, such as in terms of the design of products, design of non-installed equipment and design of parts, and in terms of noise and emissions.

EASA KPI reports provide relevant information with regard to the progress encountered in product certification activities. The table below presents the progress in product certification activities between 2015 and 2022.

Table 19. Product certification KPIs (2015-2022)

Product certification KPIs	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022
Initial airworthiness (IAW) performance rate	%	86%	89%	92%	92%	89%	101%	103%	95%
Occurrences backlog monitoring rate	%	86%	87%	118%	104%	77%	114%	89%	118%
Technical acceptance of occurrences timeliness (in days)	Days	13.8	15.1	11.5	11	13	7	8	5
Airworthiness directives deficiency rate	%	4%	6%	5%	4%	4%	3%	3%	3%
Continuing Airworthiness (CAW) predictability time	%	71%	84%	95%	110%	95%	100%	102%	88%

¹⁸⁹ <https://www.easa.europa.eu/en/document-library/certification-procedures>

Product certification KPIs	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022
Timeliness of certification support for validation of products	%	57%	64%	53%	68%	67%	71%	60%	81%
Timely approval of Design Organisation (DOA) continuation	%	72%	89%	82%	N/A	97%	82%	85%	55%

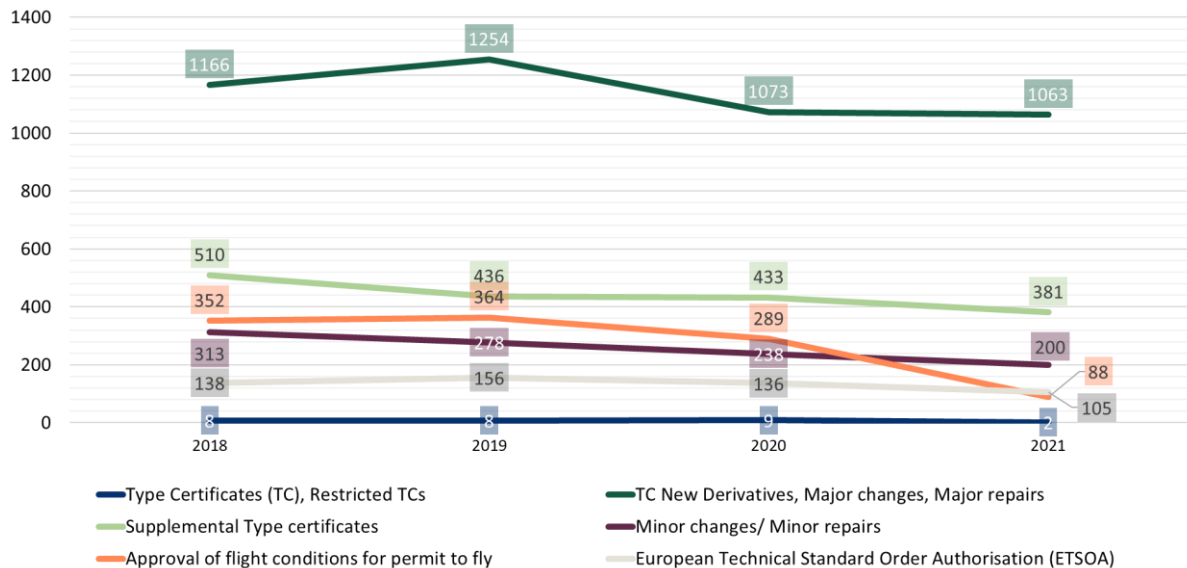
Source: EASA (2018). WP17b Historical KPI Timeline, EASA (2022). WP11 Status of EASA KPIs. N.B. The colours denote the distance to the target. Green = On track, Yellow = Delayed, Red = Attention required, Grey = Not Measurable/ Not available). It should be noted that not all data for 2022 is available/measurable to date.

Based on relevant KPI reports, in 2018, the KPIs for certification were on-track, with delays in the technical acceptance of in-coming occurrences. In 2019, delays were encountered in the occurrences backlog monitoring rate. Moreover, in the same year, airworthiness directives have been delayed and the initial airworthiness (IAW) performance was lower than initial targets. Since 2020, delays in certification were still identified in relation to the occurrences backlog monitoring.

In relation to EASA and environmental protection, a large component of EASA's responsibilities in this field is related to certification that ensures that aircrafts and engines comply with environmental standards (under ICAO Standard and Recommended Practices (SARPs), Annex 16¹⁹⁰).

The figure below presents the number of approvals issued by EASA between 2018 and 2021.

Figure 36. Approvals issued by EASA during 2018 - 2021



Source: EASA 2018-2022 Consolidated Annual Activity Reports

Environmental protection in relation to product certification has been a priority more recently since the inception of Regulation (EU) 2018/1139. EASA approves certification noise levels as part of the

¹⁹⁰ <https://www.icao.int/environmental-protection/CORSIA/Pages/SARPs-Annex-16-Volume-IV.aspx>

process of aircraft certification, in line with noise standards defined by ICAO SARPs Annex 16¹⁹¹; this is now part of the aircraft and engine type certification process. Additionally, after the entry into force of Regulation (EU) 2018/1139 in 2018, EASA introduced the concept of innovative certification¹⁹² in order to increase efficiency in certifying products that demonstrate compliance with environmental standards.

Consultation activities

One important task of EASA is to consult with stakeholders from the aviation sector, particularly with Member States and with the industry. For these activities, EASA has a number of bodies and groups¹⁹³:

- Advisory Bodies (Technical Body, Member States Advisory Body, and Stakeholder Advisory Body)¹⁹⁴;
- Collaborative Analysis Groups (CAGs);
- European Network of Analysts (NoAs);
- Stakeholder experts and representatives in rulemaking groups;
- Open public consultation on NPAs;
- Targeted consultation to groups of stakeholders;
- Working groups of experts.

In the analysed documents that referred to EASA's stakeholder consultation activities, most often it was highlighted that the process was seen as crucial in ensuring that actors are consulted when relevant (i.e. Member States, stakeholders, experts etc.).

Analysed meeting minutes from the MAB and SAB have been most relevant in providing views on consultation activities since 2018 across all analysed documents. In addition to the frequently outlined importance of consultation activities, a recurring theme brought by members to MAB and SAB meetings is the pivotal role of EASA in respecting the due process when consulting all relevant stakeholders without ad hoc changes in procedures¹⁹⁵.

There have been changes in terms of how to structure the consultation mechanisms and how to improve them after 2018. These recent developments were mostly discussed in Member States Advisory Body (MAB) and Stakeholder Advisory Body (SAB) meetings, including discussions on potential issues in relation to consultation activities.

Monitoring Member States

Based on Regulation (EU) 2018/1139, EASA is monitoring the way National Competent Authorities (NCAs) apply the common EU rules on aviation safety. Monitoring activities refer to EASA's role in harmonising rules at European level and role of achieving and maintaining a high and uniform level of safety in the EU, as identified in the first article of Regulation (EU) 2018/1139. A limited amount of information was found as part of the desk-based review in relation to the monitoring activities carried out by EASA. The sources that were analysed have predominantly focussed on describing the procedures that EASA uses in its monitoring activities.

EASA monitors how Member States apply the requirements of Regulation (EU) 2018/1139 and of the delegated and implementing acts on the basis of Regulation (EU) 2018/1139. EASA is

¹⁹¹ <https://www.icao.int/environmental-protection/CORSIA/Pages/SARPs-Annex-16-Volume-IV.aspx>

¹⁹² <https://www.easa.europa.eu/en/domains/environment/innovative-certification>

¹⁹³ European Plan for Aviation Safety (EPAS) 2020-2024.

¹⁹⁴ <https://www.easa.europa.eu/en/the-agency/other-easa-boards-and-bodies/advisory-bodies>

¹⁹⁵ Based on MAB and SAB meeting minutes.

continuously assessing how NCAs implement rules, such as country status information on indicators based on data received from NCAs through the Standardisation Information System (SIS)¹⁹⁶.

As a direct impact of the COVID 19 crisis in relation to monitoring activities carried out by EASA, the standardisation programme was significantly reduced with only one third of planned inspections taking place in 2020 and as a result the number of findings having dropped dramatically compared to previous years. During 2020, the on-field inspections had to shift to remote inspections, which can account for the delays and issues in relation to inspections.

The table below presents relevant KPIs in relation to standardisation activities between 2015 to 2022:

Table 20. Standardisation activities KPIs (2015-2022)

Standardisation	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022
Efficient and robust Standardisation (yearly)	%	N/A	N/A	-24%	N/A	-17%	67%	217% ¹⁹⁷	N/A
Control of overdue Standardisation findings	%	N/A	N/A	7%	18%	17%	35%	10%	8%
Timely issuance of due Standardisation reports	%	79%	97%	89%	100%	92%	86%	85%	90%

Source: EASA (2018). WP17b Historical KPI Timeline, EASA (2022). WP11 Status of EASA KPIs. N.B. The colours denote the distance to the target. Green = On track, Yellow = Delayed, Red = Attention required, Grey = Not Measurable/ Not available). It should be noted that not all data for 2022 is available/measurable to date.

According to the data collected from desk research, EASA's monitoring of the implementation of rules in Member States was impacted by the pandemic, reflected in challenges in 2020 and 2021.

Resources and costs

EASA's budget is funded from different sources, with fees paid by industry (i.e. through various 'fees and charges'¹⁹⁸), accounting on average (over the period 2018-2022) for around 63% of the total EASA budget. This is accompanied by the funding from the European Commission (i.e. through various subsidies, mostly allocated to perform standardisation activities) which accounts, on average for 22% of the total budget. Overall, the budget increased by 3% over the period from EUR 198 million in 2018 to EUR 205 million in 2022.

International cooperation and relevance

This section addresses the role that EASA has in international cooperation and the relevance a European body harmonising rules across its Member States at an international level. Article 90 of

¹⁹⁶ The SIS is a website dedicated to NCAs to submit country status information: <https://www.easa.europa.eu/en/data-protection/standardisation-information-system-sis>

¹⁹⁷ In 2020, as a direct impact of the COVID 19 crisis, the standardisation programme was significantly reduced. Only 1/3 of planned inspections took place in 2020 and as a result the number of findings dropped dramatically compared to previous years. The standardisation activity normalised in 2021 resulting in a strong increase (compared to 2020) in the number of findings.

¹⁹⁸ Regulation (EU) 2019/2153 on the fees and charges levied by the European Union Aviation Safety Agency, and repealing Regulation (EU) No 319/2014.

Regulation (EU) 2018/1139 describes EASA's role in international cooperation, in matters related to Regulation (EU) 2018/1139. Specifically, EASA's role is to contribute to the harmonisation of rules, the mutual recognition of certificates, in the interest of the European industry, and the promotion of European aviation safety standards. Moreover, EASA cooperates with the NCAs of third countries and with international organisations (e.g. its role in the European coordination on ICAO matters)¹⁹⁹. All these activities are aimed at supporting EASA Member States in international or global matters relevant to the Regulation.

Part of the EASA Consolidated Annual Activity report of 2018, it is presented that the Agency puts more emphasis on international cooperation than in previous years, such as in the case of the negotiations of the new Bilateral Aviation Safety Agreements with Japan and China, the new working arrangements with Russia and Israel²⁰⁰. In 2019, EASA signed new Working Arrangements²⁰¹ with other countries (Azerbaijan, Mexico, Singapore, Egypt).

EASA collaborates with a number of organisations at both European level and internationally: Eurocontrol, International Air Transport Association (IATA), European Space Agency, SESAR Joint Undertaking, as well as others. In its relationship with ICAO (the main international organisation for aviation safety), EASA has a number of roles. Among others, EASA works with the Commission and EASA Member States to coordinate positions on matters at a global level and it supports Member States in implementing ICAO standards. EASA is a member of the Regional Safety Oversight Organisations (RSOOs) of ICAO, a mechanism where a group of countries cooperate with the purpose of a more effective system of aviation safety oversight. Additionally, since Regulation (EU) 2018/1139 entered into force, a bigger role in relation to environmental protection by aligning requirements with the ICAO provisions under Annex 16²⁰².

Table 21 presents the KPIs in relation to EASA's activities in international cooperation between 2015-2022, based on available data from more reports. The table shows the progress on bilateral agreements, working arrangements, recommendations to ICAO and other activities carried by EASA.

Table 21. International Cooperation KPIs (2015-2022)

International Cooperation	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022
Timely progression on Working Arrangements	%	N/A	N/A	100%	100%	N/A	66%	85%	On track
Timely progression on Bilateral Agreements	%	N/A	N/A	100%	Delayed	N/A	100%	100%	N/A
Timely implementation of technical support to 3rd countries	%	N/A	N/A	81%	87%	90%	80%	88%	On track
Quality of delivered projects based on	Avg. score ²⁰³	N/A	N/A	N/A	N/A	6.56	6.5	6.4	On track

¹⁹⁹ Article 90 of Regulation (EU) 2018/1139.

²⁰⁰ EASA Consolidated Annual Activity Report 2018. Available at: <https://www.easa.europa.eu/en/document-library/general-publications/annual-activity-report-2018>

²⁰¹ EASA has Bilateral Agreements and Working Arrangements with non-EU authorities. <https://www.easa.europa.eu/en/domains/international-cooperation/international-cooperation-explained>

²⁰² EASA Opinion 03/2020.

²⁰³ Average score of all completed feedback forms, on scale from 0 to 7, where 7 is the best score possible

International Cooperation	Measurement unit	2015	2016	2017	2018	2019	2020	2021	2022
stakeholder feedback									
Timely provision of recommendations on ICAO State Letters for use by Member States	%	92%	91%	97%	<50%	100%	100%	100%	On track
Timely delivery of compliance checklists for use by MS		N/A	N/A	≥ 9 months heavily delayed	Delayed	Delayed	Achieved	Achieved	2 ICAO Annexes updated

Source: EASA (2018). WP17b Historical KPI Timeline, EASA (2022). WP11 Status of EASA KPIs. N.B. The colours denote the distance to the target. Green = On track, Yellow = Delayed, Red = Attention required, Grey = Not Measurable/ Not available). It should be noted that not all data for 2022 is available/measurable to date.

Since 2020, the focus from some activities with international organisations and third countries shifted to an increased emphasis on the COVID-19 pandemic and further emphasis on cooperation in this area²⁰⁴. EASA played an important role in supporting the industry (and thus the recovery of the aviation industry) in the midst of a global crisis, as well as in playing a pivotal role in harmonised guidance across the EU. The 2020-2024 edition of EPAS presented a report of how EASA assessed the risks that the pandemic had in aviation safety and guidance (in relation to aircrew, ground handling, human factors, and many other fields).

Staffing within EASA

Table 22. EASA Statutory Staff & SNEs Establishment plans – temporary agents

Function group and grade	2018 Authorised	2018 Actual	2019 Authorised	2019 Actual	2020 Authorised	2020 Actual	2021 Authorised	2021 Actual	2022 Authorised
AD 15	1	1	1	1	1	1	1	1	1
AD 14	26	5	29	2	25	2	25	2	25
AD 13	33	7	36	6	33	5	33	3	33
AD 12	57	22	68	22	66	16	66	15	66
AD 11	81	44	86	48	88	45	88	60	88
AD 10	103	70	108	76	110	75	110	82	110
AD 9	119	121	115	129	120	129	120	128	120
AD 8	80	137	78	118	78	116	78	106	78
AD 7	44	75	30	70	32	70	32	54	32
AD 6	13	42	11	49	11	50	11	51	11
AD 5	0	23	0	23	2	25	2	26	2
AD Total	557	547	562	544	566	534	566	528	566
AST 9	1	0	1	0	1	0	1		1
AST 8	4	0	4	1	3	1	3	1	3
AST 7	13	2	12	2	11	1	11	3	11

²⁰⁴ EASA Consolidated Annual Activity Report 2020. Available at: <https://www.easa.europa.eu/en/document-library/general-publications/consolidated-annual-activity-report-2020>

Study supporting the evaluation of the European Union Aviation Safety Agency's (EASA) performance in relation to its objectives, mandate and tasks as set out in Regulation (EU) 2018/1139

AST 6	27	11	29	15	27	14	27	26	27
AST 5	34	36	30	39	30	37	28	33	28
AST 4	23	34	24	29	25	30	25	22	25
AST 3	17	21	16	18	15	18	15	15	15
AST 2	4	13	2	7	2	6	2	4	2
AST 1	0	3	0	1	0	0			
AST total	123	118	118	112	114	107	112	104	112
AST / SC 3							1	0	1
AST / SC 2							1	0	1
AST / SC 1									
AST / SC Total							2	0	2
TOTAL	680	665	680	656	680	641	680	632	680
Diff		-2%		-4%		-6%		-8%	N/A

Source: EASA 2018-2022 Consolidated Annual Activity Reports.

APPENDIX 6 – OVERVIEW OF COSTS AND BENEFITS

Table 23 provides the costs and benefits that were identified in this evaluation study. Following the Better Regulation Guidelines Toolbox's Standard Cost Model, we only show the costs that are incremental, i.e. costs that were incurred as a result of Regulation (EU) 2018/1139 and/or EASA's activities (that would not have occurred without EASA/the Regulation).

Regulations oblige certain stakeholder groups to comply with certain measures. Regulation (EU) 2018/1139 imposes mainly a set of rules for National Competent Authorities (NCAs hereinafter) and stakeholders from the aviation industry to comply with: it sets requirements ensuring that design, production, maintenance and operation of products, parts, equipment and aviation personnel are fit for the purpose of establishing and maintain a high uniform level of civil aviation safety in the EU.

Looking at the most relevant actors that bear costs in complying, implementing and enforcing the Regulation, for the purposes of this study our analysis focuses on the costs borne by EASA itself, by the aviation industry and by the NCAs. Although other stakeholder groups (such as the Commission or the broader umbrella of EU citizens) may be directly or indirectly impacted by the Regulation, a detailed analysis of costs and benefits for these groups falls outside the scope of this study.

As per the Better Regulation Guidelines, Table 23 considers to the extent possible the following types of costs incurred by the above-mentioned actors/stakeholders:

- **Compliance costs** (adjustment costs, administrative costs, regulatory and hassle charges);
- **Enforcement costs** (costs associated with activities linked to the implementation of an initiative such as monitoring, inspections and adjudication/litigation);
- **Indirect costs** (indirect compliance costs or other indirect costs such as transaction costs).

and the following types of benefits:

- **Direct benefits** (such as improved wellbeing: changes in pollution levels, safety, health, employment; market efficiency);
- **Indirect benefits** (such as wider economic benefits, macroeconomic benefits, social impacts, environmental impacts).

These categories of costs and benefits will be classified as 'one-off' or 'recurrent'.

Table 23 presents costs and benefits for each of the five domains of policy options identified by the Commission IA preceding Regulation (EU) 2018/1139. These domains correspond to the problem drivers identified by the Commission IA and contribute to the objectives of the intervention (i.e. the Regulation). The five domains are:

- Management and quality of resources
- Proportionality and safety performance
- Gaps and inconsistencies - ground handling
- Gaps and inconsistencies - aviation security
- Gaps and inconsistencies – environment

The main source for the quantitative estimates are the results from the cost-effectiveness analyses presented in Sections 3.1.2, 3.1.8, 3.1.9 and 4.1.2 of the report.

The evidence presented in relation to the efficiency criterion, due to the lack of availability of robust quantitative evidence, entailed the use of several approximations and assumptions. A lack of consistent and comparable cost and benefit data over the evaluation period was available on whether the regulatory costs (i.e. compliance costs, enforcement/implementation costs and administrative costs) of the Regulation are proportional with the achieved benefits showed, thus hindering a robust analysis.

This is due to several factors. First of all, the available information on costs was primarily of a qualitative nature, with stakeholders providing limited quantitative data despite multiple efforts by the evaluation team to gather such evidence. Furthermore, limited evidence was gathered on the links between the provisions of the Regulation and their benefits: most stakeholders reported that while the Regulation ensures an overall benefit in terms of aviation safety, a causal link between such safety benefits and a specific provision within the Regulation is not made. The main obstacle to the analysis was the lack of available/calculable Regulation-induced cost (or cost savings) data, primarily because such data are not recorded by stakeholders, and to a lesser extent because the exercise of reporting on cost estimates was perceived as too lengthy and burdensome by stakeholders.

To tackle this evidence gap, an additional data collection activity not originally foreseen in the contract was performed, in close cooperation with the Commission, to try to gather more targeted evidence on costs and benefits. A group of stakeholders identified with the advice of MAB, SAB and DG MOVE was asked to provide, as a minimum, an assessment of the percentage increase of costs/cost savings (after 2017), stemming from requirements of the Regulation. Stakeholders were also asked, depending on the availability of such data, to provide an estimate of costs/cost savings in EUR or in FTE. The aim of this exercise was to provide a qualitative comparison of the percentage increase in costs/cost savings for different stakeholder groups (or ideally a quantitative estimate of such costs/cost savings) to identify possible trends (at sectoral or geographical level).

Based on the data provided by NCAs and industry stakeholders, estimations have been generated and conclusions have been drawn. Despite the efforts made, the analysis of the proportionality of costs in relation to Regulation 2018/1139 has several caveats that must be considered when interpreting the data. Further details on these limitations are provided in Section 4.1.2.3 where these data are discussed in-depth, however these caveats mainly consist in a) the small sample size and b) self-reporting bias as the data provided were estimates made by the NCAs and the industry players themselves.

Where quantitative estimates were not available, information from all other research tools used in this evaluation (interviews, desk research, workshops, field visit) was used to give a more qualitative view on the costs and benefits for different actors.

Table 23. Overview of costs and benefits

<i>Relevant stakeholders</i>		EASA		NCA		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
Management and quality of resources							
				Cost not relevant to this stakeholder: As specified in the IA, should the emergency oversight support mechanism be deployed, mandatory costs would be imposed on market operators to recover the costs of certification and oversight tasks exercised by EASA. Therefore, no additional costs would be incurred by the NCAs	Cost not relevant to this stakeholder: As specified in the IA, should the emergency oversight support mechanism be deployed, mandatory costs would be imposed on market operators to recover the costs of certification and oversight tasks exercised by EASA. Therefore, no additional costs would be incurred by the NCAs	(See qualitative explanation in footnote for further details on the methodology employed to derive these estimates ²⁰⁵) Average annual costs borne by air operators for Air Operator Certificates (AOC) issuance and oversight (average annual costs between 2018 and 2021) = EUR mln 0.46 Total costs (2018 – 2021) borne by air operators for Air Operator Certificates (AOC) issuance and oversight = 278.15 EUR mln	
Cost: Emergency oversight support mechanism to deal with weaknesses in safety oversight capabilities of Member States	This type of cost is made up of a one-off component and a recurring one Administrative, regulatory cost	Estimates are not available to make a comparison with the IA figures	Estimates are not available to make a comparison with the IA figures				

²⁰⁵ Should the emergency oversight support mechanism be deployed, as per IA, mandatory costs would be imposed on market operators to recover the costs of certification and oversight tasks exercised by EASA. These costs would most likely apply to Air Operator Certificates (AOC) issuance and oversight. Using the estimated fees presented in the IA, it was possible to use the cost assumptions of the emergency mechanism to estimate the total annual costs (between 2018 and 2021) incurred by air operators holders of Air Operator Certificates (AOC) from EASA Member States, benefitting from continuous oversight from an EASA Member State

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
Benefit: Emergency oversight support mechanism to deal with weaknesses in safety oversight capabilities of Member States	Safety benefit One-off benefit	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	Quantitative estimates are not available	The benefit of the mechanism for industry players consists in the possibility to continue operations that would have otherwise to be stopped entirely (thus putting certain market operators out of business) in case of serious deficiencies in the safety oversight capabilities of the national aviation authorities responsible for oversight.
Proportionality and safety performance							
Cost: Introduce a broader range of possibilities for demonstrating compliance with essential requirements, in particular for product certification, based on risk assessment	Recurring Administrative, regulatory cost	Figures from EASA's annual reports do not show any additional cost for product certification: cost savings are presented in the row below	The IA estimated that, by increasing reliance on accreditation mechanisms and declarations of compliance for product certification, the costs of EASA in product certification and oversight in the general aviation sector should be reduced	Quantitative estimates are not available	The IA foresaw that the Regulation would have had a positive effect on compliance costs. Those positive effects were foreseen to result, among other factors, from the ability to satisfy requirements with greater flexibility, and from greater dependence on industry standards. Despite this,	Despite numerous and additional efforts, this study was only able to gather a very small sample of cost estimates to attempt a generalisation of the costs for the aviation industry. Therefore, the few quantitative estimates provided may overestimate or underestimate the costs of complying with Regulation 2018/1139. 1 airport and 1 air carrier/aircraft	While acknowledging that the limited sample of quantitative data available provides a limited perspective on the potential cost impact on private sector organisations, it is notable that compliance costs have appeared to have increased (based on qualitative responses to the survey) due to the introduction of Regulation 2018/1139. This is noteworthy, given that the IA had foreseen no substantial increases in costs for businesses.

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
					<p>NCA's noted that greater considerations could be taken into account by EASA with regards to the impact of new implementing regulations on stakeholders of different sizes and capacities. NCA's reported to have faced increased costs for additional staff, resources and equipment to fully comply and respond to the changes within EASA (e.g. increase in thematic domains covered, increase and frequency of implementing regulations to be reviewed and implemented).</p>	<p>operator (both with over 250 staff) estimated an additional yearly cost of EUR 350,000 due to the additional time required to comply with Regulation 2018/1139 as well as an increased level of oversight being necessary, thus requiring additional FTE support.</p> <p>8 private organisations noted an increase in FTE per year to comply with the new Regulation. For example, 4 airports (with over 250 employees) respectively estimated an increase between 3 and 50 FTE per year.</p> <p>1 large airline noted an increase of 150 FTE per year.</p> <p>1 aerodrome operator estimated an increase of 25 FTE.</p>	

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
						1 drone operator estimated an increase in 16% in their labour costs, which has been estimated to be an increase of 33 FTE	
Benefit: Introduce a broader range of possibilities for demonstrating compliance with essential requirements, in particular for product certification, based on risk assessment	Recurring Wider economic benefit/market efficiency/safety	Figures from EASA's annual reports show a 19% decrease in costs related to product certification between the period 2018 – 2021 (2021 costs were 12 EUR mln lower than in 2018). However, a strong causal link between this decrease in costs and the Regulation must be caveated in light of relevant external factors, among others the impact of COVID-19 (imposing a reduction in all activities between 2020 and 2021)	The IA estimated that, by increasing reliance on accreditation mechanisms and declarations of compliance for product certification, the costs of EASA in product certification and oversight in the general aviation sector should be reduced	Quantitative estimates are not available	Overall, NCAs identified increased safety and improvements in information as being the greatest benefits that can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139. While it was caveated that on the whole, the activities of EASA and the Regulation do contribute to increasing safety, it was more challenging to establish a causal link between the implementing regulations and requirements and the benefit	Quantitative estimates are not available	Overall, industry players identified increased safety and improvements in information as being the greatest benefits that can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139. While it was caveated that on the whole, the activities of EASA and the Regulation do contribute to increasing safety, it was more challenging to establish a causal link between the implementing regulations and requirements and the benefit of increased safety.

<i>Relevant stakeholders</i>		EASA		NCAs		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
					of increased safety.		
Cost: Develop a policy on performance-based regulations	Recurring Regulatory, adjustment cost	Figures from EASA's annual reports do not show any additional cost for rulemaking: cost savings are presented in the row below	The IA estimated that performance-based regulations would significantly reduce the need for regular updates and modifications, leading to a reduction in rulemaking costs	(See qualitative explanation in footnote for further details on the contextual information derived from the IA ²⁰⁶) Based on interpolation of cost data from Belgium and Spain NCAs, the total annual increase in NCAs' labour costs (average from 2018-2022) is comprised between EUR 26.6mIn and EUR 29.8mIn. Interpolating the average annual staff increases in the Belgian and Spanish NCAs, the total	Our quantitative analysis of cost data found that the compliance cost for NCAs was higher than forecasted by the IA	Despite numerous and additional efforts, this study was only able to gather a very small sample of cost estimates to attempt a generalisation of the costs for the aviation industry. Therefore, the few quantitative estimates provided may overestimate or underestimate the costs of complying with Regulation 2018/1139. 1 airport and 1 air carrier/aircraft operator (both with over 250 staff) estimated an additional yearly cost of EUR 350,000 due to the additional time required to comply with Regulation 2018/1139 as well as an increased level	While acknowledging that the limited sample of quantitative data available provides a limited perspective on the potential cost impact on private sector organisations, it is notable that compliance costs have appeared to have increased (based on qualitative responses to the survey) because of the introduction of Regulation 2018/1139. This is noteworthy, given that the IA had foreseen no substantial increases in costs for businesses

²⁰⁶ According to the IA, NCAs would face additional costs for training of staff and adaptation of oversight to performance-based regulations (+ EUR 21-26 mln annually, in 2020). The IA also estimated that the need for additional NCA staff to carry out the workload would increase by roughly 7.6–9.3% by the year 2020. This roughly amounts to an increase of between 387 and 472 NCAs total staff by the year 2020.

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
				estimated number of additional FTEs required in 2020 across all EASA member countries was found to be 532.		<p>of oversight being necessary, thus requiring additional FTE support.</p> <p>8 private organisations noted an increase in FTE per year to comply with the new Regulation. For example, 4 airports (with over 250 employees) respectively estimated an increase between 3 and 50 FTE per year.</p> <p>1 large airline noted an increase of 150 FTE per year.</p> <p>1 aerodrome operator estimated an increase of 25 FTE.</p> <p>1 drone operator estimated an increase in 16% in their labour costs, which has been estimated to be an increase of 33 FTE</p>	
Benefit: Develop a policy on	Recurring	Figures from EASA's annual reports show a 23% decrease in		Quantitative estimates are not available	Overall, NCAs identified increased safety	Quantitative estimates are not available	Overall, industry players identified increased safety and improvements

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
performance-based regulations	Wider economic benefit/market efficiency/safety	costs related to rulemaking between the period 2018 – 2021 (2021 costs were 2 EUR mln lower than in 2018). However, a strong causal link between this decrease in costs and the Regulation must be caveated in light of relevant external factors, among others the impact of COVID-19 (imposing a reduction in all activities between 2020 and 2021)			and improvements in information as being the greatest benefits that can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139. While it was caveated that on the whole, the activities of EASA and the Regulation do contribute to increasing safety, it was more challenging to establish a causal link between the implementing regulations and requirements and the benefit of increased safety.		in information as being the greatest benefits that can be attributed to compliance and/or enforcement of Regulation (EU) 2018/1139. While it was caveated that on the whole, the activities of EASA and the Regulation do contribute to increasing safety, it was more challenging to establish a causal link between the implementing regulations and requirements and the benefit of increased safety.
Gaps and inconsistencies - ground handling							
Cost: Establish essential requirements and a legal basis for	This type of cost is made by a one-off component and a recurring one	Quantitative estimates are not available to make a comparison with the IA's expectation of increased costs to set	Qualitative estimates are not available to make a comparison with the IA's expectation of	Quantitative estimates are not available to make a comparison with the IA's	Qualitative estimates are not available to make a comparison with the IA's	Quantitative estimates are not available to make a comparison with the IA's expectation that limited compliance	Worldwide and EU-wide costs of ground handling incidents are challenging to quantify, as they can vary widely depending on a number of factors such

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
oversight of ground handling service providers in the EU	Regulatory, administrative and enforcement costs	up and maintain the system of common ground handling requirements. This is consistent with the fact that a new ground handling Regulation will not enter into force before 2024	increased costs to set up and maintain the system of common ground handling requirements. This is consistent with the fact that a new ground handling Regulation will not enter into force before 2024	expectation of low-cost impact on national aviation authorities to set up or adjust the existing oversight system. This is consistent with the fact that a new ground handling Regulation will not enter into force before 2024	expectation of low-cost impact on national aviation authorities to set up or adjust the existing oversight system. This is consistent with the fact that a new ground handling Regulation will not enter into force before 2024	costs are expected, due to the absence of new certification requirements and reliance on existing industry standards which are followed by the majority of the market operators.	as the severity of the incident, the type of equipment or infrastructure involved, and the location of the incident
Benefit: Establish essential requirements and a legal basis for oversight of ground handling service providers in the EU	Recurring Safety	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	This benefit is not relevant to this stakeholder	Quantitative estimates are not available	While positive impacts were foreseen for airlines due to a reduction in the costs of ground handling related damage, the increasing trend in incidents/accidents suggests that this cost saving may not have occurred as predicted in the IA. It should be caveated however that worldwide and EU-wide costs of ground handling incidents are challenging to quantify, as they can vary widely depending on a number of factors such as the severity of the incident, the type of equipment or infrastructure involved, and the location of the incident. Thus, it is not possible to quantitatively estimate whether an actual cost saving has occurred.

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
Type of costs and benefits							
Gaps and inconsistencies - aviation security							
Cost: Establish a process for involvement of EASA in the work on aviation security where the Agency has relevant expertise	Recurring Regulatory, adjustment cost	There are no quantitative data on the assessment of safety and security trade-offs by EASA.	EASA has undertaken a range of activities since 2018 aimed at assessing and managing safety and security risks in aviation, and this includes considering trade-offs between safety and security. For example, EASA's safety and security risk assessment processes are designed to identify and prioritise risks based on their potential impact on safety and security. This includes considering trade-offs between safety and security risks and determining appropriate mitigation measures based on these trade-offs	There are no quantitative data to make an assessment of the IA's expectation of additional costs due to the development of cyber-security expertise	There are no qualitative data to make an assessment of the IA's expectation of additional costs due to the development of cyber-security expertise	Quantitative estimates are not available	This cost is expected to be relevant only to ATM service providers
Benefit: Establish a process for involvement of EASA in the	Recurring Safety, Security benefit	Quantitative estimates not available	Qualitative estimates were not provided	Quantitative estimates not available	Qualitative estimates were not provided	Quantitative estimates not available	The fieldwork for this study highlighted that although the intervention is overall externally coherent, there are some

<i>Relevant stakeholders</i>		EASA		NCA s		Aviation industry	
		<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>	<u>Quantitative</u>	<u>Qualitative</u>
<i>Costs and benefits</i>							
	Type of costs and benefits						
work on aviation security where the Agency has relevant expertise							areas for improvement. In fact, clearer Regulation's requirements and better defined EASA's tasks would provide synergies with cybersecurity requirements (e.g. the NIS Directive) within the broader EU regulatory framework.
Gaps and inconsistencies - environment							
Cost: Establish EU essential requirements for environmental protection of aeronautical products	This type of cost has a one-off component and a recurring one Administrative, regulatory and enforcement costs	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral
Benefit: Establish EU essential requirements for environmental protection of aeronautical products	Recurring Safety, Environmental benefits	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral	Quantitative estimates not available	The IA concluded that the overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral

APPENDIX 7 – CS-23 AND CS-25

As discussed earlier, the CS-23 and CS-25 certification specifications affect aircraft design and, thus, innovation. For this reason, a summary of the significant differences between EASA's CS-23 and CS-25 and their FAA counterparts is provided in this appendix.

This is based on the Significant Standards Differences (SSD) for Airworthiness. This allows for an insight into the innovative regulatory framework of Europe and the United States. Although much remained the same in the certification specification (CS-23 and CS-25) after the Regulation's implementation, the changes made the certification process easier to comply with than FAA standards, by looking only at the SSDs. The following table summarises the SSDs since the end of 2018²⁰⁷. The table shows the amendments where the FAA requirements are stricter than EASA's, resulting in EASA's requirements not being sufficient in certain situations.

Table 12. SSDs of CS-23 and CS-25 between US and EU

Effective date	14 CFR (FAA)	CS (EASA)
15/12/2020	Amend. 25-146	CS 25 Amend. 26
25/06/2020	Amend. 25-146	CS 25 Amend. 25
10/01/2020	Amend. 25-146	CS 25 Amend. 24
15/07/2019	Amend. 25-146	CS 25 Amend. 23
19/11/2018	Amend. 25-146	CS 25 Amend. 22

Source: List of Significant and Non-Significant Standards Differences (SSD and non-SSD), 2023²⁰⁸

The same exercise can be done for the SSDs for Environmental certification. Table 13 shows the amendments where EASA's certification specialisations are stricter than the FAA. The lists include only specifications where compliance with the FAR minimum standards would not be sufficient to comply with the EASA CS-34 since 2018²⁰⁹.

Table 13. SSDs of CS-34 between US and EU

Issue date	14 CFR (FAA)	CS (EASA)
15/10/2019	Amend. 34-5A	CS 34 Amend. 3
16/12/2021	Amend. 34-6	CS 34 Amend. 3
16/12/2021	Amend. 34-6	CS 34 Amend. 4

²⁰⁷ https://www.faa.gov/aircraft/air_cert/design_approvals/transport/transport_intl/sd_list/ssd_nonssd_list

²⁰⁸ EASA has its own comparison list (updated last December 2021). No SSDs were mentioned after 2018. <https://www.easa.europa.eu/en/document-library/bilateral-agreements/eu-usa/easa-significant-standards-differences-ssd-between-cs-codes-and-faa-14-cfr-codes>

²⁰⁹ <https://www.easa.europa.eu/en/document-library/bilateral-agreements/eu-usa/easa-significant-standards-differences-ssd-between-cs-codes-and-faa-14-cfr-codes>

Source: List of Significant and Non-Significant Standards Differences (SSD and non-SSD), 2023²¹⁰

²¹⁰ <https://www.easa.europa.eu/en/document-library/bilateral-agreements/eu-usa/easa-significant-standards-differences-ssd-between-cs-codes-and-faa-14-cfr-codes>

APPENDIX 8 - DIFFERENCES IN CERTIFICATION AND OVERSIGHT BETWEEN EU AND US

The mentioned Boeing 737 MAX accident allows for a deeper look into the potential **differences between the FAA's and EASA's certification and oversight processes**. The study of the United States Government Accountability Office (GAO) did a comparative analysis of the activities and standards for certifying the design of new commercial aircraft due to the raised concerns about the FAA's certification and oversight processes of aircraft manufacturers²¹¹. The study concludes that the **activities and standards are broadly similar in the US and Europe**, stemming from a US-EU 2008 bilateral agreement aiming to harmonise processes and streamline the verification of each other's safety certification approvals. FAA and EASA rely on manufacturers to support the design certification process, but their **approaches to involving manufacturers and reviewing their work differ**.

The main results of the study are listed below²¹²:

- Activities and standards for certifying new aircraft Designs by the FAA and EASA are relatively similar;
- The FAA and EASA have adopted similar standards and procedures for resolving disagreements;
- **FAA and EASA fund their certification processes differently:**
 - **Federal funding supports the FAA's certification and validation procedures.** Under certain conditions, the FAA Administrator is authorised by the FAA Reauthorization Act of 2018 to impose and collect a fee from a foreign government or entity related to certification services. According to FAA representatives, these fees still need to be set. The **fees and charges collected from manufacturers inside and outside the EU fund EASA's certification and airworthiness oversight activities**. According to EASA, the fees and charges typically allow EASA to recover all costs associated with its certification procedures. According to several American businesses, EASA fees are "significantly high" compared to those imposed by other foreign governments. FAA and EASA claim that the Bilateral Oversight Board is considering actions that could enable EASA to charge American manufacturers lower fees for specific types of activity.
- Both the FAA and EASA rely on manufacturers to certify aircraft designs, although they use different approaches:
 - The **FAA** must make determinations of aircraft certification compliance. However, it often delegates manufacturers with making the vast bulk of these decisions on its behalf. However, all compliance determinations and verification in Europe are the sole responsibility of the manufacturers under EASA's supervision.
- FAA's and EASA's audits of manufacturers differ in scope, but potential penalties for violations are similar;

The differing organisational structures of ODA units and Design Organizations are a significant determinant in the critical differences in the audit scopes performed by the aviation authorities and internal auditors. They are not subject to either internal or external audits under the FAA's ODA program. The manufacturer's internal design assurance procedures are regulated by the Design Organization under EASA's Design Organisation program. EASA and internal Design Organization audits can examine how design decisions were made.

²¹¹ GAO-22-104480 Aircraft Certification

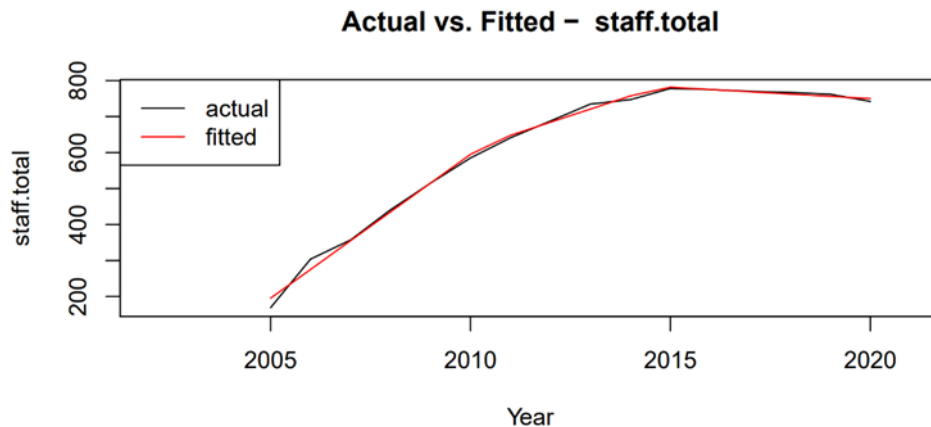
²¹² United States Government Accountability Office

APPENDIX 9 – STRUCTURAL BREAK ANALYSES

Structural break analyses on EASA's staff

The impact of the Regulation on the total staff at EASA can also be estimated using the structural break regression model. This research also analysed the division of the staff into different staff categories, as the Regulation might have (unintendedly) changed EASA's staff structure by broadening its scope. The Regulation's causality on number of staff cannot be estimated with the structural break analysis. However, this does not mean that the Regulation did not impact the number of EASA employees. The number of temporary agents increased significantly until 2007, followed by a more moderate increase until 2015. After 2015, the number of temporary agents at EASA decreased slowly. The number of contract agents at EASA grew from 2005 until 2015, after which a structural break emerged. In 2016, the number of contract agents dropped, and growth continued slower than before. The number of seconded national experts had a strong growth between 2008 and 2012, followed by a stable situation between 2013-2015. A significant jump in the number of seconded national experts was discovered in 2016, followed by a significant gradual decrease.

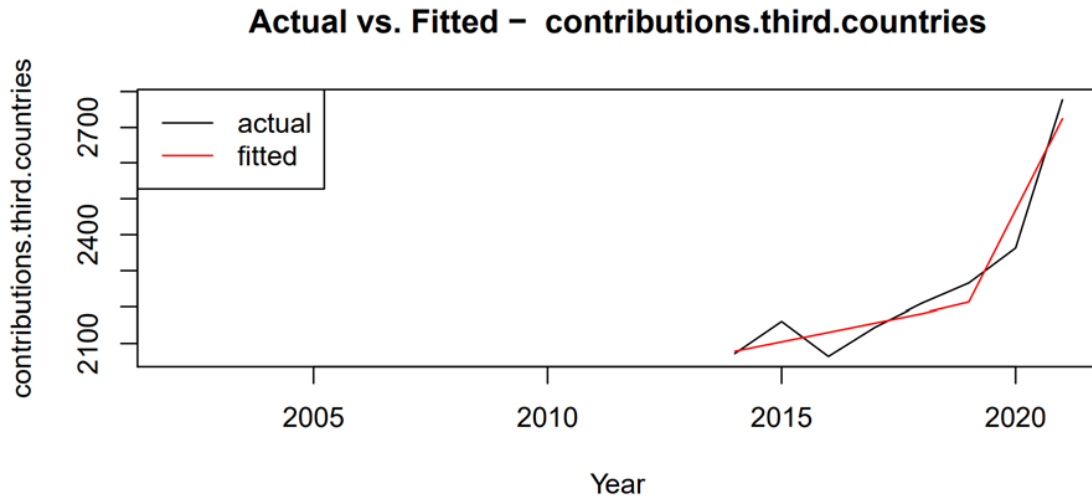
Figure 15. Structural break analysis of the total staff at EASA (breakpoints in 2010 and 2014)



Source: Own composition based on EASA annual activity reports

From Figure 37 **Error! Reference source not found.**, it can be observed that a structural break in the number of third country contributions occurred after 2018. This structural break could be partly linked to the implementation of the Regulation.

Figure 37. Structural break analysis of contributions from third countries (breakpoint in 2018)



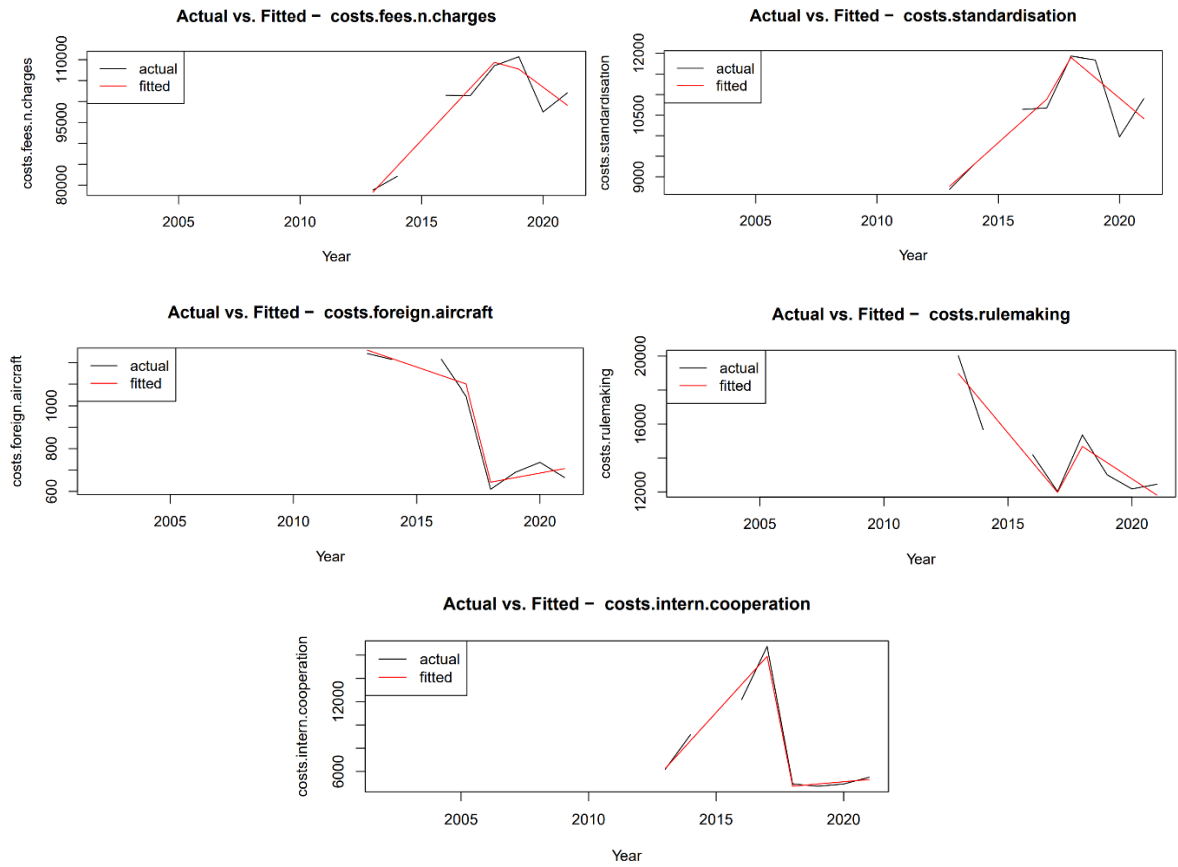
Source: Own composition based on EASA's Annual Reports, 2015-2021

Structural break analyses on EASA's costs

To analyse whether the Regulation could have had an impact on the revenue and cost streams, a structural break analysis on EASA's costs over the period 2013-2021 was conducted. The total profit of the cost categories (product certification and organisational approvals) increased since 2019 mainly due to the positive profit of the organisational approvals. The evolution of the total costs related to the fees & charges activity demonstrate a significant structural break in 2018. From 2013 to 2018, these costs show an increasing trend, while from **2019 onwards the costs tend to decrease**. The costs of standardisation, safety assessment of foreign aircrafts, rulemaking and international cooperation all show significant structural breaks after 2017. However, it is uncertain if the Regulation caused these breaks.

The **costs linked to standardisation show an increasing trend from 2013 to 2017, while a decreasing trend occurs from 2018 to 2021**. When looking at the costs linked to the safety assessment of foreign aircrafts, a large drop is to be observed between 2017 and 2018, while before and after this drop the level was more or less stable over time. A similar pattern emerges when looking at the costs linked to international cooperation. From 2013 to 2017, the costs of international cooperation demonstrate an increasing trend, followed by a sharp drop in 2018 after which the cost level stabilises. Finally, the costs linked to rulemaking follow a decreasing trend from 2013 to 2017, followed by an increase in level in 2018 after which the decreasing trend continues. A one-off cost increase in 2018 is found, which might be due to the implementation of the Regulation. However the regression coefficients are not significant and causality cannot be estimated using this methodology.

Figure 38. Structural break analysis of EASA's cost components



Source: Own composition based on EASA yearly annual reports

APPENDIX 10 – EASA’S COSTS AND REVENUES PER CATEGORY FROM 2013-2021 (IN THOUSANDS)

Cost category	Sub-cost category	2013	2014	2015	2016	2017	2018	2019	2020	2021
Activity category: Fees and charges										
Product certification	Revenue	€ 54,128.70	€ 61,305.80		€ 64,563.00	€ 70,164.00	€ 70,610.00	€ 69,792.00	€ 57,571.00	€ 61,216.00
	Subtotal costs	€ 55,653.60	€ 58,159.70		€ 71,643.00	€ 71,052.00	€ 74,599.00	€ 75,872.00	€ 65,330.00	€ 62,283.00
	Difference	€ -1,524.90	€ 3,146.10		€ -7,080.00	€ -888.00	€ -3,989.00	€ -608.00	€ -7,759.00	€ -1,067.00
Organisation approval	Revenue	€ 25,354.10	€ 28,673.60		€ 29,249.00	€ 33,848.00	€ 35,197.00	€ 40,220.00	€ 49,311.00	€ 52,074.00
	Subtotal costs	€ 23,169.60	€ 23,941.70		€ 29,828.00	€ 30,325.00	€ 33,954.00	€ 34,834.00	€ 32,157.00	€ 39,779.00
	Difference	€ 2,184.50	€ 4,731.90		€ -579.00	€ 3,523.00	€ 1,243.00	€ 5,386.00	€ 17,154.00	€ 12,295.00
Totals	Total revenue under fees & charges	€ 79,482.80	€ 89,979.40		€ 93,812.00	€ 104,012.00	€ 105,807.00	€ 110,012.00	€ 106,882.00	€ 113,229.00
	Total costs under fees & charges	€ 78,823.20	€ 82,101.40		€ 101,471.00	€ 101,377.00	€ 108,553.00	€ 110,706.00	€ 97,487.00	€ 102,062.00
	Difference	€ 659.60	€ 7,878.00		€ -7,659.00	€ 2,635.00	€ -2,746.00	€ -694	€ 9,395.00	€ 11,228.00
Activity category: Subsidy and other contributions										
Total contributions	EU subsidy Third country contributions other income	€ 39,386.50	€ 39,192.30		€ 46,046.00	€ 48,788.00	€ 42,103.00	€ 40,219.00	€ 40,993.00	€ 41,907.00
Total costs	Third country operators		€ 1,474.50		€ 2,921.00	€ 2,438.00	€ 2,219.00	€ 2,741.00	€ 2,353.00	€ 2,082.00
	Standardisation	€ 8,698.30	€ 9,297.30		€ 10,641.00	€ 10,675.00	€ 11,930.00	€ 11,842.00	€ 9,970.00	€ 10,900.00
	Safety Assessment of Foreign Aircrafts Rulemaking	€ 1,243	€ 1,215		€ 1,216	€ 1,045	€ 610	€ 689	€ 736	€ 665
	International cooperation	€ 20,025.20	€ 15,670.60		€ 14,179.00	€ 12,017.00	€ 15,351.00	€ 13,002.00	€ 12,174.00	€ 12,449.00
	Safety Intelligence & performance	€ 6,174.30	€ 9,179.30		€ 12,171.00	€ 16,747.00	€ 4,929.00	€ 4,731.00	€ 4,922.00	€ 5,503.00
		€ 2,991.20	€ 2,464.80		€ 6,573.00	€ 5,773.00	€ 6,403.00	€ 7,432.00	€ 7,630.00	€ 9,989.00

Cost category	Sub-cost category	2013	2014	2015	2016	2017	2018	2019	2020	2021
Totals	Total contributions	€ 39,386.50	€ 39,192.30		€ 46,046.00	€ 48,788.00	€ 42,103.00	€ 40,219.00	€ 40,993.00	€ 41,907.00
	Total costs	€ 39,131.90	€ 39,301.70		€ 47,701.00	€ 48,695.00	€ 41,441.00	€ 40,437.00	€ 37,785.00	€ 41,588.00
	Difference	€ 255	€ -109		€ -1,655	€ 93	€ 662	€ -218	€ 3,208.00	€ -228

APPENDIX 11 – TECHNICAL DETAILS ON TECHNOLOGICAL DEVELOPMENTS

By lowering carbon emissions and improving fuel efficiency, green technologies like hybrid-electric and hydrogen aircraft have the potential to revolutionise the aviation sector. By reducing carbon emissions, increasing fuel efficiency, and minimising noise pollution, green technologies have the potential to impact the aviation ecosystem. However, several obstacles, such as a limited range, high costs, and the requirement for infrastructure development, make implementing these technologies challenging. Nevertheless, the aviation sector is heavily regulated, and any improvements must adhere to strict performance and safety standards. These technologies' advantages and challenges will all be briefly discussed.

Hybrid-electric aircraft use a combination of traditional fossil fuels and electric power to reduce fuel use and emissions. Compared to conventional aircraft, these aircraft have the potential to reduce emissions of greenhouse gases by up to 5% . A combustion engine and an electric motor create the hybrid-electric propulsion system, which propels the aircraft. Hybrid-electric aircraft can reduce emissions and noise and lower fuel consumption. Compared to other applications with hybrid technologies, the aircraft's efficiency is far more weight-sensitive. Improvements in effectiveness and decreases in noise must compensate for any potential weight penalty brought on by adding electrical components. Traditionally, electric components have difficulty matching the power density of their mechanical equivalents (particularly at higher power levels). Hybrid-electrical propulsion also inherently adds losses to a system through the intermediate use of electrical power. The efficiency of the electrical-mechanical power conversion and the electrical distribution system, as well as the size of associated systems to deal with these losses (e.g. the thermal management system), would have a considerable influence on the profitability of any hybrid electric aircraft design .

Electric aircraft, especially Vertical Takeoff and Landing (eVTOLs), have a high potential to reduce the industry's carbon footprint and noise and make urban air mobility more accessible. Using electric aircraft and eVTOLs will save costs due to less maintenance and fuel costs than traditional aircraft. eVTOLs will also imply infrastructural and regulatory changes highly relevant to EASA. Regulatory agencies may need to adapt to new technologies and safety standards. These changes may require new certifications and training for pilots and maintenance crews and new air transportation regulations in urban areas.

Hydrogen fuel cells are incorporated into hydrogen aircraft to generate the electricity that powers the aircraft. Fuel cells use hydrogen stored in tanks to produce electricity, water, and heat. Only water vapour is released from hydrogen aircraft, which has the potential to cut greenhouse gas emissions by up to 90% . Hydrogen aircraft can reduce emissions and noise and increase efficiency as hydrogen fuel cells are more efficient than conventional combustion engines, resulting in lower fuel usage and operational expenses.

Although the benefits have high potential, significant advancements in battery and fuel cell technology, infrastructure development, and safety measures are needed for these technologies to become viable alternatives to conventional aircraft. The regulatory environment for these newer technologies is still evolving and will continue to do so as these innovations will be needed to achieve climate goals.

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