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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}
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1 INTRODUCTION

1.1 Political context

This initiative is part of the 2015 European Commission's 'Aviation Package for improving the competitiveness of the EU aviation sector'. The objective of this review is to prepare the EU aviation safety framework for the challenges of the next 10-15 years and thus to continue to ensure safe, secure and environmentally friendly air transport for passengers. This initiative builds on over twelve years of experience in the implementation of Regulation (EC) No 216/2008[1] and its predecessor.[2]

The 2011 White Paper on transport[3] aims at Europe becoming the safest region for aviation. Air transport in the EU has at present an excellent safety record. With the average annual accident rate in commercial air transport in the last ten years standing at 1.8 per ten million flights, the EU is one of the safest regions in the world for air travellers.[4] However, with the aviation traffic in Europe predicted to reach 14.4 million flights in 2035 (50% more than in 2012),[5] we must make sure, by focusing on clearly identified risks, that the system continues to maintain the current low number of accidents. This means that the accident rate has to continue decreasing in proportion to traffic growth.

While aviation safety is an important objective of this initiative, it is not the only one. This proposal must also be seen in the context of the Europe 2020 Strategy[6], in particular regarding employment and innovation, and of the Commission priorities of fostering jobs and growth, developing the internal market and strengthening Europe's role as a global actor.[7] Aviation is one of the strategic EU industries with a positive growth projection for the next decades and generates numerous, highly skilled jobs. Including indirect and induced impacts, the air transport sector supports 5.5 million jobs and contributes nearly EUR 395 billion to GDP in the EU28.[8] This initiative thus also aims at contributing to a competitive European aviation industry based on a well-functioning internal market, which creates high value-jobs and drives technological innovation.

Safety is a pre-requisite for a competitive aviation sector. Staying competitive without making concession on safety however, requires the EU to become more efficient. While the present system has been so far effective in ensuring safety of air passengers, it is not the most efficient one, and creates unnecessary costs for Member States, industry and airspace users. There is a strong call from the industry and Member States for a more flexible system which would allow using the limited resources more efficiently, eliminate ineffective regulation, facilitate innovation and boost the competitiveness of the European industry. Especially the small and medium sized enterprises (SMEs) urge the EU to introduce a more proportionate

[1] Regulation (EU) No 216/2008 of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC, (OJ L 79, 19.3.2008).
[2] Regulation (EC) No 1592/2002 of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency', (OJ L 240, 7.9.2002).
[3] COM (2011) 144 final, p. 22.
[4] EASA, Annual Safety Review (2013), p. 15.
[5] EUROCONTROL, Challenges of Growth 2013, Task 4: European Air Traffic in 2035. This is the most likely out of four scenarios proposed by EUROCONTROL that range from 11.2 to 17.3 million flights (19–83% growth compared to 2013).
[6] COM (2010) 2020 final.
[7] Commission Work Programme 2015, COM (2014) 910 final, 16.12.2014.
[8] ATAG, Aviation benefits beyond borders (2014), p. 47.

regulatory framework and to eliminate regulation which stifles entrepreneurship and introduction of new technologies with too prescriptive requirements.

Finally the present unfavourable economic situation puts an increasing pressure on EU and Member States' budgets. Many National Aviation Authorities are finding it difficult to maintain, not to mention increase, their resources, while the demand from industry for technically challenging certification and oversight work does not diminish.

1.2 Legal context

The responsibilities for the implementation of the EU aviation safety system are shared between the national and EU levels. In addition, in the area of air traffic management, the EU still makes some use of the European Organisation for the Safety of Air Navigation (EUROCONTROL) which is a separate intergovernmental organisation. The International Civil Aviation Organisation (ICAO) influences the functioning of the EU system by setting minimum standards at the global level and overseeing their implementation by Member States and the European Aviation Safety Agency (EASA). Finally a number of specialised bodies, such as SESAR Joint Undertaking, Network Manager and Performance Review Body, contribute to the functioning of the EU aviation safety system.

The EU legal framework for civil aviation safety is primarily based on Regulation (EC) No 216/2008[9], which constitutes a recast of Regulation (EC) No 1592/2002.[10] This Regulation establishes the main functions of the system, such as rulemaking, certification and oversight, and creates EASA as a specialised EU aviation safety body. Originally the scope of the Regulation was limited to airworthiness and certification of environmental protection with respect to aeronautical products. This initial scope was subsequently extended to flight operations and aircrew (2008), and safety aspects of air traffic management, air navigation services and aerodromes (2009).[11] Whilst Regulation (EC) No 216/2008 defines the scope of the system and sets out the responsibilities for its implementation, the detailed obligations of the regulated entities, such as airlines or manufacturers, are laid down in Implementing Rules adopted by the European Commission on the basis of technical proposals of EASA.

In addition to Regulation (EC) No 216/2008 and its Implementing Rules, the legal framework of the EU civil aviation safety system is composed of a number of additional regulations, most notably on: accident investigation,[12] occurrence reporting and analysis,[13] and banning of unsafe operators.[14] Finally safety aspects of air traffic management and air navigation services are still to a certain extent regulated in parallel by Regulation (EC) No 216/2008 and the Single European Sky (SES) regulations. With respect to this last point, the European

[9] See note 1.
[10] See note 2.
[11] Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Directive 2006/23/EC, (OJ L 309, 24.11.2009)
[12] Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC', (OJ L 295, 12.11.2010).
[13] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).
[14] Regulation (EC) No 2111/2005 of the European Parliament and of the Council of 14 December 2005 on the establishment of a Community list of air carriers subject to an operating ban within the Community and on informing air transport passengers of the identity of the operating air carrier, and repealing Article 9 of Directive 2004/36/EC **(**OJ L 344, 27.12.2005, p. 15).

Commission has launched the SES II+ initiative which aims to remediate the overlap[15], and on which the present proposal builds.

Regulation (EC) No 1008/2008 on common rules for the operation of air services in the Union[16] also contains a number of safety related provisions (concerning leasing and Air Operators Certificates) which are impacted by the present initiative.

Finally, the governance, functioning and oversight framework for EU agencies has been subject to a comprehensive review in 2012, which resulted in a 'Common Approach on decentralised agencies' between the Commission, European Parliament and the Council, which needs to be taken into account by the present initiative.[17]

Annexes VI and VII contain additional information about the functioning of the EU aviation safety system and responsibilities of the different actors involved in its implementation. Annex XXIII contains a glossary of the main technical terms used in this report.

1.3 Evolution of aviation safety in the EU/EFTA[18] states in the last decade

When it comes to scheduled commercial air transport operations, the EU/EFTA enjoys today one of the best safety records in the world (Table 1), with the average fatal accident rate in the last ten years standing at 1.8 per ten million flights, which is significantly below the worldwide average (Figure 1).

Table 1: Scheduled Commercial Air Transport Fatal Accident Rate per 10 million flights, 2004-2013

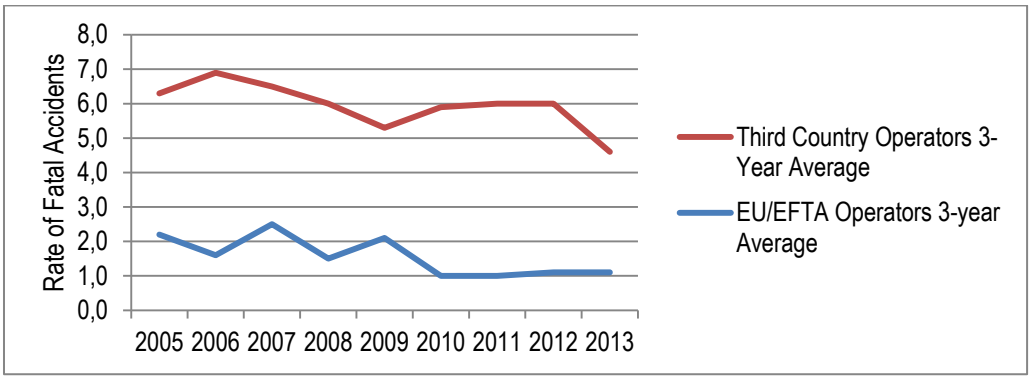
EU/EFTA	1,8
North America	1,9
Asia	6,3
Middle East	15,5
Africa	38,3

Source: EASA, Annual Safety Review (2013)

The available data also shows that the rate of fatal accidents for EU/EFTA Member State operated aeroplanes in scheduled passenger operations remains stable since 2010. Between 2005 and 2013 the number of flight movements under instrument flight rules in the EUROCONTROL area has increased by only 2.5% due to the economic downturn of 2008.[19]

[15] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Accelerating the implementation of the Single European Sky, (COM(2013) 408 final, 2013), p.9.
[16] OJ L 293, 31.10.2008, p. 3.
[17] http://europa.eu/agencies/documents/joint_statement_and_common_approach_2012_en.pdf
[18] The EFTA States (Switzerland, Norway, Iceland and Liechtenstein) have been associated with the EU aviation safety system and the work of EASA on the basis of international agreements.
[19] Source: EUROCONTROL.

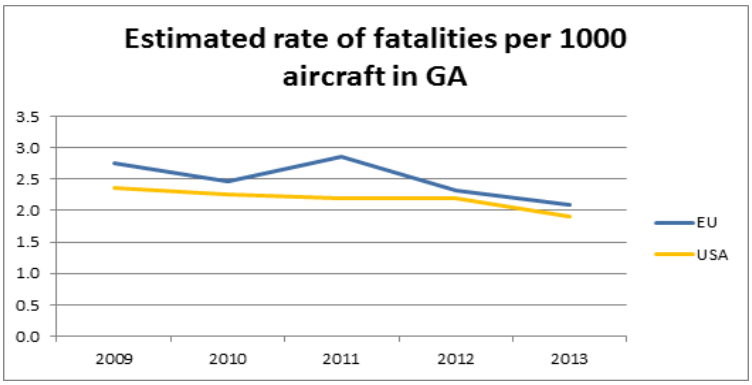
Figure 1: Rate of fatal accidents in EU/EFTA Member States and third country operated scheduled passenger operations, aeroplanes above 2250 kg MTOM, 2004-2013 per 10 million flights



Source: EASA, Annual Safety Review (2013)

When it comes to non-commercial aviation, or 'General Aviation', it is at present not possible to calculate accident rates in a similar fashion as for commercial air transport, due to unavailability of exposure data (number of flights or flight hours). Nevertheless, an approximate picture of General Aviation safety can be given using as exposure the size of the fleet. Using this method, we can assume that the rate of fatalities has been decreasing, but that the level of safety of General Aviation in the EU is slightly worse than in the US (Figure 2). Anecdotal evidence suggests that the reduction in the level of fatalities partly results from the reduction of General Aviation activity in the EU[20] - it is however not possible to verify such a proposition due to lack of exposure data.

Figure 2: Comparison of General Aviation safety in the EU and US



Source: EASA

2 PROBLEM DEFINITION

The problems selected for analysis have been chosen on the basis of the following primary sources:

(a) Results of the public consultation conducted by the services of the Commission (Annex II provides a summary);
(b) Opinion of the European Aviation Safety Agency;[21]

[20] For example in 2013 over 200 general aviation aircraft were destroyed and another 600 substantially damaged in Europe. At the same time, on average 170 general aviation aircraft are sold in Europe (Source: 2014 EASA Conference on General Aviation, Rome).
[21] EASA, Opinion 1/2015, European Commission policy initiative on aviation safety and a possible revision of Regulation (EC) No 216/2008.

(c) EASA Management Board Sub-Group Report on the Future of the European Aviation Regulatory System (Annex V provides a summary of recommendations);
(d) Report on the evaluation of the functioning of Regulation (EC) No 216/2008 conducted under Article 62 of that Regulation (Annex IV provides a summary of recommendations);
(e) Two support studies [*hyperlink to be added*] contracted by the Commission (Annex I provides further details);
(f) Own analysis by the services of the Commission.

The following sections of this Chapter will refer back to the above sources when substantiating the identification of a particular problem which has been selected for analysis in this impact assessment. The problems identified concern the technical framework for civil aviation safety. Where other technical domains of aviation regulation, such as aviation security, are taken into account, this is done to the extent that there are interdependencies between safety and these other technical domains. Environmental protection with respect to aeronautical products' certification is already within the scope of Regulation (EU) 216/2008, and is accordingly also within the scope of the present initiative.

Table IV at the end of this Chapter presents the relationship between the problems identified and their drivers. It also indicates the relative importance of the specific problem driver for each of the problems.

2.1 Description of the main problems

2.1.1 The present regulatory system may not be sufficiently able to identify and mitigate safety risks in the medium to long term

The European Aviation Safety Plan (EASp) identifies the main systemic, operational and emerging issues which present risk to safety of civil aviation in the Union (Annex XXI provides further details). However, the purpose of this initiative is not to deal with specific operational issues (such as loss of control in flight or runway excursions), as important as they may be.[22] Such operational issues are already within the scope of the Union competence and are being dealt with by EASA and the Member States' aviation authorities. The two exceptions in this respect, identified by the impact assessment and for which Union action is examined, are ground-handling and security aspects of aircraft and aviation systems' design. The relevance of these two issues for the maintenance of aviation safety are analysed under Section 2.2.3.

Other than that, this impact assessment looks at aviation safety from a systemic perspective. In this respect the Commission services have identified two main issues which require attention: shortages and inefficient use of resources by aviation authorities, as well as reactive nature of aviation safety regulation and oversight.

The above mentioned issues, and especially those related to the use of resources and safety management, are considered as system weaknesses which may make it more difficult to maintain the present safety record in conditions of expected traffic growth and increasing complexity of the aviation system. They also contribute to other problems as identified in this Chapter.

[22] The four main occurrence categories associated with fatal accidents of aeroplanes (2004-2013) are as follows: (1) Loss of control in flight; (2) Post impact fire; (3) System or component failure not related to engine/propeller; (4) Ramp or ground handling related accidents (Source: EASA, Annual Safety Review, 2013).

The evidence collected by the Commission supports the need for additional, proportionate efforts to maintain the current good safety record of the Union in conditions of traffic growth and other future developments. In particular, the safety performance study contracted by the Commission estimates that, to counterbalance the expected increase in traffic volume in Europe, the required risk reduction should amount to around 25% in the short term (10 years) and 60% in the long term (30 years).[23] These figures are in line with the assumptions for the SESAR project, which estimates the need for a 40% reduction in accident risk per flight hour in Step 1 of the project.[24]

The uncertainty about future safety performance of the system was also highlighted in the results of the Commission public consultation, where 77% of National Aviation Authorities and 75% of all organisations were of the opinion that the EU's ability to identify and mitigate risks has to be improved going forward.

Similarly, the Article 62 evaluation stated that the present 'largely positive picture of air safety in Europe cannot be taken for granted and both regulators and regulated must continue to maintain and even improve Europe's record on aviation safety.'[25] It also warned that 'any deviation from the highest standards of safety could have significant negative impact on Europe's air transport industry.'[26]

This analysis is in line with the approach of other leading civil aviation safety authorities in the world. In particular, the ICAO Resolution on the Global Aviation Safety Plan stresses that the 'expected increase in international civil aviation traffic will result in an increasing number of aircraft accidents unless the accident rate is reduced.'[27] Similarly, the US Federal Aviation Administration recognises the need to achieve the next level of safety by 2025 in a proactive manner, by augmenting the traditional methods of analysing the causes of accidents and incidents. [28]

2.1.2 The present regulatory system is not proportionate and creates excessive burdens especially for smaller operators

While the EU aviation safety system has been so far effective, it achieves good safety performance at a disproportionate cost. High costs are largely attributed to overregulation which affects especially SMEs and General Aviation. This view was strongly expressed in the Commission public consultation, where 77% of National Aviation Authorities and 82% of all respondent organisations stated that safety regulation is too detailed or difficult to comprehend; 88% of National Aviation Authorities and 83% of all respondent organisations stated that existing safety levels could be maintained with lower costs. The EASA Opinion concludes that the current regulatory system puts an excessive and unnecessary administrative and financial burden on the maintenance and operation of light aircraft.[29] The EASA agency points out in particular that the regulatory framework for light aircraft is not sufficiently differentiated from the regulatory framework for commercial air transport, while the risks

[23] ECORYS, Performance Scheme and Performance Based Approach in the context of aviation safety (Support study on performance), Final Report, (2015), p. 85.
[24] European ATM Master Plan, 2nd Edition (2012), p. 18.
[25] Article 62 evaluation, Final Report (2013), p.12.
[26] Idem.

[28] US Federal Aviation Administration, Destination 2025.
[29] EASA Opinion 1/2015, p.7.

involved are different, and that this results - to a certain extent - from the rigidity of the provisions in the Regulation (EU) 216/2008, notably as far as definitions are concerned.[30]

It is notable that nearly half of the respondents to Commission public consultation which expressed dissatisfaction with the current regulatory system are microenterprises employing less than 10 persons. More specifically, with respect to SMEs, the following issues have been identified in the Commission public consultations (see Annex II for further details):

⇒ The present system puts excessive requirements on SMEs compared to the achieved safety benefits. It is felt by many contributors that regulations are too complex and beyond the ability of many SMEs to comprehend and be abreast with the constant changes;

⇒ The ongoing improvements are focused on non-commercial aviation ('pure' general aviation), and not sufficient attention is being given to more proportionate regulation for commercial activities of SMEs;

⇒ Regulations are difficult to implement by companies where a single individual performs roles which in an airline or a big manufacturer are responsibility of multiple departments.

The results of the Commission public consultation and the support study on safety performance[31] point to the fact that disproportionate and overly complex regulation results not only in excessive cost to demonstrate compliance but also that resources of the operators and National Aviation Authorities are diverted from operational and oversight work as well as from innovation (activities important for safety and competitiveness of the EU aviation), towards administrative tasks.

Several attempts were made by the Commission to quantify the costs of overregulation more precisely. While no comprehensive picture could be obtained (manufacturers in particular indicated that companies do not routinely account certification costs separately from overall product development costs),[32] a number of cases of overregulation were identified and are presented as examples (Case I). Overall it seems that overregulation particularly affects businesses and operators involved in light and general aviation. This observation is also supported by the conclusions of the EASA Management Board sub-group report.[33]

Case I: Identified examples of quantified overregulation

- Overregulation leading to ***high maintenance costs for small aircraft and gliders***. A case study provided by Europe Air Sports and concerning one of the EFTA States shows that maintenance costs for small aircraft and gliders increased by 50% since 2003.[34] Figure 2 above demonstrates that General Aviation in the US has a better safety record than the EU, even though the requirements for this sector in the EU are more demanding;
- ***Disproportionate costs for advanced private pilot training.*** Instrument rating training costs are approximately twice as big in Europe as in the US[35]. These differences in training costs make an overseas training an attractive alternative for European private pilot licence holders who consider obtaining an instrument rating. Compared to the US, the share of private pilot licence holders with instrument rating is much lower in the EU than in the US (5.2% and 26.8%, respectively). These economic effects have also safety implications: the instrument rating qualification is an effective way of avoiding accidents in bad weather conditions. New instrument ratings that were recently introduced by the EU took into account the special needs of private pilot licence holders by making instrument rating training more accessible and less costly. Further efforts are however needed to increase the number of private pilot licence holders with

[30] Idem.
[31] Support study on performance, Final Report, p. 17.
[32] Source: Commission interviews with AeroSpace and Defence Industries Association of Europe (ASD).
[33] EASA Management Board sub-group, Final Report, p.8.
[34] Source: Europe Air Sports case study provided to the Commission.
[35] Sample study performed in an Impact Assessment performed by EASA for NPA 2011-16.

instrument ratings in the EU. This may include considering training outside approved training organisations.

- ***Regulatory burden is created by a lack of responsiveness of the current rulemaking system.*** When comparing the average duration of current technical rule development to the development of an industry standard a rough comparison indicates that it takes approximately 3 times longer to develop a rule compared to a standard, i.e. 3 years for a rule versus 1 year and 2 months for the industry standard.[36] Although referring to industry standards is not always an alternative to a traditional rulemaking process, this comparison points to potential time and cost savings which could be achieved by increasing reliance on industry standards.

2.1.3 The present regulatory system is not sufficiently responsive to market developments

Evidence shows that the regulatory system is not sufficiently adapted to market developments. This regards the ability of the system to: (i) quickly accommodate safety and efficiency enhancing technologies, and (ii) to respond to new operational practices of the industry.

(a) Aspects related to technologies:

The present system is largely based on prescriptive regulations which often describe, in a detailed manner, the required way of conduct or technical solutions to be used. Although this provides clear guidance to users and compliance with the rules is straightforward, this approach has also resulted in some parts of the aviation industry slowing down in adopting technological safety and efficiency improvements, as acceptance of new technologies and certification methods necessitates frequent changes in the requirements. In addition, it limits alternatives for achieving compliance and thus discourages innovation.

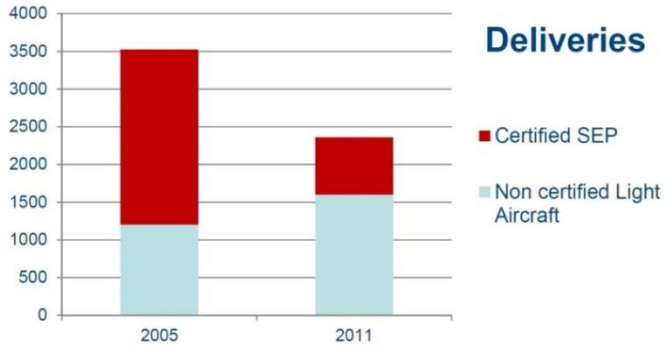
88% of the National Aviation Authorities and 72% of all organisations which contributed to the Commission public consultation stated that the system based on prescriptive rules hampers innovation. Similarly 77% of the National Aviation Authorities and 83% of all organisations stated that excessive reliance on prescriptive regulations puts the EU industry at a competitive disadvantage.

The safety performance study concluded that: 'the current prescriptive basis of regulation is seen as blocking or slowing down innovation by a continued focus on mandating specific methods and solutions rather than outcomes and not leaving much flexibility.'[37]

This problem can be very well illustrated with the example of General Aviation, where the increasing costs of operating certified aircraft and the slow level of incorporation of new technologies, which often represent safety improvements, has contributed to the shift of many pilots towards less regulated, ultralight and other Annex II aircraft[38], as Figure 3 illustrates and the EU General Aviation roadmap confirms.[39] It is notable that the average age of certified General Aviation aircraft is 40 years.[40] Similarly, for drones the existing rules do not reflect well the needs of this newly emerging technology.

[36] Source: EASA analysis prepared for the Commission.
[37] Support study on performance, Final Report, p. xvii.
[38] 'Annex II aircraft' refers to aircraft excluded from the scope of Regulation (EC) No 216/2008 as set out in Annex II to this Regulation.
[39] General Aviation Roadmap, http://easa.europa.eu/system/files/dfu/EASA%20MB%2004-2012%20WP09a%20GA-roadmap_mb.pdf, p.5.
[40] Source: General Aviation Manufacturers Association (GAMA).

Figure 3: European deliveries of Single Engine Piston (SEP) and non-certified light aircraft



Source: Daher-Socata (EASA General Aviation Conference, Rome 2014)

With respect to promotion of environmentally friendly technical solutions and technologies, the regulatory system based on Regulation (EC) No 216/2008 has 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 last twelve years. The scope of Regulation (EC) No 216/2008 is limited to environmental compatibility of aeronautical products only, and the automatic link with ICAO requirements[41] - which does not exist for safety rules - does not permit the EU to consider possible better alternatives to minimum international standards, and weakens the negotiating position of Member States and the EU in ICAO. The emergence of electric engines is also not reflected in Regulation (EC) No 216/2008, which defines 'complex aircraft' by referring to turbine powered engines only.

Finally, the manufacturing industry has voiced concern during EASA and Commission consultations that the present certification system, due to lengthy procedures and in particular limited availability of resources at EASA (see point 2.2.4), might not be able to respond to future industry demand for product certification in a timely manner, which could lead to financial penalties and more generally, to a competitive disadvantage for European industry. More specifically, it is estimated that a 6-month delay in delivery of an aircraft to an airline can lead to penalties to the manufacturer of up to 2% the price of each aircraft, or cancellation of orders to the benefit of competitors.[42] The development costs exceed 10 billion € for a new large aircraft. If a design issue is detected at a late stage of the certification process, the development costs can increase by 10%.[43]

(b) Aspects related to operational practices of the industry:

The creation of the single aviation market has lifted the limits imposed on the airline industry by Air Services Agreements, and airlines can now operate within the EU as if national borders did not exist. Similarly, the recognition of certificates enabled by EU legislation means that individuals can now claim recognition of their privileges anywhere in the EU.

The liberalisation has also resulted in emergence of new employment practices,[44] and business models. This includes multinational airline consortia, which hold multiple Air Operator Certificates (AOCs) in order to be able to satisfy ownership and control requirements of Air Services Agreements of individual Member States with third countries. However this necessity to hold separate AOCs from multiple Member States prevents such consortia from

[41] See Article 6 of Regulation (EC) No 216/2008.
[42] DG RTD InnovREFIT Task Force, Better regulations for R&I at EU level, Report, July 2015, p.87.
[43] Idem.
[44] Y. Jorens, D. Gillis, L. Valcke and J. De Coninck, 'Atypical forms of employment in the aviation sector', European Social Dialogue, European Commission, (2015).

operating as a single airline which would allow for interoperability of assets and associated safety benefits (see Case II). It has also become a common practice for airlines to use remote bases of operations which allows business development away from the principal place of business and outside the territory under the jurisdiction of the certifying authority.

Case II: One Air Operator Certificate (AOC) or four?

One of the EU tour operators holds four AOCs from separate Member States. The group would like to merge these certificates in order to eliminate inefficiencies caused by concurrent activities, achieve higher integration of fleet, and enhance safety by using only one process across the whole operation. At the same time the group does not want to jeopardise the traffic rights it enjoys from the Member States where its AOC holders are incorporated. While for the purpose of intra-EU operations one AOC and operating licence suffices, an airline must be licensed and certified by the designating Member State in order to exercise traffic rights outside the EU, if a third country did not accept an EU designation clause.

The current EU regulatory system does not explicitly envisage a 'joint AOC' issued by several states, although the concept of a joint air transport operating organisation is allowed by the Chicago Convention and has been effectively used by three EU/EFTA States based on an international agreement concluded in 1951. In 2014 at least three EU airline consortia expressed interest in merging their AOCs into a joint approval, while continuing to be able to exercise traffic rights to third countries from their Member States of establishment.

Evidence does not indicate that any of the new business models is 'unsafe',[45] although the oversight of multinational organisations and certificate holders moving between jurisdictions is more challenging and requires close collaboration between National Aviation Authorities. For example:

- The report issued by the Air Accident Investigation Unit of Ireland following the fatal accident of the Fairchild SA 227-BC Metro III EC-ITP which occurred on 10 February 2011 at the Cork airport, showed that inadequate oversight of a geographically remote operation by the State of the Operator can be a contributing factor to an accident;[46]
- At least three Member States reported to the Commission or EASA that they had encountered situations where licence holders claimed recognition of certificates which had been earlier revoked or suspended by the (another) issuing Member State (see Case III).
- Task Force on Measures Following the Accident of Germanwings Flight 9525 observed that the introduction of pan European medical certification has given pilots freedom to apply to any aero-medical examiner certificated by any EU/EFTA Member State. At the same time, the authorities and aero-medical examiners do not have easy access to information on whether a pilot has been denied a medical certificate in another State, nor the reason for eventual denial.[47]

[45] The 2015 study on atypical forms of employment in the aviation sector suggested that innovative employment schemes such as zero-hour contracts or 'pay-to-fly' employment schemes can raise safety concerns. While the services of the Commission noted the results of this study, they concluded that the evidence presented in the study is not sufficient to draw unequivocal conclusions as to the safety consequences of such market practices.
[46] Air Accident Investigation Unit Ireland, Formal accident report, Fairchild Aircraft Corporation SA 227-BC Metro III, EC-ITP Cork Airport, Ireland, 10 February 2011, at Conclusions.
[47] Task Force on Measures Following the Accident of Germanwings Flight 9525, Final Report (2015), p.14.

Case III: Challenges in cross-border enforcement (Irregularities in pilot licensing)

In 2014 two cases of irregularities with respect to the conduct of training courses and skill tests / proficiency checks were reported by two Member States. The investigation conducted jointly by the two Member States concerned necessitated review of documentation concerning hundreds of pilots, several training organisations and numerous instructors and examiners located in different countries. As a result of the investigation a number of pilot licences were suspended. The cross-border investigation made the case particularly complicated and the current regulatory framework proved to be of limited help. The authorities concerned and EASA also concluded that in absence of a central repository of pilot licences it would be difficult to detect if the individuals concerned did not apply for new licences in other Member States.

The Article 62 evaluation concluded that new business models are going to impact heavily on the work content of the EASA system.[48] These findings are also reflected in the Commission public consultation, where 88% of the National Aviation Authorities and 83% of all respondent organisations stated that the EU system lacks flexibility to accommodate new business models, while 77% of the National Aviation Authorities and 49% of all respondent organisations stated that there is a need to change the legislative framework to better accommodate multinational operations.

The 2013 EASA Annual Standardisation Report highlights transnational business models and operators having multiple principal places of business as new challenges which need to be addressed by the oversight authorities, and for which standardised implementation of regulations is not a sufficient solution on its own.[49]

The 2015 report of the EASA working group on safety implications of new business models concluded that regulators' own procedures and oversight methodologies are not adapted to the developments in business models and that there is insufficient guidance on cooperative oversight.[50]

2.1.4 There are differences in organisational capabilities between Member States

The availability of qualified personnel is an essential pre-requisite for effective oversight and certification by EASA and National Aviation Authorities. At the same time evidence shows that there are significant differences in organisational capabilities of Member States, which:

- Create potential safety risks, as some Member States are not sufficiently capable of ensuring effective oversight of EU legislation (see below);
- Contribute to mistrust between the Member States. The support study on resources reported for example that four out of sixteen National Aviation Authorities interviewed stated that they do not automatically accept certificates issued by some other authorities due to lack of trust in their compliance.[51] This is also one of the reasons why cooperative oversight is embraced with reluctance by Member States;
- Result in varying interpretations of requirements by Member States which negatively affects the level playing field on the market. Many of the organisations and National Aviation Authorities which contributed to the Commission's public consultation expressed concern over this issue;
- The support study on resources also concluded, based on 25 interviews, that 'both industry and the National Aviation Authorities must deal with an unequal playing field in the different Member States, which may potentially undermine the common market/system'. The study indicated that these differences stem from varying approaches of national

[48] Article 62 evaluation, Final Report (2013), p. 11.
[49] EASA, 'Annual Standardisation Report', (2013).
[50] EASA, Developing Business Models in Aviation: Report from the RAG Working Group (2015), p.4.
[51] ECORYS, Study on the resources deployed in the area of European aviation safety before and after the creation of EASA (Support study on resources), Final Report, (2015), p. 121.

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);[52]

The identification of this problem is further supported by the following evidence:

- 66% of National Aviation Authorities and 68% of all organisations which contributed to the Commission public consultation were of the opinion that 'the capabilities of national authorities to perform oversight differ increasingly';
- The EASA standardisation programme shows that, at the end of 2014, ten (30%) of EU/EFTA Member States had open supplementary reports with non-resolved safety relevant findings, meaning that they did not adequately implement corrective action plans. Shortages of staff and its inadequate qualification were identified by EASA as two main reasons for inadequate oversight by National Aviation Authorities;
- The support study on resources concluded that, given the current working methods of authorities, the aviation safety resources in the EU are insufficient compared to workload, and that there are significant differences in supervisory approaches between the Member States;[53]
- The safety performance study concluded that approximately only 1/3 of National Aviation Authorities are 'sufficiently well-resourced and skilled to exercise appropriate oversight'[54]. While this does not mean that safety is in danger, it points to the fact that the levels of safety assurance vary across the EU;
- The Article 62 evaluation panel concluded that it is urgently needed to find a solution to the problem of weaknesses in safety oversight abilities of some Member States.[55]

At present, the EU already has a number of tools for addressing deficiencies identified in safety oversight capabilities of a Member State. These include infringement procedures to be launched by the Commission, the possibility to suspend recognition of certificates under Article 11 of Regulation (EC) No 216/2008, and imposing complete or partial operating restrictions on operators certified by an EU Member State using Regulation (EC) No 2111/2005[56]. However, these measures either take long to be implemented (which is the case for infringements), or simply stop the entire operation without resolving the underlying problems of deficient national oversight.

2.2 Underlying problem drivers

There is no one-to-one relationship between the problem drivers identified below and the problems set out in the preceding section. This means that one problem driver can feed into more than one problem. For example the problem drivers related to shortages and inefficient use of resources affect Problem No 1 related to the future performance of the EU aviation safety system, as well as Problem No 4 related to organisational capabilities of Member States. This is illustrated in Table 4.

[52] Support study on resources, Final Report, p. 103-105.
[53] Support study on resources, Final Report, p. 105, and p. 118.
[54] Support study on performance, Final Report, p.15.
[55] Article 62 evaluation, Final Report (2013), p.18.
[56] OJ L 344, 27.12.2005, p. 15.

2.2.1 Level and type of regulation does not sufficiently correspond to the risks associated with different aviation activities

According to the results of the public consultation, one of the primary reasons why the EU system creates excessive burdens for Member States and stakeholders is the fact that the level of regulation and the measures applied do not sufficiently differentiate between the risks involved in different types of activities. Although the preamble to Regulation (EC) No 216/2008 recognises that rules should take into account the risk associated with the different types of operations and complexity of aircraft, this principle is not very 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. The different classifications of operations provided in the regulation are also quite rigid and make reference to technical criteria (such as type of engines or maximum mass) which are better suited for lower level implementing measures.

The lack of sufficient differentiation between acceptable levels of risk has resulted, especially in the initial phases of developing the EU aviation safety regulations, in a 'one-size-fits-all' approach which is particularly disproportionate for smaller organisations. The EU General Aviation Roadmap concludes that 'much regulation has been blanket regulation, which aimed to cover all possible risks by saying something about everything, although the vast majority of fatalities are caused by a small set of recurring causes'.[57] In some cases (see Case IV) the 'one-size-fits-all' approach has affected the development of the single aviation market.

Case IV: Light Sport Aircraft: 'one size fits all' (or not) for product certification and production[58]

The light sport aircraft category covers a range of lightweight aircraft which represent an entry level for many private pilots. In the EU the light sport aircraft are subject to a type certification procedure by EASA and organisations which are involved in their design and manufacture must hold design and production organisations approvals, similar as manufacturers of large transport category planes.

In the US, the light sport aircraft can be designed in accordance with consensually developed industry standards, and put on the market based on the statement of conformity issued by the manufacturer. As a result, the design and production approval costs for light sport aircraft are on average 2.5 higher in the EU than in the US. Because of a more favourable regulatory environment overseas, more than 60% of EU produced light sport aircraft are sold in the US.

The second reason for excessive burdens, also highlighted in the results of the Commission and EASA public consultations, is the fact that the EU overly relies on legislative instruments as a means of addressing safety risks while not sufficiently exploring other tools providing more flexibility in addressing risks. Such alternative tools mentioned by the respondents include the use of industry standards, training and safety promotion.

2.2.2 System is reactive and predominantly based on prescriptive regulations and compliance checking

The EU aviation safety system is largely based on prescriptive rules, usually developed following lessons learned from accidents, which are controlled through periodic audit-type checks focusing on procedures and manuals.[59] This prescriptive and reactive approach, which has been an international standard so far, allowed the EU to achieve the present good safety

[57] General Aviation Roadmap, see note 42, p.2.
[58] Source: Light Aircraft Manufacturers Association EUROPE.
[59] Support study on performance, Final Report, pp. 9-10.

record.[60] The results of the Commission public consultation also show that prescriptive rules have many other advantages, such as legal certainty and straightforward compliance checking.

On the other hand the EASA Opinion indicates that '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 cases'.[61] This is because the EU has reached a situation where accident causes have become operator unique. Controlling such unique threats through generic legislation is very difficult.[62]

To achieve further safety improvements, the EU has now mandated, in the Implementing Rules, a business-like approach to managing safety risks. This approach is based on the new Annex 19 to the Chicago Convention,[63] which contains safety management requirements for industry and States. Although progress has been made in implementing this new approach, the work is far from complete:

- Safety Management Systems are a recent requirement and not yet mature if we take the EU as a whole. At the State level, authorities are moving ahead with implementation of State Safety Programmes, but this remains voluntary as the adoption of Sates Safety Programmes is not yet mandated by EU law. Furthermore, evidence collected by EASA shows that there are still large differences between States, and that performance based elements (e.g. agreement on safety performance indicators for industry organisations) are posing greatest difficulties for Member States in the State Safety Programme implementation process;[64]
- The EU has not yet established a fully operational European Aviation Safety Plan, which would allow it to identify and address risks collectively as a region. This is partly due to the fact that Safety Management Systems and State Safety Programmes are not yet mature (see above), and partly due to the fragmentation of the safety management process at EU level, where safety information is scattered, in certain respects incomplete or of sub-standard quality.[65] There is also a lack of a process allowing the EU to identify risks in a systemic and evidence-based manner. The implementation of the European Aviation Safety Plan is voluntary and the effectiveness of the actions contained in the plan is not monitored, as highlighted by the EASA Opinion.[66]

2.2.3 Inconsistencies and gaps in the regulatory system

A number of gaps and inconsistencies have been identified in the present regulatory system. These result primarily from the high complexity of this system. A clear majority (73%) of all organisations, including National Aviation Authorities, which contributed to the Commission public consultation, believe that there are gaps, overlaps or contradictions between the different domains of EU aviation safety legislation. Many of the contributions point to the general problem of inconsistencies stemming from varying interpretations of EU requirements by Member States which has also been confirmed by the support study on resources.[67]

Many contributors to the Commission consultation highlighted inconsistencies between EU requirements for airborne and ground-based components of the air traffic management

[60] Idem.
[61] EASA Opinion 1/2015, p.4.
[62] SMICG, 'A systems Approach to Measuring Safety Performance: the regulator perspective', (2014), pp. 5-6.
[63] ICAO, Annex 19 'Safety Management', First Edition (2013).
[64] EASA, SSP Phase Implementation Survey Results, Annex C to EASp, 4th Edition, (2014).
[65] Support study on performance, Final Report, pp.18-19.
[66] EASA Opinion 1/2015, pp.5-6.
[67] Support study on resources, Final Report, p. 119.

system. With regard to the latter issue, the Commission understands that this refers to the problems with regard to deployment of data-link technologies, which are already being addressed.[68] The stakeholders and Member States also identified the lack of a common safety framework for drones as an issue for action at EU level. The Commission furthermore takes note of the concerns expressed by many stakeholders with regard to inconsistencies between occurrence reporting obligations in the Implementing Rules adopted under Regulation (EC) No 216/2008 and the new regulation on occurrence reporting[69]. The Commission believes that alignment of the reporting requirements[70] has ensured that the two systems are consistent and complementary and therefore that this issue is also already being addressed.

Another gap in the present EU regulatory system has been identified with respect to security aspects of aircraft and aviation systems' design, including cyber-security, where the EU currently lacks a clear mandate to act. Essential requirements to Regulation (EC) No 216/2008 do not explicitly address security of aircraft design. Essential requirements for airworthiness only provide that with respect to systems and equipment, design precautions must be taken to minimise the hazards to the aircraft and occupants also from reasonably probable external threats. EASA relies on this broad formulation to assess the resilience of aircraft design with respect to certain security threats, in particular related to cyber-security, but does not have a clear competence to propose relevant implementing measures or to mandate design changes addressing security threats for in-service aircraft. The EASA Opinion signals the need to address security aspects of aircraft airworthiness, where today the Agency has encountered a number of practical problems in addressing safety risks due to lack of a clear mandate to act.[71] Technical aspects of aircraft security related to the design of aircraft and aviation systems have been also identified by a number of contributions to Commission public consultation as requiring further EU action. At the same time however the stakeholders cautioned that cyber-security goes beyond technical aspects of aircraft and related systems and that aviation cyber-security measures should be consistent with the overall EU cyber-security policies. The Article 62 evaluation recognised that the security of communications between the ground and aircraft should be comprehensively addressed by the EU regulatory system, as it has clear safety implications. From a general policy perspective, the Commission proposal for a directive on network and information security (NIS directive) identifies the aviation sector as a critical infrastructure, vital to the EU economy and societal interests which needs appropriate protection against cyber threats.[72]

Furthermore, there are areas of aviation regulation where safety and security matters are so closely linked together that they should be considered jointly in order to avoid gaps or unintended consequences, and carefully balance any safety/security trade-offs that may have to be made when imposing new requirements on operators. Such close relationship between safety and security exists with respect to aircraft operations and in particular in-flight security measures, which at present are regulated in parallel by two separate legal instruments: Regulation (EC) No 216/2008 and Regulation (EC) No 300/2008. While the results of the public consultations do not point to the need for a complete integration of legal frameworks

[68] EASA, Technical issues in the implementation of Regulation (EC) No 29/200 9 (Data link), Report 1.1, (2014).
[69] See note 13.
[70] Commission Implementing Regulation (EU) No …/... of XXX laying down a list classifying occurrences in civil aviation to be mandatorily reported according to Regulation (EU) No 376/2014 of the European Parliament and of the Council
[71] EASA, Opinion 1/2015, p. 15.
[72] Proposal for a Directive of the European Parliament and of the Council concerning measures to ensure a high common level of network and information security across the Union, COM(2013)48 final. Further information on the NIS Directive is given in Annex XXII.

for safety and security, they did however bring to the attention of the Commission the need for better management of interdependencies between these two domains.

In addition, the EASA Opinion highlighted the need for an EU mechanism for conformity assessment of aviation security equipment, the absence of which is currently considered a stumbling block towards the creation of an EU market for manufacturers of airport screening and explosive detection equipment. With respect to this issue, a separate initiative is ongoing under coordination of DG HOME.[73]

Moreover, the EASA Opinion[74] and Article 62 evaluation[75] identified safety gaps with regard to ground handling. This is an area for which presently no safety provisions directly addressing the service providers exist at EU level, and which makes oversight and mandating corrective action by the competent authorities difficult.[76] All interested stakeholders, with the exception of airlines, point to the fact that regulatory action is necessary, in particular with respect to training of ground handling staff.[77] The airlines believe that they are sufficiently able to control the safety of ground handling through contractual arrangements with the providers and that the costs of regulating ground handling at EU level would outweigh the potential benefits.

The EASA Management Board sub-group also highlighted the issue of ground-handling as requiring analysis, but noted that further regulatory intervention should be based on a clear safety case.[78] In this respect, the safety data shows that since 2005, ground handling occurrences in the EU have constituted 6% of fatal accidents, 15% of non-fatal accidents and 2% of serious incidents. There are on average 3 500 risk-bearing ground handling occurrences reported annually, which is between 9%-11% of all risk-bearing occurrences reported.[79] Ground handling accidents constitute the fourth biggest accident category in the period of the last ten years after loss of control in flight, post impact fires, and system or components failures not related to the engine/propeller (See Annex XXI for information about other top categories of accidents in the EU).[80]

The main contributing factors to ground handling risk-bearing incidents are a lack of standardisation of ground handling procedures, not always sufficient training of staff, and deficiencies in safety management, including with respect to occurrence reporting. There is no evidence that Europe-wide voluntary safety initiatives have had a significant impact in improving ramp safety (see Annex XX for further information about ground handling market and safety of ground handling operations). With the expected growth in air traffic, the main European air hubs reaching full capacities, increasing pressure on aircraft turnaround times, and emergence of composite aircraft which are more prone to ground damage, the deficiencies in safety of ground handling operations become an issue that needs addressing. In

[73] Commission Roadmap for establishing an EU harmonised certification system for airport equipment, http://ec.europa.eu/smart-regulation/impact/planned_ia/docs/2014_entr_004_harmonized_certification_airport_screening_equipment_en.pdf.

[74] EASA, Opinion 1/2015, p. 12.

[75] Article 62 evaluation, Final report (2013), p. 16.

[76] Currently, there are no general safety objectives or specific requirements for ground handling operators in the EU aviation safety regulatory framework. Safety of ground-handling is addressed only indirectly through Implementing Rules related to flight operations and aerodromes.

[77] Conclusion reached on the basis of public consultations and discussions with stakeholders in advisory bodies established by the Commission.

[78] EASA Management Board sub-group, Final Report, p.6.

[79] EASA analysis based on data from the European Central Repository of information on aviation occurrences.

[80] EASA, Annual Safety Review (2013), p. 30. See Annex XXI for information about other top categories of accidents in the EU.

addition, the ground handling industry also highlighted the inefficiencies stemming from repetitive audits and inspections of the same service providers by multiple airlines and aviation authorities.

With regard to environmental protection, the current Regulation (EC) No 216/2008 makes Annex 16 to the Chicago Convention (as regards setting minimum standards for aircraft noise and engine emissions) directly applicable in EU law, while in the area of safety ICAO standards are met through the adoption of implementing rules. This difference in approach excludes the possibility for the EU to deviate from ICAO environmental standards for products and thus weakens its negotiation position at international level and prevents the EU from considering possible better alternatives to minimum international standards. For example, the fact that ICAO environmental standards for tilt-rotor aircraft are applicable only as of 2018, the current certification projects for such aircraft in the EU do not cover noise aspects. Another example is the ongoing discussions in ICAO on a new standard in respect of aircraft engine CO_2 emissions which have been significantly influenced by the US environmental protection agency announcement of an intention to develop a national CO_2 standard[81] – at present the EU cannot use a similar negotiating leverage. Stakeholders who contributed to the public consultation do not see a need for changing the scope of the current EU environmental action under Regulation (EC) No 216/2008, which is limited to environmental compatibility of products.[82] The contributions received point however to the need of better considering interdependencies between aviation safety and environmental legislation (in particular chemicals legislation under the REACH system).

The Commission has further identified inconsistencies in the EU legislation concerning leasing of third country registered aircraft - an issue which has been already identified in 2013 in the context of the EU internal aviation market 'fitness check'.[83] With regard to dry lease-in of foreign registered aircraft[84] the EU safety legislation allows, subject to a number of conditions, such arrangements, while the internal market legislation (Regulation (EC) No 1008/2008) is not clear whether they are allowed or not which leads to legal uncertainty. This inconsistency has been highlighted also by a number of Member States,[85] and an airline trade body which highlighted that 'registering and deregistering aircraft registered in a third country

[81] EPA, Proposed Finding That Greenhouse Gas Emissions From Aircraft Cause or Contribute to Air Pollution That May Reasonably Be Anticipated To Endanger Public Health and Welfare and Advance Notice of Proposed Rulemaking, Federal Register / Vol. 80, No. 126, July 1, 2015.

[82] Other main EU legislation which aims at protecting environment from aviation impacts is: (1) Regulation (EU) No 598/2014 of the European Parliament and the Council of 16 April 2014 on the establishment of rules and procedures with regard to the introduction of noise-related operating restrictions at Union airports within a Balanced Approach (OJ L 173, 12.06.2014, p. 65); (2) Commission regulation (EU) No 691/2010 of 29 July 2010 lying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 lying down common requirements for the provision of air navigation services (OJ L 201, 3.08.2010, p.1); Directive 2008/101/EC of the European Parliament and of the Council of 19 November 2008 amending Directive 2003/87/EC so as to include aviation activities in the scheme for greenhouse gas emission allowance trading within the Community (OJ L 8, 13.01.2009, p.3).

[83] European Commission, Fitness Check - Internal Aviation Market, Report on the suitability of economic regulation of the European air transport market and of selected ancillary services, SWD(2013) 208 final, pp. 53 and 66.

[84] Dry lease agreement means an agreement between undertakings pursuant to which the aircraft is operated under the air operator certificate (AOC) of the lessee or, in the case of commercial operations other than CAT, under the responsibility of the lessee. Wet lease agreement means an agreement, in the case of CAT operations, between air carriers pursuant to which the aircraft is operated under the AOC of the lessor; or in the case of commercial operations other than CAT, between operators pursuant to which the aircraft is operated under the responsibility of the lessor.

[85] Committee established by Article 65 (1) of Regulation (EC) No 216/2008, minutes of the meeting 2014/3, Brussels 8-9 July 2014.

for the typical duration of seasonal leases is complicated and costly'.[86] With regard to wet lease arrangements between EU operators, while Regulation (EC) No 1008/2008 requires a prior safety approval from the relevant authority,[87] the EU safety legislation does not impose on such arrangements any lease specific conditions in addition to the need of the lessor (AOC holder) to comply with usual EU requirements for flight operations and aircraft maintenance. The safety value of such prior approval is questionable, especially in view of the fact that airlines are now also obliged to monitor the safety of the services they contract from other providers. At the same time leasing is a crucial tool for airlines in maintaining operating flexibility – it is estimated that nearly 70% of aircraft in operation in the EU are leased aircraft.[88]

Finally, inconsistencies have been identified with respect to the way Member States notify to ICAO differences between international standards and recommended practices and EU requirements. The analysis of the content of the differences notified by 23 Member States (322 items) to ICAO through the EFOD[89] system revealed that EASA's recommendation concerning the type of a difference to be notified was followed in only 29.19% of cases (see Annex VIII for more detail). The cases when the recommendations were not followed include mostly no information provided, or outdated references to European rules (JARs or EU-OPS) or to national rules. This lack of uniformity undermines the consistency of the EU system vis-à-vis ICAO and third countries and stands in the way of achieving full coordination between ICAO and EU aviation safety audits of Member States, as envisaged under the EU-ICAO Memorandum of Cooperation on enhanced cooperation.[90]

2.2.4 Shortages of resources impacting safety oversight and certification

The support study on resources concluded that, taking into account the current working methods and the size of the EU industry, the aviation safety resources are insufficient.[91] While it is difficult to put a concrete figure on what would be the appropriate level of resources in Europe to continue ensuring a high level of aviation safety in the future, a number of observations can be made.

First of all, the growth in size of the industry has, over the last ten years, outpaced the increase in workforce and budget of aviation authorities, which at the same time have not yet significantly changed working methods. Table 2 illustrates that trend, based on key indicators calculated using samples of EU/EFTA Members States.

Table 2: Trends in evolution of resources and workload in EU/EFTA Member States since 2003

	2003	2008	2013	2003-2013
Resources				
OPS/AIR/FCL National Aviation Authority staff (MS=17)	1 574	1 727 (+10%)	1 659 (-4%)	+5%
National Aviation Authority budget (MS=16)	EUR 439 million	EUR 558 million (+27%)	EUR 530 million (-5%)	+21% / -3% if adjusted for inflation

[86] IACA, 'Dry lease-in of third country aircraft by Community operators for Commercial Air Transport'.
[87] Article 13(2), 'Leasing' provides that: (…) a wet lease agreement under which the Community air carrier is the lessee of the wet leased aircraft shall be subject to prior approval in accordance with applicable Community or national law on aviation safety.
[88] Fitness Check - Internal Aviation Market, see note 81, p. 53.
[89] ICAO Electronic Filing of Differences (EFOD) database.
[90] Memorandum of Cooperation between the European Union and the International Civil Aviation Organization providing a framework for enhanced cooperation, (OJ L 232, 09.09.2011, p. 2).
[91] Support study on resources, Final Report, p. 105.

Workload				
CAT fleet size (MS=22)	3 494	4 127 (+18%)	4 307 (+4%)	+23%
AOC holders (MS=31)	1,221	1,304 (+7%)	1,201 (-8%)	-2%
Pilots (MS= 23)	139 258	176 575 (+27%)	175 383 (-1%)	+26%
FTOs (MS=25)	1 544	2 010 (+30%)	2 047 (+2%)	+33%

Source: Support study on resources

In addition, the transition to the EU regulatory framework has created transition costs for the authorities, and in some cases increased workload due to the more demanding and complex regulatory framework (see Case VI as an example) and standardisation requirements.[92] Furthermore, budget constraints and divergences in the funding of authorities come into play, as demonstrated by the support study on resources.[93] Especially the small authorities funded through government contributions find it difficult to attract competent personnel from the market (see Case V).

Case V: Budget constraints (Source: support study on resources)

Among the primary problems cited by nearly all Competent Authorities is the imbalance created by an increase in workload alongside decreasing budgets in the aftermath of the 2008 economic crisis. There are considerable variations in the size of Competent Authorities' budgets, with larger Member States having relatively larger budgets than their smaller counterparts on account of the relative size of their respective workloads. In addition to this however a number of Competent Authorities recorded extremely low budgets which may be indicative of an even greater imbalance between Member States. For example, budgets in large Member States range from EUR 40 – 61 million, while in certain smaller Member States, budgets range from EUR 5 million to as low as EUR 1.1 million. While the latter group has a smaller workload than the former, the workload-budget disparity is considerably greater for small Competent Authorities.

The Article 62 evaluation concluded that in the current economic climate, there is a huge strain on the resources of Member States and EASA, and that it is incumbent on all partners in the system to strive for greater efficiency in the use of limited resources.[94] It concluded further that some of the National Aviation Authorities are finding it difficult to fulfil their statutory obligations related to safety oversight due to staffing/financial problems.[95]

Case VI: New regulatory requirements for ballooning

Before the establishment of the EU aviation legislation, some of the Member States were delegating oversight and certification in certain sectors of general aviation, for example ballooning, to user organisations, such as national aero-clubs. The EU legislation harmonised requirements for the production and maintenance of balloons as well as for their operations and pilots' competence. Member States which were not directly involved in that activity before now have to develop the necessary expertise and recruit additional personnel.

Also results of the EASA standardisation programme identified shortages in resources in respect of the size, scope and complexity of the regulated industry, as one of the two main contributors to inadequate oversight in some of the EU Member States in the fields of Air Operations, air traffic management/air navigation services and Aircrew.[96] Finally, 55% of National Aviation Authorities and 63% of all organisations which contributed to the Commission public consultation stated that 'some National Aviation Authorities do not have sufficient financial or human resources to carry out their oversight tasks'. At the same time, there was no clear position amongst the respondents, whether there are increased safety risks because oversight obligations are not always fully complied with.

[92] Idem, p. 100.
[93] Idem, p. 111.
[94] Article 62 evaluation, Final Report (2013), p. 10.
[95] Article 62 evaluation, Final Report (2013), p. 25.
[96] EASA Annual Standardisation Report (2013).

With respect to EASA, the total workload of the Agency with respect to product safety oversight workload has increased by 22% between 2011 and 2014, and is expected to further grow by 5% by 2016.[97] The Agency is going to deploy new performance based working methods but anticipates a steady increase in the initial certification and in continuing oversight activities due to the upturn of the aircraft fleets in operation and the increase in the number of type certificates issued.[98] This expectation is confirmed by a review of manufacturers' forecasts which predict the size of the EU fleet to nearly double by 2033.[99] The Article 62 evaluation predicts that in the next twenty years, Europe will need around 250 000 new engineers (25% of the global demand) to accommodate the increase in the size of the fleet, and new aircraft types.[100] Even though the EASA resources for certification are financed by the industry, they are prevented from being adapted to market demand, by an overall EU staffing cap, which may hinder the capability of the Agency to adequately respond to this anticipated growth. The cuts of the Agency's staff financed by fees and charges are applied irrespective of the industry demand for the certification and oversight services. Already today, EASA has to adjust efforts spent on continuing airworthiness to meet industry demands for initial certification as a consequence of the staff ceiling.[101]

The shortages of resources concern not only the availability of staff but also the level of qualifications which have been found sub-optimal in a number of Member States:

- The 2013 EASA standardisation report identified 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;
- Competence of personnel in the National Aviation Authorities has been also identified as one of the systemic issues to be addressed in the European Aviation Safety Plan 2014-2017.[102] The concerns about the level of training in some National Aviation Authorities have been also identified by the support study on resources.[103]

2.2.5 Inefficient use of resources stemming from fragmentation

The inefficiencies of the EU aviation system stem to a large extent from institutional fragmentation and a high number of actors involved. Already the 2007 report of the High Level Group for the Future European Aviation Regulatory Framework stated that 'fragmentation is a major bottleneck in improving the performance of the European aviation system'.[104] Similarly the Article 62 evaluation report stated that the architecture of the aviation safety system is not sustainable in the long term and that the current institutional set-up does not contribute to the maintenance of the high and uniform levels of safety.[105]

[97] Work Programmes of EASA for the years 2011-2015.
[98] EASA, Work Programme, (2015), p. 5.
[99] According to Airbus, the commercial passenger fleet with 100 seats or more in Europe is expected to grow by 82% by 2033 (Airbus, Global Market Forecast, 2014-2033, p. 111). Boeing's forecast, that includes also regional jets, projects a 77% growth in the size of European fleet during the 2013-2033 period (Boeing, Current Market Outlook, 2014-2033, p. 2). Embraer forecasts that the fleet of jets with 70–210 seats and turboprops with 70 or more seats is going to more than double in the 2013-2033 period (Embraer: Market Outlook 2014-2033, p.32).
[100] Article 62 evaluation, Final Report (2013), p. 11.
[101] EASA Annual Activity Report 2014, p. 51.
[102] EASA, European Aviation Safety Plan (2014-2017).
[103] Support study on resources, Final Report, p. 107.
[104] High Level Group for the Future European Aviation Regulatory Framework (2007), Final Report, p. 7.
[105] Article 62 evaluation, Final Report (2013), pp. 27-28.

The support study on resources concluded that the resources available in National Aviation Authorities and EASA do not operate as a single system and that there is lack of an effective framework for sharing of resources between National Aviation Authorities and between National Aviation Authorities and EASA.[106] The present system obliges National Aviation Authorities to be competent in each domain of aviation safety, even when the aviation activities in such a domain are limited.[107] This does not help specialisation of National Aviation Authorities and prevents achieving economies of scale.

At the same time, the evolution of the EU aviation market and the organisation of safety oversight result in an increasing need for authorities to cooperate with each other. Although a legal basis for cooperative oversight has been already introduced into the EU legislation, the support study on resources showed that sharing of resources is hampered by lack of common working procedures, limited transparency of information about certificates issued/revoked/suspended by Member States, differences in funding of authorities, lack of standardisation in training and qualification of staff, and absence of a common framework for delegation of responsibilities and tasks between authorities as well as practical issues related to recovery of costs, language barriers, and questions associated with liability of aviation authorities.[108] For example, the EASA pool of flight operations and airworthiness experts is hardly used due to the inability of the Member States to finance the use of experts from the pool.

A comparison between the EU and US aviation safety systems shows, despite some structural differences between the two systems, that the US manages an aviation market which is twice as big as in the EU with human resources which are only 29% bigger and a similar budget, as illustrated by Table 3.

Table 3: Comparison between Europe and USA on key indicators

Indicator	Europe (2013)	US (2012)
Budget	EUR 1.13 billion	EUR 1.0 billion
Total aviation safety staffing level (technical and support staff)	5 600	7 238
# AOC holders	1 201	2 686
# Aircraft on register	107 500	199 952
# Active pilots	255 204	496 053

Source: support study on resources[109]

Further inefficiencies result from the fact that Member States must run two or even three systems in parallel: (1) The EU system, which covers the majority of aviation activities in the EU; (2) A national system for Annex II aircraft which are excluded from the scope of Regulation (EC) No 216/2008; (3) A national system for State aircraft, such as police, or fire-fighting, which are also excluded from the scope of Regulation (EC) No 216/2008.

Case VII: Complex regulatory framework for aerial fire-fighting

Some EU Member States consider aerial-firefighting as a civil aviation activity. One of such Member States reported in an interview with the Commission that following the entry into force of the EU requirements for special operations, it will have to run in parallel two regulatory systems for aerial works. The national system will cover fire-fighting services which are excluded from Regulation (EC) No 216/2008. At the same time fire-fighting aircraft are also used in that Member State for agricultural

[106] Support study on resources, Final Report, p. 111.
[107] Support study on resources, Final Report, p. 109.
[108] Support study on resources, Final Report, pp. 104-124.
[109] Support study on resources, Final Report, p. 95.

operations which fall within EU special operations requirements. The Member State concerned would like to be able to opt-into the EU system for firefighting services to simplify the regulatory framework, and eliminate redundant paperwork resulting from the need to run two systems in parallel.

There are also overlaps in resources and cost between EUROCONTROL and EASA, an issue which has been highlighted by the EASA Management Board sub-group report,[110] and quantified by the support study on resources at around EUR 2 million per year.[111]

It may be that the system collectively disposes of enough resources, but that as a result of fragmentation there is a perceived shortage, which was pointed out by the support study on resources. This conclusion has also been suggested by the Article 62 evaluation panel[112] and EASA Management Board sub-group.[113] It is for this reason that this impact assessment puts a stronger emphasis on the need for increasing the efficiency in the utilisation of existing resources, rather than increasing the numbers of available staff, which in the current economic climate would be unrealistic to expect.

[110] EASA Management Board sub-group, Final Report, p.6.
[111] Support study on resources, Final Report, p. 46.
[112] Article 62 evaluation, Final Report (2013), p. 25.
[113] EASA Management Board sub-group, Final Report, p. 13.

Table 4: Problems (limitations of the regulatory system in meeting future challenges), problem drivers and objectives of the initiative

Problem drivers \ Problems	The present regulatory system may not be sufficiently able to identify and mitigate safety risks in the mid to long term	The present regulatory system is not proportionate and creates excessive burdens, especially for smaller operators	The present regulatory system is not sufficiently responsive to market developments	There are differences in organisational capabilities between Member States
Level and type of regulation does not sufficiently correspond to the risks associated with different aviation activities	☑	☑☑☑	☑☑	
System is reactive and predominantly based on prescriptive regulations and compliance checking	☑☑☑	☑☑	☑☑	
Inconsistencies and gaps in the regulatory system	☑		☑	
Shortages of resources impacting safety oversight and certification	☑		☑☑	☑
Inefficient use of resources stemming from fragmentation	☑☑		☑	☑☑☑

☑ - ☑☑☑ : Relative importance of a specific 'problem driver' for a given 'problem'

Specific Objectives (SO):	
1)	Eliminate unnecessary requirements and ensure that regulation is proportionate to the risks associated with different types of aviation activities
2)	Ensure that new technologies and market developments are efficiently integrated and effectively overseen
3)	Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation
4)	Close the gaps in the regulatory system and ensure its consistency
5)	Create an effectively working system of pooling and sharing of resources between the Member States and the Agency

2.3 Baseline scenario

2.3.1 Evolution of the problems

The structure of the baseline scenario mirrors the structure of the problem definition.

(a) The present regulatory system may not be sufficiently able to identify and mitigate safety risks in the medium to long term

The EU system will continue the transition to a risk and performance based environment. Safety management systems will continue to mature supported by further guidance, and will be used EU-wide across the industry. The European Aviation Safety Plan will remain a voluntary exercise however and it is likely that not all the Member States will be implementing the actions contained in the European Aviation Safety Plan and reporting back to EASA on its implementation. Safety information available at EU level will be gradually integrated by EASA into a single analysis process, although these efforts may be hampered by the reliability and completeness of this information.

Safety gaps will continue with respect to ground-handling, where experience showed that voluntary action is not sufficient. The risks stemming from cyber-security threats will also remain partly unaddressed, and are expected to intensify with the introduction of more data driven technologies and e-enabled aircraft. Weaknesses in oversight capabilities of some Member States are likely to persist due to continuing pressure on public administrations' budgets, as showed by the support study on resources. These weaknesses, combined with traffic growth,[114] will create additional risks for safety of the aviation system.

Modelling future performance of the EU aviation safety system is very difficult due to already low number of accidents and very low probabilities of system failures. For the purpose of this report, analysis has been performed based on past accident rates and future traffic projections for large aircraft operated in commercial air transport by EU/EFTA air operator certificate holders.

Based on the overall performance of the EU aviation safety system so far, it is reasonable to expect that the system is robust enough to at least maintain the current accident rate. This would however mean that the absolute number of fatal accidents and fatalities would increase by around 30% in the next ten years, due to the expected increase in traffic. The additional economic costs related to accidents under this scenario, taking into account the typical costs inherent in a fatal accident, are assessed to be around EUR 289 million by 2023 (see Table 5).

[114] Current economic trends point to significant growth in air traffic across Europe over the next two decades. Following an economic crisis in 2009 which saw a slow recovery from a significant decrease in air traffic across Europe, the 2008 peak in air traffic of 10.1 million flights is forecasted to be reached again by 2016 (this figure includes all instrument flight rules traffic of both EU/EFTA and foreign operators). This is expected to increase by 50% in the next 10 to 20 years, growing to 11 million flights in 2018 – a 16% increase over its 2011 flight total. Studies predict at the European level, traffic growth rates of 2.7% to 3.9% per year, on average over the next 10 to 20 years (Source: Support study on resources).

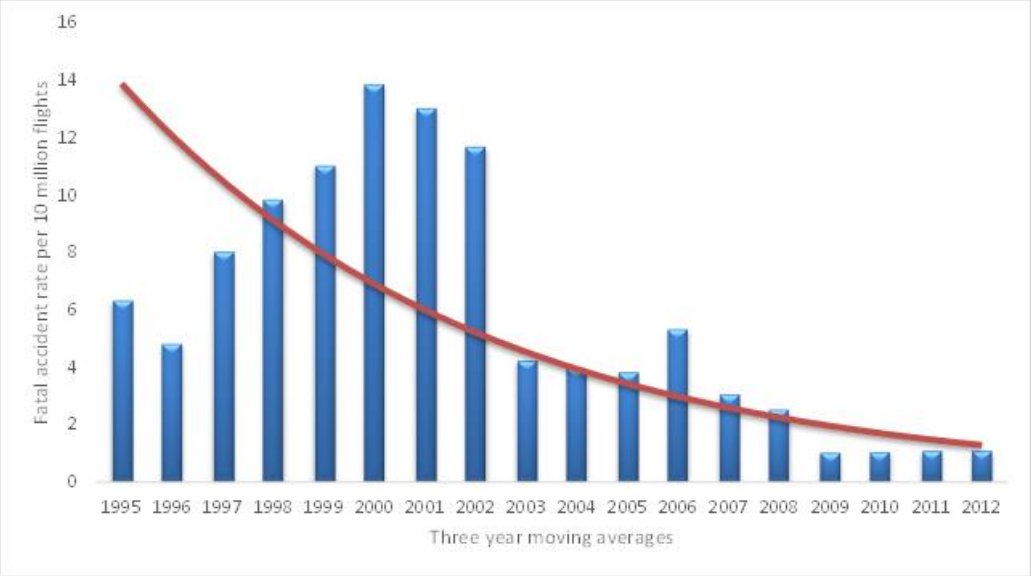
Table 5: Simulation of flight growth scenarios and associated accident costs

Items	Unit	Per accident	2004–2013 actual	2014-2023 with status quo accident rate	Change in accident cost 2004–2013 vs 2014–2023	2014-2023 with improved accident rate	Benefit of lower accident rate (2014–2023)
IFR Movements (000s)			78 000	107 396	29 396	107 396	
Number of Fatal Accidents			14	18	4	13	-5
Total fatalities			552	710	158	508	-202
Fatal accident per 10 million flights			1.8	1.8	1.8	1.2	-0.6
Typical costs of a fatal accident							
Search and rescue costs	(in million)	€ 0.6	€ 8.4	€ 10.8	€ 2.4	€ 7.7	-€ 3.1
Aircraft physical damage costs		€ 15.9	€ 222	€ 285	€ 63	€ 204	-€ 81
Site contamination and clearance costs		€ 1.5	€ 21	€ 27	€ 6	€ 19	-€ 8
Diversion, delays and cancellations costs		€ 1.8	€ 25	€ 32	€ 7	€ 23	-€ 9
Accident investigation costs		€ 10.0	€ 140	€ 180	€ 40	€ 129	-€ 51
Passenger liability (per fatality)		€ 1.1	€ 594	€ 763	€ 170	€ 546	-€ 217
Total costs of fatal accidents		**30.8**	**€ 1 010**	**€ 1 299**	**€ 289**	**€ 930**	**-€ 369**

Source: EASA[115]

The question therefore is under which conditions the accident rate could improve further in order to compensate for the expected traffic growth. Two aspects have to be considered in this respect. The first observation to be made is that while the system has been able to deliver increasing levels of safety, the rate of improvement has slowed down (Figure 4).

Figure 4: Three year moving average fatal accident rates and an exponential trend line



Source: EASA

The second observation is that past safety improvements did not happen on its own but were depending on the conscious efforts made by industry and the regulators. This observation is supported by the safety performance study, which links future reduction of accident rate with further improvement efforts and in particular successful implementation of safety

[115]Additional costs might be involved in an accident such as insurance costs and the impact on the value and reputation of the airline. However these are not easy to quantify. The costs included in the table are the most current on which reliable information is available. Number of flights includes only EU/EFTA Air Operator Certificate (AOC) holders. Sources: Ascend Fleets, IATA Safety Report 2014, Eurocontrol, National Luch- en Ruimtevaartlaboratorium (NLR): Aviation Safety Targets for Effective Regulation, Consolidated Final Report (2001)

management systems.[116] This impact assessment study is therefore based on the premise that further safety improvements will be conditional on addressing the weaknesses in the system identified in the problem definition section of the report.

As a first estimate on how large such an improvement could potentially be, the evolution of annual accident rates of EU/EFTA operators may be modelled using a function of exponential decay. This means extrapolating the trend line in Figure 4 into the future.

Based on this assumption, it is estimated that the accident rate may be further decreased from 1.8 to 1.2 fatal accidents per 10 million flights in the next decade (2014–2023), which would mean five fatal accidents and 202 fatalities prevented, as well as EUR 369 million saving in accident costs. This potential improvement would however require further improvement of the regulatory system and corresponding efforts in terms of safety promotion and oversight.

In the 2004–2013 decade there were also 17 non-fatal accidents for every fatal accident with an average €2.6 million aircraft physical damage costs, amounting to almost EUR 620 million. If the non-fatal accident rate would improve with the same rate as fatal accident rate, that would mean almost 85 non-fatal accidents with an estimated EUR 221 million aircraft damage prevented in the 2014–2023 decade.

(b) The present regulatory system is not proportionate and creates excessive burdens especially for smaller operators

Further efforts will be made to improve proportionality of the regulatory system and eliminate unnecessary regulation. In particular the General Aviation roadmap will continue to be implemented and EASA will gradually increase reliance on industry standards. A more rigorous impact assessment process is also being introduced by EASA to clearly link rulemaking tasks to safety risks and to consistently take into account non-rulemaking risk control measures, such as safety promotion actions, as possible alternatives.

The Regulation (EC) No 216/2008 will not allow however to introduce alternative to a type certification methods of assessing airworthiness of products, nor to grant more extensive competences to Qualified Entities to help Member States in the conduct of certification and oversight activities. Future Implementing Rules may be performance based if needed, but a number of prescriptive requirements in Regulation (EC) No 216/2008, such as detailed definitions or rigid conditions for granting exemptions, will hamper introduction of a truly proportionate regulatory regime, especially for lower risk operations such as light aircraft or drones.

(c) The present regulatory system is not sufficiently responsive to market developments

Intensification of innovative employment structures in the aviation industry and further development of the multinational organisation model can be expected. Cross-border movement of certification holders is also expected to be on the increase, as aviation personnel seeks employment opportunities within the internal market. The EU industry is also expected to continue seeking business opportunities overseas and developing new technologies such as drones, which may require additional regulatory oversight by EASA and National Aviation Authorities.

The above developments will increase the overall complexity of oversight required from the National Aviation Authorities and EASA. This, coupled with shortages of resources in some

[116] Support study on performance, Final Report, p. 84 and 88.

Member States and lack of an efficient framework for sharing resources may result in some organisations not being properly overseen. Fragmented oversight may slow down integration of multinational organisations and hamper interoperability of personnel and aircraft.

(d) There are differences in organisational capabilities between Member States

The differences in organisational capabilities of Member States are likely to persist. The economic forecasts for the EU indicate that the pressures on budgets of Member States will continue.[117] Lack of an effective framework for sharing resources will result in resources of National Aviation Authorities and EASA operating largely in isolation from each other.

Member States will also continue to be obliged to run three regulatory systems in parallel: (1) the EU system; (2) A national system for aircraft and aerodromes excluded from the scope of Regulation (EC) No 216/2008; (3) a national system for State aircraft, which are also excluded from the scope of Regulation (EC) No 216/2008.

Differences in organisational capabilities of Member States and variations in funding of oversight will also continue, affecting level playing field for the industry, and will increase possibilities for business to 'shop' for the most favourable regulatory environments. With respect to training, the EASA Virtual Training Academy will continue to be developed on a voluntary basis.

2.3.2 Expected future resource needs

The quantification of the baseline has been done in two main dimensions: (i) current resources and budgets for aviation safety at Member States and EASA levels; (ii) future needs for resources for aviation safety.

i. Current resources for aviation safety in the EU

The current resources for aviation safety in EU/EFTA Member States and in EASA, have been calculated with the help of the support study contracted by the Commission and are presented in Table 6 below. With respect to Member States, this calculation is broad and should only be used as an indication. The reason for that note of caution is that no precise data are available for all Member States. In particular no information is available from Member States splitting the resources into technical and support staff. Similarly the figures provided for the size of the budget of Member States is, to a certain extent, estimation based on extrapolation of available data.

Table 6: Staffing and budget on European level in 2013

	Staff	Budget
31 NAAs (EU/EFTA)	5 100	EUR 1 billion
EASA (technical staff only)+ NAAs	5 600	EUR 1.13 billion

Source: support study on resources

In order to provide a point of reference for both the resources available in the EU and the workload associated with these resources, a comparison with the US and FAA (aviation safety branch) has also been done, and which was presented in Table 3 above.

This comparison shows that the size of the budget for aviation safety in EU and US is similar. The US has +/- 29% more staff than the EU, but at the same time the volume of the aviation

[117] European Commission, Fiscal Sustainability Report (2012), p. 43.

activity under the responsibility of the FAA is roughly two times bigger than in the EU, which is also an indicator of the relative efficiency of the US system if compared with the EU.

ii. Costs of filling the future gap in authority resources:

The costs of future resource needs for aviation safety (until 2030) were calculated with the support of an external study.[118] The detailed calculations and assumptions for this analysis are contained in Annex XI. In summary, this 'resources gap' analysis indicated that:

- The need for additional staff to carry out the workload will increase by roughly 7.6 – 9.3% of the base figure of around 5 100 total National Aviation Authority staff in 2013 by the year 2020, amounting to between 5 487 to 5 572 total staff needed. By 2030, total staff needed is expected to increase by between 17.4-21.6% over the 2013 level, which represents between 5 987 to 6 200 individuals;
- The budget for National Aviation Authorities would need to be on a higher level compared to the current (2013) level of EUR 1 billion to accommodate for the additional staff. The annual increases have been estimated at EUR 21-26 million in 2020, and at EUR 49-61 million by 2030 to match the projected gap in resources in 2020 and 2030, respectively. The present value of the total increase amounts to EUR 290 – 360 million (2016-2030, 4% discount rate).

No information is available on the forecasted revenues of National Aviation Authorities.

Similarly, forecasted revenue of EASA is not available for the mid to long term. For 2016 the estimated revenue from fees and charges which are mainly related to certification activities, amounts to EUR 121.5 million. For the following years these estimates will largely depend on the evolution of the aviation market. Factors that will influence industry demand for certification vis-à-vis EASA include the number of new aircraft, the entry of new types of aircraft from Asian manufacturers on the market and the development of new technologies such as unmanned aircraft. However, since the EASA constituent act requires that fees and charges have to reflect the real costs of the related activities these revenues will not lead to a profit. Therefore they do not constitute revenue that would impact on the estimated future resource gap.

In order to verify the accuracy of these future predictions, a comparison has also been made by using as a benchmark the projection of future aviation safety resources needs in the US. The US FAA expects its staffing needs for aviation safety to increase by 12% by 2023 if compared to 2013.[119] This is a rate comparable to the one anticipated for the EU by 2020. Given that the EU and US have similar regulatory frameworks for aviation safety, are both in the course of transition to a safety management system environment and have comparable safety performance, it can be considered that the calculations used in this impact assessment for predicting future resources needs of the EU are in the right order of magnitude. The FAA aviation safety workforce trends are included in Annex XIV for comparison purposes.

[118] Support study on resources, Final Report, pp. 135-131.
[119] FAA, Aviation Safety FY2014 Workforce Plan, pp. 8-11.

2.4 Subsidiarity

2.4.1 Legal basis

According to Article 4(2)(g) of the Treaty on the Functioning of the European Union (TFEU), transport is a shared competence between the EU and its Member States. The right for the EU to act in the field of transport is set out in particular in Title VI of the TFEU which provides for the European Transport policy. Article 91(1)(c) gives the Union competence for laying down 'measures to improve transport safety' under the co-decision procedure. Article 100(2) gives the Union the possibility to lay down appropriate provisions for air transport.

2.4.2 Necessity and EU added value

Air transport is to a large extent of transnational character and therefore, by nature, calls for a regulatory approach at EU-level.

There is a general understanding of the Member States that common rules are necessary to reach a high level of safety. This was manifested already by the initial adoption of Regulation (EC) No 216/2008 and its predecessor Regulation (EC) No 1592/2002. The safety of the European aviation system depends inter alia on how well the elements of this system interlink. Any interface in this system constitutes a risk that requires coordination. Common legislation does away with the need to coordinate between Member States regulatory systems and as such contributes to an increase in safety. Promoting a common European safety system can most effectively be achieved only at EU level. Similarly, efficiency gains, in the order of up to 30% (based on comparison with the US), can be potentially achieved within the single European aviation safety system by countering costly fragmentation.

More specifically, as regards ground handling, this initiative has identified a safety gap due to a lack of safety requirements in the EU aviation safety regulatory framework. Analysis has also shown (see Annex XX) that voluntary initiatives have not as yet brought expected results. As ground handling is part of the overall aviation system and interlinks with other aviation domains, regulating it at EU level will assure regulatory consistency for ground handling safety throughout the internal market. The need for regulatory action in this regard is supported by all the groups of stakeholders save airlines, which do not believe that the benefits of an EU intervention would outweigh the costs. Member States see the need for addressing safety of ground-handling but caution about heavy regulation. The Commission believes that a properly designed regulatory framework building on existing industry standards would address these concerns while strengthening the oversight of ground handling.

Furthermore, while most actions addressing deficiencies in safety oversight would be implemented by the Member States on a voluntary basis and subject to a positive cost-benefit analysis, additional action at EU level seems necessary where the ability of a Member State to ensure effective oversight is seriously impaired. In this case Union action would be justified by the fact that failure to meet the safety requirements would negatively impact the whole of the internal market and that this serious safety risk could effectively be addressed by temporarily transferring oversight competences.

Finally, with respect to cyber-security and security aspects of aircraft and systems design it has to be pointed out that the EU is already involved in some of these issues, although not always with a clear legal basis, as was explained in Section 2.2.3. EU action to clarify the competence in this domain is justified by the fact that these matters are inseparably linked with the overall design aspects of aircraft and aviation systems, where the EU already has been given a competence to act under Regulation (EC) No 216/2008. The nature of cyber-security threats in particular is such that can affect systems spanning across multiple Member

States, or even the whole of the EU, and where therefore a coordinated action at Union level is required.

The other options examined in the impact assessment, including with regard to environmental certification of aeronautical products, do not entail an extension of existing EU competences.

3 OBJECTIVES

This policy initiative does not introduce specific EU level targets, expressed in numerical values. With respect to qualitative targets, this policy initiative reiterates the target which has already been expressed by the Commission in the 2011 White Paper on Transport, which is to become and maintain the position of the EU as the safest region in the world. Although the public consultation addressed the need for introducing specific safety targets, after consideration, this idea has been abandoned. Setting of minimum safety targets depends on reliable data and information. The EU is not yet technically ready in this regard, as showed by the safety performance study. In addition, review of relevant literature and expert sources points to the fact that setting of safety targets can result in unintended consequences, especially when such targets are defined in isolation from the operational environment.

This initiative is linked and fully consistent with the 2014-2019 strategic objectives of the European Commission with respect to the promotion of 'Jobs and Growth' and of a 'Deeper and Fairer Internal Market with a Strengthened Industrial Base'. This initiative is also an integral part of the Commission's 'Aviation Package for improving the competitiveness of the EU aviation sector'.

The specific objectives (SO) of this initiative are as follows:

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

In addition operational objectives are proposed for the preferred policy package in Chapter 6.

4 POLICY OPTIONS

4.1 General approach to policy options

This initiative addresses a broad range of issues. In order to cover all of them, five domains of policy options, which are independent of each other, have been developed. They address all problem drivers identified under Section 2 and contribute to the objectives set out under Section 3 (see Table 7 below).

Similar to the problem drivers and problems, there is no exclusive one-to-one relationship between a policy option and a problem driver. For example options in the domain of management and quality of resources address problem drivers related to shortages and inefficient use of resources and contribute to tackling Problem No 4 (Differences in organisational capabilities of Member States), but also Problem No 1 (Identification and mitigation of safety risks).

The policy options within the respective domains were developed taking into account the suggestions made in the two support studies, results of the public consultations, EASA Opinion, Article 62 evaluation, and the Report of the Management Board sub-group. In addition, a 'No EU action' option, the use of international standards and soft law measures have been considered, as explained in the following section dealing with pre-screening of options.

Table 7: Listing of Policy Options and their links with problem drivers and objectives

Domains of Policy Options	Policy Options	Problem drivers targeted	Objectives to be achieved
Management and quality of resources	PO 1.1: Baseline Scenario; PO 1.2: Enhanced cooperation within the current system; PO 1.3 (a): Joint oversight system with voluntary transfer of responsibilities; PO 1.3 (b): Emergency oversight support mechanism; PO 1.4: A single EU aviation safety authority;	Shortages of resources impacting safety oversight and certification; Inefficient use of resources stemming from fragmentation;	SO 2: Ensure that new technologies and market developments are efficiently integrated and effectively overseen SO 3: Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation SO 5: Create an effectively working system of pooling and sharing of resources between the Member States and the Agency
Proportionality and safety performance	PO 2.1: Baseline Scenario; PO 2.2: Enablers for a proportional and performance based safety system; PO 2.3: Two-layered regulatory system; PO 2.4: Transition to a full performance based regulatory system;	System predominantly based on prescriptive regulations and compliance checking Level and type of regulation does not sufficiently correspond to the risks associated with different aviation activities	SO 1: Eliminate unnecessary requirements and ensure that regulation is proportionate to the risks associated with different types of aviation activities SO 2: Ensure that new technologies and market developments are efficiently integrated and effectively overseen SO 3: Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation
Gaps and inconsistencies - *ground handling*	PO 3.1 (A): Ground-handling (Baseline Scenario); PO 3.1 (B): Ground-handling (Industry Standards/no certification); PO 3.1 (C): Ground-handling (Implementing Rules/certification);	Inconsistencies and gaps in the regulatory system	SO 3: Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation SO 4: Close the gaps in the regulatory system and ensure its consistency
Gaps and inconsistencies - *aviation security*	PO 3.2 (A): Aviation Security (Baseline Scenario); PO 3.2 (B): Legal framework for security aspects of design; PO 3.2 (C): Coordinated approach to safety and security related matters	Inconsistencies and gaps in the regulatory system	SO 2: Ensure that new technologies and market developments are efficiently integrated and effectively overseen SO 3: Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation

			SO 4: Close the gaps in the regulatory system and ensure its consistency
Gaps and inconsistencies - *environment*	PO 3.3 (A): Environment (Baseline Scenario);	Inconsistencies and gaps in the regulatory system	SO 2: Ensure that new technologies and market developments are efficiently integrated and effectively overseen SO 4: Close the gaps in the regulatory system and ensure its consistency
	PO 3.3 (B): EU essential requirements for environmental protection with respect to aeronautical products;		

4.2 Discarded Policy Options

4.2.1 'No EU action'

The 'No EU action' option was considered for each domain of policy options, meaning that the EU would stop regulating aviation safety matters entirely. This would mean returning to the voluntary system which existed under the Joint Aviation Authorities, with no regional EU enforcement mechanisms, different national requirements, and lack of automatic recognition of certificates. Aeronautical products would again be certified or validated by Members States individually instead of by EASA. Recognition agreements with US and other foreign partners would have to be revoked.

The above would result in a major disruption for the EU industry and could have negative impact on aviation safety and is therefore not a viable scenario. However, a 'No EU action' option is considered as potentially of added value if applied to some sectors of non-commercial aviation. The results of public consultations and support studies have shown that the EU regulatory intervention is too deep when it comes to General Aviation[120]. Accordingly Policy Options 1.3, 1.4, and 2.2 will consider measures which would reduce the authority involvement. This will include the possibility of transferring part of oversight from public authorities to competent user organisations, and greater reliance on industry standards in certification and oversight processes.

4.2.2 Using international standards only

In the field of aviation safety, ICAO adopts standards and recommended practices (SARPs) which are contained in Annexes to the Chicago Convention. Standards are binding for Member States, all of which are parties to the Chicago Convention. However, the SARPs are not directly applicable and require legal transposition into the national legal orders of the Member States. This is done through EU legislation where the competence has been delegated to the EU. Secondly the SARPs usually require adaptation to make them fully operational when being transposed into EU law. This requires a rulemaking process with the involvement of EASA and the European Commission, and sometimes also the European Parliament and the Council. Relying only on ICAO SARPs is therefore not sufficient and does not guarantee uniformity of action within the EU which is required for aviation safety. The proposed options have been designed in full consistency with the existing ICAO SARPs where they are applicable (e.g. ICAO Annex 19).

1.1.1. 'Soft law' measures

[120] General aviation means 'an aircraft operation other than a commercial air transport operation or an aerial work operation' (Source: ICAO Annex 6, Part II).

Soft law measures have also been considered in the development of the policy options. This analysis has shown that there is significant scope for greater reliance on recognised industry standards in regulating aviation safety in the EU. Accordingly, Options 2.1 to 2.4 and Option 3.1(B) consider reliance on industry standards. However industry standards are only a means of compliance with legally binding objectives which in any case always need to be defined at the EU level. In the context of the present initiative, these objectives are set in the so-called "essential requirements" for the different domains of aviation safety which are annexed to Regulation (EC) No 216/2008.

4.3 Description of Policy Options

4.3.1 Options with respect to the management and quality of resources

Adequately resourced aviation authorities, staffed with competent personnel is a pre-requisite for a well-functioning oversight system contributing to the maintenance of a high level of safety, level playing field for the industry and transition to risk based oversight and performance based regulation. The support study on resources[121], the EASA Opinion[122], the Article 62 evaluation[123] and the report of the EASA Management Board Sub-Group[124] all suggest various options with respect to more efficient management and quality of resources in National Aviation Authorities and EASA. These suggestions have been taken into account when developing the options listed below.

While there are shortages of resources in the present system, as was explained in Section 2.2.4, analysis conducted for the purpose of this impact assessment suggests that reorganisation of the way these resources are used, should allow for efficiencies to be gained. The support study on resources demonstrated, in case of centralisation of certification and oversight tasks at EU level, efficiencies in the order of 40%.[125] The comparison with the US in Section 2.2.5, also suggests that potentially the EU should be able to manage with the current resources a much bigger aviation market. The options proposed aim at making these efficiencies possible. It has to be underlined however, that the degree to which such efficiencies could be achieved would directly correlate with the degree of flexibility the regulatory authorities (EASA and national aviation authorities) have in re-allocating between themselves the certification and oversight work. For example, the staffing cap applicable to EASA means that, to be able to take on new tasks, more outsourcing would be necessary, which is not always possible (e.g. general shortages in supply of particular expertise at national authorities) or desirable (i.e. quality control and management functions should not be outsourced).

Option 1.1: Baseline Scenario

With the exception of amendments expected to be introduced through the SES II+ package[126], Regulation (EC) No 216/2008 is not revised, and the current distribution of responsibilities remains unchanged. Cooperation mechanisms between National Aviation Authorities and between National Aviation Authorities and EASA remain in their current form. EASA continues to develop the 'Virtual Academy' and additional guidance material. Minimum EU

[121] Support study on resources, Final Report, pp.125-147.
[122] EASA, Opinion 1/2015, pp. 20-21.
[123] Article 62 evaluation, Final Report (2013), pp.7-8.
[124] EASA Management Board sub-group, Final Report, pp.13-14.
[125] Support study on resources, Final Report, p. 188.
[126] COM(2013)409 and COM(2013)410.

standards (through Implementing Rules to Regulation (EC) No 216/2008) may be provided on qualification and training requirements for inspecting staff of National Aviation Authorities.

Option 1.2: Enhanced cooperation within the current system

This option consists of a number of non-legislative measures aiming at improving the implementation and enforcement of the existing regulatory framework. It focuses on creating closer relations among the authorities and on encouraging exchange of best practices through common forums under EASA auspices. The measures envisaged are as follows:

a) Promoting the use of risk and performance based oversight methods. This would be achieved by developing further guidance material by EASA. The Agency would also launch additional pilot projects together with the Member States. Exchange of best practices between the authorities would be also facilitated through dedicated workshops and training sessions organised by EASA;
b) Establishing central repositories of licences and approvals on a voluntary basis to facilitate cross border oversight. This measure would be implemented by the Agency through establishment of an IT database;
c) Further development and promotion of the EASA pool of experts (raising awareness of its existence and facilitating procedures for usage);
d) EASA to develop best practices and guidance material on cooperative oversight;
e) More detailed guidance material on training of staff of National Aviation Authorities to be developed by EASA;
f) Promoting exchange of best practice in the use of resources between Member States. This would be implemented through activities similar as under point (a);
g) Further development of the EASA virtual Training Academy (accreditation of training institutes in Member States on a voluntary basis).

This option is expected to have support of both Member States and of the aviation stakeholders.

The timeframe for implementation is expected to be one to two years. Risks related to implementation of this option are considered low.

Option 1.3 (a): Joint oversight system with voluntary transfer of responsibilities

The objective of this option is to join up the aviation safety resources available in the National Aviation Authorities and EASA through a system of 'pooling and sharing' and to focus them on the risks where the public expects greatest authority involvement. This option would consist of a number of measures, most of which would require an amendment of Regulation (EC) No 216/2008:

a) A pool of EU-accredited aviation safety inspectors with clearly defined privileges, common liability regime, and funded through fees. For this purpose the Agency would pre-define profiles on the basis of which Member States would designate candidates for participation in the pool. The rights and obligations of Member States providing and requesting the assistance from the EU inspectors would be defined in EU law (today in individual contracts signed by national authorities). A funding mechanism would be also established based on fees and charges (today charging is organised on a bilateral basis between the national authorities concerned). The pool of experts would be thus put on formal basis, as opposed to today's informal framework coordinated by EASA;
b) Increased possibilities for EU Member States to transfer regulatory responsibilities to other Member States or EASA on a voluntary basis (this measure would also require

amendment of Regulation (EC) No 1008/2008, if transfer of responsibilities for certification and oversight of air operators from Member States' aviation authorities to EASA were to be enabled. At present Regulation (EC) No 1008/2008 requires the same Member State to be responsible for the operating license and for the AOC). Such transfers are already possible today as far as production organisations and flight simulators are concerned. This measure would extend these possibilities to other domains of aviation;

c) Freeing up resources of National Aviation Authorities by enabling delegation of certain certification and oversight responsibilities to the General Aviation sector, while ensuring that conflicts of interest are properly managed. This measure would require amendment of the current requirements related to Qualified Entities. Member States would also be able to grant to qualified entities a privilege to issues certificates on their behalf;
d) Establishing a repository of aircraft, organisations and personnel registered and approved in EU Member States (mandatory), and possibly of other information relevant for cooperation between authorities in certification, oversight and enforcement. This measure would be implemented by establishing an IT database by EASA in cooperation with the national aviation authorities;
e) Establishing an accreditation scheme for aviation training institutes building on the current EASA 'Virtual Academy' process. This means that the legal basis for the accreditation process would be established in EU legislation. The accreditation criteria would be also made public by EASA to ensure transparency. Member States would not be obliged to participate in the accreditation scheme;
f) Introducing a more flexible framework for funding EASA activities (en-route charges to cover the costs of air traffic management related responsibilities; human resources financed by fees and charges are allowed to fluctuate in line with the market demand for certification services[127]). Implementation of these measures would require an amendment of the founding act of EASA. A corresponding reduction of the EUROCONTROL budget would have to be also achieved as explained in Annex X;
g) Voluntary 'opt-in' for State aircraft and Annex II aircraft for Member States and aircraft manufacturers. Regarding state aircraft, Member States would be able to extend the scope of the basic safety regulation to all or certain state aircraft under their regulatory responsibility. Regarding Annex II aircraft, a possibility would be given to manufacturers of aircraft which are produced in series and which could benefit from circulation within the internal market to opt-into EU requirements;

In addition this Option entails measure (a) under Option 1.2 (promotion of risk and performance oversight methods).

This option is expected to have support of both Member States and aviation stakeholders. The timeframe for implementation is expected to be two to three years. Risks related to implementation are also considered low to moderate in view of the voluntary nature of most of the measures.

Option 1.3 (b): Emergency oversight support mechanism

This option encompasses all the measures envisaged under Option 1.3(a). In addition, where objective evidence shows that the ability of a Member State to ensure effective oversight of

[127] An inter-institutional working group on partially self-financed agencies is examining the cap on staff financed from fees and charges.

activities under its responsibility is seriously degraded and there are no prospects for rapid resolution of the problem, the Commission, following opinion of EASA, could decide that the oversight of a particular organisation or group of organisations is temporarily transferred from the Member State concerned to the EU level (EASA), pending satisfactory resolution of the underlying oversight issues. This option would envisage that a Member State is first invited to make use of the possibilities to temporarily transfer the responsibility to another authority, pending the resolution of the underlying difficulties. The implementation of this option would require an amendment of Regulation (EC) No 216/2008. The procedures and conditions for activating and deactivating the emergency mechanism would be established in EU law. Implementation of this option would require development by EASA of means and capabilities for AOC oversight.

This option is expected to draw some opposition from the Member States but should be supported by the aviation industry. The timeframe for implementation is expected to be two to three years. Risks related to implementation are considered moderate in view of the mandatory nature of the emergency mechanism.

Option 1.4: A single aviation safety authority

Under this option EASA becomes the competent safety authority for all aviation activities in the EU. It allocates tasks to the National Aviation Authorities, which act as local offices of EASA, based on the actual demand in the system. Under this option EASA fully oversees the work of National Aviation Authorities where they act within the scope of the EU system. Standardisation mechanisms are replaced by internal quality mechanism of EASA which covers also the National Aviation Authorities.

This option would be based on an EU-wide accreditation mechanism, and require amendment to Regulation (EC) No 216/2008. National inspectors would continue to be employed at the national level, but perform the certification and oversight work 'on behalf of EASA'. The single aviation authority would also operate a training academy for its staff and those of the local offices - National Aviation Authorities. Under this option there is only one safety programme for the whole of the EU instead of 28 national programmes. Similar to Option 1.3 (a), Member States may decide to opt into the EU system as far as state aircraft are concerned. However, Annex II aircraft and all aerodromes are included from the outset into the scope of EU aviation safety legislation.

The financing of the single authority would come from a fees and charges scheme. Concerning the timeframe for implementation, a transition period would have to be established in the Union legal act establishing the authority. At the time when EASA was originally established, a transition period of three and half years was provided for to allow the Agency to assume its aircraft certification and other responsibilities. The establishment of the single authority would most likely take longer and in any case be a gradual process. A detailed implementation plan would need to be developed in close cooperation with the Member States. The risks involved in the implementation of this option are considered high, due to a significant change of the legal and institutional set-up of aviation safety oversight in the EU.

This option is expected to draw some opposition from Member States and possibly smaller aviation operators, but is expected to be supported by the large aviation industry. The EASA Management Board Sub-group report did not support the proposal for 'convergence of the

various existing actors towards a single entity, one integrated Agency, within the EU institutional architecture'.[128]

4.3.2 Options with respect to proportionality and safety performance

The options considered under this section aim at better identifying and mitigating safety risks, at supporting the development of more proportionate regulations, and at using resources more efficiently by targeting them according to risk priorities.

Safety management systems, safety performance schemes and performance based rules are different approaches used in managing and regulating aviation safety. A brief explanation as to how they are used in the context of this impact assessment has been added as Annex XVII. There is wide consensus in the aviation community that implementation of these concepts is the way forward to attain further safety improvements beyond current safety levels. ICAO reflects this common understanding in its safety management manual.[129] The benefits of these regulatory approaches were also confirmed by the support study on resources, which was peer-reviewed (see Annex XVIII). Consequently, this impact assessment does not put into question the merits of a performance based system, but rather focuses on the modalities for its effective implementation.

The EASA Opinion recommends that 'existing prescriptive rules should be progressively reviewed to assess whether they are efficient, should remain, or could be either complemented or replaced by performance based rules.'[130] The EASA Management Board sub-group has also recommended a gradual approach by 'promoting performance and risk-based regulations where appropriate.'[131] The support study on performance recommended that performance based rules are introduced over time in accordance with a transition plan, for organisations with sufficiently mature Safety Management Systems.[132]

Furthermore, an option on establishing a safety performance scheme[133] at EU level has been considered, but eventually disregarded. This is justified by the fact that the EU today is technically not yet ready for such a step, primarily due to a lack of reliable data and information.[134] In addition, from a safety management point of view, much better effects are achieved when safety improvement targets and indicators are defined close to the operational environment, as the support study on performance concluded.[135] Experience with the EU performance scheme in the air traffic management sector also shows that a performance scheme at EU level requires an elaborate administrative machinery,[136]and that the scheme has not yet succeeded in defining meaningful safety performance targets.

There is nevertheless a need for strengthening cooperation between EU and Member States in identifying and mitigating risks of EU-wide concern. The views of the stakeholders and Member States from the public consultation indicate that while there is little support for

[128] EASA Management Board sub-group, Final Report, p.20.

[129] ICAO, Safety Management Manual, Third edition 2013, ICAO Doc 9859, AN 474.
[130] EASA, Opinion 1/2015, p. 5.
[131] EASA Management Board sub-group, Final Report, p.8.
[132] Support study on performance, Final Report, p.117.
[133] A safety performance scheme allows for measuring safety levels and identifying risks by using indicators and setting safety improvement targets.
[134] SMICG, 'A systems Approach to Measuring Safety Performance: the regulator perspective', (2014), pp. 5-6.
[135] Support study on performance, Final Report, pp.53-55.
[136] The Commission outsources the implementation of the ATM performance scheme to EUROCONTROL which acts as a Performance Review Body under Commission Regulation (EC) No 691/2010of 29 July 2010 laying down a performance scheme for air navigation services and network functions (OJ L 201, 3.8.2010, p.1).

establishing an EU safety performance scheme, there is support for formalisation of the existing voluntary processes around the European Aviation Safety Plan. The EASA Opinion[137] and the Article 62 evaluation[138] similarly suggest giving to the European Aviation Safety Plan a formal legal basis.

Option 2.1: Baseline Scenario

The EU system continues to incorporate elements of risk based oversight and performance based regulation. Further efforts are made to complete the safety management systems requirements in all aviation domains and to ensure uniform implementation of these requirements by authorities and industry, which are subject to the EASA standardisation programme. Guidance material is developed and exchange of best practices on evaluating the implementation of safety management systems takes place. Member States continue to adopt and implement State Safety Programmes on a non-mandatory basis only. At EU level the European Aviation Safety Programme is regularly updated by the Commission. The European Aviation Safety Plan process continues to be developed on a voluntary basis. EASA continues to develop safety analysis capabilities.

Future Implementing Rules could be drafted in a more performance and risk based manner if needed. There are some provisions in Regulation (EC) No 216/2008 which can be considered as overly prescriptive (i.e. definitions, product certification), and which may hamper, but do not fully prevent the introduction of performance based rules.

Option 2.2: Enablers for a proportional and performance based safety system

This option establishes a number of enablers which will facilitate the introduction of a more proportionate and performance based regulatory environment. It in particular brings closer together the safety management processes at EU and Member State levels, though falling short of mandating EU safety targets.

Under this option, a more proportional and performance based approach is achieved through:

a) Reviewing definitions and classifications of aircraft and operations in Regulation (EC) No 216/2008 to make sure that they are in line with risk hierarchy principles (Annex XVI). In particular the definitions of 'commercial operation' and 'complex motor-powered aircraft would be reviewed';
b) Introducing in Regulation (EC) No 216/2008 a broader range of possibilities for demonstrating compliance with essential requirements, in particular for product certification, based on risk assessment. These should include mechanisms of accreditation and declarations of compliance, particularly for light aircraft and drone operations;
c) Introducing the principles of a risk hierarchy to the mechanism of exemptions and derogations under Regulation (EC) No 216/2008. For low risk activities Member States would be given more flexibility to decide on exemptions and derogations;
d) Simplifying the regulatory framework for wet leasing of aircraft between EU operators in Regulation (EC) No 1008/2008, and corresponding Implementing Rules to Regulation (EC) No 216/2008 (removing the requirement of prior approval).
e) Greater reliance on recognised industry standards when developing Implementing Rules, Acceptable Means of Compliance, Guidance Material or Certification Specifications.

[137] EASA, Opinion 1/2015, pp. 5-7.
[138] Article 62 evaluation, Final Report (2013), p. 8.

In addition, a collaborative safety management process is created, requiring each Member State to establish a State Safety Programme (in line with ICAO Annex 19). The adoption and update of the European Aviation Safety Plan and the European Aviation Safety Programme are formalised in Regulation (EC) No 216/2008. A process is agreed with the Member States to identify risks of EU concern and to develop mitigating actions needed to address these risks.

Regarding performance based rules this option is based on the premise that a decision on the type of rule to be introduced is best taken on a case by case basis, each time a new Implementing Rule under Regulation (EC) No 216/2008 or a significant amendment thereto, is being developed. For each rule which has been converted into a performance-based, organisations have a choice to either remain under a 'traditional approach' or to opt for a performance based rule. This option also envisages reviewing essential requirements in Annexes to Regulation (EC) No 216/2008 for all the domains of aviation safety with a view to eliminating overly prescriptive language or rules which could be an obstacle to a more systematic introduction of performance based rules or which are better suited for Implementing Rules.

The implementation of this option would require amending Regulation (EC) No 216/2008 and, as regards leasing, Regulation (EC) No 1008/2008.

Explanation of the process to be followed for developing performance based rules is set out in Annex XVII.

This Option is expected to have support from both the Member States and the aviation sector.

Option 2.3: Two-layered regulatory system

This option builds on Option 2.2, but with regard to performance based rules creates a two-layered approach for the entire safety regulatory system. All Implementing Rules to Regulation (EC) No 216/2008 are drafted both in a prescriptive and in a performance based manner, where relevant.

Under this Option, Implementing Rules which have been adopted so far are systematically reviewed to bring them in line with the two-layered principle. Organisations can then apply for performance based rules if their safety management systems are sufficiently mature. EASA verifies the ability of Member States to authorise organisations under their regulatory responsibility to switch to a performance based approach as well as Member States' ability to perform oversight on performance based rules.

To illustrate how this Option would work in practice a parallel with the present requirements for pilot training can be made, where in addition to a standard set of requirements, operators can also apply to its aviation authority for an authorisation of an alternative, performance based training qualification programme.

This Option is expected to be supported by the aviation sector but to draw some opposition from the Member States due to additional administrative burden imposed on the authorities.

Option 2.4: Transition to a full performance based regulatory system

This option builds on Option 2.2, but as regards performance based rules a transition plan towards performance based rules for the entire safety regulatory system is developed at EU level, taking into account the specificities of different aviation domains. This transition plan

would be developed by EASA with the assistance of existing rulemaking advisory groups. Performance based rules are then introduced in the Implementing Rules to Regulation (EC) No 216/2008 in accordance to this plan, and prescriptive rules eliminated completely where feasible, not providing organisations with a choice as under Options 2.2 and 2.3. This option implies mandatory changes for organisations, and a top-down approach with a predetermined timetable: organisations are more and more required to collect evidence to show that they operate above a certain safety level, and this leads to a change in the way they operate. EASA controls the ability of Member States to perform oversight on performance based rules.

This Option is expected to draw some opposition from the Member States and from the smaller aviation organisations. The bigger aviation industry is expected to be supportive of this option.

4.3.3 Options with respect to the safety gaps and inconsistencies

4.3.3.1 Options with respect to safety aspects of ground handling

Today ground-handling safety is regulated by the EU only indirectly, through requirements imposed on air operators and aerodrome operators. The options proposed would change that by allowing the EU to impose safety requirements directly on providers of ground-handling services. The EASA Opinion recommends addressing ground-handling safety through the use of industry standards.[139] The EASA Management Board sub-group also cautioned against imposing requirements going beyond the recognised industry standards.[140] Ground handling service providers, airports and ground handling staff favour an EU action on ground handling safety, while airlines advised against that believing that they are sufficiently able to control the quality of services through their contractual relations with ground handlers.

Option 3.1(A): Baseline Scenario

Safety of ground handling operations is handled in an indirect manner through air operations and aerodrome rules adopted under Regulation (EC) No 216/2008. There is however no legal basis in Regulation (EC) No 216/2008 for addressing specific safety requirements directly to ground-handling operators.

Option 3.1(B): Addressing safety of ground handling through industry standards

This option would extend the EU competence and establish a set of high level essential requirements in Regulation (EC) No 216/2008 regarding safety of ground handling, on the basis of which EASA could issue Acceptable Means of Compliance/Guidance Material based on existing industry standards for ground operations (such as materials from the International Air Transport Association (IATA) or the Airports Council International (ACI)). No certification requirements are envisaged under this option. However service providers would be required to declare their compliance with the essential requirements, and Member States would be responsible for ensuring safety oversight. If needed, implementing rules could be adopted as well to supplement the essential requirements.

This option is expected to be supported by the ground handling service providers and aerodrome operators. The airline industry is expected to be opposed to this option. Most Member States are expected to be supportive.

[139] EASA, Opinion 1/2015, p. 12.
[140] EASA Management Board sub-group, Final Report, p. 6-7.

Option 3.1(C): Certification of ground handling service providers

This option, in addition to establishing essential requirements for the safety of ground-handling operations would create, also in Regulation (EC) No 216/2008, a legal basis for the development of related Implementing Rules, including a certification system and related oversight obligations for National Aviation Authorities. Ground-handling would be therefore regulated in a similar fashion to other certified aviation activities.

This option is expected to draw some opposition from Member States and the airline sector. The ground handling service providers and aerodrome operators are expected to be supportive or neutral.

4.3.3.2 Options with respect to aviation security

The proposed options aim, as a minimum, at addressing the most pressing problems related to identified safety gaps (security matters related to the design of aircraft and aviation systems, including cyber-security), and better coordination of interfaces between safety and security measures.

The Commission has also considered an option whereby the implementation of the current EU competence related to aviation security would be transferred to the European Aviation Safety Agency. This option has been however abandoned due to expected lack of support for this option from Member States and stakeholders. In addition the problems identified with respect to the interfaces between safety and security matters can be addressed without the need to change the existing institutional set-up and division of competences.

Option 3.2(A): Baseline Scenario

Security aspects of aircraft design continue to be addressed by EASA on an ad-hoc basis through special conditions. EASA has no clear competence to issue security sensitive airworthiness directives and cannot develop design requirements for other aviation systems in order to protect them from cyber-security threats. The ongoing discussions on the Commission proposal for a Network Information Safety Directive[141] could provide a framework for reporting cyber incidents affecting aviation safety, but the final outcome of the legislative process concerning this Directive is at this point uncertain. Safety and security measures related to flight operations continue to be addressed separately under Regulation (EC) No 216/2008 and Regulation (EC) No 300/2008.

Option 3.2(B): Legal framework for security aspects of design

A legal basis (i.e. essential requirements) is introduced in Regulation (EC) No 216/2008 to address security aspects of aircraft and aviation systems design, including with respect to protection against cyber-security threats. EASA is also given the competence to issue security sensitive airworthiness directives.

This option is expected to be supported by Member States and the aviation stakeholders.

Option 3.2(C): Coordinated approach to safety and security related matters

In addition to Option 3.2(B), this option proposes a change in the way existing EU competences are exercised. The objective of this option is to ensure that, where relevant, safety and security aspects are considered together and that interdependencies between these two areas are better taken into account. It does not imply any extension of existing EU

[141] COM(2013)48 final.

competence beyond what is proposed under Option 3.2(B), but only reorganising within the EU the way this competence is exercised.

Under this option, interdependencies between Regulation (EC) 216/2008 and Regulation (EC) 300/2008 are better taken account by establishing closer cooperation between EASA and Commission on aviation security matters. Under this option, EASA could assist the Commission in developing proposals for aviation security legislation which has impacts on aviation safety, or where trade-offs have to be made between safety and security. To this end EASA could issue technical opinions and provide advice, as is at present the case for aviation safety. This role of EASA would not cover measures which require a security threat and risk assessments, which would remain under responsibility of the Member States and the Commission. The Commission could also, on a case by case basis, call upon EASA's support in performing security inspections of Member States. This is a model currently used with respect to security inspections in the maritime sector, where EMSA provides technical assistance to the Commission in the performance of security inspection tasks. The overall functioning of the aviation security committee (AVSEC) and its advisory bodies would not be affected by this option and would remain under the responsibility of the Commission.

This option would require amendment of Regulation (EC) No 216/2008.

This option is expected to be supported by Member States and the aviation stakeholders.

4.3.3.3 Options with respect to environmental protection

Option 3.3(A): Baseline Scenario

The current system of automatic transposition of minimum ICAO requirements (Annex 16 to the Chicago Convention) with respect to environmental protection of aeronautical products (noise and emissions) is maintained.

Option 3.3(B): EU essential requirements for environmental protection with respect to aeronautical products

Under this option the EU adopts its own essential requirements for environmental protection for aeronautical products, parts and appliances, which is the present scope of the EU competence. This would require amending Regulation (EC) No 216/2008. As it is done in the field of safety, these essential requirements would then be implemented by means of Implementing Rules and EASA certification specifications, hereby affording the necessary flexibility to provide for the best level of environmental protection.

To allow Member States to fulfil their ICAO obligations and to avoid penalising the European industry, the essential requirements and their implementation measures would need, in principle, to be fully consistent with the ICAO framework. However, the EU would also have the possibility – which does not exist today – to depart from minimum ICAO requirements if this is justified by the need for more or less stringent measures. In that case all Member States would be obliged to file, in a uniform manner, a difference under Article 38 of the Chicago Convention.

This option also includes, through an amendment to Regulation (EC) No 216/2008 the introduction of a European Environmental Report for Aviation to increase transparency of the environmental protection measures taken at European level with respect to civil aviation. Such report already exists for aviation safety.

5 ANALYSIS OF IMPACTS

This section details the impact assessment for all the policy options. The impacts of the options have been assessed as a net change compared to the baseline described in Section 2.3.

Given that each domain of policy options addresses distinct issues, the impact assessment is done for each domain separately. The impacts are quantified wherever possible, but it has to be noted that a number of policy options concern aspects such as administrative or governance efficiency, where all elements of changes cannot be quantified.

In addition some of the options (e.g. related to environment or ground handling) aim at establishing a general framework for regulating a particular activity, where the specific impacts can only be quantified once the competence is actually exercised, for example though adoption or amendment of an implementing rule.

Finally a number of options do not aim at creating legal obligations but rather at opening new opportunities for cooperation, especially between Member States, and in such cases the magnitude of impacts will depend on whether these new opportunities will be taken up by the Member States or not, which is a further limitation to quantifying impacts.

Next to monetary quantification (where possible), the impacts are rated as negative (-), positive (+) or neutral (0) impacts. Further explanation of the methodologies used can be found below in the part of the text dealing with each policy domain, and in the Annexes IX to XIII.

The impact assessment is based on:

- Results of the two support studies;
- EASA expert advice;
- Results of public consultations, and relevant documentation review;
- In house Commission expertise and expert judgement.

5.1 Quality and management of resources

	Option 1.2: Enhanced Cooperation within the current system	Option 1.3(a): Joint oversight system with voluntary transfer of responsibilities	Option 1.3(b): Emergency oversight support mechanism	Option 1.4: A single aviation safety authority
ECONOMIC IMPACTS				
Functioning of the internal market	Positive impacts are expected on the level playing field in the internal market through more uniform oversight provided by the national authorities. This is expected primarily thanks to more standardised training offered by the EASA virtual academy, and additional guidance material offered by EASA and exchange of best practices between national authorities. Overall impact positive: (+).	Positive impacts are expected on the level playing field in the internal market through more uniform oversight. These impacts are expected to be stronger than under Option 1.2, thanks to a more robust pool of European inspectors, and enhanced possibilities for Member States to delegate and pool responsibilities for certification and oversight. Voluntary opt-in for State aircraft, and Annex II aircraft should have a positive impact on the small aircraft manufacturers and free movement of services and personnel within the internal market. It is estimated that over 1 000 state aircraft could potentially benefit from the opt-in.[142] The number of Annex II aircraft is estimated to be at least 18 000,[143] however the opt-in could apply only to those aircraft which are in serial production. Positive impacts are expected on manufacturers by allowing the EASA staff involved in certification to fluctuate in accordance with market demand, and thus shorten time to market for new products. Overall impact positive: (++).	Same impacts are expected as under Option 1.3(a). In addition, the emergency oversight support mechanism allows the market operators to continue to do business where they are compliant with EU aviation safety requirements, but where serious deficiencies have been identified in the safety oversight capabilities of the national aviation authority responsible for oversight, and where these deficiencies are not being resolved by the Member State concerned. Overall impact positive: (++/+++).	Significant positive impacts are expected on the level playing field and uniformity of oversight. Interfaces for the industry are also reduced, while proximity of service is ensured through local offices. A single authority is expected to create more standardised approach for industry and reduce uncertainties regarding interpretation and application of rules by different authorities. Overall a very positive impact: (+++).
Operating and compliance costs for businesses	Positive impacts are expected for best performing organisations through reduction of costs of compliance audits (risk based oversight methods allow greater reliance on internal compliance assurance of operators). EU law already allows scheduling audits in (up to) 48 months intervals instead of annually for best performing organisations. These costs cannot be calculated upfront as they depend on the scope and depth of the audits and their frequency, which in turn are determined by risk profiles of the operators. EUR 10 000 accreditation fee for an	Additional costs are expected for the industry in those Member States which make use of the pool of experts or delegate responsibilities to EASA. Simulation of the magnitude of costs for initial AOC issuance and its continuous oversight for a mid-sized airline, based on a fee schedule currently applied by one of the Member States: - initial AOC issuance: EUR 90 000; - annual fee: EUR 464 000;[145] Another example is the EASA fee for approval of a repair station (in case a Member State delegates to EASA approval of its repair stations): - initial approval of repair station[146]: EUR 32 080 + fee for technical ratings (range from EUR 580 to 12 780/rating); - annual fee: EUR 32 080 + fee for technical ratings (range from EUR 580 to 12 780 /rating); Hourly fees would need to be established for the use of European aviation safety inspectors. Examples of hourly fees applied today by selected aviation	Same impacts are expected as under Option 1.3(a), meaning additional costs for industry. Similar as under Option 1.3(a) most of these costs (use of EU aviation safety inspectors, delegation of certification responsibilities to EASA, seeking accreditation for an aviation training institute) would apply only in those cases where an organisation or a Member State responsible for oversight of the organisation, expresses an interest in using these new possibilities. However, in exceptional cases where the emergency oversight support	Significant additional costs are expected for industry by transferring the costs which are currently covered by Member States' budgets into a 'fees and charges' based financing. At present around 40% of NAAs budgets are covered by state budget – this amounts to +/- EUR 400 million annually, which under this option would have to be converted into activity based fees and charges.[153] In the 2016-2030 timeframe the net present value (NPV) of these costs are being estimated at over EUR 4 billion.[154] Overall, a very negative impact on industry in terms of additional costs: (- - -)

[142] Source: Ascend
[143] Support study on resources, Final Report, p. 65.

	aviation training institute participating in the 'virtual academy'.[144] These costs are however incurred only by organisations willing to seek EASA accreditation. Overall impact positive (+).	authorities are as follows: - UK CAA: EUR 236;[147] EASA: EUR 233;[148] IE: EUR 205;[149] The possibility for delegating certification and oversight responsibility from Member States to competent users' organisations (i.e. a national aeroclub) is expected to reduce the compliance costs for non-commercial aviation by ensuring proximity of the authority and simplification of oversight. It is also assumed that should this not be the case, the organisation will not take up these new opportunities, which are on a voluntary basis. Removing the staffing cap on EASA resources financed from fees and charges is not in itself expected to create additional costs for manufacturing industry, as the certification work is in anyway subject to fees and charges. In the domain of product certification, based on current growth in the fleet size and plans of aircraft manufacturers it can be estimated that in the mid to long term the number of EASA staff is expected to increase by around 12%, compared to the current Multiannual Staff Policy Plan, which is around 30 posts (EUR 2.8 m).[150] This would be reduced in case of downturn in demand for certification resources.[151] Otherwise same impacts as for Option 1.2. Overall impact in terms of additional costs negative: (-)	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 would most likely apply to AOC issuance and oversight, where the costs can be simulated in a similar manner as for voluntary transfers: - initial AOC issuance: EUR 90 000 (if applicable in a given case); - annual fee: EUR 464 000;[152] Overall impacts are expected to be negative, in terms of additional cost, for operators affected by an emergency oversight support mechanism. However it has to be pointed out 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. Overall impact in terms of additional costs negative: (-)	

[145] Simulation based on an actual air operator with five aircraft types and 36 aircraft in the fleet, including one type with maximum mass over 100 tonnes. An ETOPS authorisation for one of the aircraft types was included in the simulation of costs.
[146] Simulation based on a repair station employing between 100 and 499 staff. See Annex to Commission Regulation (EU) No 319/2014 of 27 March 2014 on the fees and charges levied by the European Aviation Safety Agency, and repealing Regulation (EC) No 593/2007 (OJ L 93, 28.3.2014).
[153] Support study on resources, Final Report, pp. 200-201.
[154] Support study on resources, Final Report, p. 201.
[144] Source: EASA
[147] UK CAA, Scheme of Charges, Official Record Series 5, 2015.
[148] See note 144.
[149] Irish Aviation Authority (fees) (No. 2) Order, S.I. No. 805 (2007).
[150] Source: EASA internal resources plan for product certification. In addition EASA estimates that improved working methods and more reliance on bilateral partners through BASA agreements should allow to gain further efficiency gains.
[151] In case of downturn of demand for certification resources EASA would reduce, as a short term measure, outsourcing to Member States, and then reduce internal staff by not replacing leaving staff and not extending time limited contracts.
[152] Simulation based on an actual air operator with five aircraft types and 36 aircraft in the fleet, including one type with maximum mass over 100 tonnes. An ETOPS authorisation for one of the aircraft types was included in the simulation of costs.

Administrative burden for businesses	No new mandatory reporting obligations identified. Overall impact neutral: (0)	No new mandatory reporting obligations identified. When multiple approvals are combined at the EU level as a result of delegation of responsibilities by Member States to EASA, the reporting obligations for businesses will be simplified. Overall impact neutral or slightly positive: (0/+)	Same impacts expected as under Option 1.3(a). Overall impact neutral or slightly positive: (0/+)	Significant simplification of reporting obligations is expected for industry, which will have to interact with just one aviation authority, and where proximity would be maintained through NAAs acting as local offices. Overall impact positive: (+)
Innovation	No significant impacts identified. Overall impact neutral: (0)	New technologies might be more rapidly introduced thanks to more efficient use of resources in Member States and EASA. Adding en-route charges as source of income for EASA is expected to ensure the necessary resources for support to the deployment of new SESAR technologies. Removing the staffing cap on EASA resources financed from fees and charges is expected to have positive impacts on innovation by making sure that new technologies can be certified according to market demand. Overall impact positive: (+)	Same impacts expected as under Option 1.3(a). Overall impact positive: (+)	New technologies might be more rapidly introduced thanks to more efficient use of authority resources and existence of a single system. These impacts are expected to be more significant than under Option 1.3(a), due to even more efficient use and higher specialisation of resources. Overall impact positive: (++)
SMEs	No significant impacts identified. Overall impact neutral: (0)	Positive impacts expected on SMEs, by enabling delegation of certification and oversight to competent users' organisations in the GA sector (many of which are SMEs). Overall impact positive (+)	Same impacts expected as under Option 1.3(a). Overall impact positive (+)	Same impacts expected as under Option 1.3(a). Overall impact positive (+)
International relations	Some positive impacts on the promotion of EU aviation safety requirements are expected by opening cooperation between the virtual training academy and third countries. Overall impact positive: (+)	Positive impacts on the promotion of EU aviation safety requirements by opening cooperation between virtual training academy and third countries. Positive impacts are also expected on implementation by EU MS of ICAO requirements, thanks to a common system of filing of differences, which should also contribute to better alignment between ICAO USOAP programme and EU system of standardisation inspections and continuous monitoring activities. Overall impact positive (+/++)	Same impacts expected as under Option 1.3(a). Overall impact positive (+/++)	Same impacts expected as under Option 1.3(a). In addition positive impacts are expected through better coordination of EU positions at the international level, more optimal use of resources for technical work at ICAO and other international fora. Overall impact positive (++)
Competitiveness	At least neutral, possibly positive, as competitiveness of the EU airline industry partly relies on its safety record. Overall impact neutral to slightly positive: (0/+)	Positive impact, as competitiveness of the EU airline industry partly relies on its safety record. However, these impacts will depend on the ability of the EU and Member States to adequately manage the interfaces involved in the horizontal and vertical transfers of responsibilities for safety oversight – the possibility which is envisaged under this option. Should these interfaces not be adequately managed the safety impacts could be negative, having a knock-on effect on the competitiveness of the EU industry. The risks of successful implementation have to be therefore taken into account. Positive impacts are also expected on companies with multiple approvals in different Member States, which will be able to combine approvals at EU	Positive, as competitiveness of the EU airline industry partly relies on its safety record. The positive impacts are expected to be stronger than under Option 1.3(a), due to the fact that the emergency oversight support mechanism could be used as a means of last resort in exceptional cases of safety oversight deficiencies in a Member State.	Overall impacts on competitiveness are expected to be negative. This is because although some positive impacts are expected from safety improvements, (as competitiveness of the EU airline industry partly relies on its safety record), and the fact that EU industry would be represented by a single authority, the positive impacts would be outweighed by additional costs which the EU industry would have to incur as a result of the change in charging

		level, thus simplifying oversight and reducing administrative overheads. This should also facilitate the consolidation of the EU airline industry.[155] Based on past experiences, it can be assumed that the possibility to combine approvals at EU level is also expected to bring benefits for multinational companies, based on the fact that they would be represented by a single, internationally recognised authority (EASA).[156] Overall impact positive: (+)	Overall impact positive: (+/++)	regimes (see compliance costs for businesses). The airlines are expected to transfer these additional costs on to the passengers, which could deteriorate the competitive position of EU industry vis-a-vis other regions where the costs of oversight are covered by public budgets (e.g. US). Overall impact negative (-)
Implementation costs for public authorities	Central repository of certificates: EU level: EUR 1.2 m (one-off costs) + EUR 0.5 m (annual maintenance);[157] MS level: - EUR 0.1 m (annual savings);[158] Pool of experts: EU level: EUR 0.4 m (one-off upgrade costs) + EUR 0.1 m (annual costs);[159] Further development of virtual training academy: EU level: EUR 0.1 m (one-off costs);[160] MS level: EUR 0.3 m (annual additional training costs);[161] Additional training guidance material: EU level: EUR 0.2 m (one-off costs);[162] Promotion of risk and performance based oversight methods: EU level: EUR 0.2 m (annual costs), MS level: EUR 0.4 m (annual costs);[163] Accreditation audits for training	Same impacts as under Option 1.2. In addition: Mid to long term positive effects on reduction of future resources needs of Member States are expected, the NPV of which is estimated during the 2016-2030 time frame at EUR 13-25 million.[165] Expanded possibilities for delegation of certification and oversight responsibilities to EASA, would result in the following impacts: - EASA would need to build capabilities to act as a competent authority primarily in air operations. For other domains EASA already has the capability as a result of competence for approval of third country organisations, but it would need to be expanded based on interest of Member States to delegate the responsibility. The new capability in air operations would be built on a combination of internal EASA resources, and resources available in the Member States and qualified entities (through an accreditation programme). The costs would be financed by fees and charges (see example of a simulation under 'compliance costs for businesses'). The one off costs of setting up of administrative and contractual framework for effectuating the delegations to EASA is	Same impacts as under Option 1.3(a) Overall the long term impacts for the Member States and the EU are expected to be positive: (+)	The total NPV of transitioning to the single authority is estimated (for the period 2016-2030) at: - EU: EUR 7.4 m[168] - MS: EUR - 4.3 billion to - 4.4 billion; The savings for the Member States include: - reduction of employment at National Aviation Authority level by 64 FTEs due to work rationalisation. The total NPV of this rationalisation for 2016-2030 is estimated at EUR 117 m. [169] - reduction of future resources needs of Member States, NPV of which is estimated, for the period 2016-2030, at EUR 209-246 m, and which corresponds to 368-433 FTEs.[170] - 4,1 billion EUR savings for the public budgets, by switching completely to an industry funded authority (see operating and

[155] Attempt was made to quantify these benefits based on the current example of the Airbus Single Production Organisation approval, but this analysis, including contacts with Airbus, allowed to assess the impacts only qualitatively. Another example of such a combined approval is the Scandinavian Airline System, which holds a joint AOC from Sweden, Denmark and Norway. The SAS structure creates significant benefits for the operator, at the same time requires however additional administrative arrangements between authorities to coordinate the oversight.
[156] This assumption is based on an interview with the Airbus consortium, which highlighted that one of the main benefits of a single EU approval and establishment of EASA was the fact that Airbus was put under responsibility of an aviation authority which is recognised worldwide, and with competence commensurate with the significance of the EU aviation Industry, and at par with the FAA.
[157] Support study on resources, Final Report, pp.168-171.
[158] Support study on resources, Final Report, p. 170.
[159] Support study on resources, Final Report, p.169.
[160] Support study on resources, Final Report, p. 169.

[162] Resources support study, Final Report, p. 169.
[163] Resources support study, Final Report, p. 170.

	institutes: EU level: 1 FTE(EUR 95 000) (magnitude of EU-wide costs depending on demand for accreditation);[164] Additional savings expected for the Member States from the use of the pool of experts. However based on experience so far it is clear that MS that have already very limited resources, find it also difficult the financing of the use of central pool of experts. The resources support study was not able to assess up front the impact of the pool of resources, as a self-standing measure, on the reduction of future resources needs. The measures under this option are largely voluntary, and therefore the majority of the costs will be incurred only by the Member States which take advantage of the opportunities offered. **Total EU level**: EUR 1.9 m (one-off costs); EUR 0.895 m (annual costs); Overall NPV 2016-2030: EUR 12,7 m.; **Total Member States:** EUR 0.6 m (annual costs); Overall NPV 2016-2030: EUR 8.6 m. Additional savings not possible to quantify. Overall impacts are expected to be negative in terms of additional costs for both Member States and EU: (-)	estimated at: EUR 0.7 m for EU budget.[166] Impacts of financing EASA ATM/ANS tasks from en-route charges are set out in Annex X. The formalisation of the common repository of differences between EU and ICAO requirements is not expected to create additional costs, as the processes are already established and functioning as part of the baseline scenario. At the same time it is expected to reduce the costs of demonstrating compliance with ICAO requirements for the Member States. Additional one-off costs are expected for Member States which take up the opportunity to delegate responsibilities to users' organisations. An administrative and surveillance framework has to be established in such case. In case all Member States take up such opportunity, the EU wide costs are estimated at: EUR 1.8 m.[167] **Total EU level (including option 1.2):** EUR 2.6 m (one-off costs); EUR 0.8 m (annual costs); Overall NPV 2016-2030: EUR 11.5 m; **Total Member States (including option 1.2):** EUR 1.8 m (one off costs); EUR 0.6 m (annual costs); Overall NPV 2016-2030 as the net total of NPV of reduction of resource needs of EUR 13-25 million and NPV of total costs of EUR 8.6: EUR - 4.4 m to – 16.4 m Additional savings not possible to quantify Overall the long term impacts for the Member States and the EU are expected to be positive: (+)		compliance costs for businesses); **Total EU:** Overall NPV 2016-2030: EUR 7.4 m **Total Member States:** Overall NPV 2016-2030: EUR -4.1 to -4.2 billion Overall impact very positive (+++)
SOCIAL IMPACTS				

[165] See Annex XII for detailed calculations and methodology.
[168] Resources support study, Final Report, p.198.
[169] Resources support study, Final Report, p.203.
[170] See Annex XII for detailed calculations and methodology.
[164] Source: EASA.
[166] Resources support study, Final Report, p. 182
[167] Support study on resources, Final Report, p.170.

Number and quality of jobs	There is a marginal impact from the safety benefits of these options, as the aviation industry's market share and therefore the aviation related employment in the internal market are impacted by the number of accidents. Overall impact neutral: (0)			
Aviation safety	Positive impacts expected through improved training and qualification of staff and more uniform oversight. Critical Element No 4 (training) and Critical Element No 7 (surveillance of state safety oversight system) have 'strong' and 'very strong' correlation with accident rates, according to ICAO statistical model (see Annex XIII). Overall impact positive: (+)	Same impacts as under Option 1.2. In addition, the possibility for delegating certification and oversight responsibility from Member States to competent users' organisations (i.e. a national aeroclub) is expected to free up resources in NAAs, which can be then shifted to oversight of higher risk activities, bringing safety benefits. Overall impact positive (+/++)	More positive impact than under Option 1.3(a) by providing a mechanism for dealing with safety oversight deficiencies at Member State level. See correlation between critical elements of safety oversight system and accident rates in Annex XIII. Overall impact positive: (++)	Significant positive impacts are expected by reducing the number of interfaces between authorities, ensuring uniformity of oversight, common training and qualifications of inspecting staff and minimising conflicts of interest. There are however significant implementation risks involved during the transition to the single authority. Overall impact positive: (+++)

ENVIRONMENTAL IMPACTS	This option involves very limited environmental impacts which could be linked to the prevention of environmental damage caused by aircraft accidents. Overall impact neutral (0)

1.2. Proportionality and safety performance

	Option 2.2: Enablers for a proportional and performance based safety system	**Option 2.3: Two-layered regulatory system**	**Option 2.4: Transition to a full performance based regulatory system**
ECONOMIC IMPACTS			
Functioning of the internal market	Eliminating overly prescriptive rules and introducing a broader range of possibilities to demonstrate compliance with essential requirements stimulates economic activity and allows for a wider range of technical solutions and thus choices on the market. Changes to Reg. 216/2008 will allow new methods for product certification, quality assurance from manufactures and an increased use of industry standards according to the risk involved. This will reduce the complexity and length of administrative procedures. (See example of certification specifications CS-23 in Annex XV). Simplification of leasing approvals will also have positive impacts on the airline industry by increasing operational flexibility. Positive impacts are expected for new technologies such as drones. Overall impact positive: (+)	Same impacts as under Option 2.2. With regard to PBR, two sets of rules apply in parallel within the internal market. The choice of the set of rules is left to industry and the only limiting and non-discriminatory criteria enabling this choice is the maturity of the safety management system of the operator. Hence no additional impact on the internal market as compared to Option 2.2. Overall impact positive: (+)	Same impacts as under Option 2.2. Overall impact positive: (+)

Operational and compliance costs for businesses	With regard to safety management, operators are already mandated to monitor the safety of their operations on an ongoing basis as part of their management systems which is an existing EU requirement. In addition it is expected that a simplification of certification procedures, increased reliance on industry standards, simplification of leasing approvals and more extensive use of Qualified Entities in the certification and oversight processes will reduce compliance costs for businesses. For example in the light sport aircraft category, a comparison with the US system shows that this approach could reduce the certification costs by over 50% while maintaining an acceptable level of safety.[171] Positive impacts are also expected by giving industry the possibility of PBR on a case by case basis. Overall impact positive: (+)	Same positive impacts are expected as under Option 2.2, with regard to simplification and proportionality related measures. Additional positive impacts are expected by maintaining the prescriptive rules in parallel to new PBR across the whole spectrum of aviation regulations, which will allow companies to choose the preferred method of compliance. The organisations opting for PBR may need to develop additional skills and possibly adapt their Safety Management Systems to the specificities of the rules[172] (e.g. develop additional safety indicators, identify relevant sources of information) to demonstrate compliance with the objective of the performance based rule. It is assumed that the operator will opt for PBR based on a cost-benefit analysis where the additional costs of adapting the system will be outweighed by other benefits (e.g. safety benefits). Overall impact positive: (++)	Same positive impacts are expected as under Option 2.2, with regard to simplification and proportionality related measures. Additional compliance costs are expected compared to the baseline, as PBR is imposed on all organisations in a top-down manner according to a predetermined schedule and not based on individual and operators specific cost-benefit analyses. Overall impact neutral to positive: (0/+)
Administrative burdens for businesses	The requirement for the industry to provide information will increase in those Member States which have not yet implemented a State Safety Programme (15 Member States[173]). In such situation the relevant industry will have to provide to their State information on their safety performance. This additional burden is however limited compared to the baseline scenario, as the assessment of the safety performance of an organisation is already required by EU law in the context of safety management system requirements. Overall impact negative: (-)	Same impacts as under Option 2.2. Additional reporting requirements for those businesses having opted for performance based rules to demonstrate having reached acceptable performance levels established by these rules will exceed those of Option 2.2 as the entire safety regulatory system is concerned. Overall impact negative: (- -)	Same impacts as under Option 2.2. In addition, there will be additional reporting requirements for all businesses to demonstrate having reached acceptable performance levels established by performance based rules. Overall impact negative: (- -)
Innovation	Eliminating overly prescriptive rules, reducing costs of compliance and introducing a broader range of possibilities to demonstrate compliance with essential requirements is expected to stimulate innovation. In particular greater reliance on industry standards is expected to reduce the time to market for new technologies (e.g. electric engines or drones). Furthermore, increased use of PBR that define a desired outcome without prescribing the method of how to achieve it, will give to industry more flexibility in developing new technologies. Thus there is a positive impact compared to baseline for all three options. Overall impact positive: (+)		
SMEs	No measures under Option 2.2 and Option 2.3 specifically target SMEs, but SMEs in particular could benefit from simplified and less costly procedures, which so far have kept them out of business in certain areas. In addition, these options are favourable to SMEs, among which capabilities to accommodate PBR differ significantly, 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 related to PBR is to the advantage of SMEs, some of which may prefer to use prescriptive rules which clearly describe what exactly is required from the operator.		Negative impacts are expected on SMEs that would prefer prescriptive rules but which will be obliged, regardless of their preference, to apply PBR rules which require more sophisticated management systems and data collection and analysis capabilities.

[171] See Case IV in Section 2.2.
[172] Safety Performance Study, Final Report, p. 107.
[173] Source: EASA

	Overall impact positive: (+)		Overall impact negative: (-)
International relations	Harmonisation of rules at international level may become more difficult if foreign partners do not follow an equivalent approach to regulation. The example of CS-23 certification code which is revised jointly with the FAA shows that it is possible to develop performance based rules across national borders. With regard to safety management this option will positively impact the compliance of the European Union Member States with international ICAO standards as the requirement for States to adopt and implement a State Safety Programme already exists at international level (ICAO Annex 19) and will be transposed into EU legislation under this option. Overall impact neutral: (0)		
Competitiveness	Competitiveness of European industry is influenced by the safety record of air carriers and the ability of industry to innovate. Accidents reduce public confidence in the safety of the transport system and this is particularly true for aviation where accidents usually involve a high number of fatalities. Accidents have an impact on the market value of the organisation concerned and on the demand for tickets offered by the airline which has had an accident. Compared to the baseline scenario which involves an increased fatal accidents number, the expected aviation safety benefit from an improved collaborative safety management process will contribute, as a minimum, to the EU industry remaining as competitive as it is in the current situation, if not more competitive. The quantitative dimension of this impact is however difficult to assess, mainly due to lack of a reliable methodology to assess the number of accident which could be avoided thanks to the implementation of this option. Eliminating overly prescriptive rules and introducing a risk-based approach and performance elements to regulation will render compliance less costly, stimulate innovation and thus positively impact competitiveness. However, impacts related to a more proportional, risk and performance based regulatory system are difficult to quantify due to lack of a methodology to assess the number of accidents avoided and monetary benefits from innovation. Overall impact positive: (+)		
Implementation costs for public authorities	In this option, all EU Member States are required to set up and implement a State Safety Programme and to report on the European Aviation Safety Plan implementation. Currently, on the basis of available information, 13 Member States have started to implement a State Safety Programme[174]. In this respect this option will mainly impact 15 Member States. The effort required per Member State is estimated at an average need of 2 senior person-years and 3 junior person-years[175]. However, in the current economic context, it is expected that most these resources will be redeployed internally, notably benefiting from the potential savings of performing a more focused and risk-based oversight. The effort compared to the baseline scenario is estimated around 2 FTE for each of the 15 Member State in which a State Safety Programme is not yet implemented. This means 30 FTEs EU wide at a total cost of: EUR 1.7 million annually.	With regard to implementation of State Safety Programmes, European Aviation Safety Plan, and simplification of certification and approvals procedures the costs/benefits for Member States and EASA will be the same as under Option 2.2. As regards PBR, although these significantly reduce the need for regular updates and modifications as explained under Option 2.2, the two-layered system of rules envisaged under this option will require additional rulemaking, training and standardisation efforts, which can be estimated as follows: - At EU (EASA) level the two-layered system will have to be set up and compliance checking of Member States to be integrated in the standardisation programme. It is estimated that 3 FTE at EUR 285 000 per year are needed;[177] - At the Member States level, the adaptation and training costs are estimated at EUR 3.5 million one-off training costs and EUR 17.7 million recurrent costs;[178]	With regard to implementation of State Safety Programmes, European Aviation Safety Plan, and simplification of certification and approvals procedures the costs/benefits for Member States and EASA will be the same as under Option 2.2. As regards PBR, although these significantly reduce the need for regular updates and modifications as explained under Option 2.2, the need for completely reforming the regulatory system as envisaged under this option will require additional rulemaking, training and standardisation efforts, the costs of which can be estimated as follows: - At EU (EASA) level the introduction of PBR has to be set up and checking compliance of Member States to be integrated in the standardisation programme. It is estimated that 3 FTE at EUR 285 000 per year are needed.[179] - At the Member States level, the adaptation and training costs are estimated at EUR 3.5 million one-off training costs and EUR 16.1

[174] Source: EASA
[175] Support study on performance, Final Report, pp. 97-98.
[177] Support study on performance, Final Report, p. 108.
[178] Support study on performance, Final Report, p. 107.
[179] Support study on performance, Final Report, p. 109.

	This option is not expected to require additional resources from EASA, as it only formalises the current process with respect to the European Aviation Safety Plan. The analysis of the information coming from Member States on implementation of European Aviation Safety Plan is expected to be absorbed by EASA with the currently available resources. As regards PBR, these significantly reduce the need for regular updates and modifications. The standard EASA rulemaking process is also on average three times longer if compared to the development of specifications by industry by the most efficient standard setting bodies.[176] On the other hand, staff at Member States will need additional training and oversight has to be adapted. Increasing reliance on accreditation mechanisms and declarations of compliance for product certification should also reduce the costs of EASA in product certification and oversight in the general aviation sector. Finally, simplifying the approvals for leasing should also reduce the administrative costs for Member States. The quantitative impact for the public authorities is expected as follows: **Total EU level:** Reduction in rulemaking and certification costs **Total Member States:** Overall NPV 2016-2030: EUR 24.5 m Additional costs for training of staff and adaptation of oversight to PBR Reduced effort for participation in rulemaking Reduced costs of leasing approvals Reduced costs for production oversight of light aircraft Overall impact positive: (+)	**Total EU level (in addition to Option 2.2):** Overall NPV 2016-2030: EUR 4.3 m **Total Member States (in addition to Option 2.2):** Overall NPV 2016-2030: EUR 255 m Overall impact negative: (- -)	million recurrent costs;[180] **Total EU level (in addition to Option 2.2):** Overall NPV 2016-2030: EUR 4.3 m **Total Member States (in addition to Option 2.2):** Overall NPV 2016-2030: EUR 232 m Overall impact negative: (- -)
SOCIAL IMPACTS			

[176] Source: EASA.
[180] Support study on performance, Final Report, p. 109.

Number and quality of jobs	It is expected that employment is impacted positively by more proportionate rules and favourable conditions for innovation. The introduction of PBR in certain areas will require training of job holders which positively affects the quality of jobs. The simplification of certification procedures should have in particular positive impacts on decreasing costs in the general aviation sector, which could translate into new jobs in the sector. While it is difficult to quantify these benefits, a comparison with the US shows that the costs of certification and production oversight for the simplest aircraft are probably over 2 times higher in the EU than in the US.[181] The aviation industry's market share and therefore the aviation related employment in the internal market are impacted by the number of accidents. The safety benefit from this option will, as a minimum, contribute to an equivalent level of employment in the aviation industry compared to the current situation and an improved one compared to the baseline scenario. Overall impact positive: (+)
Aviation safety	By improving the ability to identify and mitigate safety risks through a collaborative safety management process, the overall safety performance of the EU aviation safety sector should improve. The adoption of a State Safety Programme by each Member State (whereas only 13 Member States have started to implement a State Safety Programme in the current situation) will improve the ability of each Member State to agree with their organisations on the safety performance of their Safety Management Systems. It will also support States in performing risk-based oversight. Furthermore, the monitoring of the implementation of European Aviation Safety Plan actions will ensure a better effectiveness of the European risk identification and mitigation processes. This option is expected to deliver an overall safety level improvement of 19% on the short term (10 years) and 44% on the long term (30 years).[182] Compared to the baseline scenario in which the number of accidents is expected to increase, this option should therefore bring safety benefits by reducing the probability of accidents and related fatalities. Determining quantitative impacts in terms of decrease in number of fatal accidents is not possible due to lack of a reliable calculation method. As regards performance based rules, the safety impacts depend on the specific rules that will be converted from prescriptive to performance based requiring a case by case assessment and can therefore not be quantified. Overall, a performance based approach to the regulation of aviation safety lends itself well to setting safety performance targets that are progressively more ambitious. Being data-driven, a performance based approach allows operators to better adapt to different conditions in order to meet safety targets (Fatigue risk management is an example.) Indirectly, PBR could stimulate swifter introduction of innovations that improve safety (CS-23 is an example - see Annex XV). On the other hand, the proof and verification of whether safety levels have been attained becomes more complex for organisations and authorities under PBR than under prescriptive rules which bears a risk if not mitigated by suitable processes and qualified staff. Overall impact positive: (+)

ENVIRONMENTAL IMPACTS	This option involves limited environmental impacts. Indirect positive impacts could stem from swifter innovation including also more environmentally friendly technologies and practices. In addition, the prevention of environmental damage caused by aircraft accidents entails positive environmental impacts and therefore the baseline scenario would be impacted positively in proportion to the safety improvement. Overall impact neutral to positive: (0/+)

5.2 Gaps and inconsistencies - safety aspects of ground handling

	Option 3.1 (B): Ground handling (industry standards, no certification)	Option 3.1 (C): Ground handling (implementing rules, certification)
ECONOMIC IMPACTS		
Functioning of the internal market	This option is expected to have a positive impact on the functioning of the internal market by introducing common safety standards for ground handling services across the EU. This should contribute to a level playing field for the operators. The recognition of standards would also be enabled	The functioning of the internal market would be ensured to the same or even slightly greater extent as under Option 3.1(B), given the fact that certification requirements would improve the enforcement of common standards.

[181] See Case IV in Section 2.2
[182] Support study on performance, Final Report, pp. 88-91.

	thus making market access for operators easier across the EU. Overall impact positive: (+)	Overall impact positive: (+/++)
Operating and compliance costs for businesses	Limited compliance costs are expected under this option, due to absence of new certification requirements and reliance on existing industry standards which are followed by the majority of the market operators. Positive impacts are expected for ground handling operators from harmonised EU standards which could lead to airlines not imposing their own standards when auditing ground handling providers. Positive impacts are expected for airlines by reducing the costs of ground handling related damage. Airlines estimate the worldwide cost of ground handling incidents to be in the region of EUR 9 billion damages and delay (no EU specific information on these costs is however available).[183] Overall impact neutral: (0)	The impacts are expected to be more negative than under Option 3.1(B) because the new certification process would imply higher cost for industry to demonstrate compliance with the common EU requirements. It is not certain whether the certification requirement would be able to replace / significantly reduce audits of ground handling companies by airlines, which are obliged to ensure oversight of contracted services under EU rules for flight operations. Overall impact negative: (-)
Administrative burdens for businesses	Due to absence of a certification scheme, there would be no new reporting obligations for ground-handling companies. Occurrence reporting obligations are already imposed on the ground handling operators through separate EU legislation. Overall impact negative: (-)	The new certification process would result in reporting and auditing requirements creating administrative burden for ground handling businesses. Overall impact negative: (- -)
Innovation	No significant impacts identified Overall impact neutral: (0)	
SMEs	Only a low/medium number of ground handling companies are expected to be SMEs.[184] The implementation of industry standards is not expected to have negative impacts for the SMEs. Overall impact neutral: (0)	Only a low/medium number of ground handling companies are expected to be SMEs.[185] However, the increase in administrative costs would have a more significant impact on SMEs than on larger companies who operate in the ground handling market. For example, if a certification process for ground-handlers is introduced at a European level, an SME in one country would incur costs similar to a large ground handling company, operating in a large number of EU Member States. The cost, as a proportion of turnover would be higher in the SME than in the larger company. Overall impact negative: (-)
International relations	No significant impacts identified. Overall impact neutral: (0)	

[183] Steer Davies Gleave, Possible revision of Directive 96/67/EC on access to the ground-handling market at Community airports, Final Report, 16 June 2010, p. 22.
[184] EC, Impact Assessment accompanying the proposal for a Regulation of the European Parliament and of the Council on ground-handling services at Union airports and repealing Council Directive 96/67/EC, COM(2011) 824 final, p. 40.
[185] EC, Impact Assessment accompanying the proposal for a Regulation of the European Parliament and of the Council on ground-handling services at Union airports and repealing Council Directive 96/67/EC, COM(2011) 824 final, p. 40.

Competitiveness	Positive impacts are expected for airlines by reducing the costs of ground handling related damage and associated delays. Airlines estimate the worldwide cost of ground handling incidents to be in the region of EUR 9 billion damages and delay.[186] On the other hand there are additional costs expected for ground handling service providers to ensure compliance with the new essential requirements. Overall impact neutral: (0)	Positive impacts are expected for airlines by reducing the costs of ground handling related damage and associated delays. Airlines estimate the worldwide cost of ground handling incidents to be in the region of EUR.9 billion damages and delay. On the other hand there are additional costs expected for ground handling service providers to ensure compliance with the new essential requirements. These additional costs are higher than under Option 3.1 (B) due to certification requirements. Overall impact negative: (-)
Implementation costs for public authorities	Low cost impact on national aviation authorities to set up or adjust the existing oversight system. With respect to EASA, 1.5 FTE (EUR 142 500) is expected to set up and maintain the system of common requirements including initial rulemaking and maintenance of rules, standardisation and implementation support.[187] **Total EU level:** Overall NPV 2016-2030: EUR 2.05 m **Total Member States:** marginal Overall impact negative: (-)	Medium to high cost impact on national aviation authorities in terms of implementation costs, as a certification process needs to be set up in the competent aviation authorities. With respect to EASA, 1.5 FTE (EUR 142 500) is expected to set up and maintain the system of common requirements including initial rulemaking and maintenance of rules, standardisation and implementation support.[188] **Total EU level:** Overall NPV 2016-2030: EUR 2.05 m **Total Member States:** Costs of setting up a certification system. Depends on the size of the ground-handling industry under responsibility. Overall impact negative: (- -)
SOCIAL IMPACTS		
Number and quality of jobs	The introduction of minimum training, as well as the introduction of minimum quality requirement in terms of safety of operations, should contribute to an improvement of working conditions and reduction of injuries under both policy options. Overall impact positive: (+)	
Aviation safety	The safety issues identified in Section 2.2.3 of this impact assessment report are expected to be further mitigated as essential requirement would allow for a direct oversight of the ground handling activities.[189] Overall impact positive: (+)	There is no indication that in this particular case the certification solution can provide a significantly higher level of safety as compared to using industry standards.[190] The safety impacts are therefore expected to be comparable to those under Option 3.1(B). Overall impact positive: (+)
ENVIRONMENTAL IMPACTS	No significant impacts identified.	No significant impacts identified.

[186] Steer Davies Gleave, Possible revision of Directive 96/67/EC on access to the ground-handling market at Community airports, Final Report, 16 June 2010, p. 22.
[187] Expert judgement by EASA.
[188] Expert judgement by EASA.
[189] Expert judgment by EASA.
[190] Expert judgement by EASA.

	Overall impact neutral: (0)	Overall impact neutral: (0)

5.3 Gaps and inconsistencies - aviation security

	Option 3.2 (B): Legal framework for security aspects of design	Option 3.2 (C): Coordinated approach to safety and security related matters
ECONOMIC IMPACTS		
Functioning of the internal market	With respect to the security aspects of aircraft airworthiness this option will have neutral impacts compared to the baseline. This is because EASA in practice already addresses security of aircraft design but the legal basis for that is not clear. With respect to the security of the ATM systems, this option is expected to have a positive effect on the functioning of the internal market by reducing the probability of disruption in the provision of air traffic services. Overall impact positive: (+)	Impacts expected as under Option 3.2(B) or slightly more positive thanks to better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen. Overall impact positive: (+/++)
Operating and compliance costs for businesses	With respect to the security aspects of aircraft airworthiness this option will have neutral impacts compared to the baseline. This is because EASA in practice already addresses security of aircraft design but the legal basis for that is not clear. With respect to the security of ATM system, this option, by imposing new requirements, is expected to have additional costs for the air traffic service providers. Overall impact negative: (-)	Overall impacts are expected to be more positive than under Option 3.2(B), thanks to better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen. Overall impact neutral to positive: (0/+)
Administrative burdens for businesses	With respect to the security aspects of aircraft airworthiness this option will have neutral impacts compared to the baseline. This is because EASA in practice already addresses security of aircraft design but the legal basis for that is not clear. With regard to ATM, no additional reporting obligations are envisaged in case the NIS Directive imposes adequate obligations concerning reporting of cyber-security related incidents on providers of critical ATM infrastructure. Should that not be the case, aviation specific reporting obligations would be introduced with the resulting increased administrative burden. Overall impact neutral to negative: (0/-)	Impacts expected as under Option 3.2(B) Overall impact neutral to negative (0/-)
Innovation	Essential requirements for cyber-protection and resilience of critical ATM infrastructure and systems are expected to stimulate development of innovative technical solutions to meet these requirements Overall impact positive: (+)	Positive impacts are expected but slightly stronger than under Option 3.2(B), thanks to better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen. Overall impact positive: (++)
SMEs	With respect to the security aspects of aircraft airworthiness this option will have neutral impacts compared to the baseline. This is because EASA in practice already addresses security of aircraft design but the legal basis for that is not clear. With regard to ATM, the SMEs are not expected to be affected as they are not involved in the provision of air traffic services. Overall impact neutral: (0)	Impacts expected as under Option 3.2(B) Overall impact neutral: (0)

International relations	This option would have a positive effect on the compliance of EU Member States with the ICAO Annex 17 recommendations concerning measures related to cyber-threats (Recommendations 4.9.1 and 4.9.2.) Overall impact positive: (+)	Impacts expected as under Option 3.2(B) Overall impact positive: (+)
Competitiveness	With respect to the security aspects of aircraft airworthiness this option will have neutral impacts compared to the baseline. This is because EASA in practice already addresses security of aircraft design but the legal basis for that is not clear. With respect to ATM, innovative solutions developed by the EU industry to meet the safety objectives defined by the new essential requirements could have positive impacts on the competitiveness of the EU industry. On the other hand the additional costs for ANSPs of implementing the new requirements are expected to be reflected in the air navigation charges. Overall impact neutral: (0)	Impacts expected as under Option 3.2(B) Overall impact neutral (0)
Implementation costs for public authorities	Additional costs are expected for the national aviation authorities, of acquiring the expertise necessary for assessing the compliance of ANSPs with the new essential requirements. No additional costs are expected for EASA as in practice it already addresses security of aircraft design and has the relevant expertise in house. **Total EU level:** 0 **Total Member States:** The cost of developing cyber-security expertise. Overall impact negative: (-)	Some additional costs for both Member States and EASA. Compared to Option 3.2(B), EASA will gradually need to further develop its security expertise (estimated at 3 FTEs for the EU budget at a cost of EUR 285 000 / year). **Total EU level (in addition to Option 3.2(B)):** Overall NPV 2016-2030: EUR 4.3 m **Total Member States (in addition to Option 3.2(B):** 0 Overall impact negative: (- -)
SOCIAL IMPACTS		
Number and quality of jobs	There are no impacts identified Overall impact neutral: (0)	There are no impacts identified Overall impact neutral: (0)
Aviation safety	This option would have a positive impact on aviation safety by allowing the EU to better safeguard aviation against security related risks, including in particular cyber-security threats. Overall impact positive: (+)	Positive impacts are expected to a greater degree than under Option 3.2(B), thanks to better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen. Overall impact positive: (++)
ENVIRONMENTAL	There are no impacts identified	There are no impacts identified

IMPACTS	Overall impact neutral: (0)	Overall impact neutral: (0)

5.4 Gaps and inconsistencies - environmental protection

	Option 3.3 (B): EU essential requirements for environmental protection with respect to aeronautical products
ECONOMIC IMPACTS	
Functioning of the internal market	Having the possibility to deviate from the minimum ICAO standards (Annex 16 to the Chicago Convention), based on EU-specific impact assessment process, would allow the EU to adopt aviation environmental protection requirements for "products" (aircraft, engines and propellers) which are better adapted to the interests of European citizens and EU industry. The European Aviation Environmental Report would provide objective, accurate information on the environmental performance of the air transport sector, as well as feedback on the effectiveness of existing policies in place and future environmental challenges that lie ahead. The positive impacts on the environmental protection are also expected to contribute to the growth of the EU aviation market, given the fact that environmental limitations are expected to be a significant constraint to development of air transport in the EU. Overall impact positive: (+)
Operating and compliance costs for businesses	The cost-benefit analysis of deviating from minimum ICAO requirements would be done on a case by case basis, when the new flexibility envisaged under this option would be actually used. It is thus not possible to estimate such impacts upfront. It has to be pointed out however that the cost-effectiveness analysis that is done in ICAO may not be the same as for the EU.[191] The EU Aviation Environmental Report will not have any costs for the businesses. Overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral (0)
Administrative burdens for businesses	There are no new reporting obligations for businesses envisaged under this Option. Overall impact neutral: (0)
Innovation	The change would allow adapting EU rules more easily, thus allowing a more rapid response to benefits from innovation. In case EU would opt for higher stringency than the minimum ICAO requirements this would create a market incentive that would stimulate innovation and potentially give EU industry an advantage over other parts of the world, allowing it to export its knowledge. Overall impact positive: (+)
SMEs	Overall, the impact for SMEs would likely be neutral, but would again need to be analysed on a case by case basis. There may be cases where a lower stringency of standards would allow taking into account particular interests of SMEs, as in ICAO it is not always easy to get changes agreed that would only benefit a small part of the industry. For instance, it was not possible to lift the ICAO requirement for determining the smoke number for the very small jet engines that power self-launching gliders as there was no global interest to support this work. Overall impact neutral: (0)
International relations	This option is expected to improve the negotiation position of the EU in the ICAO Committee on Aviation Environmental Protection (CAEP). Other CAEP participants have a system in which ICAO SARPs have to be transposed into national legislation, making it relatively easy for them to deviate where they see fit. Consequently, the current EU legal framework does not help to make a credible reservation against a

[191] As an example, a higher stringency may not impact the EU fleet as much as the global fleet, as on average the EU fleet is more modern. Also the benefits of a higher stringency may be higher in a densely populated EU, compared to other regions of the world where there is more room to build new airports further away from densely populated areas. There may also be cases where the EU would prefer to be less stringent - for instance noise standards for helicopters mainly used for sea operations could be less stringent when such helicopters would have significant operational advantages in such an operating environment, while few people would be affected by the higher noise. Applying a higher stringency for just the EU may less affect the asset value of the current fleet as when there would be a global stringency increase, because the aircraft would still have value in other parts of the world. In other cases it may be deemed beneficial to be less stringent than ICAO if there is a particular problem for some European products.

	CAEP decision. As explained above, the effects of deviating from ICAO would have to be carefully assessed before deciding. If there is no such benefit, ICAO SARPs would be followed as today. The benefit would be to have an option to deviate available to the EU in principle, like other parts of the world have, rather than being automatically bound to the ICAO outcome. Where a possibility of deviation from ICAO SARPs would be used, all Member States would have to notify a common difference under Article 38 of the Chicago Convention. Overall impact positive: (+)
Competitiveness	The impact (positive or negative) would only materialise if it was decided to make use of the increased flexibility that this Option provides. For further assessment see ' *Compliance costs for businesses*'. Overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as Neutral (0).
Implementation costs for public authorities	There would be increased implementation costs of drafting the EU rules, while previously a simple update of the references to ICAO Annex 16 are all that has been needed. However, the need to spend resources in the ICAO process could potentially be decreased, as the risk of having an outcome that would affect the EU negatively can be mitigated by deviating from ICAO requirements. It is expected that the overall effort of keeping the environmental rules up-to-date would be of the same order of magnitude as the "baseline", or would be approximately 2 FTE higher, divided equally over EU (EUR 95 000) and Member States (EUR 55 000). This would primarily depend on the extent to which the increased flexibility would be used and could be judged against the expected benefits at such a moment. The implementation costs of the European Aviation Environmental Report, as well as the maintenance of data streams and modelling capabilities is estimated for EU at 1 FTEs (EUR 95 000) and EUR 300 000 / year for IT equipment. **Total EU level:** Overall NPV 2016-2030: EUR 7 m **Total Member States:** Overall NPV 2016-2030: EUR 0.8 m Overall impact negative: (-)
SOCIAL IMPACTS	
Number and quality of jobs	The impact (positive or negative) would only materialise if it was decided to make use of the increased flexibility that this Option provides. In general this Option should support the sustainable development of aviation which will likely benefit the number and quality of jobs. Overall impact in terms of costs is not possible to be estimated upfront, and is therefore considered as neutral: (0)
Aviation safety	Environmental protection requirements shall not have a negative safety impact. However, the increased flexibility could potentially allow alternative means to achieve the environmental objective while having safety benefits. European Aviation Environmental Report will not have an impact on aviation safety. Overall impact neutral to positive: (0/+)
ENVIRONMENTAL IMPACTS	The proposed change would allow easier fine-tuning of the aviation environmental requirements for aeronautical products to the environmental interests of European citizens and industry. It would allow a separate cost-effectiveness assessment from a European perspective only, and should lead to a more optimised mix of mitigation measures than the global measures that are agreed in ICAO. Another significant benefit would be that the EU could react more quickly to new developments, as the current system de facto has to wait for the relatively slow ICAO process to be completed. Innovation would be a key element of that, as well as being one of the main factors allowing the sustainable development of aviation. The European Aviation Environmental Report is also expected to have positive environmental impact. Overall impact positive: (+)

Table 8: The result of the assessment of impacts per domain of policy options

	Management and quality of resources				Proportionality and safety performance		
	PO 1.2	PO 1.3(a)	PO 1.3(b)	PO 1.4	PO 2.2	PO 2.3	PO 2.4
ECONOMIC IMPACTS							
Functioning of the internal market	+	++	++/+++	+++	+	+	+
Operating and compliance costs for businesses	+	-	-	- - -	+	++	0/+
Administrative burden for businesses	0	0/+	0/+	+	-	--	--
Innovation	0	+	+	++	+	+	+
SMEs	0	+	+	+	+	+	-
International relations	+	+/++	+/++	++	0	0	0
Competitiveness	0/+	+	+/++	-	+	+	+
Implementation costs for public authorities	-	+	+	+++	+	- -	- -
SOCIAL IMPACTS							
Number and quality of jobs	0	0	0	0	+	+	+
Aviation safety	+	+/++	++	+++	+	+	+
ENVIRONMENTAL IMPACTS	0	0	0	0	0/+	0/+	0/+

	Ground-handling		Aviation Security		Environment
	PO 3.1(B)	PO 3.1(C)	PO 3.2(B)	PO 3.2(C)	PO 3.3(B)
ECONOMIC IMPACTS					
Functioning of the internal market	+	+/++	+	+/++	+
Operating and compliance costs for businesses	0	-	-	0/+	0
Administrative burden for businesses	-	- -	0/-	0/-	0
Innovation	0	0	+	++	+
SMEs	0	-	0	0	0
International relations	0	0	+	+	+
Competitiveness	0	-	0	0	0
Implementation costs for public authorities	-	- -	-	- -	-
SOCIAL IMPACTS					
Number and quality of jobs	+	+	0	0	0
Aviation safety	+	+	+	++	0/+
ENVIRONMENTAL IMPACTS	0	0	0	0	+

6 COMPARING THE POLICY OPTIONS

Within each policy domain, the policy options (PO) are compared to the baseline in terms of effectiveness, efficiency and coherence.

1.1. *Quality and management of resources*

Effectiveness: PO 1.3(b) is considered as the most effective in achieving SO 5, SO 2 and SO 3, even though PO 1.4 better contributes to the reduction of the future resources needs for aviation safety in the EU and scores higher on safety benefits. PO 1.4 is however not expected to be supported by Member States, and has high risks during the transition period towards a single aviation authority, which reduces the overall probability of successful implementation of this policy option, and thus means a lower overall effectiveness. PO 1.3(b) has a higher effectiveness in achieving the SO 3 than PO 1.3(a) by including the emergency mechanism for dealing with oversight problems in Member States. Other than that, both PO 1.3(a) and 1.3(b) leave the same large scope for voluntary action at the Member State level. PO 1.2 has a lower effectiveness in achieving SO 5, SO 2 and SO 3, as it does not have a strong contribution to the reduction of future resources needs and has only a marginal positive impact on safety compared to the baseline.

Efficiency: PO 1.2 and PO 1.3(b) score best in a cost-efficiency analysis. While PO 1.4 is more effective in achieving SO 5, and SO 3, as stated above, the savings that it would allow for Member States' budgets are imposed as costs on the single market (NPV of over EUR 4 billion for 2016-2030). Given that the EU has already a high level of safety the improvement that could be achieved in this respect by implementing PO 1.4 would be marginal compared to the costs incurred by the market operators. At the same time PO 1.3(b) would allow to deal with the most serious safety oversight deficiencies in a targeted and proportional manner. PO 1.3(a) is also cost-efficient when it comes to making more efficient use of resources, but does not provide the additional safety benefit of PO 1.3(b). Although these safety benefits will result in additional costs for the operators, these costs are more than outweighed by the fact that under PO 1.3(b) a safe operator from a Member State with safety deficiencies will be able to continue doing business, while under PO 1.3(a) it would have to stop the operations.

Coherence: All policy options are coherent with the overarching EU objectives of a safe and well-functioning internal market for aviation, although they contribute to different degrees to these objectives. PO 1.3(b) provides for a framework enabling a safe, future growth of the aviation industry while at the same time allowing for the simplification of the legal framework and keeping decision making at the national level, unless public safety is at risk and Member States do not take sufficient action to address this risk. PO 1.4 could be considered as disproportionate due to the high cost imposed on the industry and strong encroachment on existing Member State competences, and thus not coherent with the priorities of the Commission in promoting the development of the internal market. PO 1.2 is coherent with the overall EU objectives, but its coherence with the objective of the promotion of the single market is weaker than that of PO 1.3(a) and PO 1.3(b).

6.2 Proportionality and safety performance

Effectiveness: All three options effectively contribute to reaching SO 3. By making State Safety Programmes and the European Aviation Safety Plan mandatory and by ensuring consistency between safety planning at EU and Member State levels, safety management will be enhanced and better synergies created across the EU compared to the baseline. PO 2.2 is also effective in reaching SO 1 and SO 2, as it provides a systematic approach for the introduction of more proportional rules. The main limitation of PO 2.2 is the fact that under

this option performance based rules are only introduced on a case by case basis. In this respect PO 2.3 is more effective, as under this option performance based rules are introduced into all existing safety legislation. PO 2.2 and 2.3 both provide a choice between prescriptive and performance based rules which is a solution best tailored to the capabilities of organisations. While also covering all legislation, PO 2.4 is less effective than PO 2.3, as it requires all organisations to apply performance based rules irrespective of the maturity of their safety management systems.

Efficiency: PO 2.2, though limited in scope, is the most efficient option in terms of implementation as it only requires a revision of Regulation (EC) No 216/2008 and otherwise can be integrated in the regular legislative process without much additional cost. PO 2.3 and PO 2.4 have high implementation costs because all existing safety legislation has to be revised. In addition, implementation costs under PO 2.3 are even higher as two types of rules have to be maintained. PO 2.3 on the other hand has the highest potential for cost savings in the long run for businesses. Overall though, costs are expected to outweigh the additional benefits of more performance based legislation, rendering PO 2.3 and PO 2.4 less efficient.

Coherence: All options are coherent with the overarching objectives of EU policy, in particular with regard to better regulation and fostering innovation thus contributing to growth and jobs, and support EU-wide compliance with ICAO recommendations. They all contribute to reaching the objectives without significant negative impacts. PO 2.2 and PO 2.3 are most coherent with the principle of proportionality though as they provides a choice to the organisation as to which regulatory system (performance or prescriptive) to use.

1.2. Gaps and inconsistencies - ground-handling

Effectiveness: Both PO 3.1(B) and PO 3.1(C) are considered equally effective in meeting SO 3, which is the primary objective linked to the policy option in this policy domain. The EASA analysis concluded that safety impacts of risk bearing ground-handling related accidents can be adequately addressed by both policy options under consideration. It could be however assumed that PO 3.1 (C) would have additional positive effects on enforcement and implementation due to the certification requirements, which do not exist under PO 3.1(B).

Efficiency: PO 3.1(B) is considered more cost-efficient, as it allows SO 1 with smaller compliance and implementation costs for the operators and authorities than in case of PO 3.1(C). In addition, the fact that PO 3.1(B) is coherent with the existing market practices should help improving compliance rates if this policy option is chosen.

Coherence: Both PO 3.1(B) and PO 3.1(C) score similarly with respect to the coherence with the overarching EU objectives. They both contribute to the safety of the aviation sector and to a well-functioning internal market. By raising the quality of jobs in the ground-handling sector through more standardised training, they also contribute to the social agenda of the EU. PO 3.1(B) could be considered however as better respecting the principles of proportionality and better regulation, and is therefore given a better final score.

1.3. Gaps and inconsistencies - aviation security

Effectiveness: PO 3.2 (C) is expected to be more effective than PO 3.2(B) in achieving SO 4, SO 3, and SO 2 by not only establishing a clear legal basis for the EU to deal with cyber-security protection of civil aviation and security aspects of aircraft and ATM systems, but by also ensuring a better assessment of safety and security trade-offs and interdependencies in cost-benefit analysis leading to more optimal solutions being chosen. This should reduce the risk of gaps or unintended consequences and better take into account operational aspects in design of security measures.

Efficiency: The scope of PO 3.2(B) and of PO 3.2(C) is different and therefore the cost-efficiency analysis is not directly comparable. However, these differences in scope are also reflected in cost of implementation. In case of PO 3.2(B) costs are expected for the Member States and industry, but not the EU, where EASA in practice already acts but without a clear legal basis. With respect to protection of ATM systems and infrastructure, the cost efficiency can be ensured by setting essential requirements while leaving up to the operators the choice of the methods and means of meeting these requirements. The situation is different with respect to PO 3.2(C), where additional costs are also expected at the EU level, but where on the other hand overall compliance costs for businesses are expected to be lower compared to the baseline.

Coherence: PO 3.2(B) is coherent with the EU cyber security strategy which aims at strengthening the security and resilience of vital information and communication technology infrastructures. It also contributes to the deployment of the SESAR technologies and thus achievement of the Single European Sky objectives by defining essential requirements for protection and resilience of critical ATM infrastructure and systems. PO 3.2 (C) is coherent with the overall objective of promoting safe and efficient air transport market and with existing aviation security policy.

1.4. Gaps and inconsistencies – environmental protection

Effectiveness: PO 3.3(B) is effective in contributing to SO 2 and SO 4. It favours the development of new environmental technologies and their market uptake. By aligning the legislative approach in the area of environmental protection to that of safety regulatory consistency is enhanced.

Efficiency: PO 3.3(B) involves higher implementation costs as it requires the adoption of essential requirements and implementing rules. As these costs can partly be offset by cost savings stemming from flexibility gains the option is expected to be only slightly more costly than the baseline. Taking into account the positive effect this option has in reaching SO 2 and SO 4, PO 3.3(B) can nevertheless be considered efficient.

Coherence: PO 3.3(B) is coherent with the overarching objectives of EU policy. It strengthens the position of EU Member States in ICAO on environmental issues and thus of the EU as a global actor and is expected to foster innovation through new environmental technologies.

The summary table 9 below gives an overview on the comparison of options to their respective baselines:

Table 9: Comparison of options with respect to the baseline scenario

Quality and management of resources:

	PO 1.2	PO 1.3(a)	PO 1.3(b)	PO 1.4
Effectiveness	+	++	+++	++
Efficiency	+++	++	+++	++
Coherence	++	++	++	+

Proportionality and safety performance:

	PO 2.2	PO 2.3	PO 2.4
Effectiveness	+	++	+
Efficiency	++	0	0
Coherence	+	+	+

Gaps and inconsistencies (ground-handling):

	PO 3.1(B)	PO 3.1(C)
Effectiveness	+	++
Efficiency	++	+
Coherence	++	+

Gaps and inconsistencies (aviation security):

	PO 3.2(B)	PO 3.2(C)
Effectiveness	+	++
Efficiency	+	+
Coherence	+	+

Gaps and inconsistencies (environmental protection – aeronautical products):

	PO 3.3(B)
Effectiveness	+
Efficiency	+
Coherence	+

1.5. Preferred policy package

In view of the above the following policy package could be created based on a combination of the preferred option from each of the five policy domains. The options comprising the preferred policy package address the problem drivers from different policy angles that are complementary. Thus, the options are coherent with one another and could be implemented simultaneously.

Table 10: Final package of policy options

	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 with respect to aeronautical products

In the final policy package the preferred options for all policy domains are based to a large extent on the principle of voluntary cooperation. Regulatory measures pursue above all the aim of furthering collaboration within the European aviation safety system with regard to

efficient use of resources and safety improvements. A regulatory system is created that allows for the development of aviation safety by providing a framework without imposing solutions. With the exception of ground handling, emergency oversight mechanism, and to a certain extent security of design, the measures proposed do not extend the scope of EU competence.[192]

Under the final policy package, the regulatory system is made more proportional by introducing the principle of a risk hierarchy and introducing performance based rules. Increased use of performance based regulation and industry standards leaves more room to technological developments on the market. Safety gains will be achieved through a collaborative safety management process linking organisations, Member States and EU level. Oversight is also expected to be improved by creating a framework for sharing and pooling of resources. The latter makes it possible to delegate responsibilities and to share resources according to the needs identified by the Member States and EASA based on a case by case cost-benefit analysis.

The summary of impacts with respect to the options constituting the final policy package is as follows:

With respect to the **internal market** there will be positive impacts on a level playing field through more uniform oversight by the National Aviation Authorities and promoting EU-wide training standards. A broader range of possibilities to demonstrate compliance including an increased reliance on industry standards will further stimulate market activity and choices on the market. Voluntary opt-in for state aircraft and Annex II aircraft is expected to have similar effects. Common rules for ground handling based on industry standards will ease market access and enhance safety with minimum necessary compliance costs. The emergency oversight support mechanism will allow compliant operators to continue to do business where a National Aviation Authority fails to address serious deficiencies in its oversight capabilities. Airlines will have more flexibility in leasing aircraft. It is not expected that implementation of the preferred policy package would result in additional costs for the consumers. As the measures proposed aim at increased efficiency, they are expected to contribute to reduced costs for consumers in the longer term perspective.

Compliance costs and other operational costs for businesses will overall be positively impacted. Positive impacts stem from a more proportional and performance based regulatory system, more flexibility in the means to meet requirements, an increased reliance on industry standards. In particular risk-based oversight will lead to savings for well-performing organisations. Simplified certification procedures for light aircraft are further examples where cost savings would be achieved while maintaining an acceptable level of safety. Airlines will be positively impacted by simplification of leasing approvals and possible consolidation of certificates held by the same company in multiple Member States. Financing of measures related to pooling or sharing of resources and the emergency oversight support mechanism will be borne by the industry based on the 'user pays principle', which may impact businesses in those Member States where oversight is currently financed from general tax revenue, but these measures would be applied by Member States largely on a voluntary basis.

As regards **SMEs and light aviation**, a number of measures would reduce the administrative burden for these sectors and make the regulation more favourable for small entrepreneurs. As

[192] It has to be noted that with regard to ground-handling and cyber security, the majority of the stakeholders support action at EU level (with the exception of airlines that do not support action with respect to ground-handling).

regards aircraft certification, an alternative procedure to a type certification is proposed for light aircraft used in low risk operations. Manufacturers of Annex II aircraft would be also allowed to have their products regulated under common rules and thus benefit from free circulation within the internal market if they wish so. Competent users organisations (such as national aeroclubs or light aviation associations) would be allowed to act - within established conditions - as qualified entities on behalf of the national aviation authorities, thus ensuring proximity of the oversight to the regulated entities. A modular approach to certification of aviation activities and removal of overly prescriptive definitions from the framework safety regulation will allow to better adapt requirements to the risks involved in light aviation and activities of small organisations. SMEs will be able to benefit from risk-based oversight, which removes unnecessary controls, but may not benefit from performance based regulation to the same extent as larger businesses which have more means to collect and analyse the necessary safety information.

Under the preferred policy package **innovation** will be impacted positively mainly by the measures with regard to proportionality and performance. These will free resources and allow new technologies to be introduced more easily thanks to eliminating overly prescriptive rules, reducing compliance costs and introducing a range of possibilities to demonstrate compliance. New technologies, such as electric engines or drones, would be reflected in the updated regulatory framework. The combined assessment of safety and security issues at regulatory level will lead to improved solutions and ensure that interdependencies and trade-offs between safety and security are better managed. Increased flexibility in setting environmental standards for aeronautical products could further stimulate innovation, and allow the EU to adopt solutions which are better suited to the EU context than a generic solution developed at ICAO level.

Under the preferred policy package **aviation safety** is expected to improve. Safety gains will be achieved through a collaborative safety management process linking organisation, Member States and EU level, and improved oversight thanks to easier sharing and pooling of resources. Closing safety gaps for ground handling and security aspects of design will have additional positive impacts. The emergency support oversight mechanism will be a new tool of last resort to help maintain a high safety standard throughout the EU.

Competitiveness of the European aviation sector will benefit from safety improvements and favourable conditions for innovation, which were described above.

With regard to **creating new jobs,** the final policy package should contribute to the EU aviation sector to continue being able to safely grow in the future, stimulating innovation and new technologies, and cutting costs which are not justified from a safety perspective, in particular in the general aviation and SME sector. This should translate into additional jobs on the market.

With respect to **implementation costs**, Member States that have not yet introduced State Safety Programmes will be required to do so. Further costs arise from the need for additional training. Certain Member States will have to develop expertise in cyber security and ground handling. Nevertheless, the majority of the measures proposed and which affect the resources of Member States will be applied on a voluntary basis, and be activated by a Member State on the basis of a positive cost-benefit analysis. After some initial set-up and training costs, positive impacts on the resources of national aviation administrations are expected in the mid and long run, by achieving efficiency gains through the pooling and sharing of resources and the move to more targeted, risk-based oversight. The pooling and sharing of resources will be financed by fees and charges based on the 'user pays principle'. The preferred ground-

handling and security options do not involve new certification requirements and as a result oversight costs for Member States are not expected to be significant.

In terms of **resource needs for EASA** the preferred policy option would comprise to the following:

Table 11: Resources needs of EASA under preferred policy package
(1 FTE = EUR 95 000, not including overheads; based on support study on resources)

Policy option	Resources in FTE	One-off costs in EUR (non-staff costs)	Annual costs in EUR (incl. staff costs)	NPV 2016 – 2030 in EUR[193]
PO 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)
PO 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.		
PO 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
PO 3.2(C) Coord. approach to safety and security related matters	3 FTE [194]	n/a	Support to rulemaking and inspections: 0.295 m	4.3 m
PO 3.3(B) EU essential requirements for environmental protection wrt aeronautical products	2 FTE	n/a	Update of environmental rules: 0.095 m IT equipment EUR 0.3 m European environmental report: 0.095 m	7 m
Total:	**9.5 FTE**	**2.6 m**	**1.822 m**	**28.65 m**

Possible financing of these resource needs is set out in Annex X 'The use of en-route charges to finance EASA activities in the field of ATM/ANS'.

[193] This NPV includes also the costs of FTE listed in the table.
[194] Depending on evolution of EASA role in inspections the number of FTE may increase to 7.

2. MONITORING AND EVALUATION

This section presents the monitoring and evaluation arrangement for the final policy scenario as described in the preceding section and with respect to the policy objectives of this initiative. Ample mechanisms for monitoring and evaluation already exist and can be used, due to the fact that in the field of aviation safety the monitoring of performance is an integral element of the regulatory framework.

The proposed monitoring and evaluation system would therefore largely rely on data and information sources and feedback processes already in place, or created through the implementation of the policy options envisaged under the present initiative. This should reduce additional administrative burden for Member States and industry to the minimum.

Table 12: Indicators for monitoring and evaluation of the final policy package

- **(SO 1) Eliminate unnecessary requirements and ensure that regulation is proportionate to the risks associated with different types of aviation activities:**

Main indicators	Source of information	Entity responsible for monitoring
1. Positive feedback from stakeholders and aviation authorities; 2. Reducing number of questions of interpretation concerning the revised rules; 3. Number of operators using performance based rules for demonstrating compliance with essential requirements; 4. Number of General Aviation Private Pilot Licences 5. Reduced costs for operators	- Regulatory committee under successor of Regulation (EC) No 216/2008 (regular basis) - Citizens and businesses (regular basis) - EASA standardisation and consultative bodies (regular basis); - Article 62 evaluation (every five years);	European Commission EASA EASA Management Board

- **(SO 2) Ensure that new technologies and market developments are efficiently integrated and effectively overseen:**

Main indicators	Source of information	Entity responsible for monitoring
1. Number of new rules which make reference to recognised industry standards; 2. Reduced age of the general aviation fleet in EU; 3. Reduced costs of aircraft certification and production; 4. Number of new certifications	- Rulemaking programme (annual basis) - Aircraft manufacturers (ad hoc)	EASA European Commission

- **(SO 3) Establish a cooperative safety management process between Union and its Member States to jointly identify and mitigate risks to civil aviation:**

Main indicators	Source of information	Entity responsible for monitoring
1. Accident rate in relation to traffic growth 2. Improving results of EASA standardisation and continuous monitoring activities 3. State Safety Programmes implementation level in Member States 4. Risk bearing occurrences involving ground-handling;	- EASA Safety Report (annual) - European Aviation Safety Plan (annual) - Central Repository of Information on occurrences in civil aviation (continuous) - Safety recommendations information system (continuous)	European Commission EASA

❖ **(SO 4) Close the gaps in the regulatory system and ensure its consistency:**

Main indicators	Source of information	Entity responsible for monitoring
1. Positive feedback from stakeholders and aviation authorities 2. Reducing number of questions of interpretation concerning the revised rules	- Regulatory committee under successor of Regulation (EC) No 216/2008 (regular basis) - Citizens and businesses (regular basis) - EASA standardisation and consultative bodies (regular basis); - Article 62 evaluation (every five years);	European Commission EASA

❖ **(SO 5) Create an effectively working system of pooling and sharing of resources between the Member States and the Agency:**

Main indicators	Source of information	Entity responsible for monitoring
1. Improving results of the EASA standardisation inspections and continuous monitoring with respect to resources and its competence in Member States 2. Positive feedback from Member States on workload impact of EU rules 3. Number of Member States making use of EU aviation safety inspectors, and new instruments for pooling and sharing of resources (delegation of responsibilities, opt-in for state and Annex II aircraft) 4. Evolution of resources in national aviation authorities of Member States measured in terms of FTEs and budget	- EASA standardisation report (annual basis) - 'Article 62 evaluation' (every five years) - Regulatory committee under successor of Regulation (EC) No 216/2008 (continuous basis) - EASA standardisation and consultative bodies (continuous basis); - Member States authorities (continuous basis) - EASA standardisation information system - SIS (continuous basis)	European Commission EASA EASA Management Board

8 IMPLEMENTATION OF THE PREFERRED POLICY PACKAGE

This chapter deals with aspects relates to the implementation of the preferred policy package. Issues taken into account in this respect include: operational objectives; timeframe for implementation; implementation risks; and interdependencies between different policy domains.

8.1 Operational objectives

The operational objectives are related to the specific measures to be implemented under the policy options comprising the final policy package (Table 13):

Table 13: Operational objectives with respect to the final policy package

Policy Option	Main operational objectives
1.3(b) Emergency Oversight support mechanism	- 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 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	- 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 policy on performance based regulations;
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;
3.2(C) Coordinated approach to safety and security related matters	- 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	- Establish EU essential requirements for environmental protection of aeronautical products; - Establish a legal basis for aviation environmental protection report;

8.2 Timeframe for implementation

The timeframe for implementation depends on each particular measure. Some measures are a 'low-hanging fruit', where the very change of EU law would already provide benefits. Other measures would require preparatory work to be done which could last between one to three years. Table 14 presents an overview of the implementation timeframe for the policy options comprising the final policy package where measures require preparatory work.

Table 14: Timeframe for implementation of the preferred policy package

Policy Option	Timeframe for implementation
PO 1.3 (B)	Up to three years. Need for EASA to prepare for accepting transfers of responsibilities from Member States and to exercise oversight under the emergency oversight mechanism. Similar timeframe would be needed for establishment of repository of information on personnel, organisations and aircraft.
PO 2.2 +	Implementation of performance based regulations takes place on a case by case basis and the timeframe depends on the length of a rulemaking process involved. Implementation of national and EU safety programmes is an ongoing process. Implementation of a state safety programme requires up to five years according to ICAO.
PO 3.1 (B)	Up to two years needed for development of the necessary regulatory material by EASA.
PO 3.2 (C)	Up to two years needed for development of the necessary regulatory material by EASA for security of aviation systems (primarily for ATM).

8.3 Implementation risks

The main implementation risks are linked to the measures concerning the transfer of responsibilities for the implementation of EU aviation safety legislation. This applies to the

horizontal transfers (between Member States), vertical transfers (between Member States and EASA), and the emergency oversight mechanism. There are two types of issues to be considered here. Firstly, such transfers should only take place if the transferred responsibilities can be exercised efficiently and in full compliance with the applicable safety legislation. Secondly, there should be no ambiguity about which authority is responsible for which organisation/activity.

When it comes to the emergency oversight mechanism, its effectiveness will depend on the ability of EASA to develop the means and capabilities to act as a competent authority for AOC oversight, which would be a new competence for EASA.

In order to mitigate the above risks, conditions under which the transfers can take place (or should not be taking place) must be established in the EU legislation. Transparency should be also ensured by establishing a register of such arrangements, and which should include information about the scope of the transfers effectuated. Last but not least, adequate financing of the regulatory responsibilities subject to transfer must be provided for. In case of transfers between Member States, such financing should be agreed between the Member States concerned. In case of the transfers to EASA, including under the emergency oversight mechanism, the financing mechanisms should be created by EU law (i.e. extending the current fees and charges scheme to issuance and oversight of certificates issued by EASA under the transfer arrangements).

8.4 Interdependencies between measures in different policy domains

The Options comprising the final policy package address problem drivers from different angles and are mostly self-standing. Some interdependencies do however exist between PO 2.2 (Proportionality and safety performance) and PO 1.3(b) Emergency oversight mechanism.

In particular the implementation of a risk and performance based approach to safety regulation and oversight will require the authority inspectors and specialists to acquire additional competences such as the ability to assess safety management systems. Moreover, as oversight will be mainly based on performance, the ability to measure safety performance should also become part of the inspectors' knowledge base. The need to perform oversight of ground-handling will also require some additional resources from Member States, although this should not be overly demanding due to the fact that a certification process is not proposed.

It is however expected based on the impact assessments that the benefits of the measures under PO 1.3(b), including in particular the arrangements for pooling and sharing resources, will more than outweigh the demands put on authority resources under other policy options. In particular, as demonstrated in Chapter 5, under PO 1.3(b) mid to long term positive effects on reduction of future resources needs of Member States are expected, the NPV of which is estimated during the 2016-2030 time frame at EUR 13-25 million.

ANNEX I

Procedural information concerning the process to prepare the impact assessment report and the related initiative

LIST OF ABBREVIATIONS

A-NPA	Advanced Notice of Proposed Amendment
ANS	Air Navigation Services
AOC	Air Operator Certificate
ATM	Air Traffic Management
CAT	Commercial Air Transport
EASA	European Aviation Safety Agency
EASP	European Aviation Safety Programme
EASp	European Aviation Safety Plan
EFTA	European Free Trade Association
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAA	Federal Aviation Administration of the United States of America
FTE	Full Time Equivalent
GDP	Gross Domestic Product
IA	Impact Assessment
IAB	Impact Assessment Board
ISG	Inter-service Steering Group
ICAO	International Civil Aviation Organization
MTOM	Maximum Take Off Mass
NAA	National Aviation Authority of an EU/EFTA Member State
PBR	Performance Based Regulation
SES	Single European Sky
SESAR	Single European Sky ATM Research
SME	Small and Medium Sized Enterprises
SMS	Safety Management System
SPS	Safety Performance Scheme

1. Lead DG: DG MOVE

2. Agenda planning reference: 2015/MOVE/001

This impact assessment is prepared by DG MOVE to support a legislative proposal regarding a revision of Regulation (EC) No 216/2008 of the European Parliament and of the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/20012 and Directive 2004/36/EC (Agenda Planning Reference No 2015/MOVE/001). The original roadmap was published in April 2014, and an updated version was published in May2015.[195]

3. Organisation and timing:

An Inter-service Steering Group (ISG) was created in January 2014 following an invitation sent by DG MOVE to DGs and services concerned including the SG, DG SJ, DG BUDG, DG CLIMA, DG EMPL, DG GROW, DG ENV, DG NEAR, DG HR, DG RTD, EEAS as well as EASA (Ares(2014)9349). The SG, DG SJ, DG BUDG, DG EMPL, DG GROW, DG NEAR, DG HR, DG RTD, DG CLIMA and EASA actually participated and contributed actively. DG HOME was also consulted for the parts of the impact assessment which concern aviation security aspects. The ISG met 3 times. The first ISG meeting took place on 31 January 2014, the second meeting on 26 March 2015, and the third meeting on 7 May 2015. In addition, the ISG was consulted on the questionnaire that DG MOVE used for the stakeholder consultation and on the interim and final reports of the two support studies contracted by DG MOVE.

4. Consultation of the Impact Assessment Board:

This impact assessment report was reviewed by the Commission Impact Assessment Board (IAB) on 17 June 2015. The IAB has issued a positive opinion on 19 June 2015. Based on the IAB recommendations, the IA report has been revised as follows:

(a) Comparison of the accident rate in Europe and in other regions has been added in Chapter 1;

(b) Additional information was provided in Chapter 2 on how the problems have been identified;

(c) The problem tree has been reviewed and its presentation changed to clearly indicate the relationship between the problems and problem drivers and to indicate the relative importance of each problem driver;

(d) The main categories of air accidents in the EU have been added in Chapter 2, as well as indication of the main risks affecting the EU aviation safety system (based on European Aviation Safety Plan);

(e) Problem definition chapter has been reviewed and additional evidence provided where possible;

(f) The baseline scenario has been revised, including the calculation of possible evolution of accident rates based on latest data and technical analysis done by EASA;

(g) The formulation of the objectives have been revised;

[195] http://ec.europa.eu/smart-regulation/impact/planned_ia/roadmaps_2014_en.htm#MOVE

(h) The description of the options has been expanded to better explain how the different options would be implemented;

(i) A description of the impacts of the final policy package on SMEs and light aviation has been added in Chapter 7;

(j) A new Chapter 8 has been added and which addresses implementation aspects related to the final policy package (operational objectives, risks, interdependencies and timing);

(k) Glossary of technical terms and a bibliography have been added as Annexes XXIII and XXIV.

5. External expertise:

DG MOVE contracted two studies to support the impact assessment process:

- The first study analysed the availability, efficiency of utilisation and evolution of human resources and financing of the European aviation safety system (support study on resources).[196] This study concluded that the resource to workload balance has deteriorated over the last 10 years. The mismatch between resources and workload is intensified, according to the study, by a sub-optimal allocation of resources and qualification level of staff across the system. The study concludes that, combined, these aspects prevent aviation authorities from performing up to expectations. Additionally, the insufficient harmonisation of working approaches between National Aviation Authorities and the differences in charging schemes contribute to creating an uneven playing field that undermines the common aviation market in Europe.
- The second study, on performance schemes and performance based approach, explored possibilities of introducing performance elements in the management of aviation safety (support study on performance).[197] This study concluded that introducing a safety performance scheme is feasible, but cautions against its rapid introduction for a number of technical reasons. With respect to performance based approach to the regulation of aviation safety, the study concluded that this should have a positive impact on aviation safety and innovation, but the impact can only be described qualitatively and is very much depending on the specific rules that will be converted from prescriptive to performance based, which makes it impossible to quantify upfront the benefits of such approach. A meeting was held with safety performance experts of Member States and industry to peer review the results of the study on 10 February 2015, a summary of which has been included in Annex XVIII.

This Impact Assessment takes into account the relevant ICAO documentation, including the Global Aviation Safety Plan, which sets out a continuous improvement strategy for States to implement over the next 15 years, when the global aviation traffic is expected to double, including the achievement of predictive risk management capabilities by 2027.[198]

The Commission also took into account the EU General Aviation Strategy and Roadmap, which concluded that General Aviation is regulated in a disproportionate and bureaucratic

[196] ECORYS, Study on the resources deployed in the area of European aviation safety before and after the creation of EASA (Support study on resources), Final Report, (2015).
[197] ECORYS, Performance Scheme and Performance Based Approach in the context of aviation safety (Support study on performance), Final Report, (2015).
[198] ICAO, Global Aviation Safety Plan, Doc. 10004.

manner and sets out recommendations for a more proportionate regulatory system for light aviation and SMEs. [199]

This Impact Assessment also draws on the discussions and recommendations of the sub-group on the future EU aviation regulatory system of the EASA Management Board, which was made up of the Directors-General of Civil Aviation of 14 EU/EFTA countries, as well as of representatives from EASA and DG MOVE.[200] Finally the results of the independent external evaluation conducted in accordance with Article 62 of Regulation (EC) No 216/2008 on the implementation of this regulation were taken into account (Article 62 evaluation).[201] Both of these groups recommended, amongst other, a number of amendments to Regulation (EC) No 216/2008. The summaries of recommendations of both these groups are attached as Annexes IV and V.

[199] EU General Aviation Strategy and Roadmap, http://easa.europa.eu/easa-and-you/aviation-domain/general-aviation/general-aviation-road-map.
[200] EASA Management Board sub-group, 'Final Report' (2015), http://easa.europa.eu/the-agency/governance/management-board/meetings/mb-032014.
[201] Article 62 evaluation, Final Report (2013), http://easa.europa.eu/system/files/dfu/Article%2062%20Report.pdf.

ANNEX II

Summary of Commission Public Consultations

This section presents a brief summary of the results of the public consultation. A more detailed overview is set out below:

- There is a strong agreement that the EU has achieved a very high level of safety. Over 90% of contributors agreed or strongly agreed with a statement that it is, at present, safe to travel by plane in the EU;
- At the same time it was recognised that, when it comes to safety, there is no place for complacency. Over 70% of Member States and industry organisations which contributed to the Commission's on-line survey believe that the ability to identify and mitigate safety risks has to be improved;
- Beyond maintaining the current safety performance, the main concern of Member States and stakeholders is the efficiency and proportionality of the present system. The vast majority of the organisations which contributed to the Commission's on-line survey (82%), and in particular the SMEs, argue that existing regulation is too detailed and prescriptive, and that the current safety levels could be maintained with lower compliance cost (83%). This view is largely shared by Member States;
- There is a concern amongst Member States and industry that the current way the technical resources are being used by the aviation authorities is inefficient, and that some National Aviation Authorities experience shortages of resources. The majority (63%) of Member States and of the organisations which submitted replies to Commission's on-line survey believe that some of the National Aviation Authorities do not have sufficient financial or human resources to carry out their oversight tasks;
- The aircraft manufacturing industry has strongly advocated a more active role of the EU in promoting European safety standards internationally, including in ICAO, and expressed concern about long-term availability of resources at EASA for product certification;
- Many of the organisations which contributed to the Commission's on-line survey pointed towards inconsistencies in application of law stemming from its varying interpretations by Member States.

DG MOVE and EASA collaborated closely on the stakeholder consultation. While DG MOVE prepared a questionnaire published on *'Your Voice in Europe'*, EASA published an 'Advance Notice of Proposed Amendment' (A-NPA). The two consultations were complementary, with the Commission consultation being more high level and the EASA A-NPA going into more detail on specific issues. Both consultations were launched on 15 May 2014 and ran until 15 September 2014. In addition, both DG MOVE and EASA conducted a number of meetings with Member States and aviation stakeholders to supplement the public consultations with additional information.

Supplementary feedback on the problem definition and possible policy options was collected during dedicated events: on 10 February 2015 a meeting was held with safety performance experts of Member States and industry; on 23 February 2015 a meeting was held with Member State and industry representatives covering all aspects of the initiative. Conclusions of both meetings are attached as Annex XVIII and XIX respectively.

The Commission has sought an Opinion from EASA, which was delivered on 16 March 2015.[202] The Opinion is based on over 6 000 comments submitted by Member States and stakeholders, and suggests a variety of changes to the different areas of technical regulation of aviation including safety, security, research and environmental protection. The Opinion also makes suggestions on how the resources of EASA and National Aviation Authorities could be used more efficiently. The individual replies to EASA consultations were also available to the Commission and used for the purpose of the impact assessment.

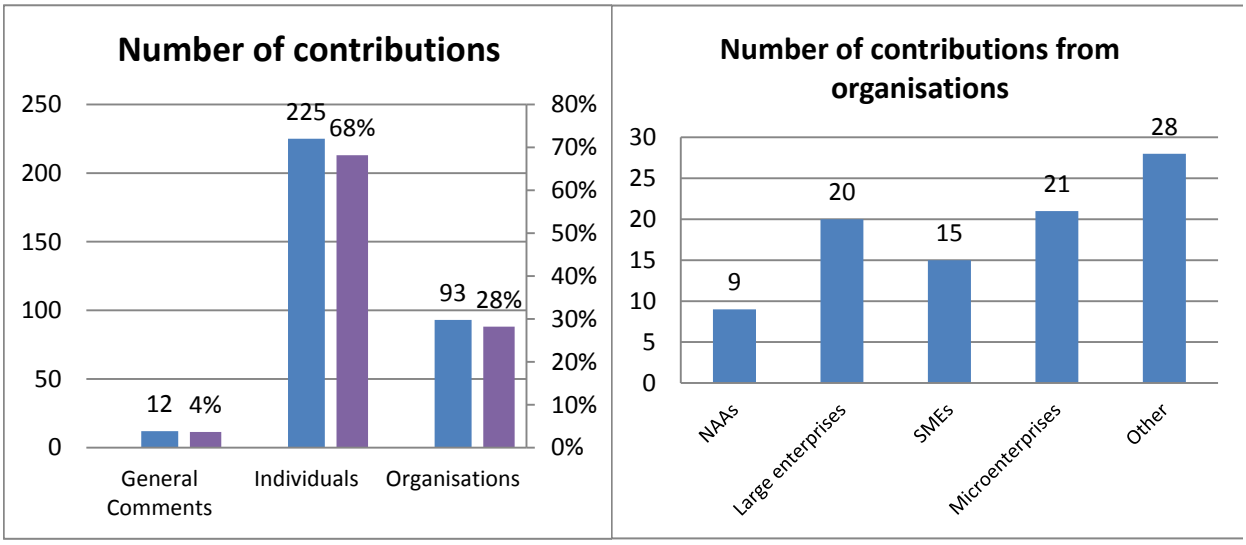
The Commission's minimum standards regarding public consultations have been met.[203]

A. GENERAL OVERVIEW OF CONTRIBUTION SOURCES

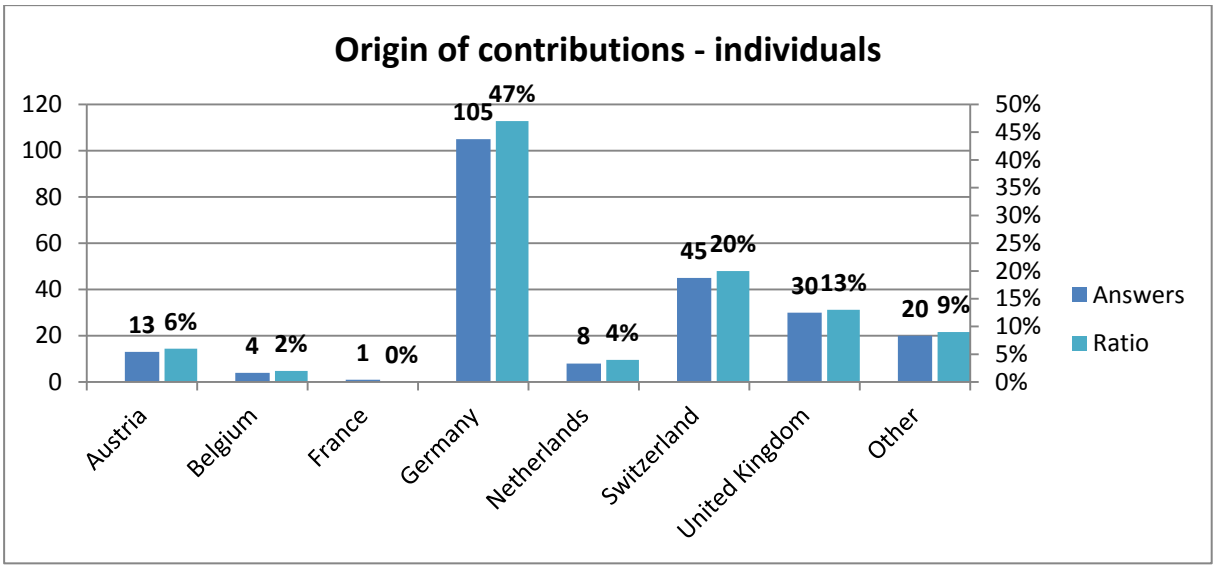
The public consultation has been opened on 23 May and closed on 15 September 2014.

In total 330 valid contributions were submitted, including 12 general comments (4%[204]), 225 contributions from individuals (68%) and 93 contributions from organisations (28%). Amongst the contributions from organisations, 9 were coming from National Aviation Authorities. In addition to National Aviation Authorities, a contribution was also submitted by EUROCONTROL.

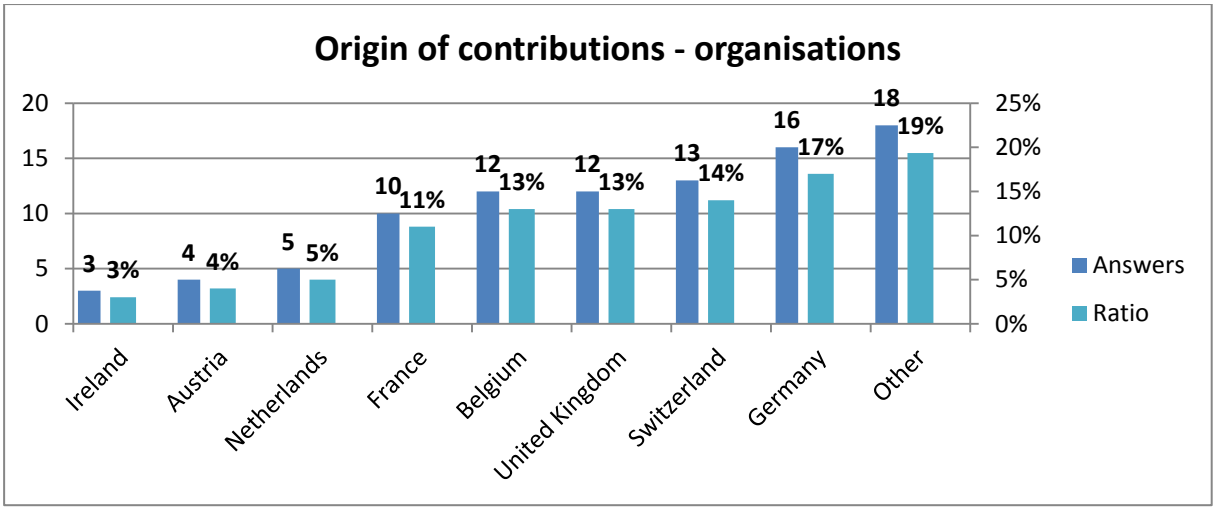
Contributions from organisations included 20 from large enterprises, 15 from SMEs and 21 from microenterprises. Overall contributions from enterprises constituted 60% of all submissions from organisations.



[202] EASA, Opinion 1/2015, http://easa.europa.eu/document-library/opinions/opinion-012015
[203] COM(2002)704.
[204] Note: Some of the percentages may not add up to 100% due to rounding of figures.



In terms of geographical distribution of contributors, the vast majority of submissions from individuals came from Germany (47%), followed by Switzerland (20%) and UK (13%).



When it comes to geographical distribution of submissions from organisations, nearly 70% of all contributions came from five States: Germany (17%), Switzerland (14%), United Kingdom (13%), Belgium (13%) and France (11%).

B. ISSUES TO BE ADRESSED

The subsequent part of this summary document contains an overview of the responses to the questions included in the survey. This overview consists of the statistical presentation of the replies to the multiple choice questions, as well as a summary of the main responses submitted by respondents as 'free text'. The replies to the multiple choice questions have been split into National Aviation Authorities, all organisations (which includes also National Aviation Authorities), and individuals.

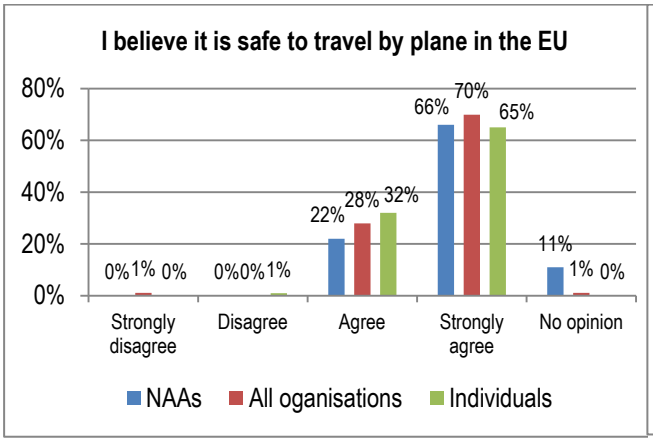
Due to the overly represented population of individual submissions from German private pilots, for some of the questions the results have been also compared with the population of individual responses which did not contain submissions from Germany.

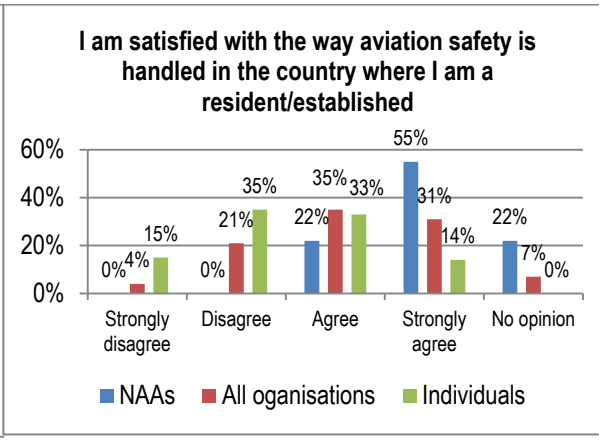
a. Overall satisfaction

Overall there is a strong agreement amongst all the categories of respondents (organisations: 98%; National Aviation Authorities: 88%; individuals: 97%) that aviation safety in the EU stands at present at a very high level.

Overall, the majority (66%) of the organisations which responded to the questionnaire are satisfied with the way aviation safety is managed in the country where they are established. A deeper analysis of the 25% of the organisations which responded that they are not satisfied revealed that nearly half of them (42%) are microenterprises employing less than 10 persons.

The satisfaction with the way aviation safety is managed is visibly lower amongst the individuals, where 50% of respondents responded that they are not satisfied with the current state of affairs. This relatively high level of unsatisfied individual respondents is maintained also when the contributions from private pilots from Germany are excluded from the analysis (52% satisfied; 46% not satisfied).



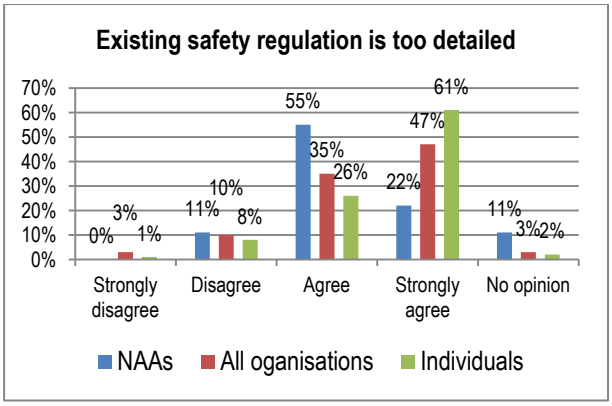


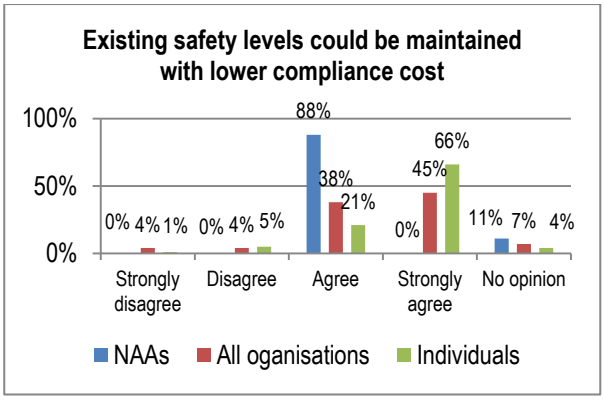
Some National Aviation Authorities pointed out that while the present safety levels are satisfactory, this should not distract the regulators from focusing on maintaining this good safety record in the future.

b. Specific Problem Areas

i. Level of regulation

Both the majority of the respondent organisations (82%) and the majority of the individuals (87%) stated that the existing safety regulation is too detailed, and that the existing safety levels could be probably maintained with lower compliance costs (83% of the organisations; 87% of the individuals). The respondent National Aviation Authorities largely share these views.





Many of the contributing organisations were of the opinion that the current complexity of the regulations is beyond the capability of the operators to understand and manage effectively, and that this in itself may present a risk, as organisations tend to overly focus on demonstrating compliance with the requirements instead of managing safety.

The contributors from the General Aviation community especially were of the opinion that impact assessments are not thorough enough and the effect of regulations on aviation safety is not being sufficiently evaluated, and that this results in requirements which are disproportionate to the risk or

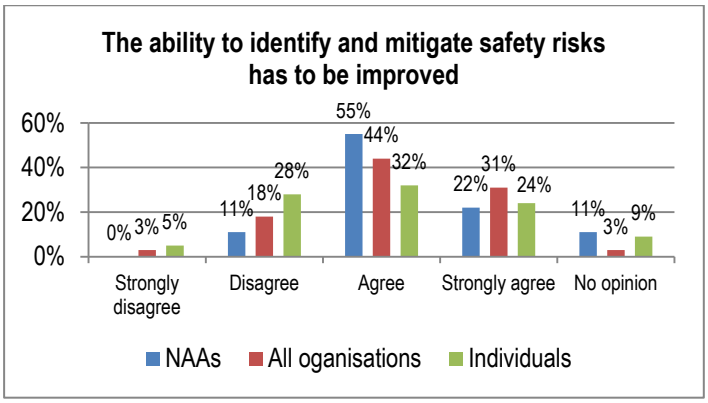
even not addressing the right risks. More generally the present requirements for non-commercial flying are considered as too onerous and costly compared to the achieved safety benefit. Many contributors suggested that the present definition of commercial operation should be reviewed.

It was pointed out by some of the contributors that North America achieves a similar safety level to EU, but with a much lower regulatory and financial burden upon its industry.

It was also pointed out by many of the organisations that aviation authorities (both at EU and NAA level) have inconsistent interpretations of the requirements. It was felt by contributors that some of the interpretations are more restrictive than the original intention of the rule.

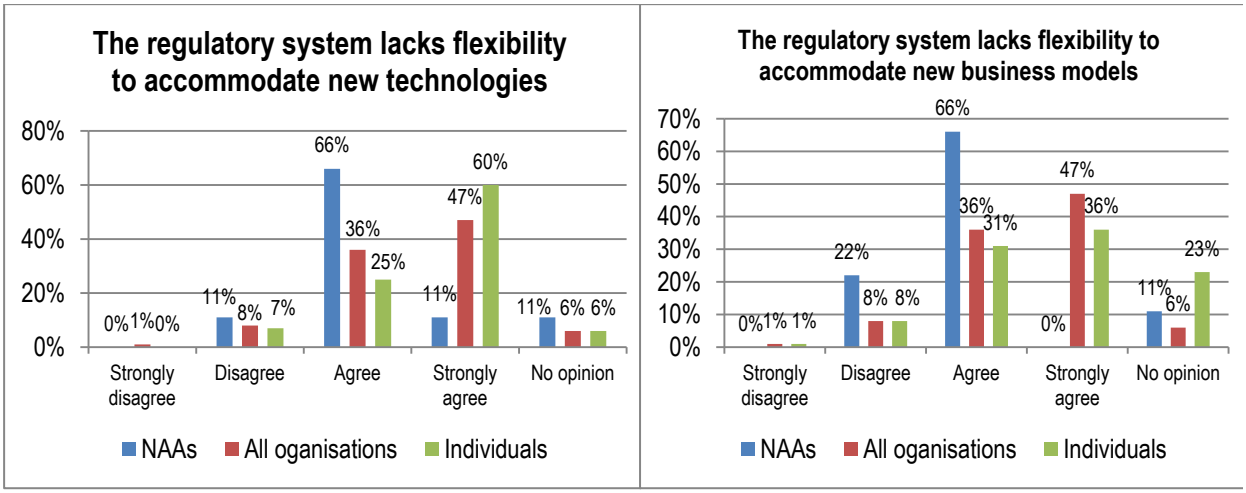
ii. Ability to identify risks and to accommodate new technologies and business models

While a clear majority of National Aviation Authorities (77%) and of the respondent organisations in general (75%) agree that the ability of the EU to identify and mitigate safety risk must be improved, there is also a group of organisations (21%), which disagree. An analysis of the latter group did not reveal any particular pattern in its composition. 56% of individual respondents believe that the ability of the EU to identify and mitigate safety risk must be improved, while 34% of the individuals disagree.



The large majority of all categories of respondents agree that the current system lack the ability to accommodate new technologies and new business models. As far as technologies are concerned, RPAS has been mentioned as an example by many of the organisations and National Aviation Authorities.

At the same time, the representatives of the aviation employees expressed their concerns about the possible negative impact of new business models on aviation safety and working conditions.

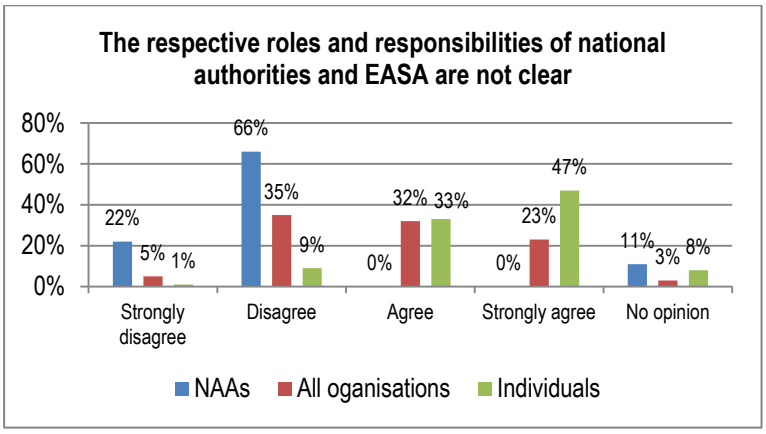


With respect to the new business models, some National Aviation Authorities and industry organisations suggested that rather than trying to restrict them, the rules should be broad enough to

safely accommodate them. It was also felt by some National Aviation Authorities that the new business models may put additional strain on oversight resources of competent authorities.

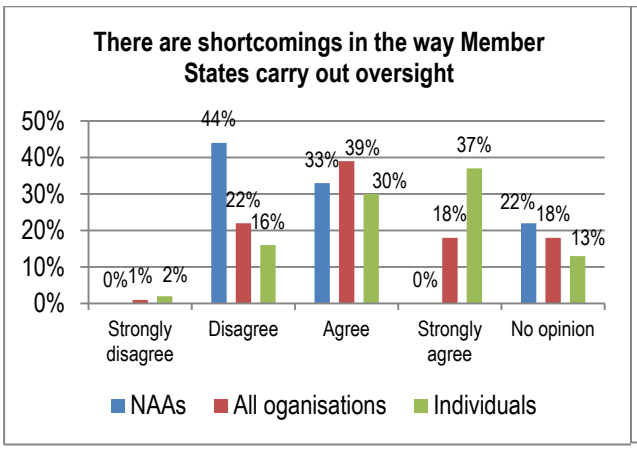
iii. Clarity of roles and responsibilities

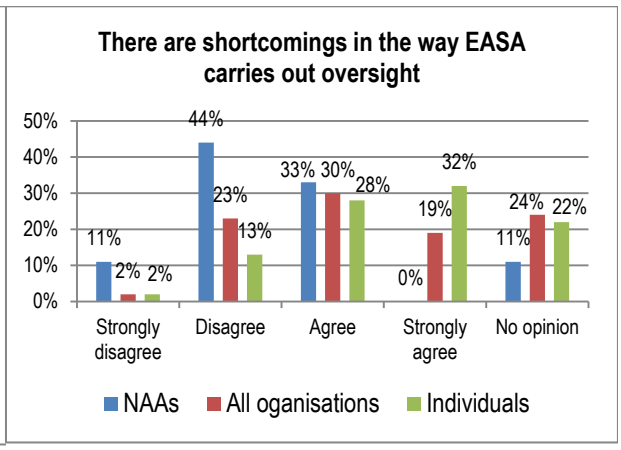
The division of responsibilities between National Aviation Authorities and EASA are clear for the Member States. On the other hand for 56% of the respondent organisations, the division of the respective roles and responsibilities of National Aviation Authorities and EASA are not clear. When it comes to individuals, 81% of them responded that the roles and responsibilities of National Aviation Authorities and EASA are not clear.



iv. Ability to carry out oversight by National Aviation Authorities and EASA

57% of organisations responded that there are shortcomings in the way Member States carry out oversight. 49% of the respondent organisations are also of the view that there are shortcomings in the way EASA carriers out oversight. When it comes to individuals, 67% of the respondents identified shortcomings in the national authority oversight, and 60% in EASA oversight. Most of the National Aviation Authorities which responded do not see shortcomings in national and EASA oversight.





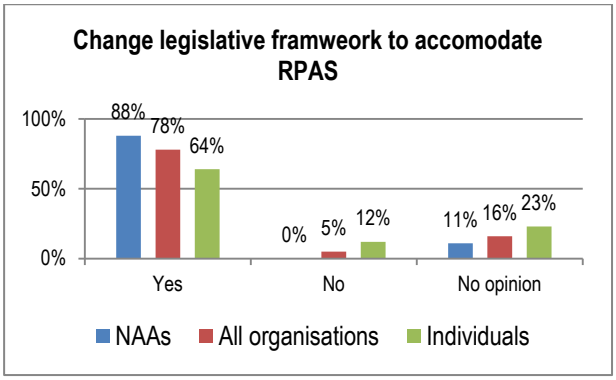
v. International leadership

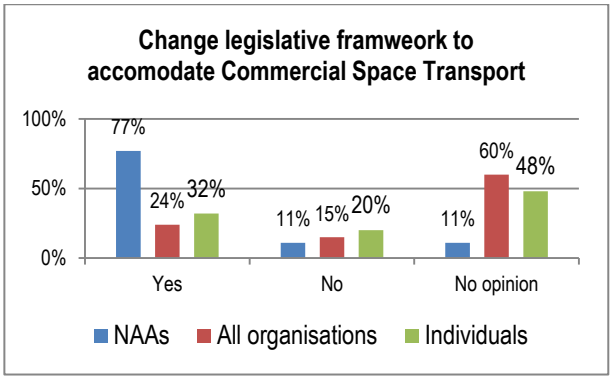
There are split views amongst respondents as to the EU international leadership on aviation safety. While 41% of organisations believe that EU lacks international leadership, 37% disagree with such a statement, and 21% have no opinion at all. The opinions of the National Aviation Authorities are split half-half.

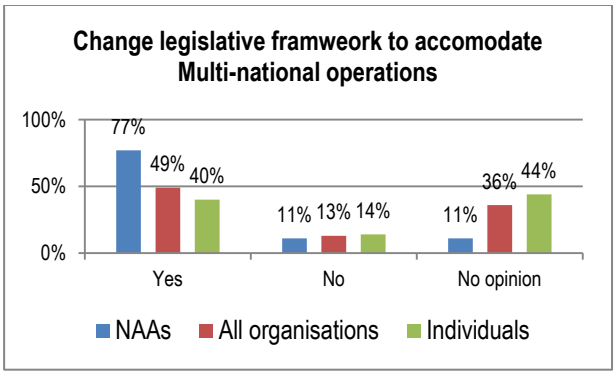
vi. Scope of the present rules

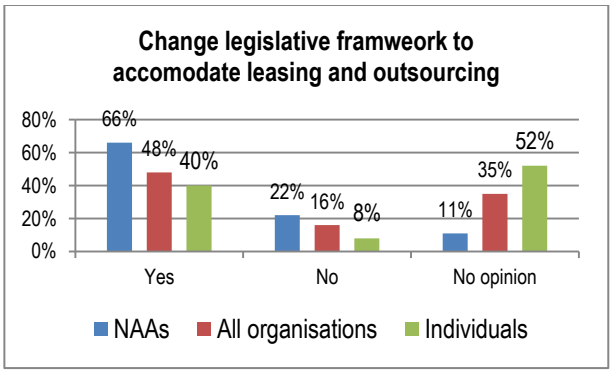
There is a very clear agreement amongst all the categories of respondents that the current legislative framework needs to be adjusted / extended to accommodate RPAS. When it comes to Commercial Space Transport, the majority of the organisations (60%) were not able to express an opinion, while 77% of respondent National Aviation Authorities see a need for a regulatory action in this respect (either at EU or ICAO level).

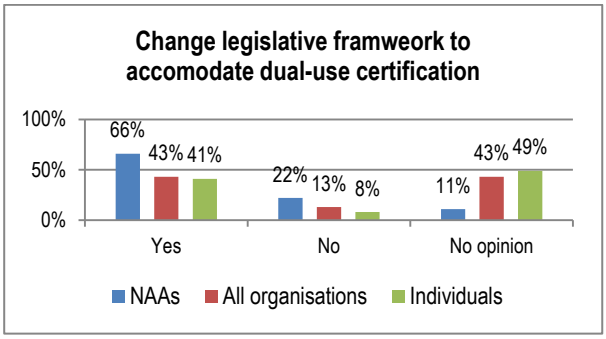
When it comes to multinational operations, outsourcing/leasing, and dual-use certification, the respondent organisations in general and National Aviation Authorities in particular tend to lean towards a need for a regulatory action. There is a large percentage of individuals which do not have an opinion on these rather specialised issues.











As regards other aspects related to potential changes in the scope of the EU rules, following main trends can be observed in the contributions received from organisations and National Aviation Authorities:

- Airports and transport workers suggest the inclusion of the ground-handling services into the scope of EU regulation. The air operators which submitted contributions and their representatives were also in favour of addressing ground-handling by the present initiative. The views amongst authorities on this issue were divided;

- Many of the organisations suggested that it should be possible for National Aviation Authorities and EASA to certify state aviation activities and aircraft (such as used by police or firefighters), according to civil rules;

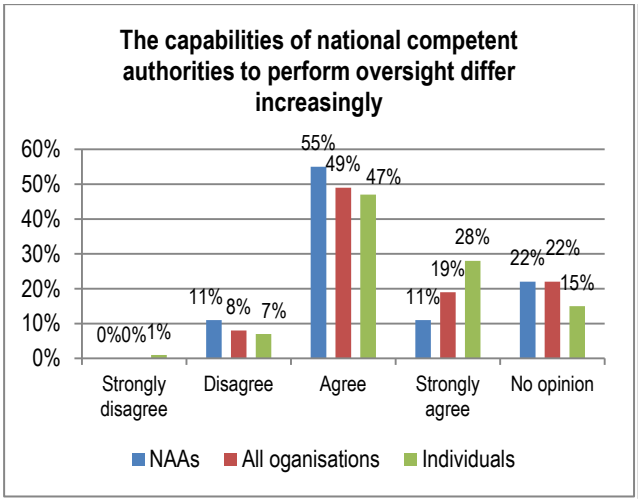
- Some of the organisations, especially from the General Aviation sector, suggested that the scope of Annex II to Regulation 216/2008 should be extended, and that leisure and sport aviation would be better regulated at the national level;

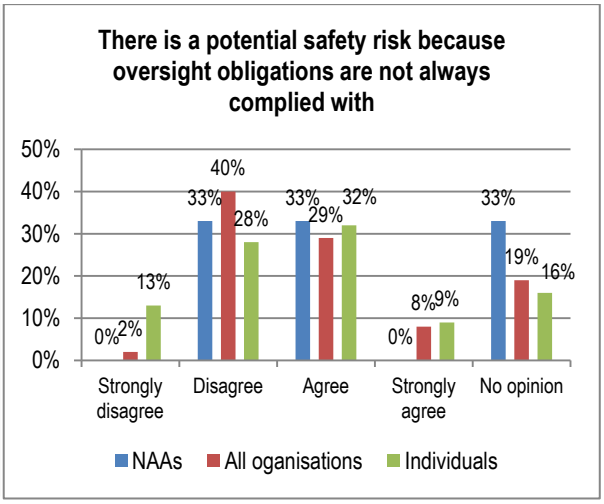
Concerning security issues, the views between organisations were rather split, with some of the contributors advocating a more integrated approach, with safety and security regulated together, while other contributors advised caution arguing that the current arrangements for security are appropriate and that any changes could have negative consequences. Those stakeholders which were in favour of including security aspects within the scope of Regulation (EU) 216/2008, would like them to be limited to technical issues such as cyber-security or aircraft design.

vii. Capabilities and resources of national authorities and EASA

There is a large agreement between all groups of respondents that the capabilities of national aviation authorities to perform oversight differ increasingly. At the same time there is no clear position amongst respondents whether there are potential safety risks because oversight obligations are not always complied with.

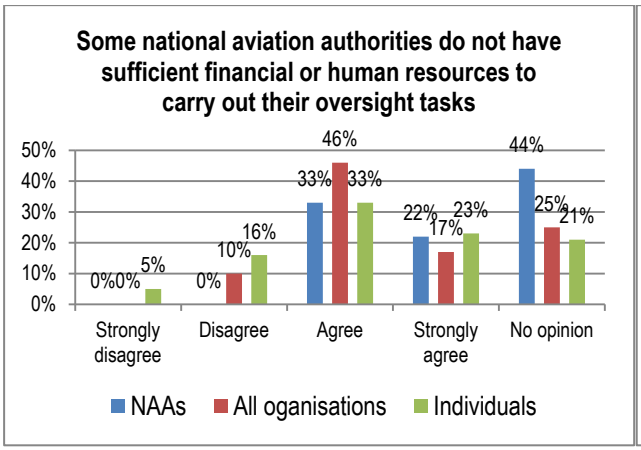
There is quite a clear majority amongst the respondents that some national aviation authorities do not have sufficient human or financial resources to carry out their safety oversight tasks. Over half of the respondent National Aviation Authorities share this view (55%). On the other hand nearly the majority of the respondent organisations (46%) in general, and most of the respondent National Aviation Authorities (77%) believe that EASA has sufficient financial and human resources.

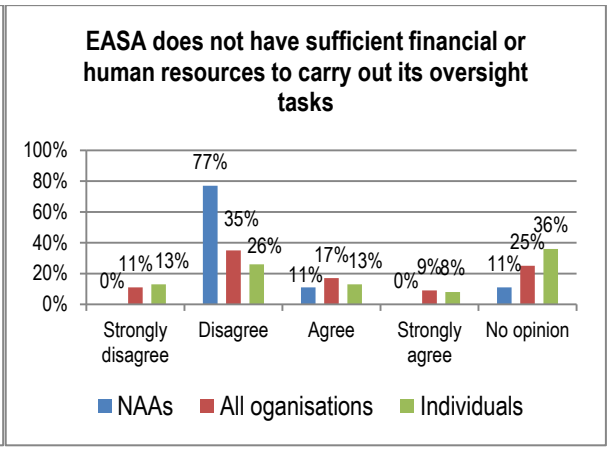




A point made by a number of organisations with regard to differing capacities of the authorities was that this difference largely stems from the fact that authorities do have differing volumes of aviation activity under their responsibility, and that it would be unrealistic to expect all the authorities to be at the same level. At the same time one of the main concerns of the industry is that the differing capabilities of the national authorities can result in a lack of playing field on the market.

Many contributions underlined the need for authorities to have first-hand experience and expertise deriving directly from the industry in order to be in touch with the realities of the market, understand changes in operational practices and be up to date with the latest technologies. The General Aviation community in particular believes that EASA lacks understanding of their sector.

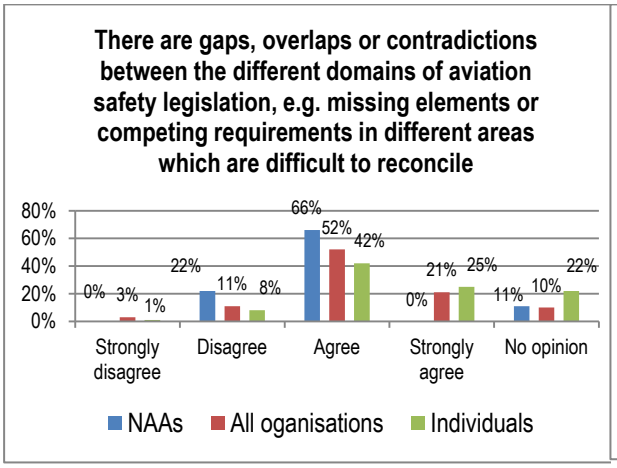


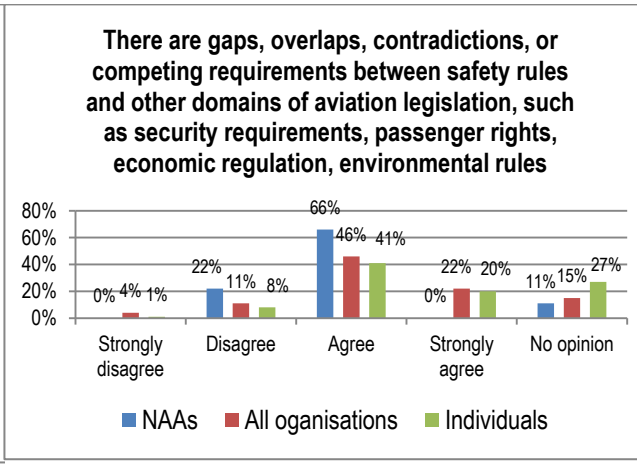


The aeronautical manufacturing industry has stressed the need for EASA to have adequate resources to ensure efficient certification of the new aeronautical products that are expected to be developed in the coming years.

viii. Consistency of the present regulatory framework

A clear majority of the respondent organisations (73%) pointed out that there are gaps, overlaps or contradictions between the different domains of aviation safety legislation. Similarly there was a clear majority of respondent organisations (68%) which believe that there are gaps, overlaps, contradictions, or competing requirements between safety rules and other domains of aviation legislation. These views were shared by the respondent National Aviation Authorities and individual respondents.





Some of the most common examples of inconsistencies and gaps pointed out by the respondents include:

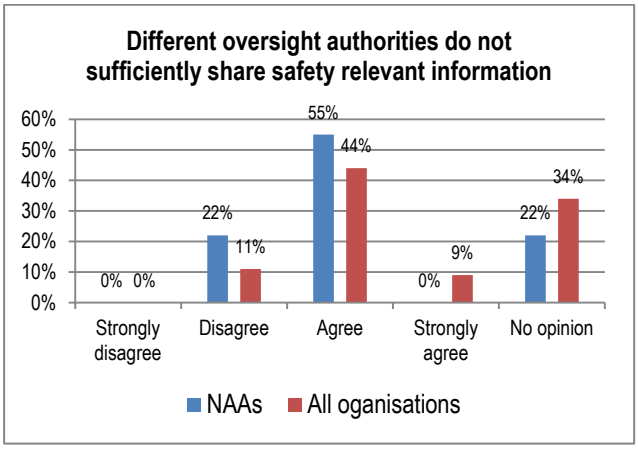
- Inconsistencies between requirements for airborne and ground-based components of the air traffic management system. Especially many air navigation service providers believe that the risk of such inconsistencies is big for the SESAR deployment phase.
- The inconsistencies between the occurrence reporting obligations in the present EASA implementing rules and the new EU regulation on occurrence reporting;
- Absence of a common framework for RPAS, and lack of coordinated response to emerging cyber-security threats;
- Inconsistencies between safety requirements and the EU chemicals regulation (REACH);

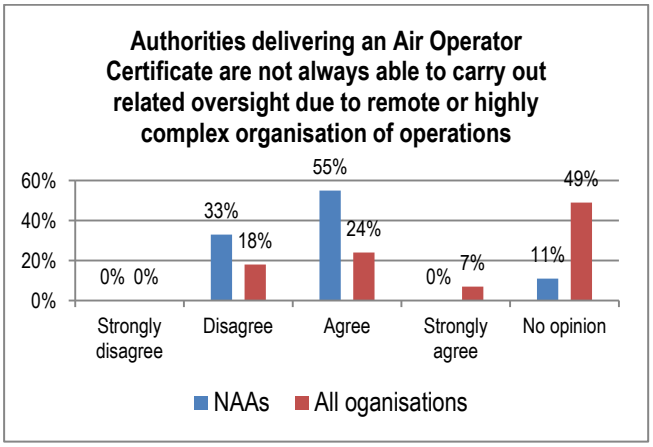
- Inconsistencies stemming from varying interpretations of EU requirements by different EU Member States;

ix. Exchange of information and oversight of complex Air Operator Certificate arrangements

While the majority of the respondent organisations (53%) believe that the oversight authorities do not sufficiently share safety relevant information, they were not able to give a clear opinion whether the complexity or geographical remoteness of the operation hampers the ability of oversight of air operator certificates by national authorities.

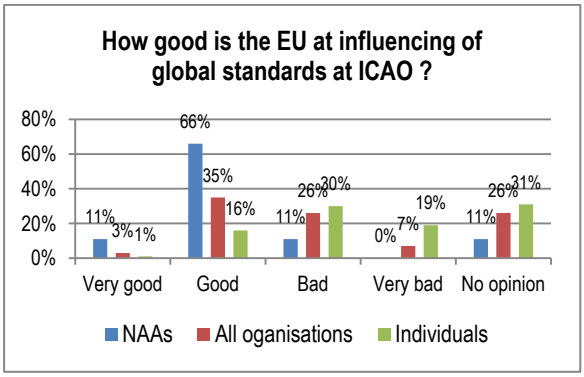
The majority of the respondent National Aviation Authorities (55%) believe that not only safety information is not sufficiently shared between the authorities but also that the authorities may not always be able to exercise oversight of air operator certificates due to remote or complex characteristics of the operation.

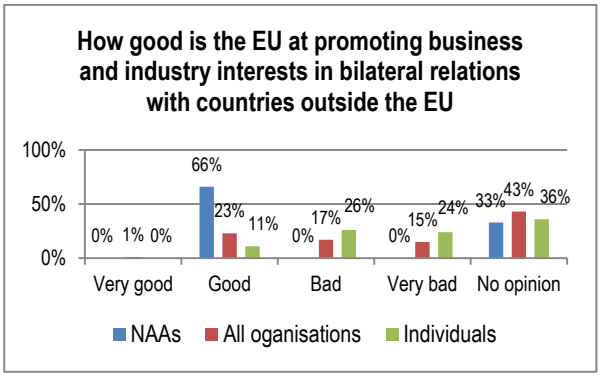


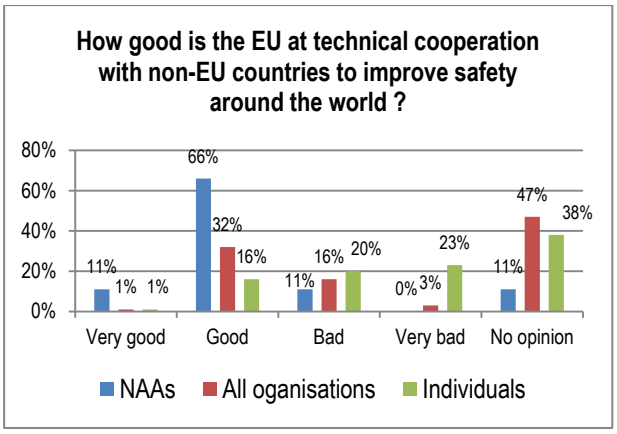


x. EU interests at international level

Views were almost equally split on whether the EU is successful in influencing international standards at ICAO level, with 38% of responding organisations agreeing that Europe is successful in this respect, 33% that not successful and 26% not having opinion at all. When it comes to the evaluation of EU's success in promoting the business interests overseas, and in supporting foreign countries in raising their safety levels, nearly half of the respondent organisations were not able to give an opinion. Respondent National Aviation Authorities were largely satisfied with the level of influence the EU has at the international level.







More specifically the following main trends can be observed in the contributions submitted:

- The manufacturing industry stresses the need for more reliance on Bilateral Aviation Safety Agreements to reduce redundant certifications and oversight. The manufacturing industry would also like to see EASA more present in the key markets and in ICAO, in order to promote the EU way of thinking on aviation safety and facilitate the export of aeronautical products;
- Many industry contributors see a need for close cooperation with the US, which at the same time is seen as a competitor;
- While the airline representatives underline the need for as close alignment with ICAO Standards And Recommended Practices as possible, the air navigation service providers caution about blindly following the ICAO Annexes which may be sometimes outdated or not adapted for the EU operational environment;
- While the need for coordination in representing EU interests abroad is widely recognised, many contributors believe that this should not be interpreted as speaking with 'single voice', and that 'multiple voices signing from the same hymn-sheet' would be more effective;

c. Subsidiarity of EU action

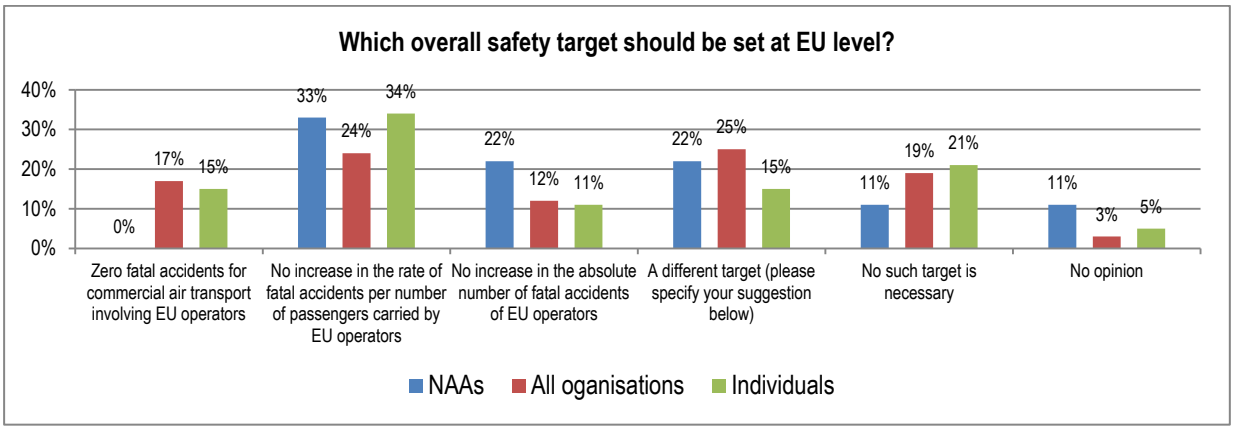
In the context of aviation safety regulation, the following main trends emerge from the contributions as regards subsidiarity of EU action:

- As a matter of principle, EU regulation is justified where it is necessary to ensure a level playing field on the internal market, or where the risks to be addressed concern more than one Member State;
- Operation in special local environments, such as mountainous regions, should be allowed on the basis of national rules or exemptions from common EU standards;
- A number of organisations suggested that sport and recreational aviation, especially with balloons and gliders, could be better regulated at the national than EU level. There were however submissions, suggesting that instead of reverting back to national approaches, the EU regulatory system for light aviation should be improved, and/or a choice given to the operators / manufacturers whether they would like to be under the EU or national system;
- Many helicopter operators suggested that commercial operations with helicopters should be regulated at national level.
- Many of the General Aviation organisations were of the opinion that more responsibility should be devolved from the authorities to competent users' organisations and individuals;

d. Policy objectives

i. The need for an EU target on aviation safety

Views were split with respect to the need to have an EU target for aviation safety. The largest proportion of the respondents was of the view that as a minimum the EU should be able to freeze the current rate of fatal accidents.



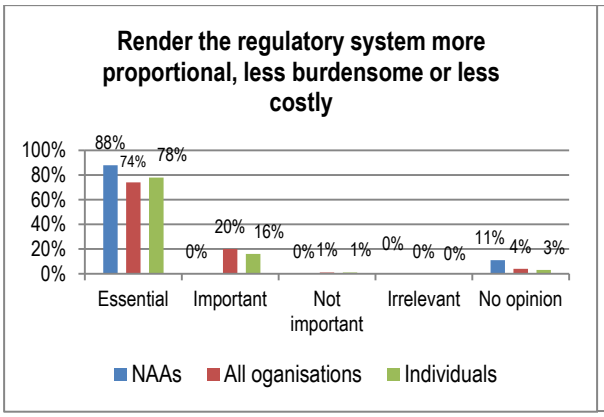
Main arguments in favour and against target setting were as follows:

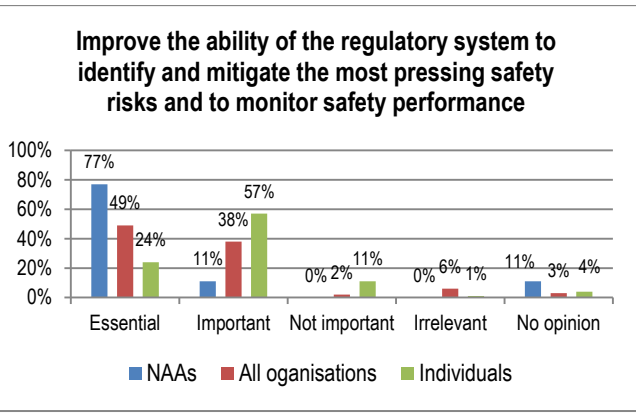
- Setting an overall safety target is too vague and could be at best considered as an aspirational objective. Targets should be set individually at the level of the organisation which has the most practical overview of the situation;
- While setting targets could be acceptable for Commercial Air Transport, General Aviation should not be subject to target setting;
- Safety targets should be set with respect to each domain of aviation and based on different acceptable levels of safety performance;
- Target setting can result in unintended safety consequences;
- 'Absolute' safety targets are unrealistic. Continuous improvement is a much better indicator of progress made;

ii. Key policy objectives, as perceived by stakeholders

Overall the respondents have agreed with the main objectives as suggested by the Commission. In particular there was almost a unanimous agreement between all the categories of respondents that the present regulatory system should be made more proportional and less costly.

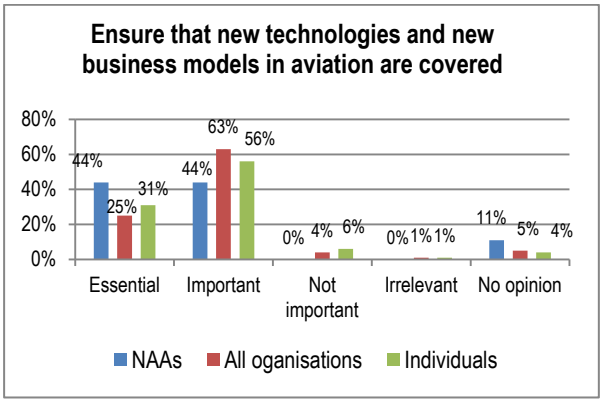
The improvement of the ability of the system to identify and mitigate safety risks has been also rated as a particularly important objective, especially by the respondent organisations and National Aviation Authorities more specifically.

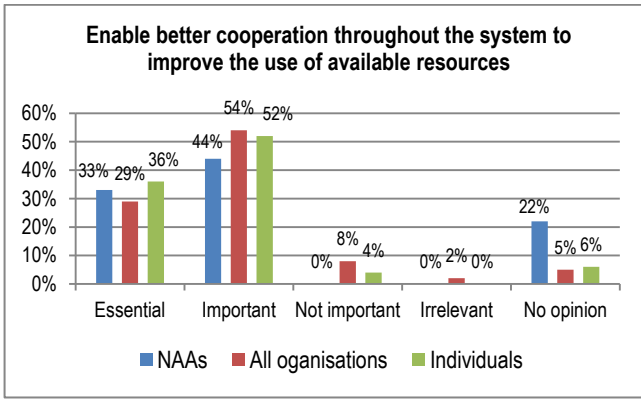


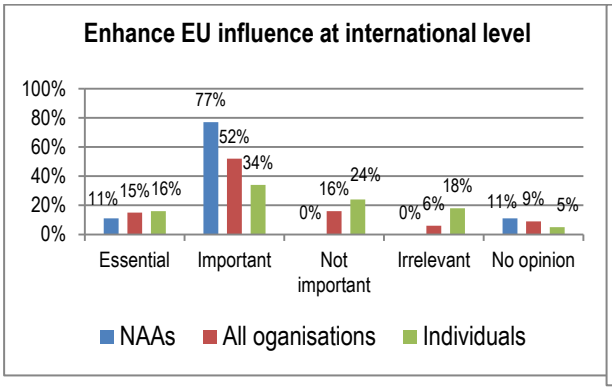


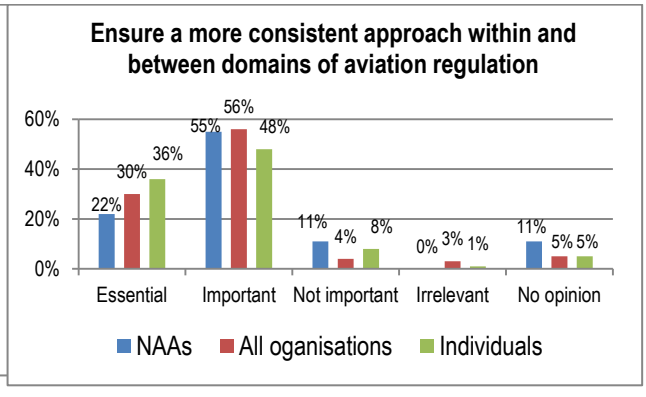
With respect to the future shape of the regulatory system, a large number of industry and National Aviation Authorities contributions suggested that rules should focus more on the safety objectives rather than prescribing in detailed the method of compliance, which should be up to the operators to choose.

Air navigation service providers and other stakeholders from the air traffic management sector advocated that EASA should be the only body in the EU responsible for setting safety requirements.









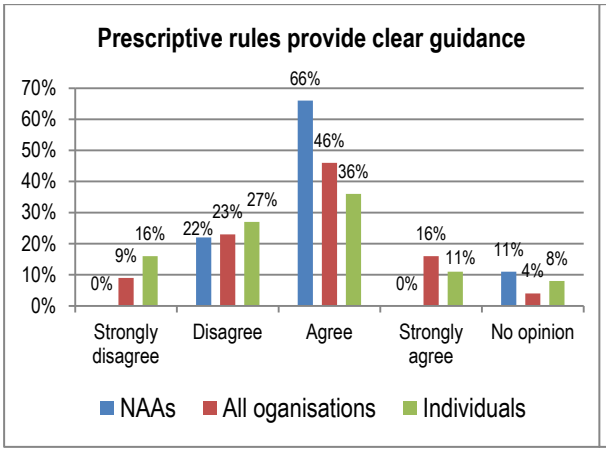
e. Policy measures

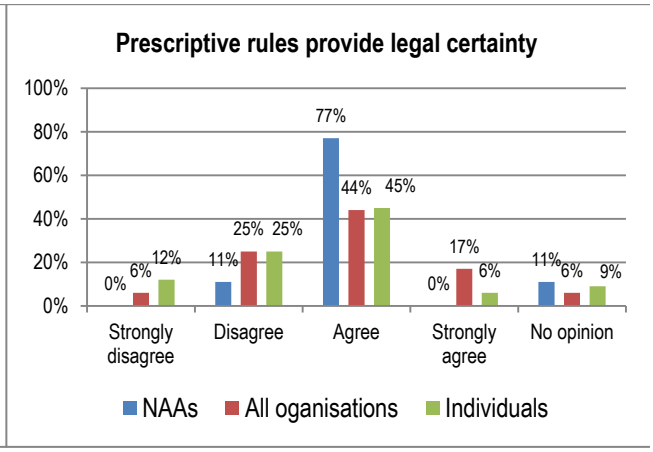
i. Regulatory system

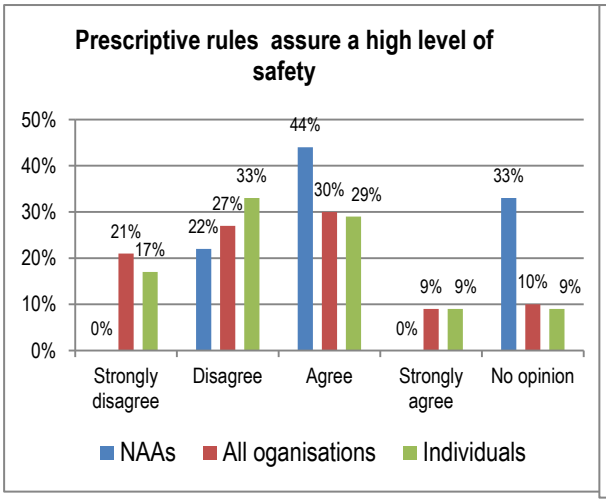
⇒ *Benefits of prescriptive regulations*

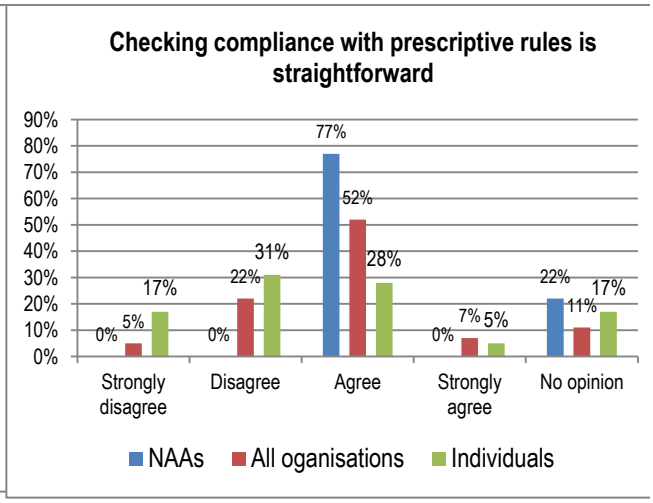
The respondents have largely agreed with the Commission as to the benefits provided by the prescriptive regulations (clear guidance, legal certainty and straightforward compliance checking).

However, views were split on whether the prescriptive regulations actually ensure a high level of safety, with 48% of all organisations and 50% of individuals disagreeing with such a statement.







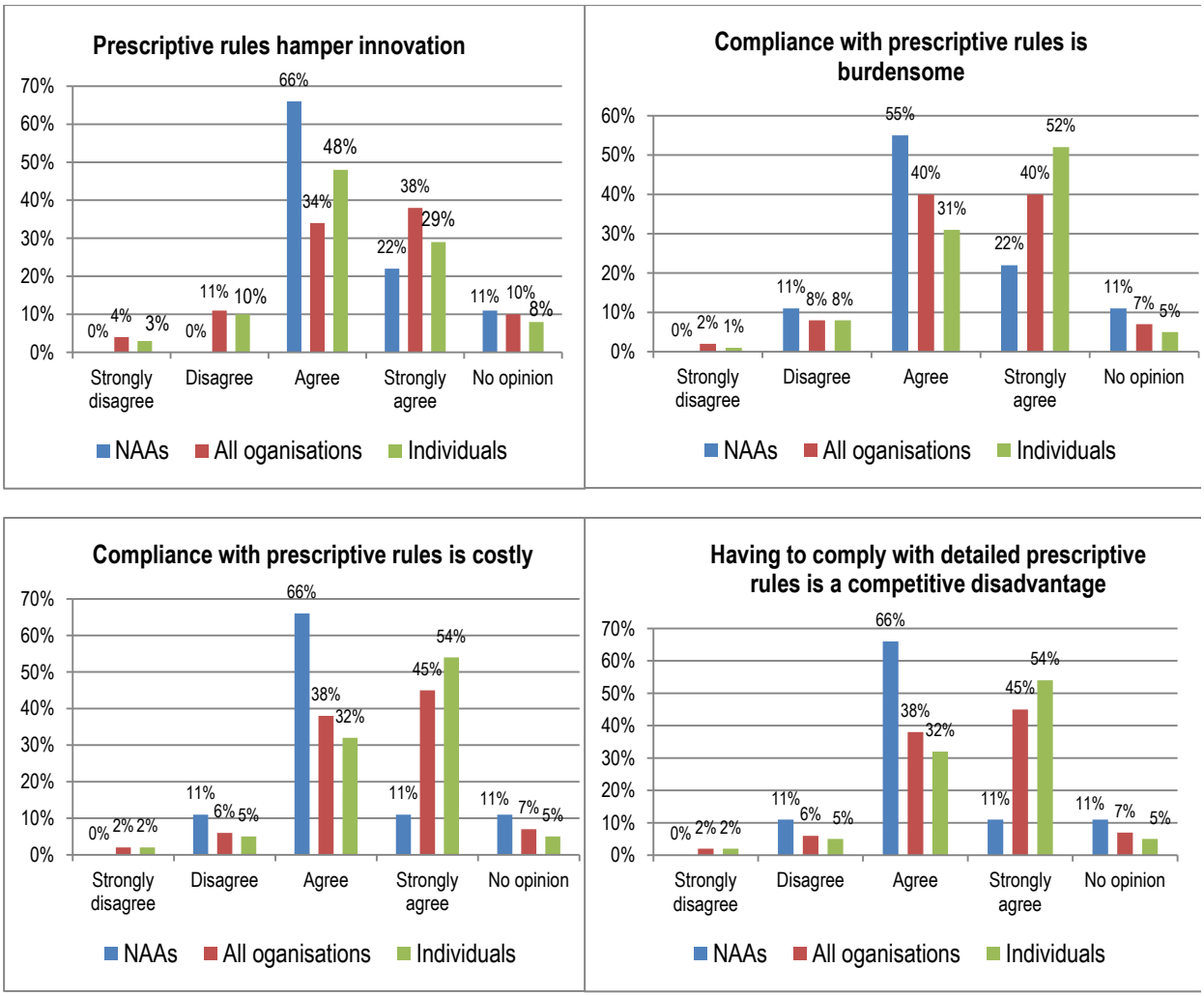


A thread that was present in many of the contributions is that while the prescriptive safety rules have helped to achieve the present high level of safety in Europe, the most important factors are commitment and professionalism of people and organisations, and that following the rule alone does not guarantee safety.

It was also highlighted in many of the contributions that EU is overly relying on regulation and that other means should be added to the EU's safety management 'tool-box' including safety promotion and support for training and implementation.

⇒ *Shortcomings of prescriptive regulations*

All the categories of respondents have similarly agreed with the statements made by the Commission with respect to the shortcomings of prescriptive regulations, which are perceived as hampering innovation, costly and burdensome.

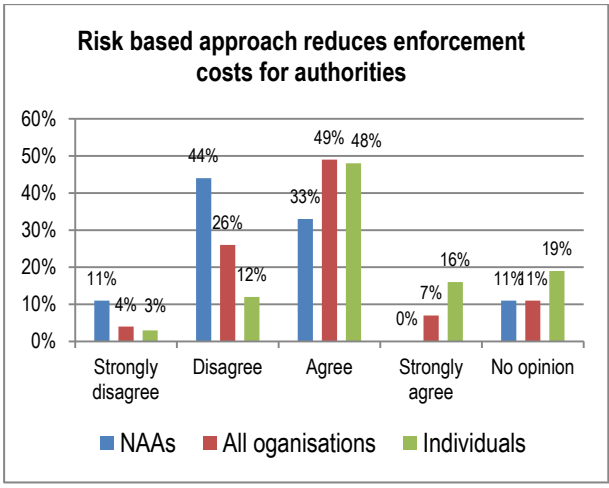


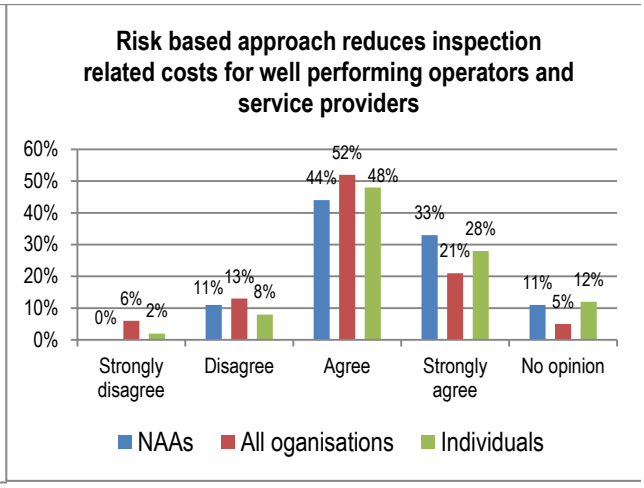
While the respondents identified a number of shortcomings of prescriptive regulations, many of them felt that there is a place for both prescriptive and performance based regulations. For many of the respondents the added value of prescriptive rules is the knowledge about safety risks - often stemming from accidents - which prescriptive rules contain. Prescriptive rules are also felt more appropriate for organisations which have not reached maturity which allows them to manage safety through own risks assessments.

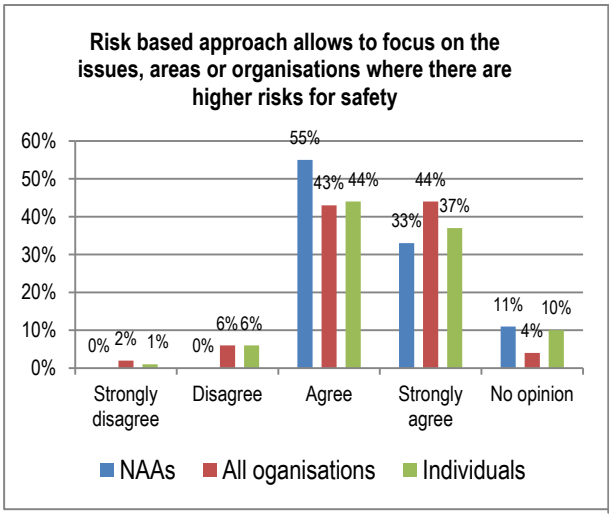
A number of respondents from the General Aviation community, while supporting a transition to more proportionate, performance and risk based regulatory framework, argued that in the first place there is a need to reassess whether in some domains there is a need for regulation at all.

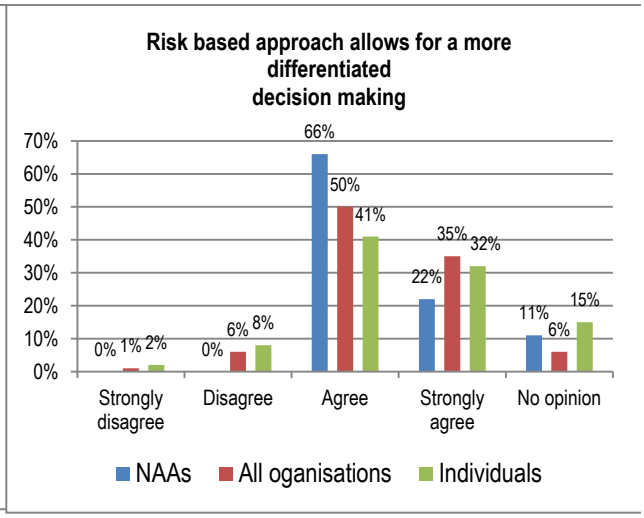
⇒ *Benefits of a risk based approach*

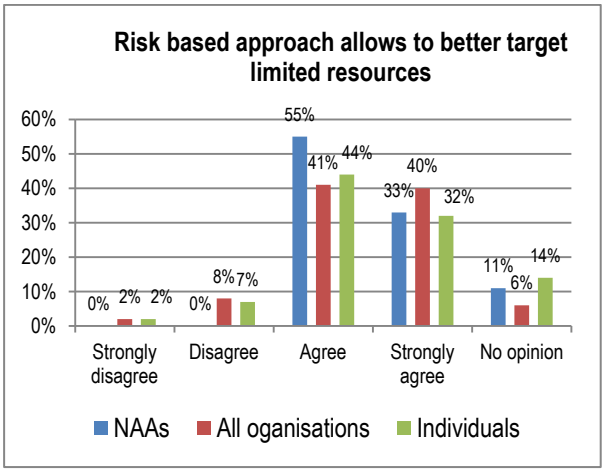
When it comes to identifying befits of a risk based approach, there has been a large degree of agreement amongst all the categories of respondents with the statements made by the Commission. However the majority of the respondent National Aviation Authorities (55%) and nearly a third of all respondent organisations (30%) do not agree that a risk based approach allows reducing enforcement costs for authorities.

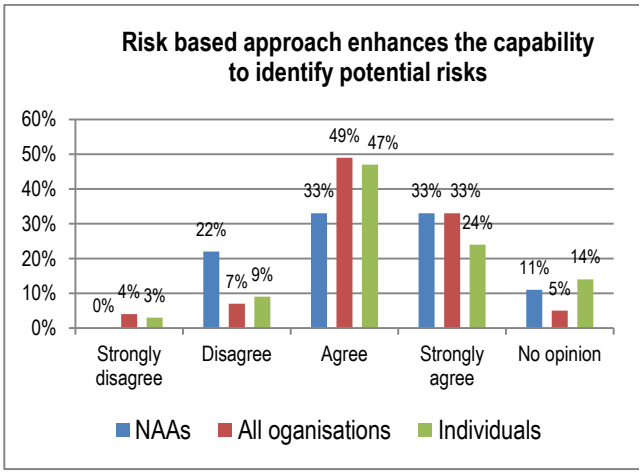










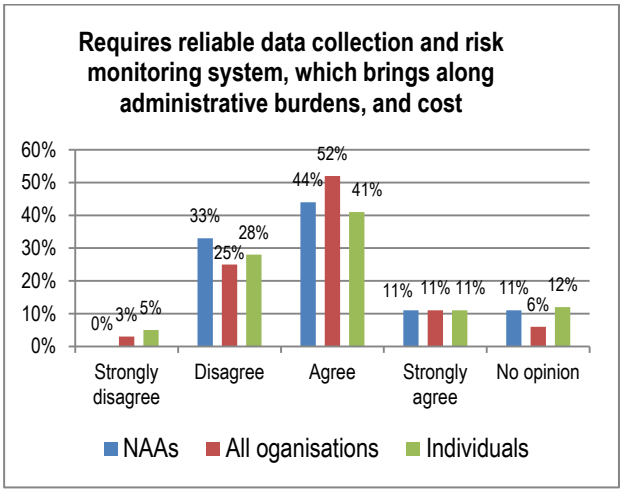


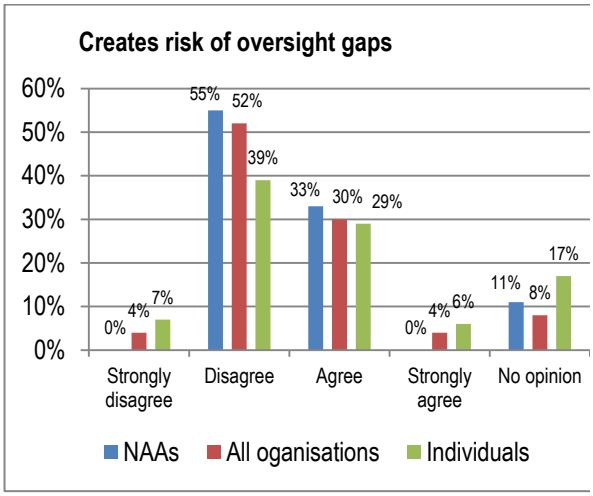
⇒ *Shortcomings of a risk based approach*

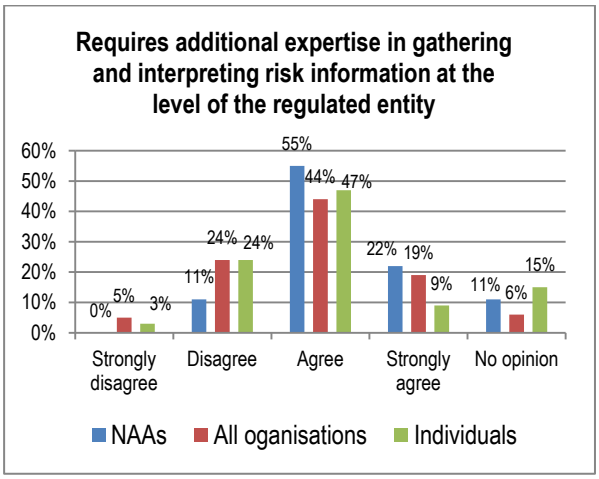
The majority of respondents in all categories agree that implementation of a risk based approach requires additional expertise in gathering and interpreting risk information, at the level of both the regulated entity and of the regulator. The majority of the respondent National Aviation Authorities (55%) and of the organisations in general (56%) believe that this new method can be implemented without risks of oversight gaps. However one-third of the respondents in each of the categories believe that such risks of oversight gaps do exist.

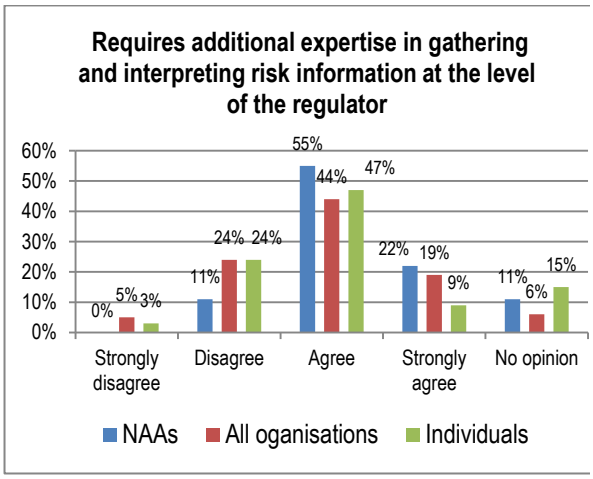
The majority of the respondents in each of the categories (55% National Aviation Authorities; 63% all organisations, 52% individuals) believe that implementation of a risk based approach creates additional costs and administrative burdens stemming from the need to put in place reliable data collection and risk monitoring systems. There is however also roughly a one-third of respondents in each of the categories, which believe that this not the case.

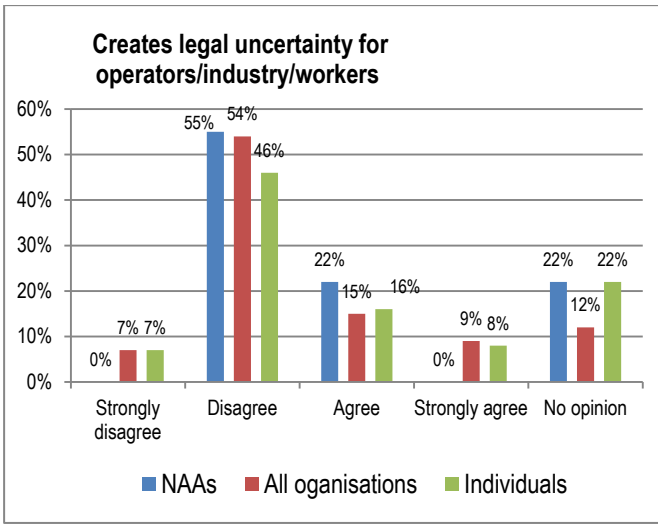
Finally, the majority of the respondents in each of the categories disagree with a statement that implementation of a risk based approach could create uncertainty for operators and employees, provided that such a new approach is well implemented.











⇒ *Benefits of SMS*

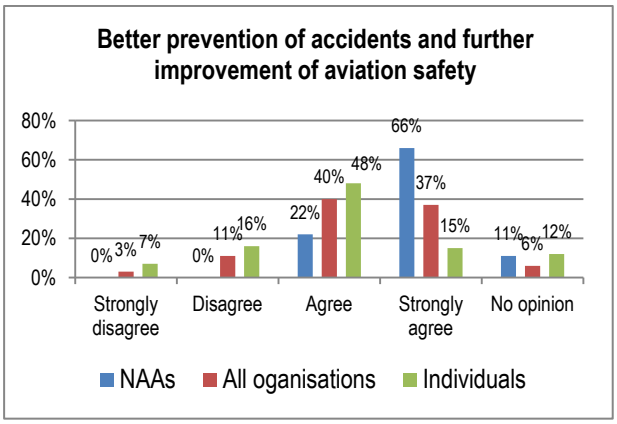
There is a strong agreement between all categories of respondents that SMS allows better prevention of accidents and further improvement of aviation safety. Respondents are also very much in agreement with the statement that SMS should allow the industry to increasingly manage its own safety.

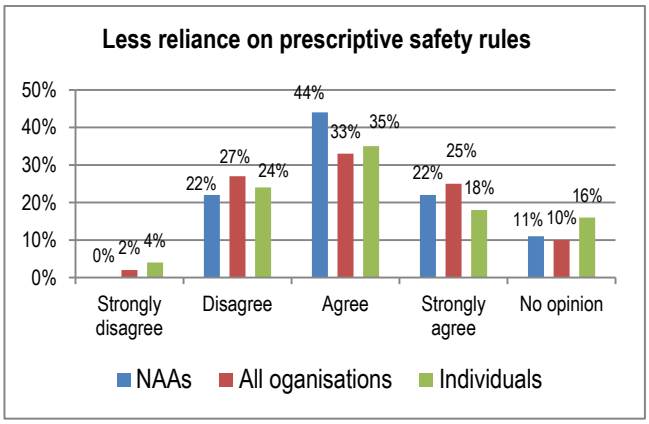
Views were however more split on the resource savings offered by SMS and on the possibility to rely less on prescriptive safety rules as a result of SMS implementation.

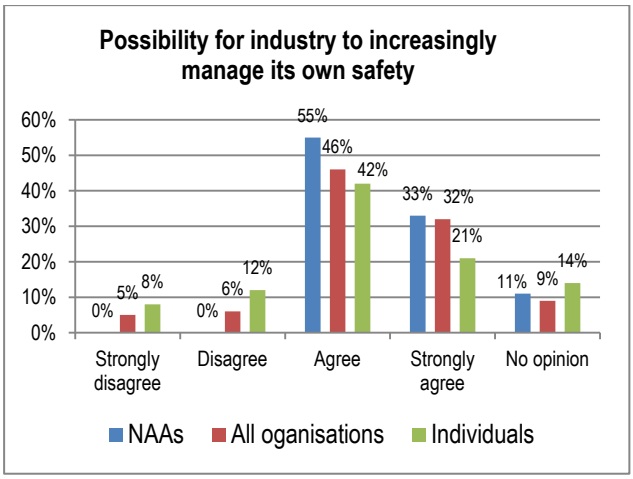
There were also two themes clearly present in the replies of respondents with respect to the SMS implementation:

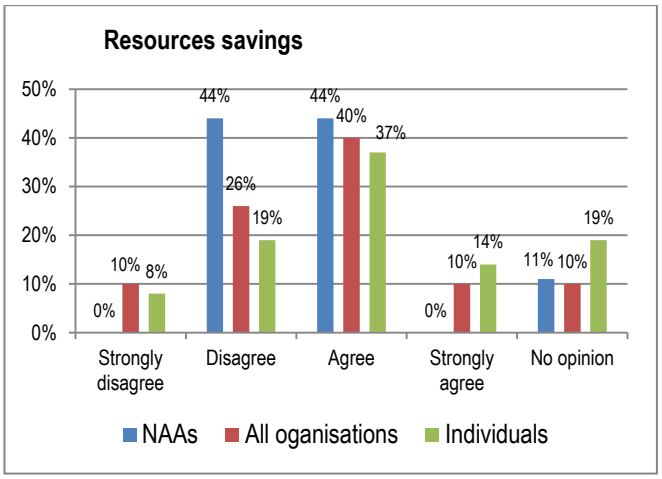
1. Genuine implementation of SMS takes time, and requires a cultural change within the organisation;

2. Smaller organisations and General Aviation community in particular expressed strong concerns about the added value of the SMS, compared to the costs required for implementation;





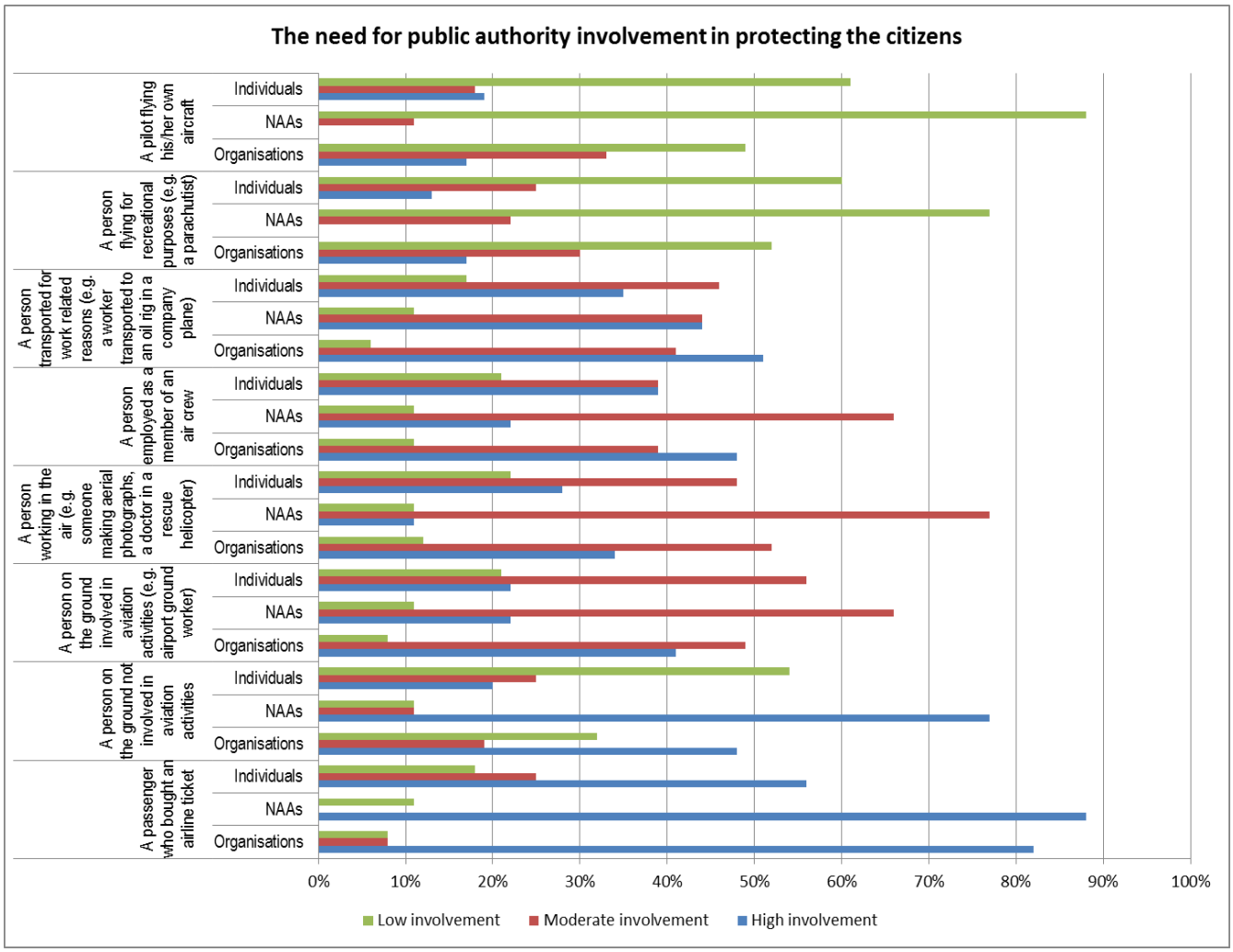




ii. The need for public authority involvement in protecting the citizens

The results of the responses to question related to the need for public authority involvement in protecting the citizens can be summarised as follows:

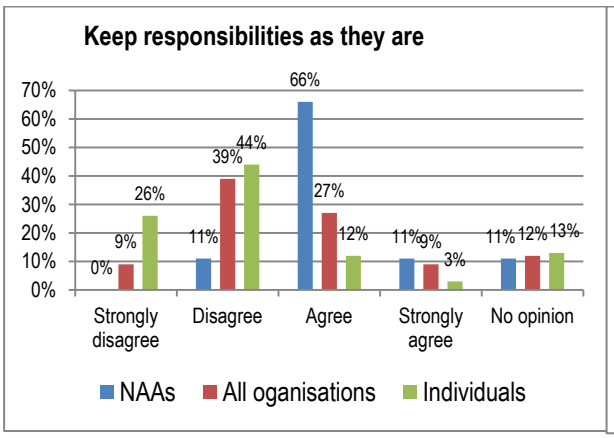
- There is an agreement between all the categories of respondents that the highest level of public authority involvement is necessary in case of airline passengers;
- The respondent organisations in general and National Aviation Authorities in particular also agree that a high level of protection (through authority involvement) should be given to persons on the ground not involved in aviation activities. This view is however not shared by the responded individuals.
- According to the respondents, a high to moderate level of protection (through authority involvement), should be afforded to persons transported by air for work related reasons, and employed as members of air crew.
- A moderate level of protection (through authority involvement), should be afforded, according to respondents, to persons on the ground involved in aviation activities (such as airport workers), and persons working in the air (such as aerial photography).
- Finally there is a large degree of consensus that the lowest need for public authority involvement is justified in case of persons flying for recreational purposes such as parachutists, and private pilots;

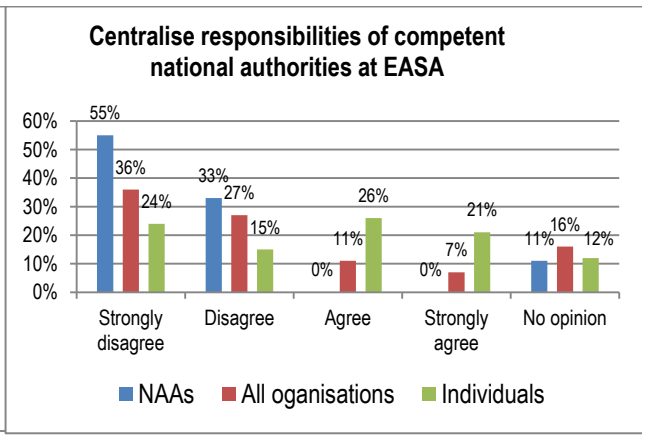


iii. Governance

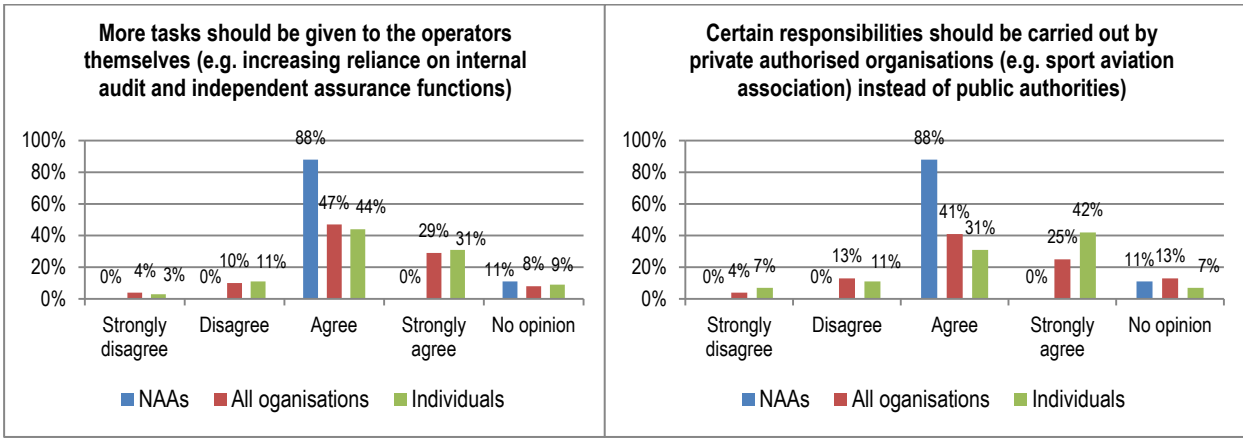
With respect to the governance, the majority of the respondent National Aviation Authorities (77%) would like to keep the current division of responsibilities between the EU and national level. On the other hand 48% of all the respondent organisations and 70% of individual respondents would like the allocation of responsibilities to be revisited.

There is a strong disagreement amongst respondent organisations (63%) and National Aviation Authorities in particular (88%) with the proposition to centralise the responsibilities of national authorities at EASA.



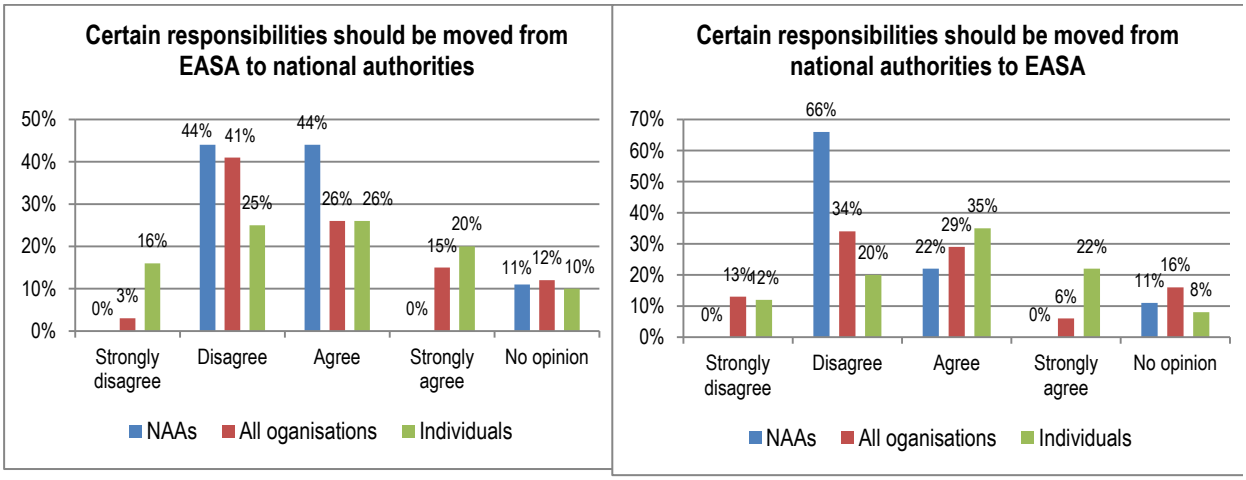


There is a very strong agreement between also the categories of respondents that more responsibility for safety should be given to the operators themselves, and that in the case of general aviation, certain regulatory tasks could be entrusted to specialised authorised private organisations, such as sport aviation associations.

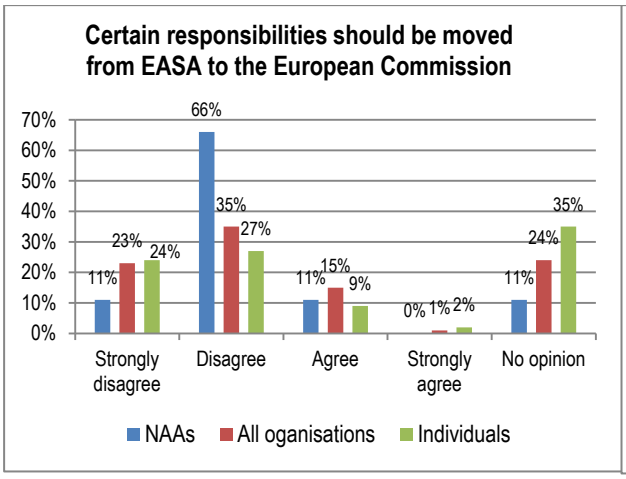


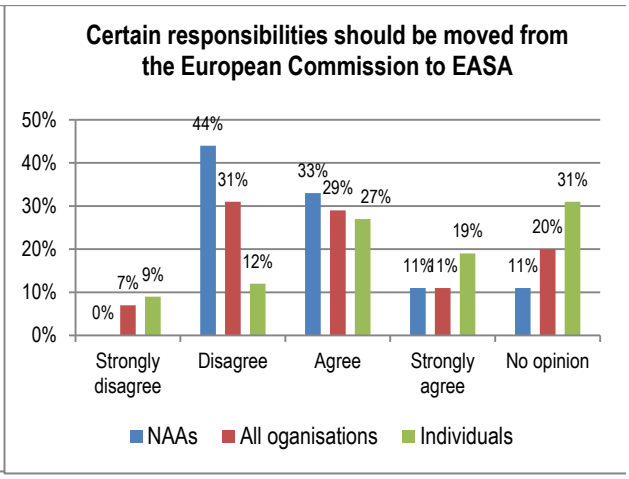
Views are almost equally split on whether certain responsibilities should be moved from EASA back to the national authorities. Similarly there are split views whether certain responsibilities should be moved from national authorities to EASA, but with the majority of the respondent National Aviation Authorities clearly against such a proposition.

Where proposals were made by the respondents that certain activities be regulated at the national level instead of EU level, that primarily concerned light and recreational aviation. The large manufacturing industry on the other hand would like to see the EASA regulatory remit extended. In those cases were respondents agreed that certain tasks should be moved from national authorities to EASA this was justified by reasons of harmonisation and standardisation. At the same time the industry recognised in their submissions the value of local proximity that the presence of national authorities gives.



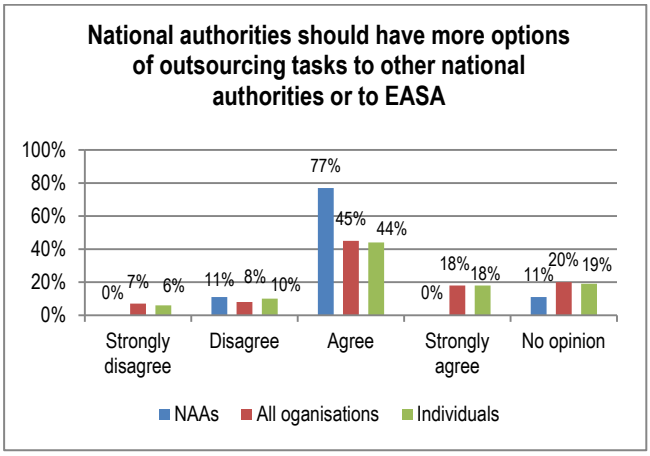
Views are split on whether some of the responsibilities should be moved from the European Commission to EASA. On the other hand respondents are clearly against moving responsibilities from EASA back to the European Commission.

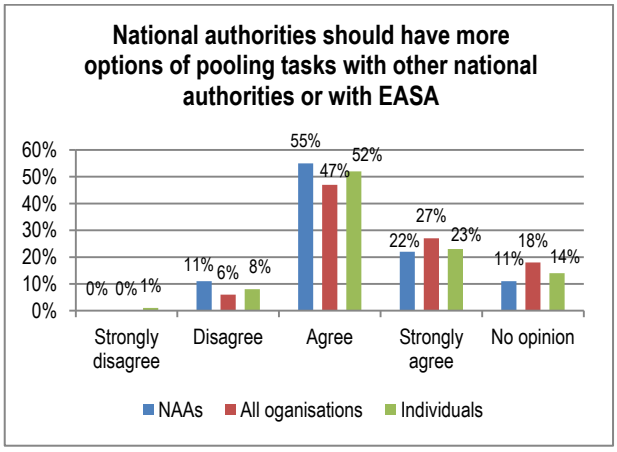


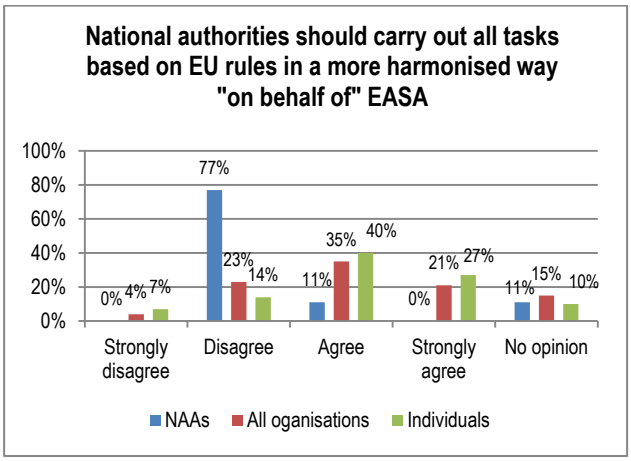


There is a clear agreement between all the categories of respondents that national authorities should have more options of outsourcing and pooling tasks amongst each other and with EASA.

The majority of the organisations (58%) would like to see the safety oversight and certification tasks executed by national authorities on behalf of EASA in a more harmonised manner. The majority of the respondent National Aviation Authorities oppose to such a proposition.







f. Small and Medium Sized Enterprises (SMEs)

The on-line survey contained a section dedicated to SMEs, and a number of contributors commented on this issue. The organisations which explicitly commented on the impact of the present regulatory system on SMEs highlighted the following:

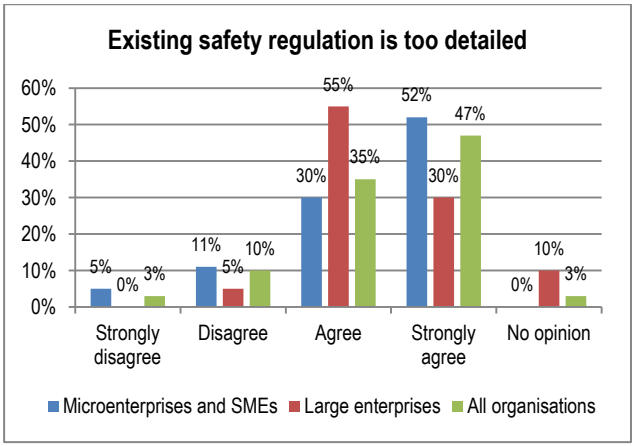
⇒ The present regulatory system puts excessive requirements on SMEs compared to achieved safety benefits. In particular it is felt by many contributors that regulations are too complex and beyond the ability of many SMEs to comprehend and be abreast with the constant changes;

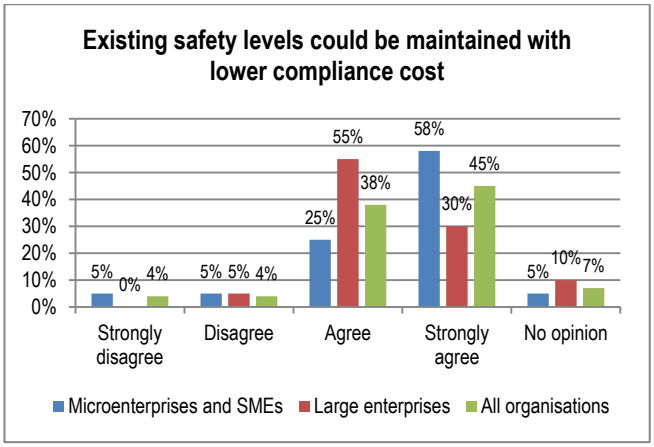
⇒ The regulations do not sufficiently differentiate between commercial air transportation provided on the mass scale by airlines and commercial air transportation provided by SMEs;

⇒ The present improvements are focused on non-commercial aviation (i.e. general aviation), and not sufficient attention is being given to more proportionate regulation for commercial activities of SMEs;

⇒ Regulations are very difficult to implement by companies where a single individual performs roles which in an airline or a big manufacturer are responsibility of multiple departments;

Overall, there is almost unanimity amongst the micro and SME enterprises which responded to the questionnaire, that the existing safety regulation is too detailed and that the existing safety levels could be maintained with lower compliance cost.





g. Other issues

Amongst some other issues brought by the respondents to the attention of the Commission were:

⇒ Suggestion to create a Light Sport Aircraft category, similar to the US one;

⇒ Need for translation of 'soft law' material into national languages;

⇒ Greater reliance on standards developed by the industry through recognised standardisation bodies;

⇒ Need for development of manuals which regroup all the regulatory material for a particular domain (i.e. general aviation) in a single user-friendly document;

⇒ Need for development of EU standards and authorisation procedures for aviation bio-fuels;

⇒ Review of EU requirements concerning wet-leasing to make them more operational.

ANNEX III

Who is affected by the initiative and how?

The stakeholders affected by the problems and their drivers outlined in Section 2 of the impact assessment are persons and organisations involved in the civil aviation safety system at national and/or EU level.

National Aviation Authorities and their staff, which are primarily responsible for the implementation of the EU aviation safety legislation, including initial approval and continuing oversight of persons, organisations and services subject to the provisions of Regulation (EC) No 216/2008 and its Implementing Rules, are affected by changes to the current legislation such as risk and performance based elements or cooperative oversight. The EU is concerned in its role as safety regulator and EASA in particular in its rule making and standardisation tasks. Both EU and Member States are responsible for ensuring a high and uniform level of safety and thus addressing safety risks.

Industry players (such as manufacturers, airlines, maintenance and training organisations including their staff) as well as private airspace users are affected as addressees of aviation safety legislation who have to handle its complexity, have to compete on a global market and are hindered in developing or using new technologies.

Employees in the aviation sector are also affected by changes to the current legislation such as risk and performance based elements or cooperative oversight, which require additional training to develop the necessary competences. Aircrew is particularly concerned by certain airline employment practices and other innovative business models.

The travelling public as potential victim of aviation accidents and incidents is affected by the ability of the regulatory system to identify and mitigate safety risks. Indirectly, their choices as consumers are influenced by the competitiveness of the European aviation sector.

ANNEX IV

Article 62 evaluation (2013)

Summary of recommendations

While the Panel has for the Management Board's convenience listed below its main recommendations, the Panel cannot emphasize too strongly the need for the Board to consider the totality of this report as the source of its advice to the Management Board. To concentrate only on these main recommendations would, in the Panel's view, not do justice to its work, nor would it enable the Management Board to derive full value from the Article 62 evaluation exercise.

1) The work of establishing a risk-based EU Safety Management System should be prioritised and completed urgently. It should extend to all areas in the Agency's remit and be mandatory involving changes to the Basic Regulation. Data collection and exchange should be accorded priority and action to implement a just culture regime across the EU System should be stepped up. Tools for the analysis of data and shared information should be enhanced as a matter of urgency.
2) The Agency should be mandated for the safety aspects of EU security measures as well as the safety aspects of ground handling, commercial space transport and remotely piloted aircraft.
3) Should Member States have insufficient resources to perform their oversight activities the Panel recommends a System-wide solution, which may be voluntary in nature but may in some cases need to be mandatory. For the voluntary solution the Agency should, by amending the Basic Regulation, be authorised to execute the national oversight duties for those Member States that wish to transfer their duties to the Agency. Where the voluntary solution is not appropriate or practical for whatever reason but the oversight responsibilities are not being or cannot be performed, a mandatory solution, requiring amendment of the Basic Regulation is recommended. The Agency should be mandated to identify and report to the Commission those States/National Aviation Authorities failing in their oversight obligations and if a method to resolve the problem (whether voluntary or mandatory) is not availed of by those States, consideration should be given to employing whatever measures are available to the Commission/Agency to resolve the issue.
4) The Management Board should initiate a study designed to clarify institutional roles and responsibilities of the actors involved in the EASA System. The outcome of the study should lead to a common understanding – pending any regulatory changes that may be required – amongst the EASA System actors on their institutional boundaries, responsibilities and roles. This understanding would be expressed in an agreed document.
5) A method should be found of tapping into and using the pool of expertise available in the European manufacturing industry. In addition, consideration should be given to delegating self-oversight arrangements to the industry on the basis of clear legal conditions.
6) A small Executive Board should be created and responsibility delegated to it by the Management Board, empowered to enable it to do this. Amendment of the Basic Regulation would be required.

7) The European Aviation Safety Plan should be embedded in the Basic Regulation (legally binding the Agency and Member States) and, as a rule, Agency proposals should emanate from this Plan.

8) To assist in securing stable and predictable funding of the Agency, new sources of funding should be explored with a stronger emphasis on the application of the user pays approach. One source that should be explored is the possibility of drawing on air navigation en route charges.

9) The Management Board should recognise and accept that the current EASA System is not sustainable in the medium to long term.

10) The Management Board should acknowledge the need for early planning to develop the present System into a genuine European Aviation Safety System through the convergence of the various existing system actors towards a single entity, one integrated Agency, within the EU institutional architecture.

ANNEX V

EASA Management Board Sub-Group on the Future of the European Aviation Regulatory System

Summary of recommendations

(a) Enable sharing of resources within the EASA system for specific tasks, through contractual and voluntary mechanisms;
(b) Extension of the remit to safety aspects in the field of ground handling, security (for oversight activities), environment (for product-related aspects), and RPAS;
(c) Avoid potential overregulation and promote performance and risk-based regulations where appropriate. The principles of proportionality and subsidiarity need to be respected;
(d) Risk-based oversight (RBO) - More effective, well planned use of oversight resources based on detected risks;
(e) Performance based oversight (PBO) concentrating on the required outcome or performance in relation with the agreed safety objectives;
(f) Facilitate the implementation of SMS at Europe/State/Authority and organisation level, in a consistent manner, as an enabler for a risk/performance-based environment;
(g) Have due regard to the competitiveness of the European industry, and avoid putting undue regulatory burden on it, as well as reviewing its role in the rulemaking process;
(h) The Agency shall enhance its presence at international level;
(i) Ensure the necessary resources are available, especially for certification and oversight purposes;
(j) Identify areas where resources could be released without compromising performance;
(k) Ensure continued availability of resources matching the evolving needs e.g. in safety analysis and PBO;
(l) New funding mechanisms based on the user-pays principle should be explored/made available, especially when the conditions change (e.g. remit expansion), but without generating new costs for the airlines.
(m) The continuous efficiency in the use of financial resources should be ensured and prioritised.

ANNEX VI

DIVISION OF RESPONSIBILITIES IN THE EU AVIATION SAFETY SYSTEM

(1) EU MEMBER STATES

Under the EU institutional system, and in particular Article 5 of the Treaty on the European Union (TEU) which sets out the principle of subsidiarity, the implementation of EU law is primarily the responsibility of the EU Member States. This is the case also for aviation safety where, unless it has been decided by the EU legislator that a certain function can be better performed - by reason of the scale or effects of the proposed action - at the EU level, EU Member States are, *per default*, responsible for the initial certification and continuing oversight of airlines, pilot schools and other types of organisations and personnel performing aviation activities. EU Member States are also primarily responsible for enforcing EU aviation safety legislation, in particular by revoking, suspending or limiting certificates, as well as laying down administrative penalties for breaches of EU aviation safety legislation.

(2) EUROPEAN COMMISSION

The European Commission has five main functions in the implementation of the EU aviation safety system. The first function is to present proposals for aviation safety regulations, which are developed, depending on whether the legal basis of the envisaged rule stems from Regulation (EC) No 216/2008 or not, either on the basis of a technical Opinion from EASA or on the Commission's own initiative. The second function is to monitor the correct implementation of the EU aviation safety *acquis*, and where the European Commission relies on EASA standardisation inspections and other monitoring activities. Thirdly, the European Commission has an enforcement role, which can take a form of an infringement action against an EU Member State or a financial penalty payment against a holder of a certificate issued by EASA. The fourth function is to negotiate, with technical assistance of EASA, Bilateral Aviation Safety Agreements with non-EU countries. Finally the European Commission has an overall responsibility for the implementation of the EU regulation establishing a list of air carriers subject to an operating ban or restriction.

(3) EUROPEAN AVIATION SAFETY AGENCY (EASA)

EASA is a body of the EU with legal personality which was originally established in 2002 on the basis of a regulation of the European Parliament and the Council. Its mandate was initially limited to airworthiness and environmental certification of aeronautical products, parts and appliances, but was subsequently extended to other domains of the aviation safety chain (in 2008 Air Operations and Aircrew; in 2009 to air traffic management/air navigation services and aerodromes). EASA is one of the few EU agencies which have not only advisory and monitoring role, but which have been doted also with executive competences. In particular EASA has been empowered by its Basic Regulation to conduct certification tasks in the area of aircraft design approval, certification of organisations located in the territories of non-EU countries and approval of organisations which provide pan-European Air Traffic Management services. In addition to its certification competences, EASA assists the European Commission in the development the EU

aviation safety *acquis* and the monitoring of its correct implementation. It has also the competence to adopt soft law measures, that is: Guidance Material, Certification Specifications and Acceptable Means of Compliance. EASA supports the European Commission and EU Member States in international cooperation with non-EU countries and ICAO, and has the competence to conclude technical working arrangements with foreign aviation authorities.

(4) EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION (EUROCONTROL)

EUROCONTROL is an intergovernmental organisation which was originally established in 1960 with the intention of being a provider of air traffic management/air navigation services in the entire upper airspace of its six initial Member States. However, the majority of the European States were not prepared to give up as much sovereignty over their own airspace as EUROCONTROL would have needed to perform these functions and thus its focus shifted from integration to cooperation. Currently EUROCONTROL is active in areas such as SESAR related R&D, support to States in implementation of the Single European Sky (SES) initiative, support to the EU in rule drafting and oversight, and most visibly it has been nominated to host both the EU Performance Review Body and the Network Manager, where it provides vital EU functions. It is widely acknowledged that the current 1997 revised EUROCONTROL Convention - which is not in force - is outdated and needs modernisation in line with the organisation's current and future roles in support of the SES initiative and increasingly focusing on operational tasks through the Network Manager, support to SESAR deployment and the performance scheme. However this modernisation is difficult to achieve due to the intergovernmental status of EUROCONTROL and the fact that its membership goes beyond the EU borders.

(5) INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO)

Although part of a separate UN system, ICAO influences the implementation of the EU aviation safety system in a number of ways. First of all by defining minimum requirements, which are set out in the 19 technical Annexes (majority of them dealing with aviation safety) to the 1944 Convention on International Civil Aviation (Chicago Convention). Whilst all the EU Member States are parties to the Chicago Convention and are thus responsible under international law for its implementation, the EU cannot be a party to it, and can influence the rulemaking ICAO machinery only indirectly. This reliance on ICAO is especially visible in the area of environmental protection where the ICAO requirements apply in the EU by reference. ICAO also monitors compliance of EU Member States with minimum requirements of the Chicago Convention. Where the EU Member States have delegated executive tasks to EASA, the Agency is also subject to monitoring by ICAO. Until 2014 ICAO has performed two audits of EASA. Finally ICAO is responsible for the global planning of aviation safety improvements and coordinated world-wide deployment of new technologies, in particular in the air traffic management domain.

ANNEX VII

The main functions of the EU aviation safety system

(1) THE CURRENT SCOPE OF THE EU AVIATION SAFETY SYSTEM

At present aviation safety is largely regulated at the EU level. The EU Member States continue to regulate only in areas which have been traditionally excluded from the EU competence, such as state aviation (military, police etc.), or where in view of the subsidiarity principle the legislator has decided that the EU regulatory involvement would not bring much added value (e.g. small general aviation aerodromes, amateur-built or historic aircraft).

The second feature of the current EU regulatory system is that not all the safety related rules are developed and maintained following the same process. In this respect three main pillars can be distinguished:

- **Pillar I**: Currently the majority of the aviation safety rules are developed, adopted and maintained in the framework of Regulation (EC) No 216/2008, which, following its initial adoption in 2002,[205] has been subsequently extended twice to cover all the principal domains of the aviation safety chain.[206] The essential requirements which are set out in the Annexes to Regulation (EC) No 216/2008 are supplemented with detailed Implementing Regulations, which in turn are accompanied by Certification Specifications, Acceptable Means of Compliance and Guidance Material developed by EASA. It is a general policy of the EU to regulate aviation safety under Pillar I. In this respect a number of safety rules which were originally developed before the adoption of Regulation (EC) No 216/2008, such as the former SAFA Directive[207] or the EU-OPS Regulation,[208] have been subsequently transformed into Implementing Rules to Regulation (EC) No 216/2008.[209]

- **Pillar II:** In 2009, Regulation (EC) No 1108/2009 extended the competences of EASA to safety aspects of air traffic management/air navigation services. Whilst this resulted in the incorporation of various related technical elements into Regulation (EC) No 216/2008, the

[205] Regulation (EC) No 1592/2002 of 15 July 2002 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency', (OJ L 240, 7.9.2002).
[206] Regulation (EU) No 216/2008 of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC, (OJ L 79, 19.3.2008); Regulation (EC) No 1108/2009 of the European Parliament and of the Council of 21 October 2009 amending Regulation (EC) No 216/2008 in the field of aerodromes, air traffic management and air navigation services and repealing Directive 2006/23/EC, (OJ L 309, 24.11.2009).
[207] Directive 2004/36/CE of the European Parliament and of the Council of 21 April 2004 on the safety of third-country aircraft using Community airports, (OJ L 143, 30.4.2004, p. 76).
[208] Council Regulation (EEC) No 3922/91 of 16 December 1991 on the harmonization of technical requirements and administrative procedures in the field of civil aviation (OJ L 373, 31.12.1991, p. 4)
[209] Both the former SAFA Directive and the EU-OPS Regulation have been replaced, subject to transitional periods, by Commission Regulation (EU) No 965/2012 of 5 October 2012 laying down technical requirements and administrative procedures related to air operations pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, (OJ L 296, 25.10.2012, p. 1)

corresponding changes to the SES founding regulations[210] were not completed simultaneously. The reason for this approach was that the legislator wanted to avoid a risk of regulatory gaps during the transition from the SES to the EASA framework. However this also caused an overlap between the SES founding regulations and Regulation (EC) No 216/2008, and more generally a mismatch between the approach used for all other sectors of aviation (airworthiness, crew licensing, air operations etc.) in the EASA framework and air traffic management/air navigation services. The 2012 SES II+ initiative launched by the European Commission has as its objective to "eradicate the overlap between SES and EASA regulations",[211] and work is ongoing on bringing all the safety relevant legislation related to air traffic management/ air navigation services under Pillar I.[212] It is therefore ultimately envisaged that Pillars I and II will be merged, following the adoption of the relevant provisions of the SES II+ package.

- **Pillar III:** This pillar contains aviation safety rules which are developed neither under the SES framework regulations, nor under Regulation (EC) No 216/2008. Three main areas can be distinguished in this respect: Air Accident investigations;[213] the reporting analysis and follow-up of occurrences;[214] and finally the EU list of airlines subject to an operating ban or restriction.[215]

[210] Regulation (EC) No 549/2004 of 10 March 2004 laying down the framework for the creation of the single European sky (OJ L 96, 31.3.2004, p. 1.); Regulation (EC) No 550/2004 of 10 March 2004 on the provision of air navigation services in the single European sky (OJ L 96, 31.3.2004, p. 10); Regulation (EC) No 551/2004 of 10 March 2004 on the organisation and use of the airspace in the Single European Sky (OJ L 96, 31.3.2004, p. 20); Regulation (EC) No 552/2004 of 10 March 2004 on the interoperability of the European air traffic management network (OJ L 96, 31.3.2004, p. 26).

[211] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Accelerating the implementation of the Single European Sky, (COM(2013) 408 final, 2013), p.9

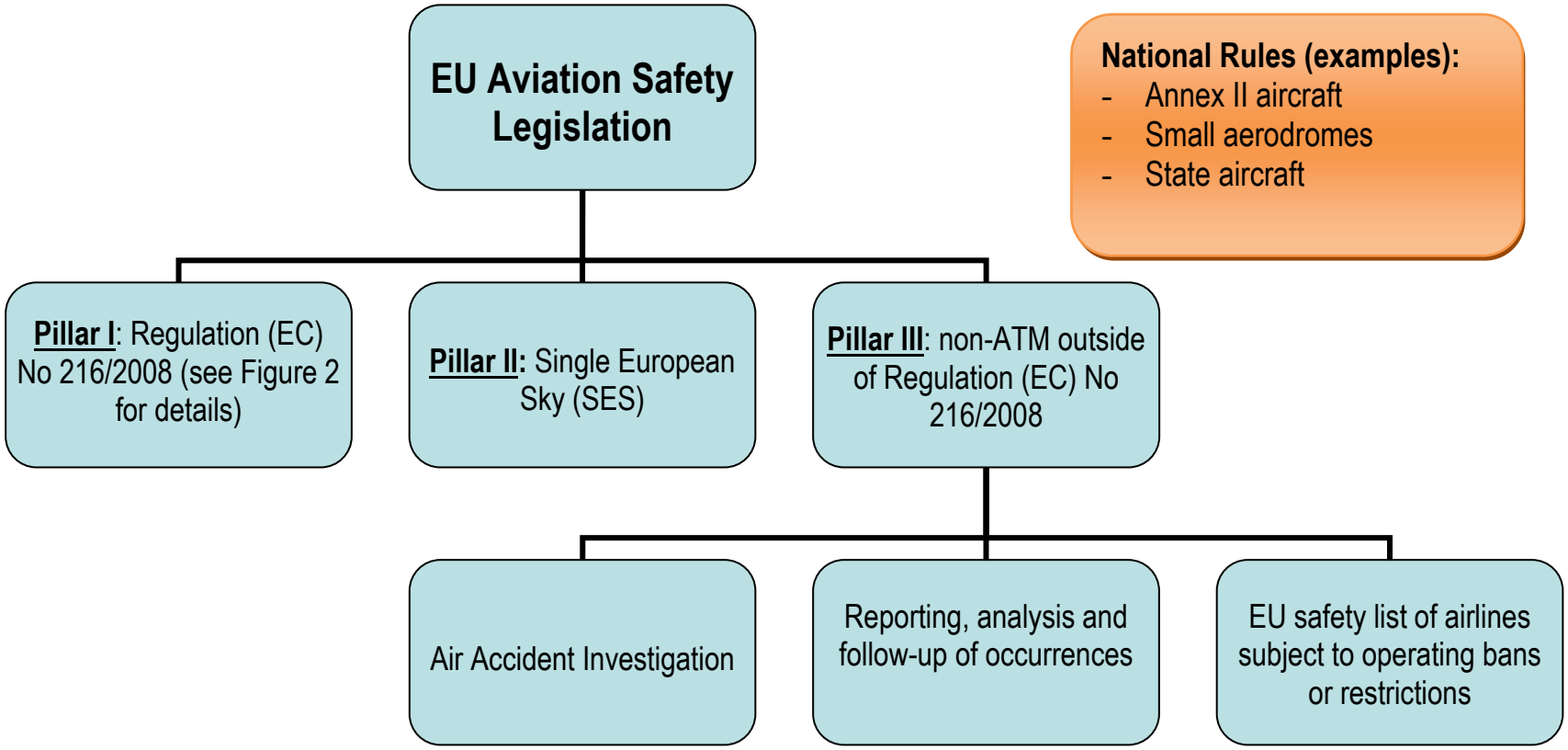
[212] This has been the case for example with the former Directive on ATCO licensing (Directive 2006/23/EC of the European Parliament and of the Council of 5 April 2006 on a Community air traffic controller licence (OJ L 114, 27.4.2006, p. 22)), which has been transformed into Commission Regulation (EU) No 805/2011 of 10 August 2011 laying down detailed rules for air traffic controllers' licences and certain certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 206, 11.8.2011, p. 21).

[213] Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC', (OJ L 295, 12.11.2010)

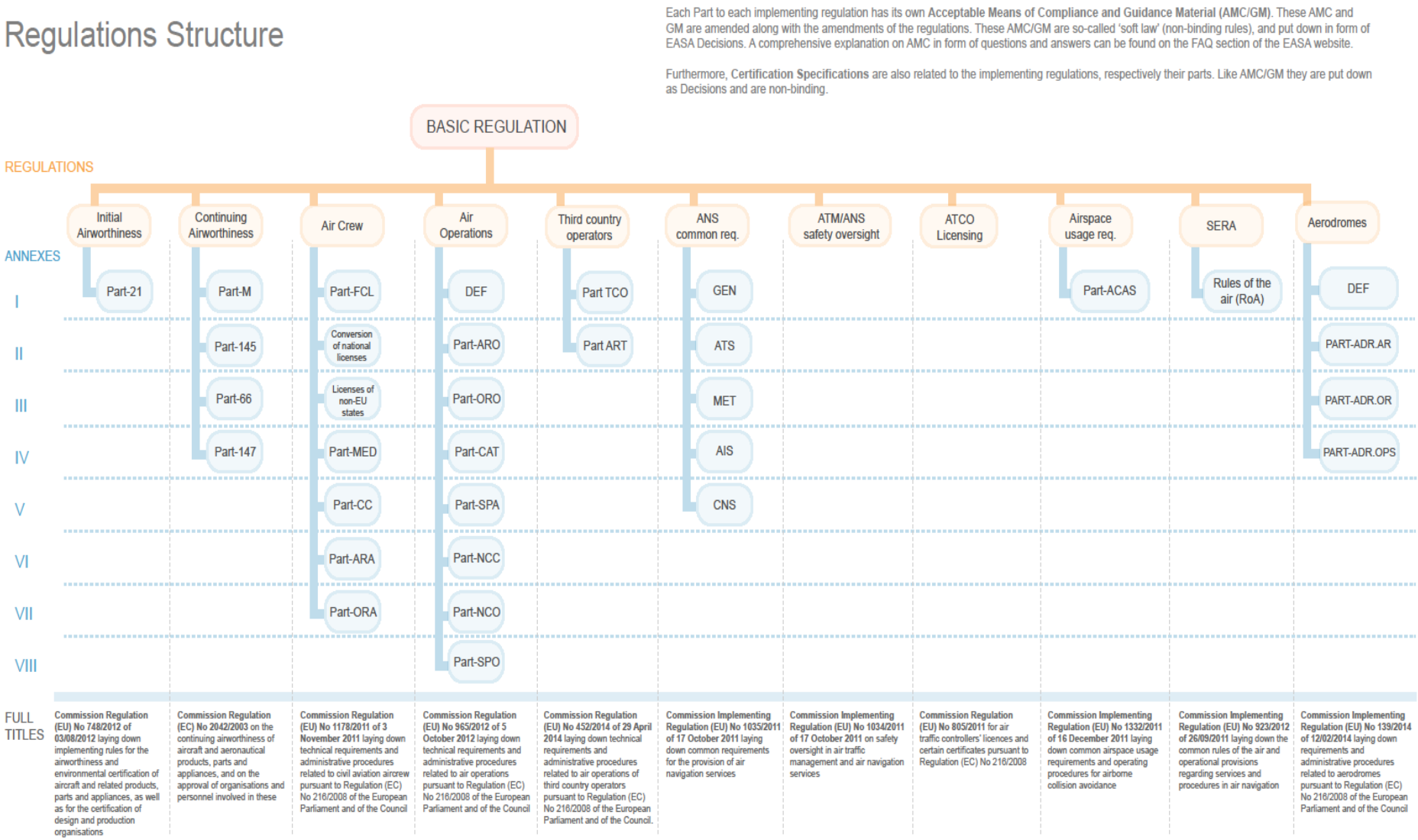
[214] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007 (OJ L 122, 24.4.2014, p. 18).

[215] Regulation (EC) No 2111/2005 of the European Parliament and of the Council of 14 December 2005 on the establishment of a Community list of air carriers subject to an operating ban within the Community and on informing air transport passengers of the identity of the operating air carrier, and repealing Article 9 of Directive 2004/36/EC **(**OJ L 344, 27.12.2005, p. 15).

Architecture of the aviation safety regulatory framework in 2014



Structure of EU aviation safety regulations (Regulation (EC) No 216/2008 framework)



Source: European Aviation Safety Agency

(2) RULEMAKING

The principal objective of the Regulation (EC) No 216/2008 is to "establish and maintain a high uniform level civil aviation safety in Europe."[216] One of the means to ensure this objective is "the preparation, adoption and uniform application of all necessary acts."[217] Harmonised and adequate rules are not only one of the safety barriers, but in the case of the EU with respect to the creation of an internal market are also essential for a level playing field for the industry, facilitating free movement of goods, persons and services, and promoting cost-efficiency in the regulatory and certification processes.

Safety rules are currently developed primarily under Pillar I above, following a rulemaking process which is defined in Regulation (EC) No 216/2008.[218] In this respect, the responsibilities are shared between the European Commission and EASA depending on the type of the regulatory material being developed:

- Proposals for binding measures of general applicability, i.e. amendments to Regulation (EC) No 216/2008 and proposals for Implementing Rules thereto are made by the European Commission on the basis of EASA technical Opinions. Regulations of the European Parliament and the Council are adopted in accordance with the ordinary legislative procedure. Implementing Rules, which are Commission Regulations, are adopted by the College.

- The non-binding regulatory material, i.e. Certification Specifications, Acceptable Means of Compliance and Guidance Material, are developed and adopted by EASA;

The above hierarchy of regulatory material was introduced to enable technical standards and best practices to be adapted quickly in view of operational experience and rapid scientific progress which characterises the aviation sector. A major benefit that the EU system has brought about when compared with the former Joint Aviation Authorities is that currently the safety requirements are legally binding and directly applicable in all EU Member States, while under the Joint Aviation Authorities rules needed transposition into the national legal orders of the Member States, and national variants were possible, which made acceptance of certificates more complex.

(3) CERTIFICATION

Another major benefit of the EU regulatory system is the principle of automatic certificate acceptance which is established by Article 11 of Regulation (EC) No 216/2008, and which requires the EU Member States to recognise "without further technical requirements or evaluation" certificates which were issued in accordance with this Regulation. This is a significant difference compared with the former Joint Aviation Authorities system which could only issue *recommendations* for certificate acceptance which in practice led to a patchwork of recognition arrangements between the Member States. The precondition for this automatic recognition of certificates is the existence of the common regulatory framework as presented under point (2).

[216] Article 2(1) of Regulation (EC) No 216/2008
[217] Article 2.3(a) of Regulation (EC) No 216/2008
[218] Articles 18-19 and 52 of Regulation (EC) No 216/2008

The second characteristic feature of the EU civil aviation system is centralisation of certification tasks, where it has been found by the EU legislator that such centralisation would bring additional efficiency effects compared to national based certification, or if it is justified by need for uniformity of action *vis-a-vis* third countries. In such cases it is EASA, and not the National Aviation Authorities, which is a competent authority for the initial approval and continuing oversight of an organisation, device or an aeronautical product. By the end of 2014 the centralisation of certification tasks will have been used in the areas of: approval of design of aeronautical products, parts and appliances,[219] third country organisations and operators,[220] and organisations providing pan-European air navigation services.[221] Regulation (EC) No 216/2008 also allows EU Member States to delegate to EASA certain certification tasks on a voluntary basis. Such voluntary delegations are currently possible in the domain of production[222] and approval of Flight Simulation Training Devices.[223] The most notable practical example of the use of such voluntary delegations is the Airbus consortium which holds a single production organisation approval from EASA and which covers the facilities of Airbus both in the EU and abroad (e.g. the A320 Final Assembly Line in Tianjin, China).

The EASA certification process represents a 'one-stop-shop' for the aeronautical industry: only one technical investigation is conducted and one certificate issued at the end of this process which is automatically valid in all EU Member States and other countries which have been associated with the EU aviation safety system on the basis of international agreements. This is a difference with the previous Joint Aviation Authorities system, where each authority had to still issue a separate certificate on the basis of the technical investigation / recommendation, and where the recommended certification basis could still be modified at the national level.

(4) OVERSIGHT & ENFORCEMENT

The EU aviation safety system has own oversight mechanisms which complement those available in EU Member States. The primary objective of the EU level oversight mechanisms is to ensure a uniform level of implementation of the common safety requirements and facilitate the sharing of best practices between the EU Member States.

The primary oversight mechanism that the EU uses to monitor the implementation of aviation safety legislation is the system of standardisation inspections and other monitoring activities which are performed by EASA on a mandatory and continuous basis, and through which the Agency assists the European Commission, using a risk based methodology, in controlling the application and uniform implementation by competent authorities of the EU Member States of Regulation (EC) No 216/2008 and its implementing rules.[224] The system of EASA standardisation inspections and other monitoring activities, together with the common

[219] Article 20 of Regulation (EC) No 216/2008
[220] Articles 20.2(b)(iii), 21.1(b), 21.2(iii), 22a(b), 22b(b) and 23 of Regulation (EC) No 216/2008
[221] Article 22(a) of Regulation (EC) No 216/2008
[222] The legal basis for such approval is: Regulation (EU) No 216/2008, *supra* note 132, Article 20.2(b)(ii). See also: EASA, 'Agency issues first European Single Production Organisation Approval to Airbus', Press release of 21.07.2008,
[223] Article 21.2(b)(ii) of Regulation (EC) No 216/2008
[224] Commission Implementing Regulation (EU) No 628/2013 of 28 June 2013 on working methods of the European Aviation Safety Agency for conducting standardisation inspections and for monitoring the application of the rules of Regulation (EC) No 216/2008 of the European Parliament and of the Council and repealing Commission Regulation (EC) No 736/2006 (OJ L 179, 29.6.2013 p. 46)

regulatory framework addressed under point (2) is an enabler of the automatic recognition of certificates, as it gives confidence to all the EU Member States that the level of implementation of EU safety requirements which is necessary to recognise certificates as provided for under Article 11 of Regulation (EC) No 216/2008 is achieved.

When it comes to enforcement, the EU Member States are primarily responsible for taking action in case of identified non-conformities or violations of EU legislation. In particular, Regulation (EC) No 216/2008 obliges the Member States to "lay down penalties for infringement of this regulation and its implementing rules". However, similarly to the EU oversight mechanisms, the enforcement at national level is supplemented by enforcement mechanisms which exist at the EU level, and which can be activated in case the national system does not take appropriate corrective measures in a timely manner. It is the primary responsibility of the European Commission, as the 'Guardian of the Treaties' to activate the EU level enforcement mechanisms, which can take two main forms: (1) an infringement against a non-compliant EU Member State taken under Article 258 of the Treaty on the Functioning of the European Union (TFEU), or (2) initiation of the procedure envisaged under Article 11 (2) of Regulation (EC) No 216/2008 with a view to determining if a certificate issued by an EU Member State effectively complies with the provision of that regulation and its implementing rules.

When it comes to enforcement competences of EASA, these are limited to the actions that the Agency can take as a competent authority with respect to organisations, devices or products that it certifies. This effectively means that the enforcement competences of EASA are limited to revoking, suspending or limiting the certificate that it has issued, or taking an action by means of an Airworthiness Directive when the Agency has identified that an unsafe condition exists with respect to a product that it has certified. When a "more nuanced, flexible and graduated response to a breach of the rules, compared to the withdrawal of a certificate" is warranted, the Agency has the possibility of recommending to the European Commission the imposition of a financial fine or a periodic penalty payment.[225] However, under the current legal framework it is the responsibility of the European Commission to actually impose such a fine or penalty payment.

(5) Safety Analysis & Promotion

With the gradual transition towards safety management and performance based approaches in aviation safety regulation and oversight, the role of safety analysis and promotion are becoming increasingly important functions of the EU aviation safety system.

The recently adopted EU Regulation on reporting, analysis and follow-up of occurrences[226], currently in transition towards implementation, is expected to improve the capabilities of the industry, the Member States and the EU to draw safety lessons from the analysis of occurrences, notably by mandating the collection and analysis of occurrences to determine necessary mitigation actions. It also strengthens the exchange of information between the

[225] Commission Implementing Regulation (EU) No 646/2012 of 16 July 2012 laying down detailed rules on fines and periodic penalty payments pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council (OJ L 187, 17.7.2012, p. 29)

[226] Regulation (EU) No 376/2014 of the European Parliament and of the Council of 3 April 2014 on the reporting, analysis and follow-up of occurrences in civil aviation, amending Regulation (EU) No 996/2010 of the European Parliament and of the Council and repealing Directive 2003/42/EC of the European Parliament and of the Council and Commission Regulations (EC) No 1321/2007 and (EC) No 1330/2007

Member States and with EASA and ensures that the Commission, EASA and Member States collaborate through a network of analysts with the view to support the adoption of the European Aviation Safety Plan.

The EU has also published the European Aviation Safety Programme[227], which describes the functioning of the EU aviation safety system, and regularly releases new editions of the European Aviation Safety Plan, which identifies the main risk areas and reports on the status of implementation actions which have been identified as the best mitigations for the identified risks. In 2014, a fourth edition of the European Aviation Safety Plan[228] has been issued.

(6) International Cooperation

In view of the global nature of the civil aviation sector, international cooperation is essential to maintain network safety, ensure fulfilment of EU Member States' obligations under the Chicago Convention, reduce redundant regulatory oversight and promote EU views regarding civil aviation safety standards and rules throughout the world. There are a number of tools that the EU uses in this respect: (a) Bilateral Aviation Safety Agreements, (b) Working Arrangements; (c) Technical cooperation projects, and (d) cooperation with ICAO.

(7) Accident Investigation

Despite aviation safety being currently at record high levels, accident investigation remains the ultimate safety net of the EU aviation safety system, which will step in to correct deficiencies once all the other safety barriers have failed. In addition to investigating the causes of aviation accidents and serious incidents, safety investigation authorities contribute to the improvement of the system by conducting safety studies and participating in analysis of safety information in the European Central Repository.

In 2010 the EU has adopted a new Regulation on the investigation and prevention of accidents and incidents in civil aviation.[229] This Regulation strengthened the accident investigation function in the EU, notably by establishing the European Network of Civil Aviation Safety Investigation Authorities (ENCASIA), clarifying the role of EASA in safety investigations, transposing ICAO Annex 13 requirements concerning safety recommendations and establishing an EU database of safety recommendations, better protecting the rights of the victims of aviation accidents and their families, and finally affording a higher level of protection to safety information collected during the investigations.

[227] SEC(2011) 1261 final, 25.10.2011
[228] http://www.easa.europa.eu/system/files/dfu/sms-docs-European-Aviation-Safety-Plan-(2014-2017).pdf
[229] Regulation (EU) No 996/2010 of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation and repealing Directive 94/56/EC (OJ L 295, 12.11.2010, p. 35)

ANNEX VIII

FILING OF DIFFERENCES WITH ICAO SARPS BY EU MEMBER STATES ON THE BASIS OF EASA RECOMMENDATIONS

Background

EASA developed Compliance Checklists (CCs) for a number of Annexes to the Chicago Convention. By November 2014 EASA drafted and consulted with the Member States the CCs for Annexes 1, 6 Part I, 6 Part III (CAT only), 8, 14 Volume I, 16, 18 and 19. This covers around 31% of entries in the ICAO Electronic Filing of Differences (EFOD) database (there are 10 800 items in the EFOD in total). Some of those checklists are now being revised with a view to the last ICAO amendments to the annexes in question. In addition new CCs for Annex 6 Part II and for Annex 10 are being developed. The purpose of this activity is two-fold:

1) To provide ICAO with information required for the continuous monitoring of EASA by ICAO in accordance with the EASA-ICAO Working Arrangement on Continuous Monitoring Activities of 30 July 2014;
2) To provide the Member States and other interested countries, members of the PANEP and EASA International Cooperation Forum, with ready-made material to be used in the CCs they must submit to ICAO as required in their Memorandums of Understanding on Continuous Monitoring Activities;

The added value of this activity is a common statement on compliance and differences of EU safety rules with ICAO SARPs, helping the Member States to fulfil their obligations towards ICAO in a uniform manner. The material prepared by EASA is based purely on EU rules and does not consider the actual implementation by the Member States including possible derogations, exemptions and alternative means of compliance.

Methodology of the study

The study was based on a sample of 14 ICAO standards for which EASA indicated category C difference ('less protective' or 'not implemented') from Annexes 1, 6 and 19. The information analysed came from 23 Member States.

The annexes were chosen based on their scope (Annexes 1 and 6) and existence of differences in the EASA CCs (which excluded Annexes 16 and 18). Annex 19 was chosen due to its recent publication and the fact that the CCs for this Annex were the first ones to be shared with Member States in 2014. The structure of Annex 8 (repeated numbering of SARPs in each of its parts) made it impossible to identify particular entries without access to the full CCs of each state. Annex 14 was not chosen because the corresponding implementing rules (Regulation (EC) No 139/2014) are not yet applicable. The Member States taken into account are those that indicated any differences against the SARPs of the three above-mentioned annexes.

Result of the study

The analysis of the content of the differences indicated in EFOD by the 23 Member States (322 items) revealed, that EASA's recommendation was followed in only 29.19% of cases, with significantly higher results in case of Annex 19. The cases when the recommendations were not followed include mostly no information provided, outdated references to European rules (JARs or EU-OPS) or to national rules. Three Member States followed the EASA CCs almost to the letter. The results are presented in the table below.

Table: Are EASA recommended CCs followed?

ICAO Annex reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	YES	NO	% of compliance
Annex 1																										
2.1.10.1	N	Y	N	N	N	Y	N	N	Y	N	N	N	Y	N	N	N	N	Y	N	N	Y	N	N	6	17	26.09%
4.2.2.2	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	Y	N	N	Y	N	N	5	18	21.74%
4.4.1.1	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y	N	N	Y	N	N	3	20	13.04%
Annex 6 Part I																										
4.3.6.2	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	3	20	13.04%
6.3.1.2.1	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	3	20	13.04%
6.5.3.1	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N	3	20	13.04%
8.2.1	N	Y	N	N	N	N	Y	N	N	N	N	N	Y	N	N	N	N	N	N	Y	Y	N	Y	6	17	26.09%
8.7.1.1	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	N	4	19	17.39%
Annex 19																										
3.1.3	Y	Y	N	N	Y	N	N	N	N	N	Y	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	11	12	47.83%
3.1.4	Y	Y	N	N	N	Y	N	N	N	N	Y	N	Y	Y	N	N	Y	Y	N	N	Y	Y	N	10	13	43.48%
3.2	Y	Y	N	N	N	Y	N	N	N	N	Y	N	Y	Y	N	N	Y	N	N	N	N	N	N	7	16	30.43%
4.1.1	Y	Y	N	N	N	Y	N	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	10	13	43.48%
4.1.4	Y	Y	N	N	Y	Y	N	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	11	12	47.83%
4.1.5	Y	Y	N	N	Y	Y	N	N	N	N	Y	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	N	12	11	52.17%

ANNEX IX

KEY FIGURES FOR THE QUANTIFICATION OF ECONOMIC IMPACTS

The following generic key figures have been used when quantifying the economic impacts:

Item	Value	Source
Average labour costs (cost of employment without overheads) EASA and Commission per person-year	EUR 95 000	http://easa.europa.eu/system/files/dfu/Working-for-us.pdf. Assumed to be average of grades of highest function group.
Average labour costs at National Aviation Authorities per person-year (cost of employment without overheads)	EUR 55 000	Average of Germany, Netherlands, UK, adapted to average EU/EFTA Member State level based on Purchasing Power Parity estimate. This excludes overheads and staff related expenditures of National Aviation Authorities on e.g. training.
Discount rate for calculating Net Present Value	4%	Commission: Annexes to Impact Assessment Guidelines.

Source: Support study on resources

ANNEX X

THE USE OF EN-ROUTE CHARGES TO FINANCE EASA ACTIVITIES IN THE FIELD OF ATM/ANS

Rationale

The objective of this measure is to mirror with respect to EASA the solution normally used at the Member State and EUROCONTROL level, whereby the relevant ATM/ANS authority tasks are financed by air navigation charges based on the user pays principle. The user pays principle is enshrined in Regulation (EC) No 550/2004 on the Single European Sky.[230]

Regulation (EC) No 216/2008 transferred a number of tasks concerning ATM/ANS rule-making, safety analysis and oversight by law from EUROCONTROL to EASA. While a number of activities were in principle discontinued by EUROCONTROL, including ATM audits and rulemaking, a number of areas continue to exist where activities between EASA and EUROCONTROL are duplicated or where there is a potential for present or future duplication (see table below). These areas include rulemaking, occurrence reporting and analysis, safety review and actions, reporting on implementation of SES regulation and consultation. Furthermore, the user charges were not transferred, and thus at EASA these tasks are now de facto financed from the general EU budget. It is proposed to correct this and to return to a user-pays environment for all ATM/ANS related activity.

In EASA accounting the user-pays principle is already established, notably in the field of certification. EASA has a cost accounting system in place which allows for separation of user and budget financed activities. There is thus no risk of double charging within EASA.

With regard to EASA, the activities affected by the proposed measure are as follows:

- standardisation inspections to be carried out in accordance with Articles 24(1) and 54 of Regulation (EC) No 216/2008;
- activities to support National Supervisory Authorities (NSA), including in the areas under the duty of EASA in the context of the NSA coordination platform established by the Commission;
- rulemaking activities in accordance with Article 19 of Regulation (EC) No 216/2008, including those stemming from SESAR deployment; and
- SES monitoring and involvement in the development and implementation of the performance scheme, as far as the safety key performance area is concerned.

This discussion relates only to general authority tasks. It does not concern EASA's tasks in issuing and renewing certificates and reviewing declarations of ATM/ANS operators and manufacturers. These are already remunerated through fees paid by the certified organisations in accordance with Article 59(1) (c) of Regulation (EC) No 216/2008.

[230] Article 15 of Regulation (EC) No 550/2004 provides that the costs to be included in the air navigation cost-base may include costs incurred by national supervisory authorities and/or qualified entities, as well as other costs incurred by the Member States.

Resource needs

The above translates into the following resource implications (in number of full time equivalents - FTE):

Domain	*EASA*	*Member States*	*EUROCONTROL (approximate)*
ATM performance scheme (safety area)	+5		-5
rulemaking	+3		-8
Flexible use of airspace	+1.5		-3
Compliance verification	+0.5	Potential significant savings from the current EUR 90 million spent by MS on oversight, by pooling and transferring tasks to EASA or to each other	-2
SES reporting	+3		-12
ATM regulatory and standardisation roadmap, including team leader	+1.5		-5
ATM safety data validation and analysis	2		-3
TOTAL CHANGE	**+16.5**		**-38**

Taking into account that there are already 23 FTE at EASA involved in ATM/ANS related tasks, in particular in standardisation inspections and rulemaking, the total resource needs at EASA in the ATM/ANS area amount to 39.5 FTE.

Cost impact

Under the proposed measure, the costs of EASA activities in the field of ATM/ANS would be set in separated accounts within the EASA budget; these costs will then be included in the cost base for air navigation charges and attributed to EU Member States through sharing-keys (similarly to the existing sharing-keys used for EUROCONTROL costs). Their inclusion in the cost base for air navigation charges will make them subject to the EU performance scheme. The costs of EUROCONTROL should be reduced accordingly, reflecting the discontinuation of the tasks mentioned in the table above. The common charging scheme including with respect to en-route charges, is established by Commission Implementing Regulation.[231]

The above table expressed in FTEs produces the following financial outcome based on an average unit cost of EUR 150 000 per FTE at EASA and EUR 263 000 at EUROCONTROL[232], mainly due to the different tax regime (both include overheads such as real estate, IT etc.):

In million euro	*EASA*	*Member States*	*EUROCONTROL (approximate)*
Additional	+2.475		
Existing	+3.450		
Total	**+5.925**	**-X (several 10s of millions to be saved in the medium to longer term)**	**-9.994**

[231] Commission Implementing Regulation (EC) No 391/2013 of 3 May 2013 laying down a common charging scheme for air navigation services, (OJ L 128, 9.5.2013, p. 31).
[232] EUROCONTROL Agency Business Plan 2015 – 2019, p. 48.

The net saving for airspace users thus amounts to over EUR 4 million immediately, and potentially more following savings in Member States' oversight needs.

The above figures are calculated on the basis of FTE costs including overheads and taxes in order to demonstrate all the savings potentially to be achieved by internalising in EASA the tasks for which the EU makes use of the expertise of EUROCONTROL today. Plain salaries in EASA and EUROCONTROL on the other hand differ only slightly.

Moreover, nearly EUR 3.5 million would be saved for the EU budget, as 23 FTE would no longer need to be financed from the EU contribution. These resources could be reallocated to finance additional EASA tasks envisaged under the preferred policy package.

ANNEX XI

METHODOLOGY FOR CALCULATING FUTURE RESOURCES NEEDS OF THE NATIONAL AVIATION AUTHORITIES UNDER THE BASELINE SCENARIO ('FUTURE RESOURCES GAP')

In order to make an estimation of future growth in workload and resource requirements for Member States' aviation authorities under a baseline scenario, an analysis was conducted of the relationship between a number of indicators related to the level of industry activity, the level of workload of national authorities and the associated number of staff resources, respectively. The relationship was assessed for three different years (2003, 2008 and 2013) in order to provide a view of the growth trends for the years 2020 and 2030.

Using this model, development in the size of the industry is measured by means of the total number of aircraft on national register and the total volume in IFR flights; to measure workload, the total number of Air Operator Certificate (AOC) holders is used; and for national authorities resources, data on the technical staff in the three largest domains, airworthiness (AIR), operations (OPS) and personnel licensing (PEL), is used.

It is assumed that a growth in the level of industry activity will increase the workload in the national authorities. As workload increases, so too will the resources required of national aviation authorities, although at a certain point this should be offset by more efficient working methods stemming from the transition to risk based safety oversight planning. On the other hand, it is clear from the resources support study,[233] that that budget constraints in Member States are considered among the most important causal factors in relation to staffing levels.

Because of the limited number of Member States with data available across all three periods referred to above (2003, 2008 and 2013), we look only at the year 2013, for which most Member States (18 total) provided data, in order to calculate an estimate for the total budget and resources in all States participating in the EU aviation safety system and to predict the baseline trend and future scenario. This calculation is done as follows: an average is taken of the total budget amount of the 18 states, and then multiplied by 31 (total number of states participating in the EU aviation safety system). It is then estimated, for each change in the level of industry activity for the years 2020 and 2030, future resources needs, assuming a continuation of the baseline scenario. This is calculated based on an elasticity approach to the industry activity and resource variables as follows:

i) The development in the size of the industry is measured by means of the total amount of aircraft on national register and the volume of "instrument flight rules" (IFR) flight in Europe both indicate *an increase*. Regarding aircraft on national register, the total number of aircraft on register of all states that submitted data grew from 75 554 in 2003, to 79 620 in 2008 and to 88 057 in 2013. This represents an overall increase of 16.5% over the 10 year period;

ii) Regarding IFR traffic, the number of flights grew from approximately 8.5 million in 2003, to 10.1 million in 2008. However due to the economic crisis, air traffic has seen a slow recovery, reaching approximately 9.447 million flights in 2013 – an 11% increase over 2003 levels, though nearly a 6.5% decrease over traffic in 2008. According to EUROCONTROL latest *Challenges of Growth* forecast, traffic will reach the 2008 peak again by 2016 and grow by approximately 1.8% annually over

[233] ECORYS, Resources support study, (2015), p. 110.

currently levels by 2030, with faster growth expected in the initial years between 2015-2020 (approximately 2.5% annually until 2020);[234]

iii) In terms of workload, it is expected that the number of AOCs - taken as a proxy measure for workload in national authorities - will be affected by the growth in industry activity levels. While the results of the analysis show a strong, positive linear correlation between the variables for passengers and the number of AOCs for each of the periods assessed, the trend in the number of AOCs held shows an increase from 1 221 in 2003 to 1 304 in 2008, followed by a decrease to 1 201 AOC holders in 2013. Thus the total period experienced an overall decrease of 2.4% with respect to 2003. No clear explanation could be found for this trend other than the economic downturn since 2008. Notwithstanding this finding, it can be expected that, all else being equal, an improved economic climate would have the effect of reversing the trend; therefore, for the purpose of this analysis, an increase in the overall workload is assumed.

iv) Summing up the total technical staff of the three largest domains (that is OPS, PEL and AIR) for all States that submitted data, provides totals of 1 573 in 2003, 1 728 in 2008 and 1 659 in 2013. Hence the trend is initially an increase of 9.9%, followed by a decrease of 11%. With respect to 2003, 2013 shows an increase of 5.5%.

v) Regarding budget, the total of the 18 States that provided data for 2013 was EUR 581 464 245. This means an average of EUR 32 303 569 per State. Multiplying this figure by 31 (total number of states participating in the EU aviation safety system) gives an estimate of the total amount of EUR 1 billion. Including the budget of EASA an estimate of the total budget is EUR 1.13 billion.

Table 1: Baseline trends, 2003-2013

Baseline	2003	2008	2013	% change, 2003 - 2013
Total technical NAA staff (AIR, OPS, PEL only)	1 573	1 728	1 659	5.5%
Total NAA staff	n/a	n/a	5 100	n/a
Total NAA Budget	n/a	n/a	EUR 1 billion	n/a
Total Budget (NAA + EASA)	n/a	n/a	EUR 1.13 billion	n/a
AOCs held	1 221	1 304	1 201	-2.4%
Aircraft	75 554	79 620	88 057	16.5%
IFR traffic	8.5 million	10.1 million	9.447 million	11.1%

[234] EUROCONTROL, Challenges to growth 2004 Report. EUROCONTROL, Brussels: 2004. EUROCONTROL Challenges of Growth 2013: Summary report, June 2013. EUROCONTROL Seven-Year Forecast - Flight Movements and Service Units 2014-2020, September 2014.

Looking forward, a number of studies[235] have been consulted to make a prediction on future growth. For the number of aircraft on register, an annual growth of 3% is estimated across Europe until 2033; and a growth rate of 2.5% per annum in IFR flights until 2020, followed by slower growth until 2030. For the latter, the 1.8% average annual growth over the whole period (2014-2030) was used to estimate the IFR flights in 2030. Based on the figures collected for 2013, total aircraft on register is estimated to reach 108 000 by 2020 and 145 000 by 2030. This represents an increase of 23% by 2020, and an increase of 65% by 2030. Regarding IFR traffic, total growth is estimated to reach 11.2 million in 2020, and 12.8 million in 2030, an increase of 19% and 35% over the 2013 figures respectively. See Table for an overview of these estimates.

Table 2: Gap assessment

Industry growth	2020 total	2020 / 2013 - % change	2030 total	2030 / 2013 - % change
Aircraft on register	108 000	23.0%	145 000	65.3%
IFR traffic growth	11.2 million	18.9%	12.8 million	35.4%
Estimated resource growth needed	**2020 total**	**2020 / 2013 - % change**	**2030 total**	**2030 / 2013 - % change**
Total EASA staff	698	7%	No additional change	No additional change
Total CA staff	5 487-5 572	7.6% – 9.3%	5 987 – 6 200	17.4% - 21.6%
Total CA Budget	EUR 1.021 billion– EUR 1.026 billion	2.1% - 2.6%	EUR 1.049 billion - EUR 1.061 billion	4.9% - 6.1%

Taking the above industry growth rate estimates for the years 2020 and 2030, together with rate of change in the number of NAA staff from 2003 to 2013, an elasticity analysis is subsequently conducted to assess the potential proportional change in the number of National Aviation Authority staff for a proportional change in industry level activity. It should be noted that the results are to be interpreted with caution, as there are clearly many other indicators that influence workload. Based on the total staff and industry growth rates calculated during the last decade, combined with the estimates for future industry growth provided above, it can be predicted that:

⇒ the need for additional staff to carry out the workload will increase by roughly 7.6 – 9.3% by the year 2020 of the base figure of around 5 100 total National Aviation Authority staff in 2013, amounting to between 5 487 to 5 572 total staff needed;

⇒ By 2030, total staff needed is expected to increase by between 17.4 – 21.6% over the current level, which represents between 5 987 to 6 200 individuals.

The above increases can be considered somewhat conservative, as the resources support study also showed that there are currently shortages in staff in certain National Aviation Authorities. As such, the current figure of 5 100 total staff that served as the basis for the assessment does

[235] Airbus, Global Market Forecast 2014-2033, Flying on Demand, 2014; Airbus, GMF book 2014-2022, 2014.

not reflect the present actual need for resources at National Aviation Authority level. The increase in staff necessary at EASA is based on analysis of the EASA Annual Staffing Plans, which call for approximately 698 additional staff by the end of 2017 (up from 638 at the end of 2013). Taking into consideration EU's intent to reduce the number of additional staff required at EASA as foreseen in the Staffing Plans, it can be expected that, the current gap of 50 FTE is maintained in 2020 and 2030. As a comparison, the FAA forecasts that it will need a staff increase for its Aviation Safety workforce of 11% in 2023 compared to 2013.[236]

The same proportional increase is applied to the total budget of NAAs, which indicates total budget needs in 2020 will amount to EUR 1.021 billion - EUR 1.026 billion, and between EUR 1.049 billion - EUR 1.061 billion in 2030. Thus, the projected gap in NAA budgets, compared to the current budget levels of approximately EUR 1 billion, is estimated at EUR 21-26 million in 2020 and EUR 49-61 million in 2030 (annually).

This increase has been valued by multiplying the additional FTEs by the average wage level of National Aviation Authority staff in Europe (see Annex IX). These are 'plain' wages costs and exclude overheads and employee related costs such as training.

The above figures are clearly indicative, as an overall resource forecast model in this area does not exist. Nevertheless, it is clear that if industry activity and associated demand for new aircraft will grow according to forecasts, this will impact National Aviation Authorities in the workload increase. These estimates do not factor in the impact of the transition to risk based approach however, which in the longer term should reduce the need for some resources.

[236]FAA, Aviation Safety FY2014 Workforce Plan.

ANNEX XII

CONTRIBUTION OF POLICY OPTIONS RELATED TO 'QUALITY AND MANAGEMENT OF RESOURCES' TO THE REDUCTION OF FUTURE RESOURCES NEEDS IN MEMBER STATES – DETAILED CALCULATIONS

In Annex XI an estimate on the gap of resources towards 2020 and 2030 has been presented. This Annex presents detailed calculations of how the different policy options related to the quality and management of resources contribute to reducing this resources gap. The calculation is not presented for PO 1.2 (Enhanced cooperation within the system), which should have a positive result on the use of resources in Member States, but the scale of this impact is expected to be rather limited. These calculations were performed using the data submitted by Member States in the context of the support study on resources.[237]

Policy Option: 1.3(a): Joint oversight system with voluntary transfer of responsibilities & 1.3 (b) Emergency oversight support mechanism

PO 1.3(a) and PO 1.3(b) are expected to have overall the same effect on the reduction of the future resources needs in Member States. The Emergency oversight support mechanism is designed as an exceptional measure not to be applied on a routine basis, and therefore its impact on the resources is very difficult to assess up-front.

Both PO 1.3(a) and PO 1.3(b) are expected to achieve a reduction in the resources gap by a reallocation of tasks from NAAs that are less specialised in performing a given type of activity, to others that are more specialised in doing so. In addition, where Member States will take up opportunity to transfer the responsibility for a given activity to EASA, this is expected to have economies of scale effects, as was the case for Type Certification centralisation under the current mandate of EASA.

In order to assess these impacts, the following methodology was followed, using as an example the OPS domain, and where it is assumed that NAAs with the least in-house expertise in OPS delegate the relevant tasks to the NAAs with most in house expertise in the same domain:

1. Identifying 6 out of 28 NAAs (that have provided relevant data), with the least experts in OPS, as well as the 6 NAAs with the most experts in OPS;
2. Calculating the average staff/AOC ratio for each of the 2 above identified groups, which results in the following:
   ⇒ 'Larger OPS NAA' average ratio: 0.60 (4 out of 6 of NAAs are within the range 0.27-0.94)
   ⇒ 'Smaller OPS NAA' ratio: 0.97
3. Estimating the decrease in resources if the OPS operations of the 'smaller OPS CAs', were performed by the 'larger OPS CAs'. To do this, we calculate the staff that would be needed (on average) to produce the same amount of output by assigning the AOCs of the 'smaller OPS CAs' to the 'larger OPS CAs', which results in the following:
   ⇒ AOCs issued by the 6 'smaller OPS CAs': 51;

[237] ECORYS, Resources support study, (2015)

⇒ Staff needed for the AOCs issued by the 6 'smaller OPS CAs': 49.25;

⇒ Staff needed if these AOCs where produced by the 'larger OPS CAs' (high estimate): 51*0.27 = 13.88;

⇒ Staff needed if these AOCs where produced by the 'larger OPS CAs' (low estimate): 51*0.598 = 30.52;

Resources gap reduction in 2013 (assuming instant implementation): approximately 19-35. FTEs:

1. This resources gap reduction concerns year 2013. By 2020, the need for resources is expected to grow by 8.45% (average of 7.6% – 9.3% band) and therefore the reduction in the resources gap due to this option is expected to grow proportionally to 20-38 FTEs. By 2030, the need for resources is expected to grow by 19.5% (average of 17.4% – 21.6% band) and therefore the reduction in the resources gap due to this option is expected to grow proportionally to 24-46 FTEs.

2. This corresponds to a reduction in the budget required to fill the resources gap of about EUR 1.0-2.0 million/year (2013), about EUR 1.1-2.1 million/year (2020) and about EUR 1.3-2.5 million/year (2030). The present value of this during the entire 2016-2030 time frame amounts to EUR13.0-24.6 million. This is valued by applying the average wage costs as presented in Annex IX to the required resources in FTEs. These are 'plain' wages costs and exclude overheads and employee related costs such as training.

The above is a global estimate of the potential impact on reducing the resources gap. The actual impact depends on the actual number of NAAs that would voluntary transfer tasks as well as the number of tasks that they would transfer.

Policy Option 1.4: A single aviation safety authority

Under PO 1.4 EASA is the competent authority for aviation safety in the EU and allocates tasks to the NAAs. We assume that at least for the 3 largest domains of oversight activity (AIR, OPS, PEL), the implementation of tasks, for each domain, will be reallocated from the least efficient NAAs to those that achieving the highest performance quality.

This is different from the calculation approach proposed for PO 1.3 where the transfer is based on a voluntary basis and therefore the assumption was that the transfers take place from smaller to larger NAAs regardless of their efficiency.

In order to calculate the impacts of PO 1.4 on the reduction of future resources needs the following steps were followed:

1. Creation of a basic resources/output ratio for each of the 3 largest domains considering a representative indicator for the workload under each domain. The selected indicators for this exercise are: aircraft in registry for AIR; AOCs issued for OPS; and ATOs supervised for PEL.

2. Calculation, for each of the 3 above domains of the average resources/output ratio for the 20% (6) most efficient, the 20% (6) least efficient NAAs, as well as the average efficiency of the NAAs with a good performance according to EASA standardisation inspections.[238]

3. Calculation of the sum of the output of the least efficient NAAs (i.e. total aircraft on the register of these NAAs; total AOCs and ATO approvals issued by these NAAs) and the sum of the resources needed for performing this output by (i) the most efficient NAAs and (ii) the NAAs with the best standardisation performance.

4. Estimation of the resources needed if the output referred to in point (3) was to be performed by the most efficient NAAs or by an average efficiency rate of the most standardised NAAs. The resources needed in each of these 2 cases are calculated by multiplying the output of the least efficient NAAs with the resources/output ratio for the most efficient NAAs and that of the most standardised NAAs respectively for each of the domains examined. These figures are presented in the table underneath (rounded-up).

Ratio resources/output				Least efficient NAAs resources needed				
	Most efficient	Least efficient	CAs with best performance	Least efficient CAs output	Actual	Performed by most efficient	Performed by CAs with best performance	Resources gap reduction (FTEs)
AIR	0.0063	0.0366	0.0116	2966 a/c	108.45	18. 541	34.41	74-90
OPS	0.2638	1.281	0.4323	226 AOCs	289.60	59.61	97.70	192-230
PEL	0.0735	1.070	0.0988	43 ATOs	46	3.16	4.25	42-43
							Total (2013)	**308 - 363**
							Total (2020) Growth 8.45%	**334-393**
							Total (2030) Growth 19.5%	**368-433**

5. We estimate the range of resources impact to be between the 2 calculated values as an indication that scale efficiency will be also achieved after the activities are allocated to the most standardised NAAs.

6. This resources gap reduction concerns year 2013. By 2030, the need for resources is expected to grow by 8.45% by 2020 and by 19.5% by 2030 (see Annex XI) and therefore the reduction in the resources gap due to this option is expected to grow proportionally to 334-393 FTE by 2020 and to 368-433 FTEs by 2030.

7. The above corresponds to a reduction in the budget required to fill the resources gap by about EUR 16.9-19.9 million/year (2013), about EUR 18.4-21.6 million/year (2020), and about EUR 20.2-23.8 million/year (2030). The present value of this during the entire 2016-2030 time frame amounts to EUR 209-246 million. This is valued by applying the average wage costs as presented in Annex IX to the required resources in FTEs. These are 'plain' wages costs and exclude overheads and employee related costs such as training.

[238] These is defined as the average efficiency rate of the CAs reported in the EASA standardization reports as having no supplementary Class C or D comments for 2012 and 2013.

ANNEX XIII

CORRELATION BETWEEN EFFECTIVENESS OF STATE SAFETY OVERSIGHT AND ACCIDENT RATES

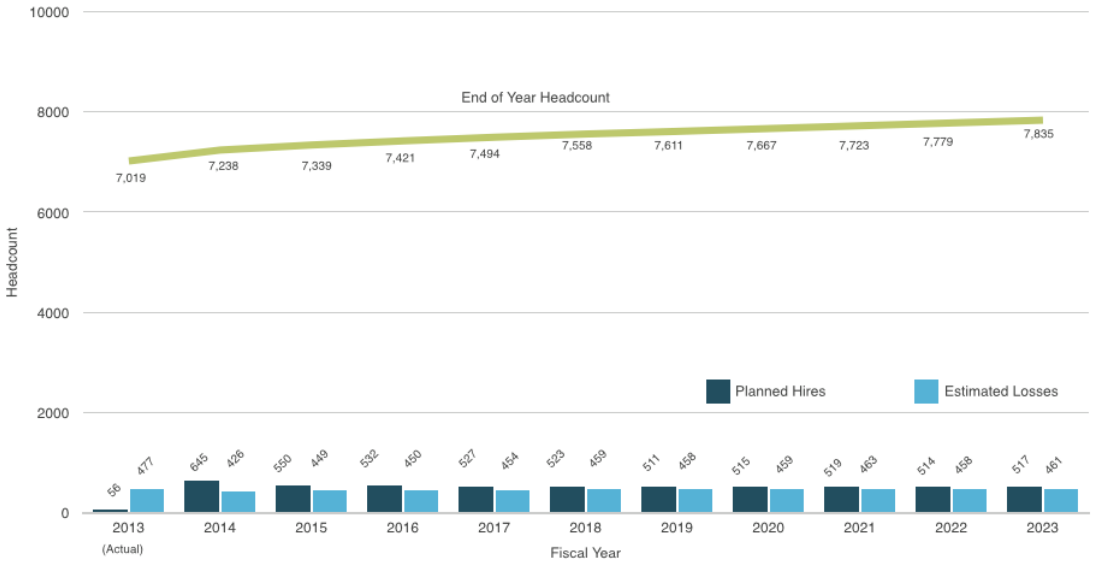
Table: Critical Elements of State Safety Oversight System and Their Correlation with Accident Rates

Critical Element	*Correlation with Accident Rates*
CE-6: Licensing, certification, authorisation and/or approval obligations	Very strong
CE-7: Surveillance obligations	Very strong
CE-3: State civil aviation system and safety oversight functions	Strong
CE-4: Technical personnel qualifications and training	Strong
CE-8: Resolution of safety concerns	Strong
CE-1: Primary aviation legislation	Medium
CE-2: Specific operating regulations	Medium
CE-5: Technical guidance, tools and provision of safety critical information	Medium

Source: ICAO, Report on the USOAP Comprehensive System Approach, Analysis of Audit Results, Reporting Period April 2005 to December 2008, Second Edition.

ANNEX XIV

PROJECTED AVIATION SAFETY WORKFORCE TRENDS IN US



Source: FAA, Aviation Safety FY 2014 workforce plan

ANNEX XV

EXAMPLES OF PERFORMANCE BASED REGULATIONS

Example: Fatigue risk management as introduced by Commission Regulation (EU) No 83/2014 ("Flight Time Limitations" Regulation)

The traditional regulatory approach to managing crew member fatigue has been to prescribe limits on maximum daily, monthly, and yearly flight and duty hours, and to require minimum breaks within and between duty periods. Prescriptive flight and duty time limits represent a simplified view of safety where being inside the limits is safe while being outside the limits is unsafe. This has two effects: (1) there will be pilots flying inside the limits who are unfit, and (2) there will be pilots that are not allowed to fly as they are outside the limits who are actually fit-to-fly. The former has a negative safety impact, the latter a negative economic impact. By applying a data-driven performance based approach based upon scientific principles and knowledge as well as operational experience which aims at ensuring that relevant personnel are performing at adequate levels of alertness (a Fatigue Risk Management System) the actual achieved level of safety performance is optimized and the negative impacts are reduced.

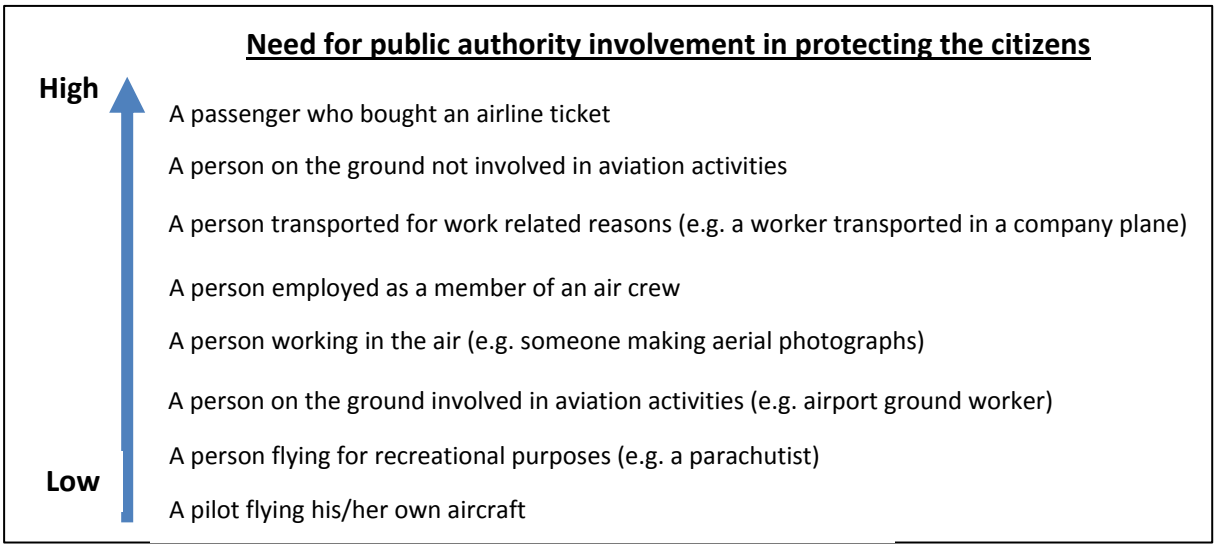
Example: Proposed reorganisation of Certification Specifications 'CS-23' (EASA Advance Notice of Proposed Amendment 2015-6)

The reorganisation of the current CS-23 introduces a new concept whereby the EASA certification specifications will be replaced by objective requirements that are design-independent and applicable to the entire range of aeroplanes within CS-23. These objective requirements will be accompanied by acceptable Airworthiness Design Standards, where the design-specific details are captured. The new concept of objective rules of a higher abstract level accompanied by Airworthiness Design Standards allows the use of appropriate and proportionate standards as Acceptable Means of Compliance catering to the specific needs of different aeroplane categories covered. This flexibility is intended to encourage the introduction of safety enhancing features and reduce certification costs. Future amendments of these Airworthiness Design Standards will have to follow an industry consensus process only, which will allow for a faster adoption of new technologies and better up-to-date standards. Acceptance of these standards as Acceptable Means of Compliance to the objective rules will remain the responsibility of EASA.

ANNEX XVI

Risk Hierarchy Concept

The public consultations clearly showed that the general public, stakeholders and Member States expect the intensity of regulatory interventions to be proportionate to the level of risk posed by the different aviation activities, and to the ability of the user to control that risk. When the risk for the general public is low and the user has direct control over the risk, as is the case for example for recreational flying, the level of regulatory intervention can be lower. Where the risk for the general public is higher and the users have no control over the risk, as is the case for high capacity air transport, the level of regulatory intervention is expected to be high.



ANNEX XVII

SAFETY MANAGEMENT SYSTEMS, SAFETY PERFORMANCE SCHEMES AND PERFORMANCE BASED RULES

This annex gives an overview on the concepts of safety management systems, safety performance schemes and performance based rules, which form important elements of the policy options in the domain on proportionality and safety performance, and their possible advantages on safety. This overview is largely based on the findings of the support study on resources[239] as well as the EASA report on 'A Harmonised European Approach to a Performance Based Environment'[240].

1. Safety Management Systems:

A safety management system is a pro-active system that identifies the hazards to the activity, assesses the risks those hazards present, and takes action to reduce those risks to an acceptable level. It then checks to confirm the effectiveness of the actions. The system works continuously to ensure any new hazards or risks are rapidly identified and that mitigation actions are suitable and where found ineffective are revised.[241] An essential component of safety management systems is 'safety assurance', which requires safety performance to be measured and monitored using safety performance indicators and targets. Safety management applies to organisational, State and regional level and to all domains of aviation. It helps recognise interactions and interdependencies of the aviation system (EASA)

2. Safety Performance Scheme:

A 'safety performance scheme' is a scheme in which the safety performance is measured and monitored. Such a scheme relies in particular on the use of measurable and pertinent safety performance indicators based on a continuous collection and analysis of data. It can also include the adoption of relevant safety performance targets. Such a scheme contributes notably to monitoring whether an action which was implemented positively impacted on the level of aviation safety and can thus support reorienting efforts where appropriate. (Study)

3. Performance based rules:

Performance based rules refers to rules setting a desired measurable outcome defined in terms of performance, but the detail of achieving it is not prescribed (although best practice guidance may be provided). Performance indicators can be used to provide evidence of achieved levels of performance.

4. Advantages of performance based rules:

Experience has shown that simple compliance with prescriptive regulations does not guarantee safety alone. Performance based rules offers improvements by proposing safety performance indicators, targeting safety objectives and efficiently mitigating risks through a

[239] ECORYS, Performance Scheme and Performance Based Approach in the context of aviation safety (Support study on performance), Final Report, (2015).

[240] http://easa.europa.eu/newsroom-and-events/general-publications/harmonised-european-approach-performance-based-environment

[241] Communication from the Commission to the Council and the European Parliament, Setting up an Aviation Safety Management System for Europe; (COM(2011)670), p. 3.

better focus on the outcome rather than only on the way something has to be done. It provides flexibility in the implementation rather than developing prescriptive rules for every eventuality.

The key advantages of performance based rules are:

- Better focus on achieving the desired performance.
- Improved understanding of risks and clearer identification of the required mitigations.
- More tailored oversight activities that focus activities on the areas of greater concern or need.
- Efficiency through a better targeting of resources.
- Better legislative adaptability and flexibility.
- Improved focus on the individuals in the aviation system and their role in safety.
- Will lead to a more active involvement and interaction of all actors in managing the system.

5. Process for developing performance based rules:

A standard EASA rulemaking process would be followed as is the case today. Depending on the type of measure (implementing rule / or soft law material) the outcome of that rulemaking process would be either an opinion for the Commission or certification specification, acceptable means of compliance, or guidance material.

EASA when developing a rule either establishes a rulemaking group with the involvement of industry and Member State authorities or develops the rule/proposal in-house.

The priorities are defined in the rulemaking programme which is approved by the EASA management board (so the Member States) as part of the EASA work programme following opinion of the EASA advisory board (composed of the industry representatives). The rulemaking programme is linked to the European Aviation Safety Plan which identifies the issues of greater concern where a mitigating action has to be taken.

However not all the risks require a rulemaking approach. Sometimes a safety promotion action, increased standardisation or guidance material is sufficient. Performance based rules can refer to acceptable industry standards, which then also reduces the rulemaking effort.

ANNEX XVIII

WORKSHOP ON PERFORMANCE SCHEMES AND PERFORMANCE BASED APPROACH IN THE CONTEXT OF AVIATION SAFETY

Brussels, 10 February 2015

Conclusions

- There is a need to clarify the concepts as not everyone understands 'performance' and related terms the same way

1. Necessity of introducing performance elements in the EU system

- There was an overall agreement on the need to go forward with both Safety Performance Scheme (SPS) and the Performance Based Approach to the Regulation of Aviation Safety (PBA)
- With regards to the feasibility of SPS, the availability and accuracy of data is a key issue
- Any change should be supported by a clear identification of its benefits (safety, economic etc…)
- There is a necessity, both for SPS and PBA, to be gradual and to build over time on the basis of experience and capacity

2. Safety performance Scheme

- There was an overall agreement on the need and benefits of measuring aviation safety
- However it was recognised that certain specific areas might not be covered as they are not measurable
- The development of an SPS will require time and should be a gradual process following a pragmatic approach
- A SPS should rely on the industry input- it should follow a bottom up approach rather than a top down one
- The introduction of SPS should follow a logical sequence of events (bottom up process):
  - The industry level with maturation of SMS and the State level with maturation of SSP should follow
  - Then the EU level with a possible development of EU SPIs
  - Finally, building on those experiences, EU SPTs might be developed.
- Different SPIs and SPTs may be defined for the various aviation sectors
- There is a need to take into account the possible unintended consequences of SPTs on safety

- Based on ATM experience, it should start with a safety monitoring phase for some years (with SPIs) before the definition of SPTs
- The key success elements for SPS are:
  - A stable and effective SMS
  - Well-designed SPIs and SPTs
  - A strong Just Culture supporting reporting of data
  - An adequate oversight from the competent authorities (training needs)

3. Performance-based approach to the Regulation of Aviation Safety

- The introduction of Performance-Based Rules (PBR) should be gradual
- A mix of options 2.1 and 2.2a might be the good way forward
- The introduction of PBR should start with selected areas
- It should not exclude the possibility for certain industry stakeholders to continue applying prescriptive rules
- Industry shift to PBR should build upon strong and mature SMS
- A proportionate way of regulating aviation safety might include the set-up of high level PBR in the legislation and the details in soft law
- There was no general answer whether PBR should replace or complement prescriptive rules. This has to be assessed according to topic and type of rule.
- Setting up both prescriptive and PBR on the same issue will be challenging for the oversight. The level playing field should be maintained
- From industry perspective the international dimension should be taken into account when introducing PBR.
- Oversight will be a key issue in the development of PBA: adapt oversight capabilities to PBR will require time and careful consideration
- Developing collaborative oversight between authorities might support oversight in a more complex regulatory framework (with both PBR and prescriptive rules)
- Shifting to PBR/PBA is expected to bring safety improvements.
- PBR might also bring economic benefits.

ANNEX XIX

Executive seminar on European aviation safety

Florence, 23 February 2015

The main conclusions of the seminar were as follows:

(1) Performance based approach and risk based approach to regulation and oversight:
   a) We have already embarked on this transition. However there is a need to clarify what these concepts really mean in detail.
   b) This transition will mean a change in philosophy of working methods and required skill sets for regulated organisations and authorities. Although performance based approach may not be always applicable, the overall objective should be not to just add additional layer of regulation, but to implement a genuinely new approach;
   c) The European Aviation Safety Plan and the State Safety Programme/Plan will be essential tools in this transition.

(2) Optimisation of resources:
   a) It is not realistic to expect that it will be possible to significantly increase the resources – this is a political reality;
   b) There is a need for changing the working methods, and the transition to a performance and risk based approach is part of the answer;
   c) Reallocation of tasks and of resources should be considered;
   d) EASA and National Aviation Authorities should work as a single system, but not necessarily a single organisation;
   e) The pooling and sharing of inspectors should be facilitated; harmonised training and working methods are key to this;
   f) When it comes to EASA budget, there is a need to clearly differentiate between funding provided by industry and funding coming from the public budget. The part of the budget funded by industry should reflect the needs of the industry;

(3) Scope of the system:
   a) There is a need for a regulatory framework for RPAS;
   b) There is a gap as regards ground-handling, as well as security aspects of airworthiness;
   c) There is a need for better coordination of research on aviation safety, and there is a role for EASA here;
   d) Cyber-security work needs to be better coordinated in EU;
   e) EASA could provide add value in technical aspects of aviation security more broadly, provided it does acquire the necessary expertise;

ANNEX XX

GENERAL INFORMATION ABOUT THE EU GROUND-HANDLING MARKET AND SAFETY OF GROUND HANDLING SERVICES[242]

1. General overview of the EU ground-handling market

It is difficult to estimate accurately the size and importance of ground-handling market in the EU, due notably to: (i) the diversity of ground-handling services: the present Directive 96/67/EC distinguishes 11 categories of services, each one including several activities; and (ii) the fact that the companies intervening in these markets can be airports, airlines or independent companies, that do not necessarily publish public separate data for their ground-handling activities or for each of their ground-handling activities.

Commission and stakeholders' estimations assess the revenues of ground-handling in Europe to lie between 6 and 10 billion euros, and the employment in the ground-handling sector to be at the minimum 60,000.[243] Global ground-handling market value was assessed to be around 31 billion euros in 2007 (KPMG, 2008[244]) but this figure seems underestimated. The market is still very fragmented with over 400 operators worldwide and a combined market share of 20% for the top 4 handlers (according to Swissport, 2008[245]): it has not witnessed the same level of regroupings as experienced by other aviation sectors such as the duty-free provider industry. However, this assessment is more or less verified depending on the considered ground-handling category.[246]

Figure 7 below presents more detailed information about the number of ground handling companies in EU member states.

2. Profitability of the ground-handling sector

Currently the independent ground handlers use a wide range of business models and their ground handling business profitability varies significantly. The profit margins or Earnings

[242] The information presented in this Annex is based on the analysis performed by the Commission for the purpose of the 2011 proposal for a Regulation of the European Parliament and of the Council on ground-handling services at Union airports and repealing Council Directive 96/67/EC. The information concerning safety of ground handling in the EU has been provided by EASA.

[243] IAHA estimates the number of workers to be around 60,000 for its members; Booz and co study found that approximately 40,000 people were working in the sole ground-handling independent companies, but put a warning that this figure is certainly underestimated.

[244] Source: www.groundhandling.com/GHI%20Conf/downloads/updated%20papers/2008/04.02%20Robin%20Cartwright,%20KPMG.pdf.

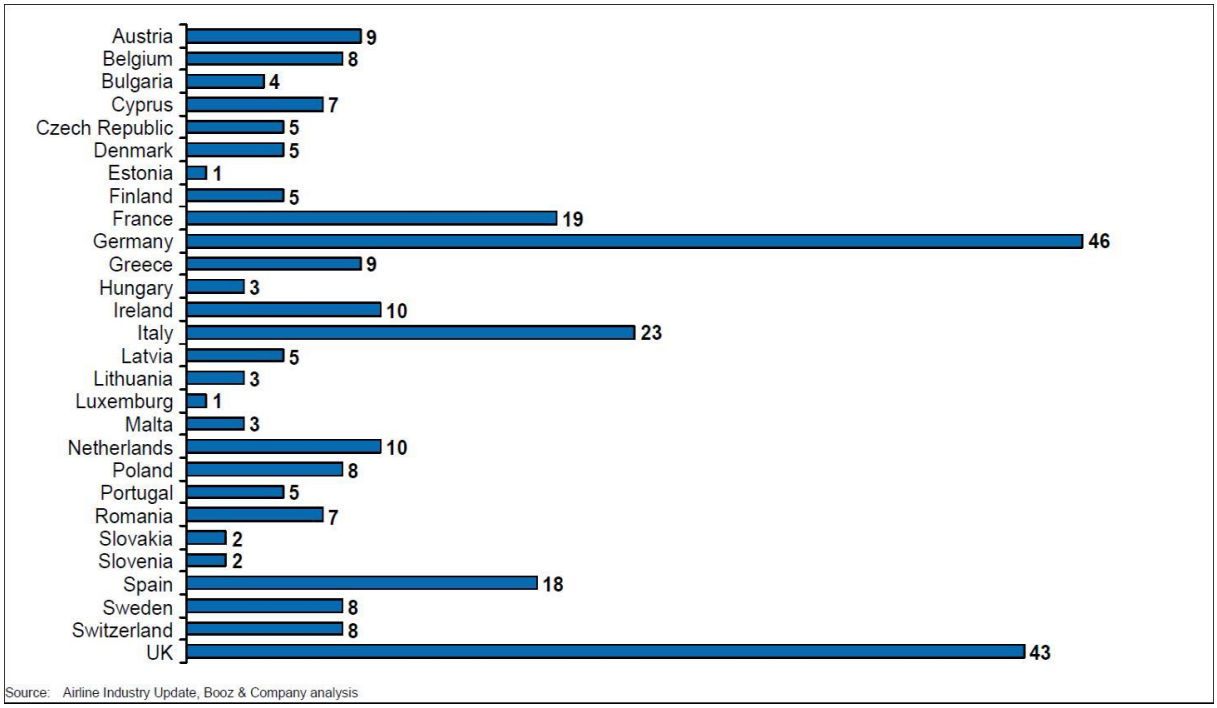
[245] Source: http://www.swissport.com/download/publications/swissreporter_2008_18.pdf.

[246] The catering services market for instance is relatively consolidated at global level with 3 main operators: LSG Sky chefs (30% of market share), Gate Gourmet (24%) and Servair (9%). On the contrary, other services such as aircraft internal cleaning services (which are a subcategory of category 6 "aircraft services") are still very often subcontracted to local cleaning companies, thereby representing extremely fragmented markets. For ramp and cargo handling services, some EU ground-handling players have gained market shares all over the world and are amongst the main providers worldwide. For instance SAS ground services is present at more than 160 airports in 40 countries worldwide (incl. 25 EU countries); BBA at 200 airports worldwide (inc. 7 EU countries); Swissport: 176 airports in 38 countries worldwide (12 EU countries); Servisair: 128 locations worldwide (incl. 8 EU countries); Menzies Aviation: 124 stations in 28 countries worldwide (incl. 8 EU countries); WFS: present in 120 airports etc.

Before Interest, Tax, Depreciation and Amortisation (EBITDA) as a % of revenues are in single digits and thus reflect the nature of the ground-handling business as a relatively commoditised, low cost margin business. This contrasts to the airline services industry with very low margins (3-4% over the period 1995-2008 source IATA) and airport business with higher margins of 10% on average (source: Infofinancials) representing some degree of local monopoly power.

Staff costs represent the vast majority of the handlers' costs (ranging from between 66% and 75% of costs).

Table: Number of ground-handling providers in the EU 27 and Switzerland, 2008 (Pax, Ramp, Cargo, Fuel, Flight Support and de-icing)



3. Detailed overview of safety issues in ground-handling

Aviation safety risks that arise from ground handling can be divided into the risks to passengers and personnel during the turnaround and those that have a knock-on effect during flight. There is a significant cross-over between health and safety in the workplace (on the ramp) and aviation safety. The ICAO definition of an accident includes injuries to people on the ground when an aircraft is being prepared for flight or when passengers and crew have not yet disembarked. In general, if an individual is injured by an aircraft or falls from an aircraft, it falls within the definition of an accident and the remit of occurrence reporting and is thus captured by the data.

Risks on the ramp include:

- Collisions between ground vehicles and aircraft causing both injuries and aircraft damage. Examples include a vehicle towing airstairs that tried to drive under the wing of an aircraft or tug drivers injured in collisions with aircraft;
- Injuries to passengers, crew or ground handlers as a result of falling from open aircraft doors or integral airstairs. This has been a particular problem where procedures are not followed or are inadequate, resulting in airstairs being removed from an aircraft without warning.

- Aircraft damage during pushback, for example caused by tow-bar failures.
- Incorrect pushbacks, such as turning the aircraft the wrong way or pushing back into taxiing aircraft.
- Poorly maintained ramp areas, such as slippery aprons from excessive de-icing, damage to aircraft from so called Foreign Object Damage (FOD), unreadable signage,

One occurrence that spans ramp and inflight safety risks is damage to aircraft where the damage is not reported when it happens but only found later. Reluctance to report such damage can stem from problems with just culture and from contractual obligations with regard to the cost of the damage.

In flight risks associated with ramp errors include:

- Loss of Control in Flight and Runway Excursion, related to
    - loading errors causing weight and balance problems
    - inadequate de/anti-icing
- In-Flight Fire related to
    - cargo or baggage fires
- System/ Component Failures and Malfunctions, related to
    - damage caused during the turnaround process
    - de/ anti-icing errors (such as fluid ingress into systems and components)
- Aircraft structure/ pressurisation problems
    - This is a particular risk for composite aircraft where the exterior surface of the aircraft can appear undamaged, but significant damage has occurred below the surface. This risk will increase as yet more composite aircraft enter service.

The majority of fatal accidents worldwide involve people struck by rotating propellers, falling from aircraft or being sucked into engines. A minority involve loading errors that subsequently cause control problems in flight. These have so far only occurred on cargo flights and so the number of fatalities is low relative to other aviation accident types, although cargo can also be carried on passenger flights. A higher number of fatalities occur where de/ anti-icing errors have happened, since these have occurred on both passenger and cargo flights.

More unusual but nevertheless severe and sometimes high-profile occurrences include:

- During the winter of 2005 and for some following winters, over-use of anti-icing fluids led to control restrictions on aircraft with non-powered flight controls such as the DHC-8, EMB 145 and BAE 146. See UK AAIB Report EW/G2006/01/14.
- Incorrect application of de or anti-icing fluid has led to contamination of the APU, resulting in fumes in the cabin and, on a few occasions, the complete disintegration of the APU.

3.1. Specific accident and incident data

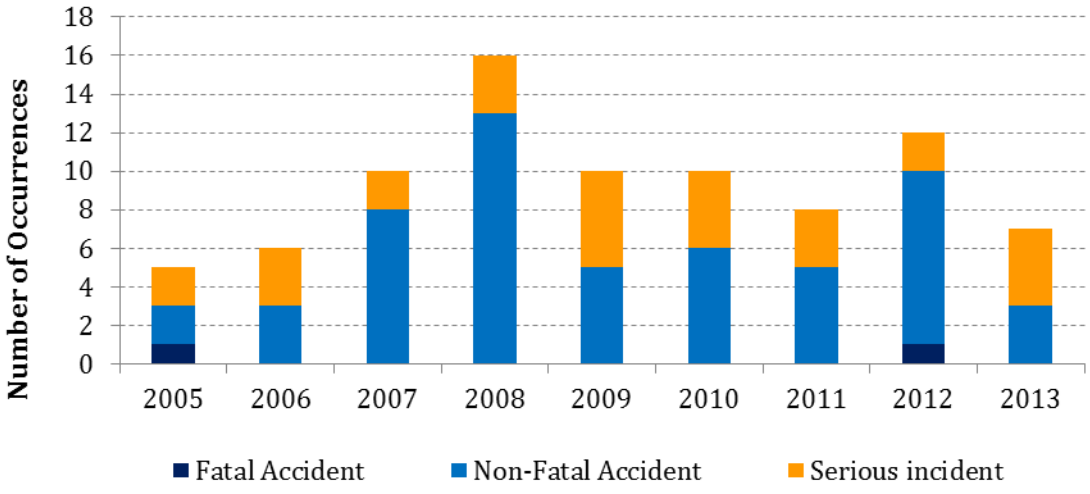
Figures presented in this section are for Part-CAT large aeroplanes where EU/EFTA Member State was the State of Occurrence, Registration or Operation.

The ADREP database has records of seven fatal accidents in the last 20 years and a total of eight fatalities.

- 06 Jul 1996, HAL748 - Marshaller walked backwards into propeller - 2 POB - 1 OG Fatal - No Damage
- 18 May 1997, ATR72 - Ground mechanic struck by propeller while removing a chock - 53 POB - 1 OG Fatal - No Damage
- 12 Jan 1999, F27 - Aircraft pitch up following flap deployment due to load exceeding aft CofG, subsequent load shift and collision with building - 2 POB – 2 Fatal - Aircraft Destroyed
- 05 Sep 2001, B777 - Ground fire during refuelling, killing aircraft fueller - 26 POB - 1 OG Fatal - Minor Damage
- 17 Sep 2002, ATR72 - Ground Handler struck by propeller during parking - 37 POB - 1 OG Fatal – Minor Damage
- 01 Feb 2005, A319 - Cabin crew fell from rear door when steps removed before closing - 104 POB - 1 Fatal - No Damage
- 11 Nov 2012, A320 - Loading operative caught between loader and baggage door - 5 POB - 1 Fatal - Substantial Damage

Since 1st January 2005, ground handling occurrences have formed 6% of fatal accidents, 15% of non-fatal accidents and 2% of serious incidents. During that time, there were 84 ground handling related accidents and serious incidents (Figure 8). The apparently low proportion of serious incidents relates to a lack of risk perception when accidents only nearly happen – because the aircraft is usually on the ground, it is assumed that what happened was not serious.

Table: Number of ground handling occurrences per year



Injury statistics (Table 11) from the European Central Repository over a six year period show no overall trend in the numbers of injuries, except that there has been an increase in minor injuries.

Table 15: Injuries associated with ground handling incidents

Year	Fatal	Serious	Minor
2009		1	7
2010		3	2
2011		2	4
2012	1	1	17
2013		3	12
2014			11
Total	**1**	**10**	**53**

Over 20,000 risk-bearing ground handling occurrences were reported to the European Central Repository (ECR) in a six year period by member states, an average of approximately 3,500 per year. However, the number of all types of occurrence reported to the ECR has increased over the past six years as changes within Member States enabled better reporting. To normalise the figures compared with overall reporting, the proportion of ground handling occurrences reported to the ECR in comparison with all occurrences reported was calculated, showing that between 9 and 11% of risk-bearing occurrences related to ground handling in the period 2009-2014. This is a high proportion of occurrences for a sector that is not directly regulated and the figures do not include records that are not considered severe enough to be classed as occurrences, but which may be costly in terms of aircraft damage and delays. Work with ground handling companies and airlines have identified significant under-reporting in this sector, due to the lack of understanding and guidance relating to ground handling reporting.

Further analysis of ECR data showed that in 2013 ground handling occurrences were more common than aerodrome occurrences, security problems, bird strikes, airborne conflict, power-plant malfunctions and runway incursions, to list but a few. It was the fourth most commonly applied occurrence category, behind "other", ATM/CNS errors and system or component failures.

Analysis of event codes shows that the majority of RAMP occurrences relate either to loading errors or to near-collisions and collisions on the ramp or during parking and pushback. Collisions can be either with ground servicing vehicles or with other aircraft. As stated above, these collisions/near collisions and loading errors carry in-flight safety risks as well as causing problems on the ground. A request to the Network of Analysts regarding unreported damage to aircraft as a result of collisions revealed that reporting varied, with one country estimating that 5% of aircraft damage was found later instead of reported at the time, while a second country put this estimate as high as 14%. Although this is a current safety risk, the introduction of composite aircraft increases the importance of reporting collisions and near collisions, owing to the difficulty in detecting damage to composite materials.

3.2 Ongoing safety initiatives

European and international safety initiatives have been initiated with the intention of raising the profile of ground handling, streamlining airline auditing of ground handlers and improving safety. Examples include:

- **UK Ground Handling Operations Safety Team (GHOST)**: actions have included awareness campaigns for aircraft loaders during the Olympics, advisory material to support reporting and just culture campaigns, , amendments to CAP 168 – Licensing of Aerodromes

- **ECAST Ground Safety Working Group (GSWG)**: research into human factors in ground handling, proposals for a standardised ground handling training syllabus and coordination with other initiatives;
- **IATA ISAGO and IGOM:** the IATA Safety Audit of Ground Operations has developed a common audit programme for ground handlers and airlines, with the aim of reducing the number of audits a ground handler must undergo and raising the standard of audits. The IATA Ground Operations Manual Task Force meets twice per year to attempt to standardise ground handling operations;

Part of the problem with voluntary initiatives is that the cost of the initiatives adds to the cost of service in a very competitive environment for contracts. Furthermore, the attendees to such groups are often the safety managers or members of the safety team, but not the budget holders or managing directors. Anecdotally, many of those responsible for safety in ground handling companies would prefer to have regulation in place because it strengthens their case for investments, however this will not necessarily be supported by their senior management, unless it can be made clear that the same regulations and oversight will also apply to their competitors.

Despite these initiatives, the occurrence data does not indicate any significant change or improvement in ground handling safety. There is no indication that voluntary initiatives have been effective at a European level. Although initiatives such as the GHOST have been productive, they work because they are local and involve targeted actions. Thus, motivation to join in the initiatives is better and follow-up is easier. This in some cases one-to-one and personal approach cannot be replicated at a European level.

3.3 International developments

Since 2012 the International Civil Aviation Organisation (ICAO) has also been looking at the safety of ground-handling services. The problem statement from ICAO in the related job-card to the Aerodrome Panel (AP, now the ADOP) states *"(t)hat there is a need to look at the safety, efficiency and standardisation issues associated with ground handling and determine the status and future needs for ICAO provisions in relation to ground-handling at aerodromes".*

In the beginning of 2015 the ICAO task force under the ADOP will report on its results and come forth with the following identified primary safety issues:

- Mass and balance, load distribution and securing;
- De-icing;
- Ground collisions.

The group will also present the following recommendations in its imminent report:

1. SMS for Ground Handlers;
2. ICAO Circular on industry best practices (industry standards);
3. In the long term ICAO Annex dedicated to ground handling (very unlikely);
4. Oversight not decided but presumably aerodrome operator proposed.

At the same time ADOP group concedes that SMS does not resolve the operational safety issue with ground collisions, which is really more a matter for the aerodrome operator and the enforcement of local apron and runway safety procedures. At the same time it is also realised

that full SMS might be excessive with non-aircraft safety related ground handling services (such as catering) and that therefore probably a selection of the most relevant ground handling categories be necessary.

Furthermore there are difficulties in implementation, as the idea of oversight over ground handling by aerodrome operator conflicts with aircraft operator's responsibility for its subcontractors. Any future ICAO or EU provisions would have to ensure to minimise the duplication of responsibilities and give a correct dimensioning of oversight resources and at the same time empower the aerodrome operator vis-a-vis ground handling service providers.

In its work, the Task Force is collaborating with the Safety Management Panel (SMP) and the Air Operations Panel (OPSP).

3.4 Conclusions on safety of ground-handling

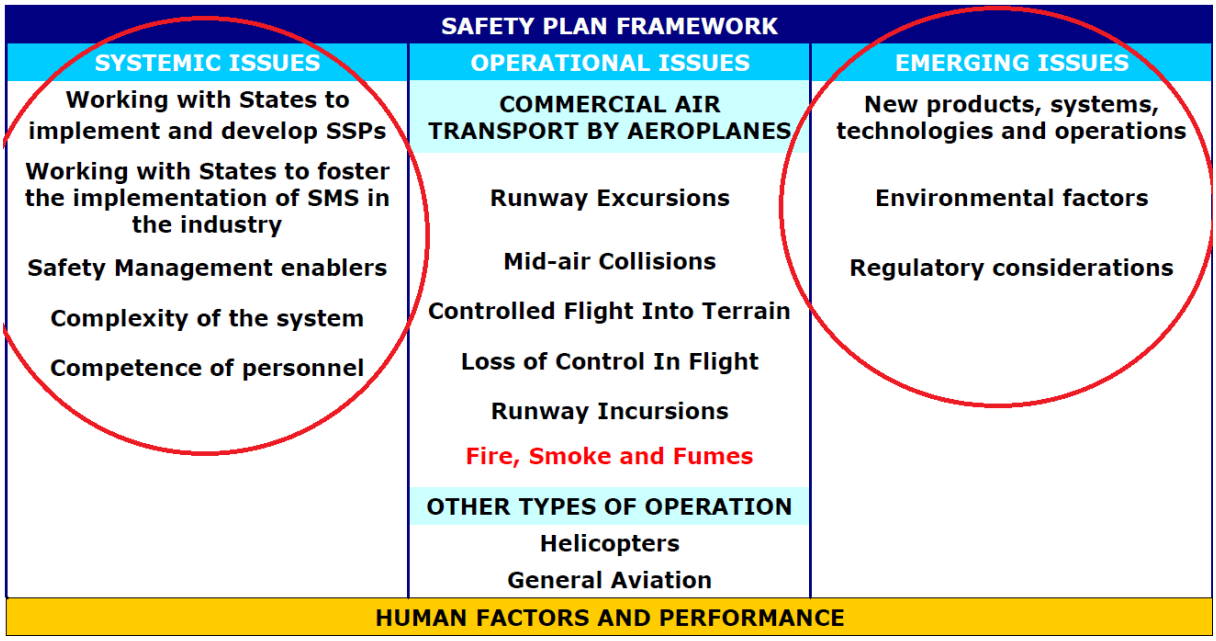
Errors on the ramp form a significant proportion of accidents and incidents involving commercial aeroplanes each year (10%). The majority of accidents occur on the ramp itself and the majority of fatal accidents involve one fatality. However, some of the errors that occur during the turnaround have serious consequences during flight, such as loss of control, runway excursion or in-flight fire.

Additional conclusions are as follows:

- Errors involving ground handling have clear in-flight safety risks that have caused fatal accidents, accidents and serious incidents.
- In addition to in-flight risks, there are risks on the ramp to passengers and personnel. The definition of Annex 13 includes these injuries, therefore they fall within the purview of aviation safety regulation and not just local health and safety.
- Ground damage to aircraft is very common but is an increasing risk, owing to the difference in appearance between significant damage to conventional aircraft and composite aircraft. As the number of composite aircraft in service increases, ground damage becomes a higher in-flight safety risk.
- Recent data shows that ground handling occurrences form approximately 10% of all aviation safety occurrences and this figure has not changed significantly over the past 5 years.
- There is no evidence that Europe-wide voluntary safety initiatives have had a significant impact in improving ramp safety.

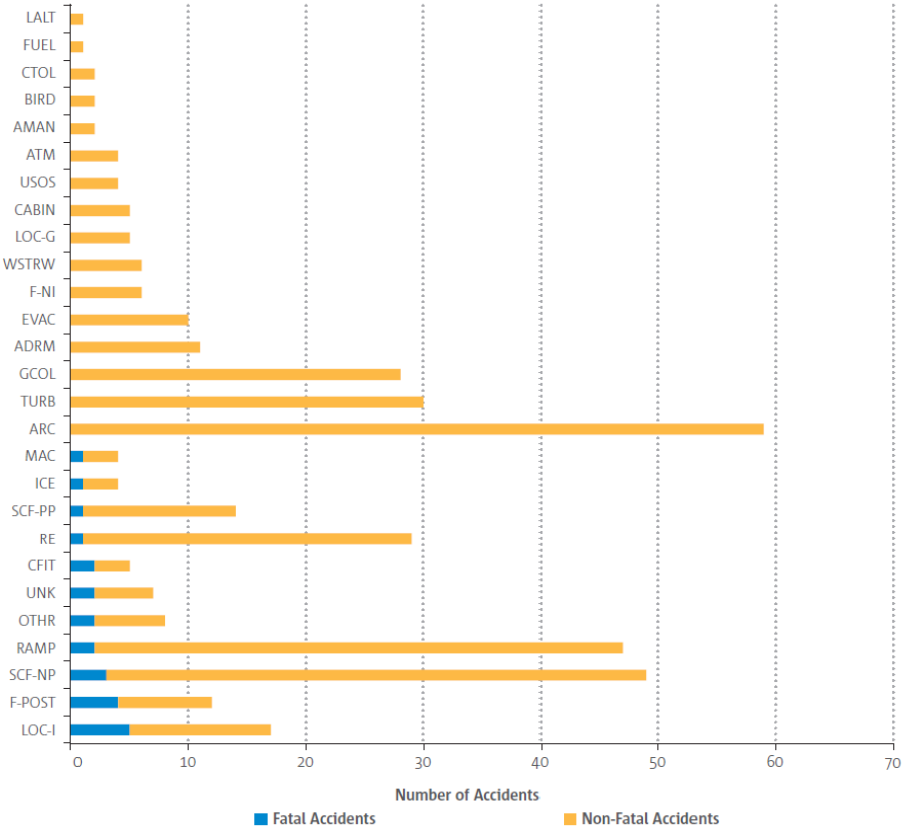
ANNEX XXI

MAIN ISSUES AFECTING THE EU AVIATION SAFETY SYSTEM



Source: European Aviation Safety Plan (edition 2014-2017)

Figure 5: Categories of fatal and non-fatal accidents involving EU/EFTA operated aeroplanes (2004-2013)



Source: EASA, Annual Safety Review (2013)

ARC	Abnormal runway contact
AMAN	Abrupt manoeuvre
ADRM	Aerodrome
ATM/CNS	Air Traffic Management/Communication Navigation Surveillance
BIRD	Collision / near Collision with bird(s)
CABIN	Cabin safety event
CFIT	Controlled flight into or toward terrain
CTOL	Collision with obstacle(s) during take-off and landing
EVAC	Evacuation
EXTL	External load related occurrence
F-NI	Fire/smoke (non-impact)
F-POST	Fire/smoke (post-impact)
FUEL	Fuel related
GCOL	Ground collision
GTOW	Glider towing related event
RAMP	Ground handling
ICE	Icing
LOC-G	Loss of control — Ground
LOC-I	Loss of control — In-flight
LOLI	Loss of lifting conditions en-route
LALT	Low altitude operation
MAC	Airprox/TCAS alert/loss of separation/near midair collisions/midair collision
OTHR	Other
RE	Runway excursion
RI-A	Runway incursion — Animal
RI-VAP	Runway incursion — Vehicle, aircraft or person
SEC	Security related
SCF-NP	System/component failure or malfunction (non-powerplant)
SCF-PP	System/component failure or malfunction (powerplant)
TURB	Turbulence encounter
UIMC	Unintended Flight in IMC
USOS	Undershoot/overshoot
UNK	Unknown or undetermined
WSTRW	Windshear or thunderstorm

Annex XXII

Overview of the draft Network Information Security (NIS) Directive

The NIS Directive was proposed by the Commission in 2013 and at the end of 2015 was in the final stages of negotiations between the European Parliament and the Council. The proposal aims to ensure a high common level of cybersecurity in the EU, by:

The proposed NIS Directive is a key component of the overall EU cybersecurity strategy and would require all Member States, key internet enablers and critical infrastructure operators such as e-commerce platforms and social networks and operators in energy, transport, banking and healthcare services to ensure a secure and trustworthy digital environment throughout the EU. The proposed NIS Directive lays down measures including:

(a) Member State must adopt a NIS strategy and designate a national NIS competent authority with adequate financial and human resources to prevent, handle and respond to NIS risks and incidents;

(b) Creating a cooperation mechanism among Member States and the Commission to share early warnings on risks and incidents through a secure infrastructure, cooperate and organise regular peer reviews;

(c) Operators of critical infrastructures in some sectors (financial services, transport, energy, health), enablers of information society services (notably: app stores e-commerce platforms, Internet payment, cloud computing, search engines, social networks) and public administrations must adopt risk management practices and report major security incidents on their core services.

The proposed NIS Directive does not mandate specific technical requirements, which can be developed at sectorial level.

ANNEX XXIII

GLOSSARY OF MAIN TECHNICAL TERMS

Acceptable Means of Compliance (AMC): are non-binding standards adopted by EASA to illustrate means to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules.

Air Operator's Certificate (AOC): certificate delivered to an undertaking confirming that the operator has the professional ability and organisation to ensure the safety of operations specified in the certificate.

Air Services Agreements (ASA): international agreement which governs the conditions and procedures for the conduct of international commercial air transport operations.

Annex II aircraft: Aircraft listed in Annex II to Regulation (EC) No 216/2008, and which are excluded from the scope of that Regulation and its Implementing Rules.

Certification Specifications (CS): 'Certification Specifications' are technical standards adopted EASA indicating means to show compliance with the essential requirements to Regulation (EC) No 216/2008.

Commercial air transport (CAT): means an aircraft operation to transport passengers, cargo or mail for remuneration or other valuable consideration.

European Organisation for the Safety of Air Navigation (EUROCONTROL): An international organisation established in 1960 to work for seamless, pan-European air traffic management.

General aviation (GA): those flight activities not involving commercial air transportation or aerial work, and where aerial work means operations used for specialized services such as agriculture, construction, photography, surveying, observation and patrol, aerial development, etc.

Guidance Material (GM): is non-binding material issued by EASA to assist in the understanding of the Regulation (EC) No 216/2008, its Implementing Rules and Certification Specifications.

State aircraft: means aircraft while carrying out military, customs, police, search and rescue, firefighting, coastguard or similar activities or services.

International Civil Aviation Organisation (ICAO): Specialised UN body established by the 1944 Convention on International Civil Aviation. The aims and objectives of ICAO is to develop the principles and techniques of international air navigation and to foster the planning and development of international air transport.

Instrument Flight Rules (IFR): Rules and regulations established to govern flight under conditions in which flight by outside visual reference is not safe. IFR flight depends upon flying by reference to instruments in the flight deck, and navigation is accomplished by reference to electronic signals.

Instrument rating (IR): A privilege given to a pilot to flight under IFR.

Maximum take-off mass (MTOM): The maximum takeoff mass of an aircraft is a value defined by the aircraft manufacturer. It is the maximum mass at which the aircraft is certified for take-off due to structural or other limits. MTOM is usually specified in units of kilograms or pounds. The mass is a fixed value and does not vary with changes in temperature, altitude or runway available

Network Manager: A body designated under the Single European Sky legislation to perform certain functions and duties with respect to the management of European ATM network. In 2015 the functions and duties of the Network Manager were entrusted to EUROCONTROL.

Qualified Entity (QE): Means a body which may be allocated oversight or certification tasks by EASA or by a national aviation authority under Regulation (EC) No 216/2008.

Annex XXIV

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