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# COMMISSION STAFF WORKING PAPER

# IMPACT ASSESSMENT

*Accompanying document to the*

**Proposal for a Regulation of the European Parliament and the Council**

**on occurrence reporting in civil aviation**

{COM(2012) 776 final}
{SWD(2012) 442 final}

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## 1. PROCEDURAL ISSUES AND CONSULTATION OF INTERESTED PARTIES

**Identification**

**Lead DG**: Directorate-General for Mobility and Transport

**Agenda planning**: 2011/MOVE/028.

### 1.1. Context of the proposal

The proposal to revise the legislation on occurrence reporting in civil aviation is a key part of the European Union's overall efforts to improve aviation safety by moving from a system which is mainly reactive and focuses on preventing accidents reoccurring by understanding their causes, towards a system which is more proactive and evidence-based and uses information coming from daily occurrences[1] in order to prevent accidents occurring.

Recital 3 of Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation[2] requests the Commission to revise Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation[3].

The White Paper 2011 "*Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*"[4] sets out a list of initiatives to be implemented among which "*Improve the collection, quality, exchange and analysis of data by reviewing legislation on occurrence reporting in civil aviation*"[5].

The Commission Communication on "*Setting up a Safety Management System for Europe*"[6] reaffirms that to allow hazard identification "*information is a vital component of any safety management system*" and that occurrence reporting is a core element of such a system. It therefore underlines the necessity to review EU legislation on occurrence reporting in civil aviation to build an efficient safety system in Europe.

This Impact Assessment accompanies the Commission proposal which revises Directive 2003/42/EC and its implementing regulations[7]. This document notably endeavours to identify the shortcomings of the current legislation.

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1 Occurrence is understood in this document according to its definition in Directive 2003/42/EC i.e. any safety event outside of accidents and serious incidents.

2 OJ L 295 of 12.11.2010, p.35.

3 OJ L 167, 4.7.2003, p. 23.

4 COM/2011/0144 final

5 First point of Initiative 17 "*A European strategy for civil aviation safety*".

6 COM/2011/0670 final

7 Commission Regulation (EC) No 1321/2007 of 12 November 2007 laying down implementing rules for the integration into a central repository of information on civil aviation occurrences, OJ L 294 of 13.11.2007, p. 3; and Commission Regulation (EC) No 1330/2007 of 24 September 2007 laying down implementing rules for the dissemination to interested parties of information on civil aviation occurrences, OJ L 295 of 14.11.2007, p. 7.

## 1.2. Organisation and timing

This Impact Assessment (IA) has been prepared and drafted by the European Commission's Directorate-General for Mobility and Transport (DG MOVE). Its preparation was assisted by an Impact Assessment Steering Group (IASG) created in May 2011 to which all the interested Directorates-General[8] of the Commission were invited to participate. The IASG met three times between May 2011 and July 2012[9]. The main elements of the proposal along with those of specific interest for the IASG members were extensively discussed during the IASG. A final version incorporating the comments made during the last meeting was circulated in August 2012. Final comments received were fully incorporated into the present report.

## 1.3. Consultation and expertise

During the IA process extensive consultations took place in respect of the general principles and minimum standards for consultation of the interested parties by the Commission. The Commission consulted all 27 Member States through a questionnaire sent out on 7 April 2011 which aimed at understanding the way the current legislation was implemented and consulted Member States on possible options for addressing the shortcomings identified in current EU legislation[10]. The Commission received answers from all Member States but one (Slovakia). The Commission also conducted on site visits to few Member States.

The Commission consulted interested stakeholders and the general public through a public consultation which was opened on 24 June 2011 and closed on 15 September 2011 (12 weeks) on the "*Your Voice in Europe*" Internet website[11]. In total, 61 replies were submitted in response. DG MOVE also received contributions from stakeholders in various forms.

As requested by Commission Decision 98/500/EC[12] which stipulates that each sectoral social dialogue committee, for the sector of activity for which it is established, "*shall be consulted on developments at Community level having social implications*", the Commission made a presentation before the Civil Aviation Social Dialogue Committee on 23 June 2011 where the Committee was invited at this occasion to formalise a position on the review where necessary.

In addition, the opinion of the European Network of Civil Aviation Safety Investigation Authorities (ENCASIA) was also sought in accordance with Article 7(3) of Regulation (EU) No 996/2010[13].

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8 Secretariat General (SG), Legal service (LS), DG Justice (JUST), DG Employment (EMPL), the Joint Research Centre (JRC), DG Health and Consumers (SANCO), DG Enterprise and Industry (ENTR), DG Information Society and Media (INFSO) and DG Internal Market and Services (MARKT).

9 The IASG met in May 2011, June 2012 and July 2012

10 A summary of Member States replies to the questionnaire is attached in Annex 1

11 A summary of the public consultation is attached as Annex 2 and is also available on the Internet to the following address: http://ec.europa.eu/transport/air/consultations/2011_11_09_occurence_en.htm

12 OJ L 225 of 12.8.1998, p. 27.

13 ENCASIA's opinion is attached in Annex 3.

All interested stakeholders and authorities were invited to a workshop organised by the Commission which focused on the "Just Culture"[14] issue and which took place on 19 April 2012[15].

The Commission also asked the opinion of the European Data Protection Supervisor. Finally, a study on the establishment of a common risk classification of civil occurrences has been carried out[16].

Inputs from all consulted parties were taken into account in the analysis of the different policy options presented in this Impact Assessment and, where relevant, are presented in the document.

The Commission has been informed that the European Parliament has commissioned a study[17] which was carried out by an external expert on both accident investigation and occurrence reporting issues. This study, published in January 2011, had been requested by the Transport Committee to provide Members of the European Parliament with background information aimed at supporting them in their decision making process task for amending the legislation on accident investigation. The Commission has carefully analysed the text regarding the elements related to occurrence reporting within this study.

### 1.4. Impact Assessment Board

Following the submission of a draft report to the Impact Assessment Board (IAB) on 5 September 2012 and a hearing with the IAB on 3 October 2012, the Board sent its opinion on 5 October 2012.

The recommendations of the IAB were duly taken into account and the main modifications were the following:

- The problem definition was made clearer and better explains the issues encountered with the current legal framework;
- The objectives were better specified and more closely linked to concrete monitoring indicators; monitoring indicators were reviewed;
- More detailed information on the content of each policy package was provided and the views of stakeholders was better specified;
- The assessment of impacts was better explained.

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14 As defined in Regulation (EC) 691/2010: *"Just culture" means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.* Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions, OJ L 201, 3.8.2010, p. 1.

15 The meeting summary and adopted conclusions are enclosed in Annex 4

16 This study is enclosed in Annex 5.

17 IP/B/TRAN/IC/2009-024

## 2. PROBLEM DEFINITION

### 2.1. Background on air safety

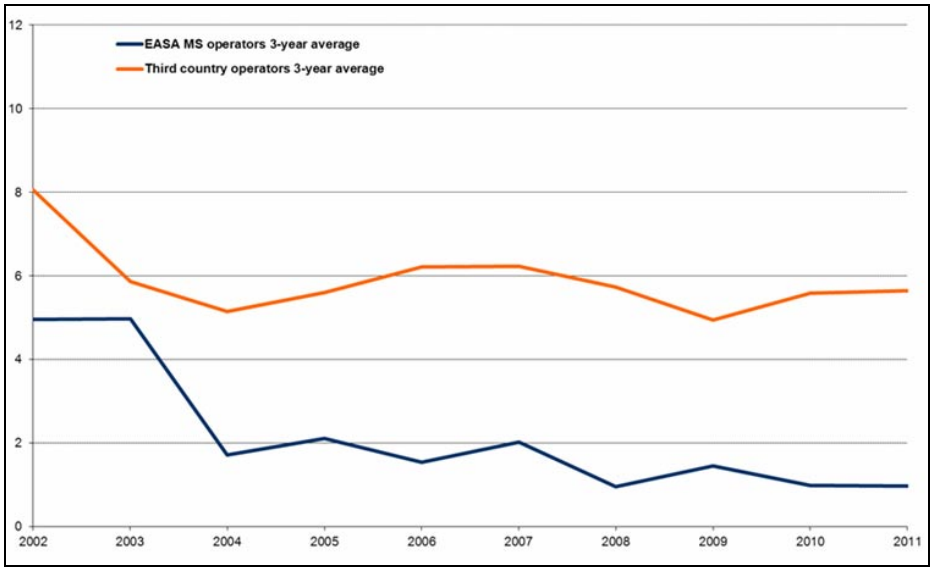
#### *2.1.1. General background*

Air safety steadily improved over the last decades[18]. This was notably due to the combined efforts of the aviation regulators and the industry.

However, whilst the European average annual rate of fatal accidents in scheduled passenger operations has improved until 2004, since then the rate has remained more or less stable[19]. During a similar period air traffic movements in Europe grew from approximately 7 million flights per annum in 2000 to 9.5 million flights per annum in 2010.

Looking to the future, according to Eurocontrol[20], the growth in aviation flights in the Eurocontrol area[21] is most likely to increase to 16.9 million flights per annum by 2030, close to 1.8 times more than in 2010. Therefore, with a stable fatal accident rate, this will likely lead to an increase in the number of accidents as a by-product of steadily increasing traffic volumes.

**Figure 1: Rate of fatal accidents in scheduled passenger operations – EASA MS and third country operated aeroplanes (fatal accidents per 10 million flights) [22]**




Accidents almost never happen by chance; they are often preceded by a number of occurrences. In addition there are often not resulting from a single failure but from a

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18 One of the indicators available to support this statement is the measure of passenger fatalities per 100 million miles flown which went from 5 in 1945 to below 0.05 in 1997 (European Aviation Safety Agency, Annual Safety Review 2005)

19 Source: European Aviation Safety Agency, Annual Safety Review 201, see figure 1

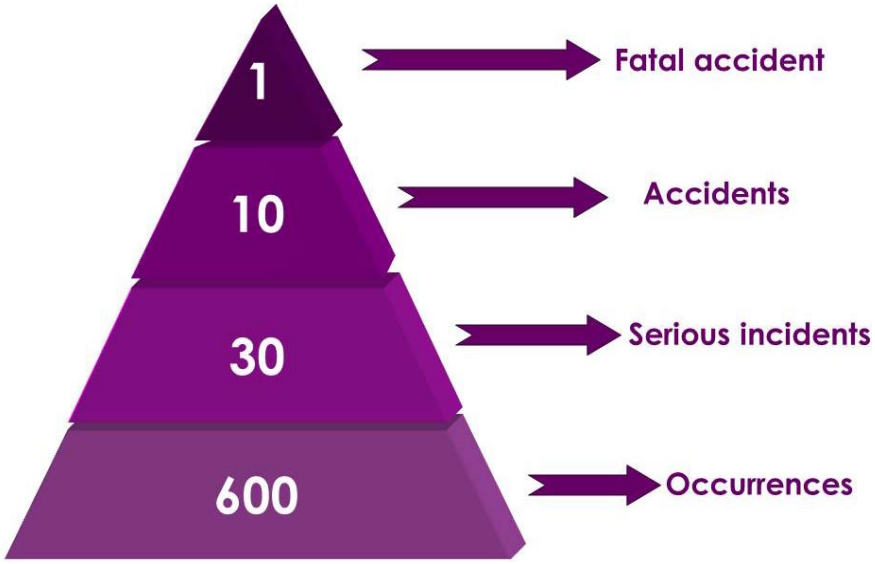
20 EUROCONTROL CND/STATFOR Doc 415 of 17 December 2010 - Long-Term Forecast - Flight Movements 2010 - 2030

21 Eurocontrol area includes 39 States among which EU-27, Balkans countries, Norway, Switzerland, Turkey and Ukraine.

22 Source: European Aviation Safety Agency, Annual Safety Review 2011

combination of incidents. The fact that for each accident an important number of precursor occurrences exist is illustrated in the figure below, inspired from the Heinrich Pyramid[23].

**Figure 2: The Accident Pyramid[24]**




The principle behind this accident pyramid is still applicable to the present situation where for a limited number of accidents there are a much higher number of incidents. Indeed, for the year 2011, 3 fatal accidents and 38 accidents occurred[25] while 447 serious incidents[26] and 68,386 incidents[27] have been reported to the Member States.

### *2.1.2. Accident prevention systems*

The current aviation safety system is primarily a reactive system relying on technological advances, sound legislation underpinned by effective regulatory oversight, and detailed accident investigations leading to recommendations for safety improvements. However whilst the ability to learn lessons from an accident is crucial, purely reactive systems have now shown their limit in continuing to bring forward improvements. Preventing accidents reoccurring is essential but insufficient to reduce the number of accidents in a context of air traffic growth. Safety efforts should focus on preventing an accident occurring in the first place by addressing incidents and therefore support the establishment of a more proactive and evidence-based safety system.

Safety in civil aviation is significantly influenced by the inherently international nature of this industry. International co-operation is thus essential to ensure network

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23 Heinrich's Pyramid is a pictorial description of the relationship between occurrences and more serious incidents and accidents. Heinrich's law is based on probability and assumes that the number of accidents is inversely proportional to the severity of those accidents. It leads to the conclusion that minimising the number of minor incidents will lead to a reduction in major accidents, which is not necessarily the case. Source: SKYbrary.

24 Source: Frank E. Bird Jr, Accident Pyramid, 1969.

25 These numbers relate to accidents for aeroplanes and helicopters involving EASA Member States operators.

26 Source: European Central Repository.

27 Source: European Central Repository.

safety and development of coordinated policies and globally agreed standards. The International Civil Aviation Organisation (ICAO) has encouraged the transition towards a proactive and evidence-based safety approach with the progressive introduction of formal requirements for safety management systems[28] since 2001 and has been formally recognised during the 2010 High Level Safety Conference with the decision to develop a new Annex to the Chicago Convention dedicated to safety management process.

The effectiveness of such a proactive and evidence-based system greatly depends on the ability to systematically analyse all available safety information, including information on civil aviation occurrences. Indeed, data is vital to identify safety hazards, for without sound information any attempt to identify the hazards would be guess work.

Collecting and analysing occurrences is not sufficient and should be complemented by actions to establish an effective proactive and evidence-based system leading to concrete aviation safety improvements and saving citizens lives. As explained in the ICAO Safety Management Manual[29], an effective "*safety data management builds upon three clearly defined steps. The first two steps (...) are the collection of safety data on hazards and the analysis of safety data, to turn data into information. The third, and often overlooked, step is the mitigation or response activities to hazards (...) as a consequence of the safety information developed*". One could add a fourth step with the oversight of corrective actions taken in order to ensure that the safety risk is eradicated.

*2.1.3. Description of the current occurrence reporting system in Europe*

The International Civil Aviation Organisation has laid down provisions requiring States to establish occurrence reporting systems, to analyse data collected and to use it for safety improvements[30], but the lack of enforcement mechanisms at ICAO level has led to a diverging implementation of these principles across European Member States.

At European level, the transition towards a proactive and evidence-based aviation safety management system has already started with the adoption of Directive 2003/42/EC which requires each Member State to set up a mandatory occurrence reporting system (MORS). Under this legislation Member States are requested to collect, store, protect and disseminate between themselves information on certain civil aviation incidents. The Directive lists examples of occurrences to be reported and details the list of aviation professionals who shall report occurrences to their Member State competent authority. In reality most individuals do not report occurrences directly to the Member State authority but report to the organisation[31]

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28 ICAO defines safety management system (SMS) as a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures. The objective of a SMS is to provide a structured management approach to control safety risks in operations.

29 ICAO Document 9859, Second edition 2009.

30 Chicago Convention, Annex 13 "*Aircraft Accident and Incident Investigation*", Chapter 8 "*Accident Prevention measures*"

31 In this document organisation is understood as an aviation industry player (i.e. airline, airport, air navigation service provider, maintenance organisation and manufacturer).

which employs them, which then sends reports to their State of registration[32]. Member States are also encouraged to establish voluntary occurrence reporting schemes (VORS) which allow the collection of occurrences not covered by the mandatory system. Occurrences collected under the MORS are stored by each Member States in a national database and are then sent to the European Central Repository (ECR). This database has been established by the Commission in order to facilitate the dissemination of information between Member States through aggregated data at the EU level[33]. In September 2012, some 628,000 occurrences were stored in the ECR and this figure is growing daily. The ECR represents a number of potential benefits for both the EU and the Member States[34] and notably allows a better identification and analysis of specific EU-wide air safety issues and trends, as well as enables the monitoring of the overall performance of the EU aviation safety system, an issue essential for successful implementation of the European Aviation Safety Plan and Programme[35]. However, the current legislation limits the access to certain data contained in the ECR. The dissemination of the information contained in the European Central Repository to interested parties is regulated by an implementing regulation[36].

It should be noted that, in parallel to the system established by Directive 2003/42/EC and its implementing rules, a number of other reporting requirements exist under European law but also outside the EU system[37]. These parallel requirements have led to the existence of a number of other occurrence databases at European level other than the European Central Repository.

The current legislation does not include provisions indicating how Member States should use the data collected for the benefit of aviation safety. Therefore this has led to quite diverse and divergent approaches among Member States depending on the level of ICAO requirements implementation.

At European level, Regulation (EU) N°996/2010 has, in its Article 19, established the principle that occurrences contained in the ECR should be analysed by the European Aviation Safety Agency (EASA) and the Member States. This cooperation is now under way, notably with the establishment of a Network of Analysts, but the practical implementation of this legislative provision is negatively affected by the failures of the current system notably the lack of access to pertinent information contained in the ECR.

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32 Around 98% of occurrence reports received by the Member States are coming from organisations and not from individuals.

33 Commission Regulation (EC) No 1321/2007 of 12 November 2007 laying down implementing rules for the integration into a central repository of information on civil aviation occurrences, OJ L 294 of 13.11.2007, p. 3.

34 It is worth pointing out, that ICAO, recognising the benefits of data aggregation in aviation safety management, recommends in its Standards and Recommended Practices on accident prevention measures, the establishment of regional air safety databases and data sharing networks.

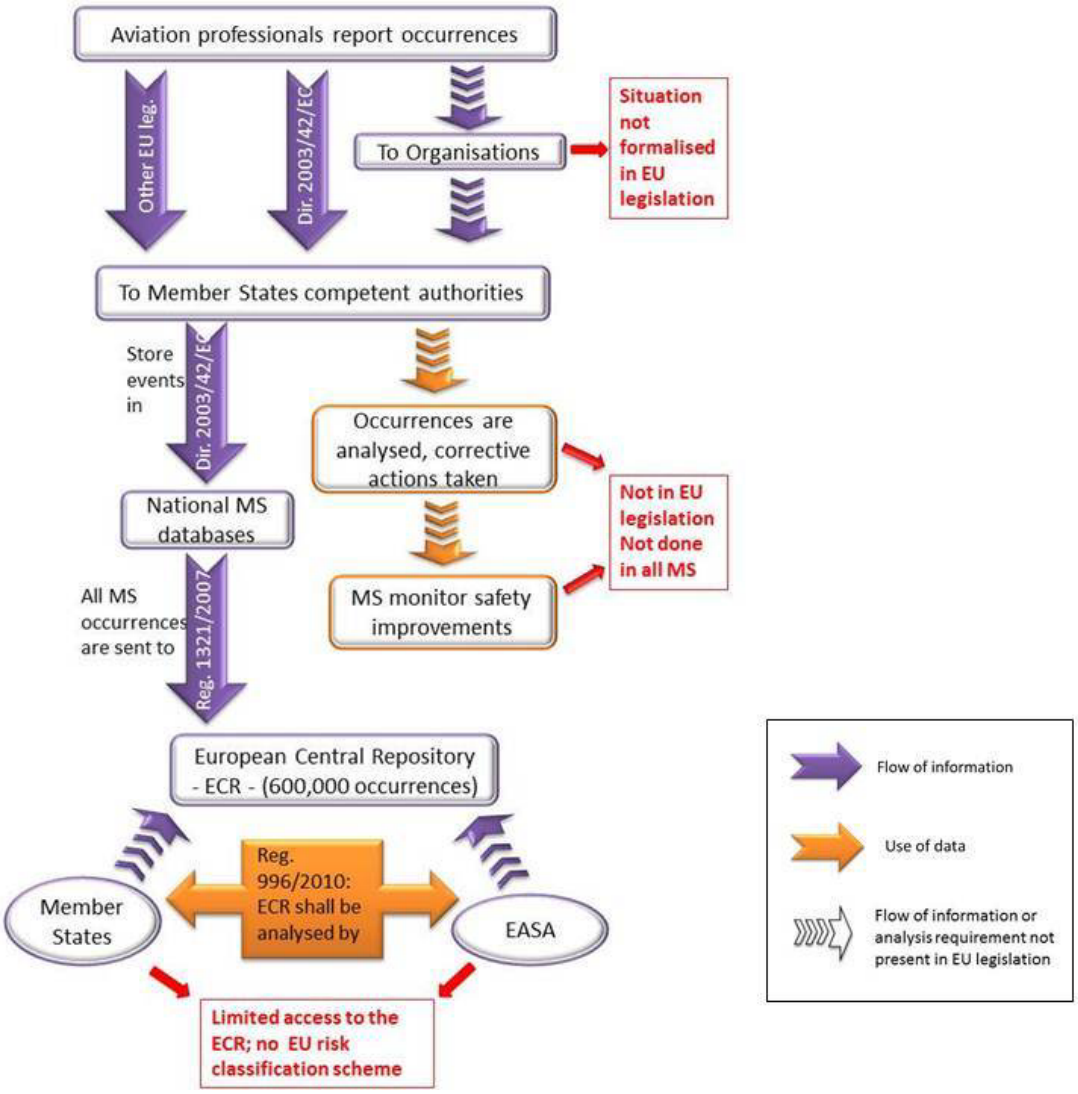
35 SEC/2011/1261 final.

36 Commission Regulation (EC) No 1330/2007 of 24 September 2007 laying down implementing rules for the dissemination to interested parties of information on civil aviation occurrences, OJ L 295 of 14.11.2007, p. 7.

37 For example Eurocontrol ESARR2 (Reporting and Assessment of Safety Occurrences in ATM)

The figure below summarises the current occurrence reporting system in the European Union.

**Figure 3: Current occurrence reporting system in the European Union**




## 2.2. Problem description – EU and Member States insufficient ability to use experience feedback for preventing accidents

As it has been illustrated by figure 2 above for each fatal accident there is an important corresponding number of occurrences which can be precursors to the accident. Accident investigation reports illustrates this fact by underlining that accidents are often preceded by a number of precursors which were not investigated or not addressed in an appropriate manner. Two examples illustrate this assessment: the Helios Airways crash which occurred on 14 August 2005, and the Air France 447 accident in the Atlantic on 1st June 2009.

In the Helios Airways accident investigation report[38], the Hellenic Air Accident Investigation and Aviation Safety Board underlined that the accident aircraft

[38] http://www.aaiasb.gr/imagies/stories/documents/11_2006_EN.pdf

experienced a pressurization incident few months before the accident and listed a number of occurrences involving pressurisation problems on Boeing 737 which occurred in Europe. It also stated that in the NASA Aviation Safety Reporting System (ASRS) database 171 reports of air conditioning and pressurization problems that involved Boeing 737 aircraft were integrated during the period 1994-2004. Regarding the Air France 447 crash the French Accident Investigation Authority[39] stated: "*As of 3 November 2009, Airbus had identified thirty-two events that had occurred between 12 November 2003 and 1st June 2009. According to Airbus these events are attributable to the possible destruction of at least two Pitot probes by ice. Eleven of these events occurred in 2008 and ten during the first five months of 2009*."

While it is not the point here to assess the causes of the accidents mentioned and without hypothesising on what could or could not have happened under different circumstances, one could suppose that, had these precursors been addressed correctly and in an efficient manner, a possible contributing factor to the accident would have not occurred and the two accidents might have been avoided.

These examples illustrate the important benefit of using occurrences to identify safety risks and therefore trigger intervention actions to mitigate the risk. However, the current system in the European Union is not sufficiently efficient to achieve an effective proactive and evidence-based safety system. When taking into consideration the EU stable accident rate and the foreseen traffic increased, it becomes clear that the EU and its Member States are not sufficiently able to use experience feedback for an increased number of accidents.

This insufficiency is caused by a number of problem drivers which are not only due to incorrect and inconsistent implementation of the current legislation but also to regulatory failures. They are detailed below and summarised in section 2.2.5.

*2.2.1. The collection of occurrences is not optimal*

In order to have a complete picture of the safety situation all occurrences which have or may have endanger aviation safety should be reported and collected in order to achieve full safety risks awareness. However, in the current situation this optimal collection of occurrences has not been achieved and can be explained by several causes.

(a) The scope of reporting differs between the Member States creating discrepancies in Member States reporting level:

Directive 2003/42/EC gives in its annexes a list of examples of occurrences to be collected under the Mandatory Occurrence Reporting Scheme (MORS). However when Member States implemented the Directive, differences in the way the list of occurrences to be reported has been implemented appeared. This has led to some important discrepancies between Member States in the scope of reportable occurrences. Indeed, while 17 Member States [40] assessed that above 50% of

[39] Second Interim report, details on the events are included in the final accident investigation report: http://www.bea.aero/en/enquetes/flight.af.447/flight.af.447.php

[40] For more details please refer to Annex 1.

'reportable occurrences' are captured by their MORS, 3 Member States consider that this level is close to 100% and one Member State that this level is under 30%.

Another figure illustrates this failure in the consistency of the Directive implementation: with a more or less equivalent traffic and fleet between France and Germany, France collects on average 45,000 occurrences yearly while Germany receives around 1,500 occurrences for the same period. This means that Germany collects 30 times less occurrences than France. This situation can notably be explained by the fact that in France the legal act implementing Directive 2003/42/EC encourages not only the reporting of occurrences listed in the annexes but equally the reporting of any other incident where it is justified for air safety[41]. In addition, France has established legal sanctions against those who fail to report any incident. These two combined elements lead to a very high rate of occurrence reporting within French aviation which makes France the biggest contributor to the ECR with over 50% of the occurrences integrated in the database. At the opposite end of the spectrum Germany has implemented the Directive in a much more restrictive way. Moreover when comparing these numbers to the EU average of occurrences collected each year (4,400 occurrences reports by Member States yearly on average) the interpretation could be drawn that the air safety situation is catastrophic in France because of the many occurrences found and excellent in Germany, whereas this important difference is mainly due to an inconsistent implementation of the Directive regarding the scope of occurrences to be reported.

(b) Individuals are afraid to report (the "Just Culture" issue)[42]:

Encouraging individuals to report occurrences they are aware of or that they were involved in is essential to an efficient aviation safety system. Indeed it has been estimated that "*for each major accident involving fatalities, there are as many as several hundred unreported incidents that, properly investigated, might have identified an underlying problem in time to prevent the accident*"[43].

To reach the goal of full occurrence awareness, individuals must be fully confident in the system because they are asked to report mistakes they may have made or contributed to. This confidence should be safeguarded by rules protecting the reporter and ensuring the non-punitive aspect of reporting while not absolving individuals from their normal responsibilities.

However while the European legislation clearly states that the sole objective of occurrence reporting is the prevention of accidents and incidents and not to attribute blame or liability, feedback received from stakeholders and results of the public consultation indicate that, in some Member States, some people are not reporting civil aviation occurrences because they fear blame or repression. Indeed, most of the respondents to the public consultation estimate that current rules are not correctly and consistently applied in all Member States notably because of their different legal systems and judicial environment. Certain stakeholders have supported this

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41 Arrêté du 17 août 2007 fixant la liste d'événements et d'incidents d'aviation civile, JORF 18/09/2007.

42 This issue is the shortcoming mentioned the most frequently both by the Member States in their reply to the Commission questionnaire and by respondents to the public consultation held by the Commission (70.5% of the replies). For more details please refer to Annexes 1 and 2.

43 GAIN Operator's Flight Safety Handbook, 1999.

assessment by giving concrete examples where individuals have been dismissed following the reporting of an occurrence. This assessment of the situation is unanimously shared by aviation employees such as pilots, air traffic controllers or technicians but is also supported by the industry and the Member States.

This indicates that the "Just Culture" principle which guarantees that individuals are not *"punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated"*[44] is probably not equally respected in all Member States. This situation has a negative effect on the collection of occurrences by giving an incomplete picture of safety risks and thus on the efficiency of the system. This seems to concern both the collection of occurrences by the MORS as well as voluntary reporting schemes[45].

When speaking about the "Just Culture" concept in an aviation context, it is often linked to aviation professionals' fear of being prosecuted before a court and eventually facing criminal charges. This is a legitimate concern which usually rises in the context of an accident, as next to the technical safety investigation a judicial investigation is often opened. In a judicial investigation the judge is looking to establish whose and what kind of involvement has caused the accident and its consequences in terms of injuries and deaths. Indeed, if safety investigations are conducted with the sole purpose of making safety recommendations to prevent the recurrence of similar accidents without apportioning blame or liability, courts have an increasing tendency to rely heavily on accident investigations reports as part of their process[46]. This evolution towards criminalisation of accidents has led aviation professionals to be reluctant to collaborate with the safety investigation, and could have a detrimental effect on the willingness of individuals to report less serious events.

However, while this perception is very strong among aviation professionals, it does not reflect the level of risk they encounter in reality. Indeed if, in a context of an accident, the risk of being prosecuted is high and the individual may be exposed to media and public attention, this risk is almost non-existent in the context of an incident. Indeed the absence of fatal consequences or important material damages may be sufficient to explain the lack of serious grounds for pressing criminal charges. To the Commission knowledge, outside of gross negligence or wilful violations acts situation, individuals have been prosecuted and convicted only once on the ground of an occurrence, in the "Delta" case in the Netherlands. In this case, three air traffic controllers were prosecuted after an incident in the Netherlands that they reported in 1998 and were found guilty for violation of the Dutch Air Traffic law. However no sentence was imposed[47].

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44 Commission Regulation (EU) No 691/2010

45 In some States the legislation related to Freedom of Information allows the general public, including the press, to have access to a wide range of information including certain aviation safety data including in certain cases, occurrences reports. However, whilst this may influence the situation, it is not considered as the major impediment to a high level of reporting.

46 Indeed in several recent cases, sensitive aviation data obtained from the safety investigation has been considered as admissible in courts as evidence against those accused.

47 For more details on this case, please refer to Eurocontrol Just Culture Guidance Material for Interfacing with the Judicial System, Edition 02.2008, Appendix 2.

Whilst the "Delta" case shows that the fear of being prosecuted following the reporting of an occurrence has dramatic consequences on the reporting level of occurrence reporting[48], this case is isolated and information for occurrence reports have never been used as evidence in judicial proceedings in 23 Member States[49]. In reality, in their day-to-day job, the risk for individuals is more of being publicly blamed or dismissed as a consequence of the mistake reported than of being prosecuted. Therefore it is very important to address the employee protection from prejudice by its employer and Directive 2003/42/EC has provided some principles in that sense. However, it appears from consultations that these provisions are insufficient and inconsistently applied in the Member States.

In addition, if it is clear that the risk related to the judicial process is quite low, the fact that individuals are afraid to report because their perception is different from the reality has a strong influence on the level of reporting. However the lack of EU competencies in this area prevents the adoption of any European harmonised rule on the use of occurrence before national jurisdictions.

(c) No obligation to establish voluntary occurrences reporting scheme:

As explained in section 2.1.3 mandatory occurrence reporting schemes (MORS) may not be sufficient to capture all relevant safety occurrences and could be complemented by voluntary reporting schemes[50]. Indeed mandatory schemes impose on specific persons to report defined occurrences but there are actual or potential safety hazards that may not have been captured by the mandatory system. This can be either because it relates to occurrences which are not in the list of occurrences to be reported or because they are witnessed by persons which are not in the list if individuals submitted to the obligation to report under the mandatory system.

Whilst VORS were only encouraged when Directive 2003/42/EC was adopted, the obligation to put in place VORS has now become an international requirement[51] imposing on States to establish such schemes next to their national MORS.

The current legislation does not provide any rules on whether occurrences from VORS should be integrated in national databases and sent to the ECR. This results in a situation where of the 23 Member States which have established a VORS, 14 are combining the data with MORS information while 9 Member States are not.

(d) Insufficient clarity in reporting obligations and in the flow of information

Directive 2003/42/EC provides the basis for the reporting of occurrences in civil aviation within the European Union through its article 4 which sets the requirements for the mandatory reporting of occurrences by aviation personnel to the relevant

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48 Indeed, during the "Delta" case legal proceedings the number of incident reports submitted by controllers dropped by 50%.

49 See Annex 1 for more details.

50 "Voluntary" does not mean here that it is not an obligation to establish VORS but it means that it collects data which are not collected by mandatory schemes. Therefore establish voluntary schemes can be mandatory.

51 ICAO Annex 13, Chap.8, Standard 8.2 "*A State shall establish a voluntary incident reporting system to facilitate collection of information on actual or potential safety deficiencies that may not be captured by the mandatory incident reporting system*".

competent authority. In addition to the directive, occurrence reporting is also regulated by a number of other EU instruments[52]. Some aspects of occurrence reporting in the area of air traffic management (ATM) are regulated in Regulation No 691/2010[53] and No 2096/2005[54]. Many Member States have also implemented into their national legal systems occurrence reporting standards adopted some years ago by Eurocontrol (ESARR2). In addition, some of these requirements were adopted before the establishment of the European Aviation Safety Agency (EASA), which as the authority responsible for certification of aircraft in the EU is an addressee of an increasing number of occurrences, some of which are of relevance not only for EASA but also for the Member State authorities.

This multitude of requirements and reporting lines is a source of confusion for the authorities and the industry. Moreover, these different systems lead to duplication and fragmentation of information and analysis. In their replies to the Commission questionnaire, Member States have indicated their concerns with this situation and underlined that there is no harmonisation in terms of notification procedures, delays, addresses or identity of the reporter (individuals/operators). Half the replies to the public consultation also specify that this issue should be addressed and that all reporting lines towards Member States should be regrouped in a single act.

In addition, the flow of information is also not very clear. Indeed the Directive imposes obligations on Member States for the collection of occurrences directly from individuals and does not mention the organisation level. However in reality Member States received almost all occurrences reports from organisations and very rarely from individuals[55]. This evolution notably caused by the introduction of safety management systems by organisations, should be recognised in the legislation according to a number of stakeholders and Member States.

*2.2.2. Data integration: the low quality of information and the incompleteness of data*

When occurrences are initially collected, they often only contain a narrative in which the reporter describes the occurrence. These narratives are then used to complete occurrences reports which include a certain amount of data[56]. It is understood that for a comprehensive understanding of potential safety deficiencies the availability of as complete and as good quality as possible set of data is necessary. However, this is not currently the situation and this affects the consistency and the usefulness of information contained both in national databases and in the ECR, and therefore its use for safety purposes. It also risks providing some misleading trends which could lead Member States and EU to focus efforts where they are not needed, or worse failing to identify a safety issue.

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52 A table summarising the different occurrence reporting lines is attached in Annex 6.

53 Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions, OJ L 201 of 3.8.2010, p. 1.

54 Commission Regulation (EC) No 2096/2005 of 20 December 2005 laying down common requirements for the provision of air navigation services, OJ L 335 of 21.12.2005, p. 13.

55 Indeed Member States received around 98% of occurrences from organisations and only 2%n directly from individuals (mainly general aviation). This was mentioned at various occasions during the consultation phase and stakeholders, including Member States, would like the revision of the legislation to take into account the reality of the situation to better reflect the evolution of the last years and notably to include the Safety Management System (SMS) principle.

56 Such as for example occurrence date, location or category.

(a) Low quality of information

The complexity of the taxonomy used to fill occurrence reports and the lack of standardisation during the data entry process contribute to data quality deficiencies. This results in particular in missing values or different coding of similar occurrences. It has been underlined in the results of the public consultation[57] that the absence of a standard for the content, format or quality of data reported leads to incomplete, unreliable and unusable data. This may be partly caused by the lack of resources and of expertise within public authorities entrusted with the occurrence reporting responsibility[58]. In addition, occurrences reported do not seem to correctly reflect the safety situation in the European Union[59]. Finally, the practice of disidentification of data[60] applied by some Member States affects the ability to detect any duplicate occurrence records in the ECR.

Data quality issues are being addressed, to a certain extent, by providing coding guidelines, and organising coding workshops by EASA[61]. In addition, some Member States have developed data quality checking processes in order to ensure that data present in the report is consistent with the original narrative received from the reporter. However this practice is not present in all Member States and is not sufficiently harmonised.

(b) Incompleteness of data

Although all Member States send occurrence data to the ECR, some Member States still do not provide all the safety relevant information. This appears to be notably due to different interpretations of the existing legislation and leads to key pieces of information being missing from the occurrences reports in the ECR[62]. Furthermore some Member States do not send all the occurrence reports included in their national databases as requested by the legislation and a few Member States hardly send any data at all[63].

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57 See Annex 2.

58 Respondents to the public consultation have considered that Member States staff is not trained enough and are not able to correctly assess the occurrences they receive in order to turn them into good quality occurrence reports.

59 Indeed, there are significant discrepancies between the reporting levels of Member States with relatively similar levels of aviation activity. Also, the largest percentage (almost 20%) of the occurrences currently stored in the ECR is Air Traffic Management (ATM) related – which does not reflect the actual safety performance of the European aviation system as the level of ATM contribution to occurrences is estimated in Europe between 4 and 6%. And the load of transmitted data is also not balanced, with peaks followed by periods of relative calmness.

60 The disidentification of data ensures the confidentiality of the reporting by deleting from the database any individual name or details according to the EU legislation. It is often extended to the deletion of information allowing the identification of the operator involved. Some States are practising a very broad disidentification and delete from the reports sent to ECR a large set of information. This situation contributes to the incompleteness and low quality of data within the ECR.

61 Over the last months this support has contributed to a reduction of around 10% of missing data fields in most key areas (EASA, April 2011).

62 As an example, in about 57% of cases even the basic information about the type of operation affected by an occurrence (i.e. commercial air transport, general aviation etc.) is not available. Some important fields are missing such as local date in 18%, occurrence category in 34% and event types in 44% of the occurrences.

63 For example, one Member State has only integrated two occurrences on the ECR since 2008.

The Commission is closely monitoring this aspect and every three months produces a report on Member States data integration in the ECR including the level of integration of certain key data fields. Based on this information the Commission has taken actions[64] against several Member States which have led to improvements in the situation in most of the Member States concerned. However the lack of requirement for mandatory data fields in the legislation limits the possibility for the Commission to take additional actions regarding the completeness of data.

*2.2.3. The legal and organisational obstacles for ensuring adequate access to information contained in the European Central Repository (ECR)*

The European Central Repository regroups all occurrences collected by Member States in application of the current legislation and stored in their national databases. Even though the ECR currently stores a substantial amount of information, access to this information for the competent authorities and decision makers is impeded. EU legislation obliges the Commission, when granting access to the ECR, to disidentify certain information, in particular information which could lead to the identification of the operator subject to an occurrence report. Although the purpose of such provisions is to protect sensitive safety data and ensure that they are not misused, its practical consequence is that important safety related facts such as the actual description of the occurrence ("narrative") is not available for the authorities. Without access to occurrences' narratives analysis possibilities are very limited. In addition, the exchange of information between Member States is impeded and this results in depriving Member States from safety information about occurrences which have taken place in their territory but have been reported to another Member State.

Although in practical terms, the current issue with access to ECR data is due to regulatory failure and derives from restrictions in the existing legislation, the core of the problem seems to be linked with Member States lack of confidence regarding the possible use of information on civil aviation occurrences[65]. Indeed, some Member States are afraid that ECR data may not be used for safety improvements but for benchmarking between airports or operators. Regulation (EU) No 996/2010 has partially addressed this issue in providing provisions limiting the use of ECR data by EASA and the Member States to "*what is strictly necessary to discharge their safety related obligations*". But some criticisms were expressed during the decision making process regarding this provision because it was not included in the appropriate legislation[66] i.e. the legislation on occurrence reporting.

This Member States limited access to ECR data combined with the bad quality of data leads to a lack of interest from Member States to use ECR data. Indeed 20 Member States expressed that they never or very rarely used ECR data[67]. This reveals the difficulty to currently exploit ECR data for meaningful safety purposes.

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64 The Commission has contacted the Member States concerned and helped them to meet their obligations where necessary. In a number of cases the Commission has also open pre-infringements procedures for non-compliance with the European legislation.

65 See Annex 1.

66 This is one of the reasons behind the formal request of the European Parliament and the Council for the review of the legislation on occurrence reporting.

67 See Annex 1.

However in a substation where data quality would be improved and where Member States would get full access to the ECR, many Member States do see an important added value in the exchange of information on occurrences through the ECR.

*2.2.4. Lack of occurrence analysis at Member States and at European levels and of appropriate corrective and preventive actions*

Directive 2003/42/EC does not indicate how the information collected should be used for contributing to safety improvements. It only encourages the publication of an annual safety review to inform the public about the level of safety. However the principle, for certain specified organisations, of analysing defined occurrences at national level is present in other pieces of legislation such as Regulation No 3922/91 (EU-OPS) and the general requirement on Sates has been agreed at international level but not yet transposed into EU law. Some Member States requested the revised legislation to address this regulatory failure by including provisions on the analysis of occurrences at national and EU levels and to develop processes to achieve safety improvements.

At national level, the situation varies considerably. In some Member States occurrence data is analysed and leads to the adoption of corrective or preventive safety actions. In some other States occurrence reports are not analysed or used for safety purposes. In consequence this means that there is no proactive and evidence based actions taken by the national authority in these States. This can be partly explained by lack of staff resources[68]. This lack of resources is obviously a major safety concern in that it means in some cases an impossibility to correctly implement EU legislation and therefore difficulties to carry out any additional task.

At European level, the obligation to analyse occurrences has been established for the first time in Regulation No 996/2010 in its article 19[69] but the framework and tools required to implement this article have yet to be developed. It seems in particular helpful to establish priorities for the analysis of all 628,000 occurrences contained in the ECR. Indeed the very large number of occurrences in the ECR is a limit to a systematic analysis of each single occurrence at European level and the absence of a common EU classification makes difficult any kind of prioritisation in terms of safety risks. This has been recognised in the Commission Communication on "Setting up a Safety Management System for Europe"[70] where it is stated that the absence of "*a universally accepted risk assessment methodology in common use across the European Union for all the aviation domains which would enable a standardised approach and better priority setting to tackle those risks that pose the greatest threat to safety*" should be addressed.

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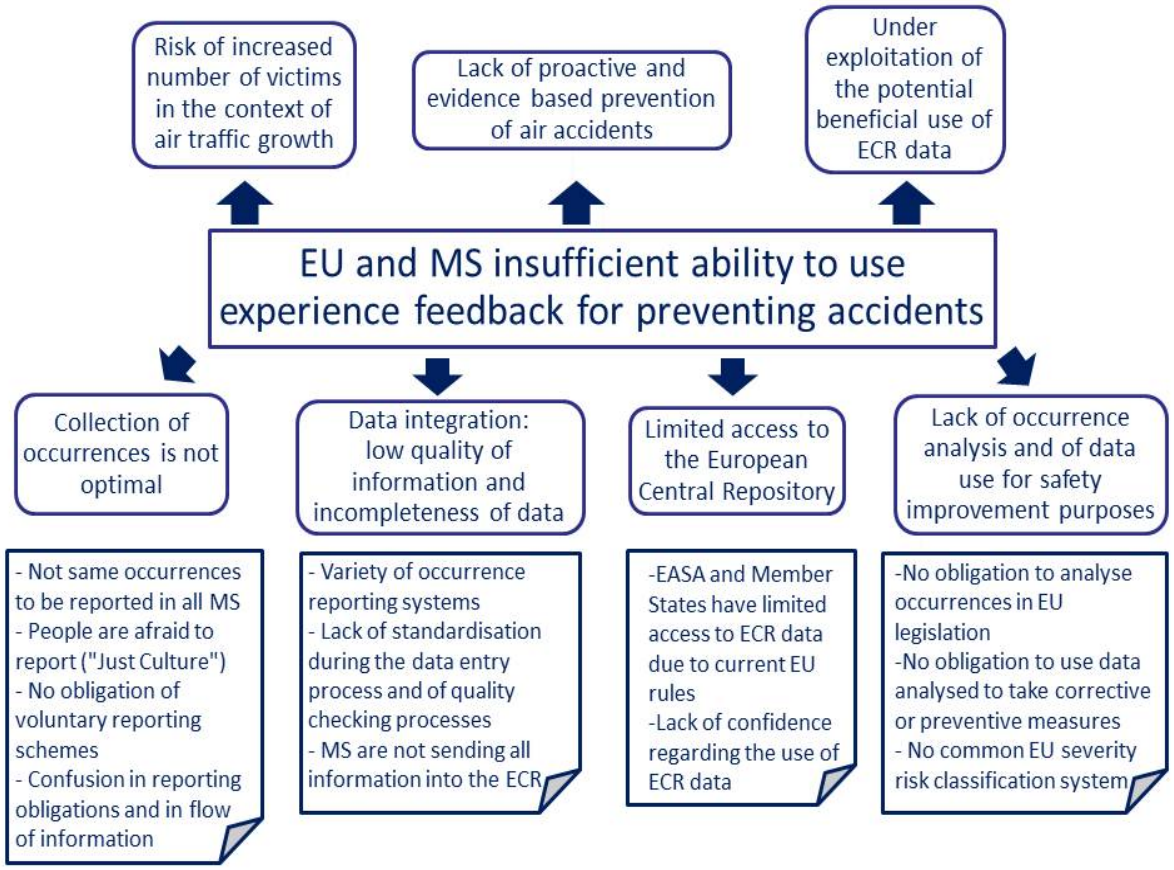
68 Indeed, in the replies to the questionnaire sent by the Commission to Member States, around a quarter of the Member States expressed that they encounter difficulties in carrying out the tasks defined in the legislation notably due to a lack of sufficient human resources.

69 Art.19 (1): "*EASA and the competent authorities of the Member States shall in collaboration participate regularly in the exchange and analysis of information covered by Directive 2003/42/EC*".

70 See the Communication action 2 on developing an analysis of occurrences at EU level and action 3 on establishing a common risk assessment classification.

### 2.2.5. *Problem tree*[71]




## 2.3. Who is affected, in what ways, and to what extent?

The main actors affected by the drivers outlined in section 2.2 are all persons and organisations involved in the civil aviation system or benefiting from air safety, both at national and European level.

The European citizen and the travelling public in a global sense are affected by aircraft accidents. They have a legitimate interest in safe public aviation transportation. They are therefore benefiting directly from a system which contributes to prevent accidents by using experience feedback.

Authorities designated by their Member State to perform collection, storage, protection, analysis and dissemination of civil aviation occurrences[72] are directly affected by the revision of the current European legislation on occurrence reporting.

The European Union and in particular the European Aviation Safety Agency (EASA) are affected because of their role as safety regulators. In addition, the European Commission is running the European Central Repository and EASA could be

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71 The problem tree illustrates the problem definition in the centre, the problem drivers on the bottom of the figure and the problem consequences on the top.

72 I.e. Civil Aviation Authorities (CAAs), Safety Investigation Authorities (SIAs) or any other entity entrusted with this function.

entrusted with additional responsibilities regarding occurrence analysis at EU level and coordination with Member States.

Industry players[73] are affected because they are the entities responsible for putting in place a system allowing their employees to report occurrences and they are essential elements of a comprehensive Safety Management System.

Industry employees[74] are key elements to the system. They are affected because they are the source of occurrences and they may be reluctant to report occurrences notably if they are afraid of disciplinary action.

Third countries are also affected because they are flying to Europe and can benefit from safety improvement in the EU aviation system (notably in the ATM area). They could also benefit from an exchange of information of safety data as provided for in bilateral aviation safety agreements between the European Union and some third countries.

## 2.4. How the problem could evolve?[75]

### *2.4.1. Evolution of the situation from an aviation safety perspective*

It has been demonstrated that aircraft accidents are often preceded by a number of incidents which, when not identified and addressed properly, might lead to an accident. This fact would, in itself, be sufficient to illustrate that efficient safety management systems based notably on the analysis of data collected from occurrences reporting schemes are necessary to prevent accidents. In addition, other elements can also illustrate the direct link between proactive safety systems based on the collection and use of occurrences and the rate of fatal accidents.

At international level the International Civil Aviation Organisation (ICAO) is monitoring States' compliance with its rules related to occurrence reporting and safety management[76] by assessing if States have established occurrences reporting schemes, and whether they are analysing the information collected to determine any preventive actions required. If we take the example of the region of "North America"[77], it has a rate of 1.6 fatal accidents per 10 million flights[78]. When looking at their USOAP audits reports, it shows that these two States are fully complying with the international requirements in the area of occurrence reporting and safety management. In comparison, the region "Europe Non EASA Member States"[79] has a rate of 32.9 fatal accidents per 10 million flights. When looking at USOAP audits

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73 I.e. airlines, airports, air navigation service providers, maintenance organisations and manufacturers.

74 E.g. pilots, air traffic controllers and ground staff.

75 The issue of the possible evolution of the situation of EU aviation safety if no improvement to the current system occurs, and if all elements, including European legislation, remain the same, corresponds to the option called "baseline scenario".

76 ICAO is assessing whether the critical elements of a safety oversight system have been implemented effectively and in particular the correct implementation of the safety-relevant ICAO Standards and Recommended Practices (SARPs). In order to exercise this monitoring ICAO launched a programme called Universal Safety Oversight Audit Programme (USOAP).

77 This region includes the United States of America and Canada.

78 Please refer to Annex 12 for details about the fatal accident rates.

79 This region includes the Balkans States, Belarus, Republic of Moldova, Russian Federation and Ukraine.

reports it reveals that almost all States from this region have not implemented or incorrectly implemented ICAO requirements related to occurrence reporting and its follow up.

While aviation safety performance results from a wide range of various factors, the evidence above shows that there is a link between accident rates and occurrence reporting and that an efficient occurrence reporting system is a key element of a proactive safety system leading to improved aviation safety and therefore to a decreased number of fatalities due to aircraft accidents.

However, as illustrated by the problem drivers identified in section 2.2, the current legislation does not ensure an efficient and complete occurrence reporting system in the European Union. Indeed, as detailed in the section 2.2 on problem definition, in most Member States the occurrence awareness and the bad quality of data do not allow an accurate identification of safety risks. In addition many Member States have not yet implemented the international requirements regarding the analysis and follow up of occurrences. One can therefore conclude that without additional safety initiatives including an improvement of occurrence reporting in Europe, the station will evolve towards an increased number of aviation accidents and of related fatalities as a result of the growth in air traffic[80].

Making accurate estimations of the number of accidents and the resulting deaths which could occur if no action is taken is very difficult if not impossible. Accidents often do not result from only one cause but from a combination of elements including some which are harder to predict (e.g. weather conditions, human factors). Indeed, as illustrated by figure 4, such events do not happen in a linear way and are not easily predictable. Therefore, an accurate number of additional accidents cannot be determined precisely, and consequently it can be very misleading to make estimates of how many accidents would be avoided by the use of an efficient proactive and evidence based safety system.

**Figure 4: European lives lost in air transport[81]**

| Period | European lives lost in EU-27 territory by any operator | European lives lost by EU-27 operators anywhere |
|---|---|---|
| **2000** | 113 | 113 |
| **2001** | 122 | 125 |
| **2002** | 101 | 25 |
| **2003** | 5 | 5 |
| **2004** | 0 | 0 |
| **2005** | 144 | 125 |
| **2006** | 5 | 6 |
| **2007** | 0 | 1 |

80 A report from the French Air and Space Academy estimates that accident rates should be reduced worldwide by 75% until 2050 in order to compensate for the estimated growth of the traffic ("*Comment volerons-nous en 2050?*" Académie de l'Air et de l'Espace).

81 On-board fatalities and only those in aircraft with a take-off mass above 5 701kg from commercial air transport and general aviation; Source: EU transport in figures, statistical pocketbook 2011; ISBN 978-92-79-19508-2.

| | | |
|---|---|---|
| **2008** | 154 | 154 |
| **2009** | 9 | 228 |
| **2010** | 2 | 2 |

However, even if estimates in this area should be looked at very cautiously, the expected aviation traffic growth as presented in section 2.1.1[82] combined with the stability of fatal accident rate in the EU area since 2004, would involve an increased number of aircraft accidents by around 1.8 by 2030.

*2.4.2. Evolution of the situation from an economic perspective*

Aircraft accidents fortunately do not happen very often (1.6 accidents per 10 million flights in Europe) but they gather a lot of attention from the media and the public when they occur and they are very costly for society, not only in terms of lives lost of course, but also in terms of monetary value.

It is however very difficult to precisely quantify the cost of air accidents in the EU due to lack of comprehensive studies in this respect. Furthermore, the cost of an aircraft accident can vary tremendously depending on the size of the aircraft, the location of the crash and many other aspects. Many elements should be taken into account to assess the economic impact of an accident[83]. A list of cost headings involved in an aircraft accident can be detailed as follows[84]: aircraft physical damage, possible loss of resale value, aircraft loss of use, aircraft loss of investment return, passenger and crew fatalities, site contamination and clearance, airline costs for delays, airport eventual closure, loss of staff investment, loss of cargo, mail and passenger baggage, search and rescue and cost of emergency services, airline immediate response, cost of accident investigation, eventual third party damage, loss of airline income/value/reputation (loss of passengers, decrease in share value and market capability), societal costs, emergency inspections of aircrafts, fines, punitive damages, criminal proceedings. One could add to that list the cost of the recovery of wreckage and bodies which can have a significant impact on the economic cost of an accident, notably if the aircraft has crashed in a location difficult to be reached such as in mountainous regions or the sea. A detailed list of costs involved by an accident is enclosed in Annex 7. It is very difficult to combine all the above mentioned elements and to assess with accuracy the global average economic impact of an aircraft accident. Indeed some of these elements cannot always be determined or be quantified in monetary value and some others vary tremendously depending for example on the circumstances, the location of the accident or the nationalities of the passengers.

There is no known study which has attempted to evaluate this monetary value on average given all the uncertainties and the variable factors involved by an accident.

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82 The expected growth is evaluated around 16.9 million flights per annum by 2030, i.e. close to 1.8 times more than in 2010.

83 These various costs are usually shared between airlines, airport operators, safety authorities and regulators, manufacturers, insurers and society.

84 NLR Air Transport Safety Institute - Accident costs for a causal model of air transport safety (ALC Roelen and JW Smeltink - 2008)

There is however a study from the US organisation CAST[85] which has calculated the accident cost per flight and has evaluated it around $76 (€60) per flight[86].

Taking into account the aviation traffic growth forecast for 2030 as presented in section 2.1.1 and the stable accident rate, accidents would increase by around 1.8 between 2010 and 2030. Based on the numbers provided by the CAST study, this means that the economic impact of accidents will increase from €570 million by year in 2010, to €1014 million by year in 2030[87]. Therefore it the situation remains unchanged, the economic impact of accidents will almost double by 2030.

## 2.5. Does the EU have the right to act?

The right to act has already been recognised in Directive 2003/42/EC on occurrence reporting. This impact assessment concerns whether there is a necessity to modify this legislation and its implementing rules.

The right for the EU to act in the field of transport is set out in several articles of the TFEU[88], in particular in Title VI which establishes provisions for the European Transport policy. Article 91 (1) c) notably gives the Union competencies for laying down "*measures to improve transport safety*" under the co-decision procedure.

This competence in matters of air safety is not exclusive but a shared competence with the Member States as set out in article 4 of the TFEU. It is therefore necessary to justify EU action and to respect the subsidiarity principle as set out in Article 5 (3) of the Treaty on the European Union. This involves two aspects: ensuring that the objectives of the proposed action could not be achieved sufficiently by the Member States ("necessity test") and considering whether and how the objectives could be better achieved by action on the part of the Union ("test of European added value").

Firstly, regarding the "necessity test", there is a need to harmonise the reporting of occurrences to ensure consistency of data collected along with a better quality of data (including the scope of reporting) and ensure a more consistent and a better implementation of "Just Culture" principles in all Member States. It is also necessary to strengthen the information exchange between Member States and allow States to have access to information about occurrences which have occurred in their territory but have been reported to another Member State. Additionally issues such as access to the ECR data and establishing processes and tools to analyse ECR data cannot be achieved at national level as it involves a European database for which action should be taken at EU level. Equally the clarification of reporting obligations present in different EU legislation cannot be addressed at national level. Action at national level is absolutely necessary for the whole system to be efficient but is not sufficient to ensure the good functioning of the system as a whole and subsequently contribute to improve air safety.

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85 CAST (Commercial Aviation Safety Team) is an U.S. government-aviation industry partnership that has developed an integrated, data-driven strategy to reduce the commercial aviation fatality rate in the United States; http://www.cast-safety.org

86 This cost has been calculated for the period 1998-2007.

87 2010: €60 by 9.5 million flights; 2030: €60 by 16.9 million flights.

88 Treaty on the Functioning of European Union, OJ C83/47 of 30.3.2010, p.47.

Secondly, looking to the "test of European added value", Union action would bring safety benefits by strengthening and developing proactive actions based on occurrence analysis at national and EU level. In addition, an event that appears to be an isolated occurrence in a Member State, when looked at across the Union as a whole, can point to a need for action. Moreover, on aspects linked to the ECR, Member States support an analysis of the information contained in the ECR in a European context which will allow to perform safety analysis on a more significant amount of data and will help to the identification of key risk areas for the European Union.

## 3. OBJECTIVES

### 3.1. What is the general policy objective?

In application of the Treaty on the Functioning of the European Union Article 91, the European Union shall "*lay down measures to improve transport safety*".

In addition, the European Commission, in its 2011 White Paper "*Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*", set the goal for the European Union of becoming the safest region of the world for aviation transport.

In this context the proposed initiative general objective is to contribute to the reduction of the number of aircraft accidents, and of related fatalities, through the improvement of existing systems, both at national and European level, using civil aviation occurrences for correcting safety deficiencies and prevent them from reoccurring and from leading to an accident. This initiative is therefore an important element of the European aviation safety transport policy as defined in the Treaty.

### 3.2. What are the specific objectives?

The general objective can be divided into four specific objectives (SO) which correspond to the problem drivers identified in section 2.2[89] and are detailed in the table below.

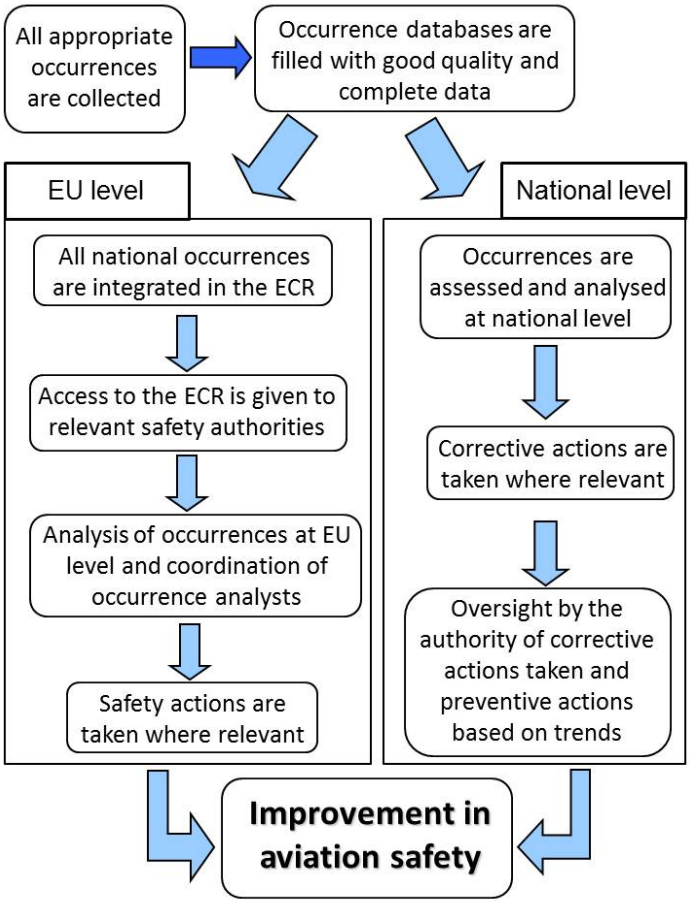
| Problem drivers | Specific objectives |
|---|---|
| 1. The collection of occurrences is not optimal | To ensure that all occurrences which endanger or would endanger aviation safety are collected and are providing a complete and clear picture of safety risks in the EU and its Member States (SO1) |
| 2. Suboptimal data integration (low quality and incompleteness) | To make sure that occurrence reports stored in the national databases and in the ECR are complete and contain high quality data (SO2) |

[89] Specific objectives are summarised in Annex 8.

| | |
|---|---|
| 3. Legal and organisational obstacles for ensuring adequate access to information contained in the ECR | To make sure that all safety-critical information stored in the ECR is accessed adequately by competent authorities and that they are used strictly for safety improvement purposes (SO3) |
| 4. Lack of occurrence analysis at MS level and at European level and of appropriate corrective and preventive actions | To ensure that reported occurrences are effectively analysed, that safety hazards are identified and addressed where relevant and that the safety effectiveness of the actions taken is monitored (SO4) |

The picture below describes how the ideal system should work, taking into account both national and European levels.

**Figure 5: Flow of information and processes in a complete proactive and evidence based system in relation to aviation occurrences**




### 3.3. What are the operational objectives?

The specific objectives can also themselves be translated into operational objectives.

SO1 would encompass the following operational objectives:

- reach a higher occurrence collection rate in the EU[90] through a harmonisation and clarification of reporting obligations
- a clarification and development of legislative requirements related to "Just Culture"
- the obligation to establish voluntary reporting schemes
- a clarification of the flow of information notably with regards to organisations.

SO2 would include the following operational objectives:

- the standardisation of data entry processes
- the establishment of mandatory data fields and
- the establishment of quality checking processes.

SO3 would have the following operational objectives:

- allow for the granting of full access to ECR data to appropriate safety authorities through the review of ECR access rules
- establish confidentiality rules and safeguards regarding potential misuse of the data.

SO4 would include the following operational objectives:

- the creation of an obligation to analyse occurrence data and to identify actual or potential safety hazards
- adopt preventive or corrective actions where appropriate
- oversee the efficiency of those actions and to create a common EU risk classification scheme for classifying occurrences.

Operational objectives corresponding to SO2 and SO4 have not been quantified because they are very much dependant on the resources allocated notably by Member States to the achievement of the specific objectives and therefore cannot be evaluated by the Commission.

### 3.4. Consistency with horizontal policies of the European Union

The proposal is consistent with the overall policies of the EU and with the objective of transport safety improvement enclosed in the Treaty on the Functioning of the European Union (Article 91). Moreover, by improving aviation safety in Europe, they contribute to the attainment of the wider objectives of the Lisbon Agenda and EU consumer protection policy.

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[90] It is difficult to assess an accurate objective for the occurrence collection rate as it is impossible to evaluate the total number of occurrences if they are not all reported.

In addition, the objectives of this initiative are fully compliant with relevant fundamental rights and principles as embodied in the Charter of Fundamental Rights of the European Union, and by giving citizens the legitimate right to safe air transport it contributes in particular to the right of physical integrity and of freedom of movement.

The proposed revision of the current legislation is fully consistent with Regulation (EU) No 996/2010 which requests such a review in its Recital 3.

Finally, the proposal is in line with the Commission White Paper 2011 "*Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*" and with the Commission Communication on "*Setting up a Safety Management System for Europe*" as it implements actions foreseen in the both texts.

## 4. POLICY OPTIONS

This section outlines the policy options which have been considered beside the "baseline scenario" detailed in section 2.4 by the Commission to address the problem areas described in Section 2 and to meet the policy objectives identified in Section 3.

### 4.1. Pre-screening

The first option identified by the Commission is the repealing of the existing EU legislation. This would mean that requirements regarding the establishment of occurrence reporting schemes and the management of such schemes would only be taken at national level. It would also lead to the suppression of the European Central Repository (ECR) established by Regulation (EC) No 1321/2007 and which regroups all occurrence reports collected by Member States. Any coordination of action or any exchange of information between States would be done on voluntary basis and the coordination developed at EU level would disappear. The rules regarding the dissemination of the information to interested parties inside and outside the European would also be repealed. A limited harmonisation could still possibly remain between Member States as certain international principles related to occurrence reporting are enshrined at international level, but these principles are limited and the problem drivers identified in section 2.2 would not be addressed.

If Member States also decided to repeal the national measures implementing the Directive on the basis that the Directive has been repealed, it would mean that States would no longer collect and use occurrence reports and therefore would not take proactive safety actions based on the analysis of incidents. Even with a stable aviation traffic growth this could lead to an increased number of aircraft accidents and subsequently to more fatalities. In the foreseen traffic growth context, the consequences could be dramatic.

This option has been identified by more than 50% of the respondents to the public consultation as the least preferred option[91]. In view of the serious risk this option would pose to citizens' safety, this option has not been pursued further and will not be analysed in section 5.

[91] For more details on respondents to the public consultation favourite options please refer to Annex 2.

The Commission also envisaged an option which would strengthen the enforcement of existing provisions. However, as the current problems are not due to an insufficient enforcement of the current legislation but to inconsistencies in the way the directive has been transposed by Member States and to lack of requirements in the current legislation, the Commission has considered that this option will not address any of the problem drivers and will not fulfil any of the specific objectives. Therefore this option has also been discarded.

### 4.2. Identification of possible policy measures

In order to identify the best options to address the problem drivers identified in section 2.2 the tables below present, for each driver, a set of possible policy measures.

| Issues identified in section 2.2 | Policy measures | Detail of the policy measure |
|---|---|---|
| **Problem driver 1: The collection of occurrence data is not optimal (PD1)** | | |
| **A: The scope of reporting, regarding the type of occurrences, is different between the Member States creating discrepancies in the reporting level** | 1. Guidance regarding the scope | Clarification regarding the scope of occurrences to be collected based on the list of occurrences annexed to the Directive and adaptation of national measures transposing the Directive to ensure consistency |
| | 2. Harmonise the scope of reportable occurrences | Replace the Directive by a Regulation and specify the scope of reportable occurrences under the mandatory system by annexing to the Regulation the list of occurrences which should be reported (this annex would be based on the current annex to the directive) |
| **B: Individuals are afraid to report (the "Just Culture" issue)** | 1. Guidance regarding interpretation and implementation of Article 8 | Some rules already exist in the Directive: guidance would be developed to ensure a better interpretation and implementation of these rules |
| | 2. Develop and complement existing rules protecting the reporter | Existing rules would be clarified and complemented: in particular include the definition of "Just Culture" (as defined in Regulation (EU) No 691/2010[92]), disidentify occurrence reports by removing details leading to the identification of the reporter, restricts the access to fully identified data, reinforce the principle of no blame except in cases of gross negligence and establish a national focal point which will receive complaints for breaches to "Just Culture" principles, assess them and propose actions to Member States when relevant. |
| **C: There is no obligation to establish Voluntary Occurrence Reporting Scheme (VORS) and there is no clarification on what should be reported under VORS** | 1. Recommendation and guidance on Voluntary Occurrence Reporting Scheme (VORS) | Commission Recommendation requesting Member States to implement the international ICAO Standard (ICAO Annex 13 Chapter 8[93]) imposing the establishment of VORS; guidance on what should be reported under MORS/VORS |
| | 2. Mandatory VORS in Member States | Modify the legislation in order to implement into EU law the ICAO Standard imposing the establishment of VORS; clarify within the legislation what should be reported under MORS/VORS |

92 *"Just culture" means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated*; Commission Regulation (EU) No 691/2010 of 29 July 2010 laying down a performance scheme for air navigation services and network functions and amending Regulation (EC) No 2096/2005 laying down common requirements for the provision of air navigation services; OJ L 201, 3.8.2010, p. 1.

93 Standard 8.2: *A State shall establish a voluntary incident reporting system to facilitate collection of information on actual or potential safety deficiencies that may not be captured by the mandatory incident reporting system.*

| | | |
|---|---|---|
| | 3. Replace Member States VORS by an EU VORS | Replace national VORS by an unique European VORS where individuals and organisations would report directly what does not come under the MORS scope; clarify within the legislation what should be reported under MORS/VORS |
| **D: There are too many occurrence reporting lines in various EU legislations which create duplication and confusion** | 1. Guidance and training | Guidance material would be developed together with a reference document specifying all reporting lines and the requirements applicable for each reporting line; training would be provided to explain the different obligations |
| | 2. Harmonisation of reporting lines | Simplify and harmonise all reporting requirements in terms of deadlines and content; modify reporting requirements in other relevant EU legislations to ensure appropriate consistency |
| **E: The flow of information is not clear and there is no requirement for organisation to collect occurrences in the Directive** | 1. Recommendation imposing occurrence reporting on organisations | Commission Recommendation asking Member States to implement the international ICAO Standard (Annex 6) requesting States to ensure the establishment of a Safety Management System within their industry |
| | 2. Include the organisation level in the revised legislation | Modify the legislation in order to implement into EU law the occurrence reporting related part of the ICAO Standard requesting States to ensure the establishment of an SMS within their industry |
| | 3. Include the organisation level in the revised legislation and transfer the obligation to collect occurrences from Member States towards a single body at EU level | Modify the legislation in order to implement into EU law the occurrence reporting related part of the ICAO Standard requesting States to ensure the establishment of an SMS within their industry; modify the legislation in order to transfer the obligation to collect occurrences from States towards a unique body which will collect directly, mainly from the industry, all occurrences coming from the MORS |

| Issues identified in section 2.2 | Policy measures | Detail of the policy measure |
|---|---|---|
| **Problem driver 2: Data integration: The low quality of information and the incompleteness of data (PD2)** | | |
| **A: Occurrences come in very different forms and are not encoded and classified into databases in a harmonised way** | 1. Develop guidance material and training | Develop guidance material regarding the filling of occurrence reports by individuals and the completion of national databases by national authorities with data issued from occurrences; organise training and workshop at national and EU level to ensure a better harmonisation of classification within and among national databases |
| | 2. Harmonise reporting, standardise the data entry process and develop guidance and training | Modify the existing legislation in order to ensure more harmonisation in reporting process and standardise the data entry process among States; in addition develop guidance material and organise training for national authorities |
| | 3. Impose the use of a single data format for occurrence reports and give the competencies to collect occurrence reports to a single body at EU level | Impose the use of the ECCAIRS data format for occurrence reports; modify the legislation in order to replace the Member States collection of occurrences by a collection at EU level through a single entity which will collect, process and store occurrences reports coming directly from individuals or from organisations. |
| **B: There is often no quality checking process to ensure the consistence of data** | 1. Develop the existing guidance material and automatic data quality checker tools; organise trainings | Develop and complement the existing guidance material about data quality; develop automatic data quality checker tools and make them available to Member States; organise trainings and workshops about data quality |
| | 2. include the principle of mandatory quality checking in the legislation in addition to development of guidance, automatic tools and trainings | Modify the existing legislation in order to impose both on organisations and on Member States the principle of quality checking; to ensure the correct implementation of this provision develop and complement the existing guidance material about data quality; develop automatic data quality checker tools and make them available to Member States; organise trainings and workshops about data quality |
| **C: Not all information is sent to the ECR and the data collected is not always reflecting the actual safety performance** | Continue to ensure the proper implementation of the legislation | The Commission would continue to ensure the oversight of the data contained into the ECR and would launch infringement procedures where necessary in order to ensure that Member States send all data they collect to the ECR; in addition the existing or modified legislation could enter in the scope of EASA standardisation inspections to ensure a better oversight of its correct implementation |
| **D: Not all key data fields are filled into the ECR for many occurrences** | 1. Guidance material on what should be filled | Develop guidance material on completeness of data and develop a suggested list of fields to be included for each relevant category of occurrences |

| | | |
|---|---|---|
| | 2. Establish mandatory data fields | Modify the legislation in order to establish the principle of mandatory fields; annex to the revised legislation the list of main mandatory fields and develop specific mandatory fields for each category of occurrences in implementing measures |

| Issues identified in section 2.2 | Policy measures | Detail of the policy measure |
|---|---|---|
| **Problem driver 3: The legal and organisational obstacles for ensuring adequate access to ECR information (PD3)** | | |
| **A: Important occurrence information (narrative) is not accessible** | Improve the exchange of information by ensuring broader access to the content ECR | Ensure broader access to ECR data notably in order to give appropriate safety authorities access to all safety information would require a modification of the legislation. This could be done through a modification of Commission Regulation No 1321/2007 which would include limited legislative changes or in a wider context as part of a more substantive legislative change which would regroup all provisions from the Directive and its implementing regulations in a single piece of law. In both cases access should be limited to define competent authorities at national and EU level and access should be given to all safety data contained in the ECR |
| **B: Member States lack of confidence regarding the use of ECR data** | Limit the use of ECR data to safety enhancement purposes | In order to allow wider access to data, their use would be strictly limited to safety purposes which would be defined in the legislation. This could be done through a modification of Commission Regulation No 1321/2007 which would include limited legislative change or in a wider context as part of a more substantive legislative change which would regroup all provisions from the Directive and its implementing regulations in a single piece of law. In both cases, data could only be used for the purpose of maintaining or improvement the level of aviation safety and not for benchmarking |

| Issues identified in section 2.2 | Policy measures | Detail of the policy measure |
|---|---|---|
| **Problem driver 4: Lack of occurrence analysis at national and at European levels and of appropriate safety measures (PD4)** | | |

| | | |
|---|---|---|
| **A: No systematic analysis of occurrences at Member States and EU level** | 1. Recommendation and guidance | Commission Recommendation asking Member States to implement the international ICAO Standard (Annex 13 Chapter 8[94]) requesting States to analyse data issued from MORS and VORS and to determine appropriate action required |
| | 2. Introduce the obligation to analyse data at Member States and EU level | Modify the legislation in order to implement into EU law the ICAO Standard requesting States to analyse data issued from MORS and VORS and to determine appropriate action required; impose this obligation on organisations, Member States and at EU level |
| | 3. Introduce the obligation to analyse data and transfer Member States analysis competencies at EU level | Modify the legislation in order to implement into EU law the ICAO Standard requesting States to analyse data issued from MORS and VORS and to determine appropriate action required; impose this obligation on organisations and at EU level |
| **B: No policy framework to achieve safety improvements based on occurrence analysis** | 1. Recommendation and guidance | Commission Recommendation asking Member States to implement the international ICAO Recommendation (Annex 13[95]) requesting to implement appropriate corrective and preventive actions identified from occurrence analysis and to monitor their effectiveness |
| | 2. Introduce the obligation to correct safety deficiencies and monitor effectiveness | Modify the legislation in order to implement into EU law the ICAO Standard requesting to implement appropriate corrective and preventive actions identified from occurrence analysis at organisation, Member States and at EU level and to monitor the effectiveness of these actions at Member States and EU level |
| | 3. Introduce the obligation to correct safety deficiencies and monitor effectiveness at EU level only | Modify the legislation in order to implement the ICAO Standard requesting to implement appropriate corrective and preventive actions identified from occurrence analysis at national and at EU level and monitor the effectiveness of these actions at EU level |
| **C: No tool to prioritise occurrence analysis** | 1. Develop a common EU risk classification scheme and recommendation to use this tool | Develop at EU level a common EU risk classification scheme in order to classify occurrences in a harmonised way; make this tool available to Member States and industry; adopt a Recommendation asking Member States to classify their occurrences according to this tool |
| | 2. Impose the classification of occurrences according to a common EU risk classification tool | Modify the legislation to include the obligation for Member States or EU entity to classify occurrences according to a common EU risk classification tool; develop this tool at EU level and make it available to Member States and industry |

[94] Standard 8.4: *A State shall establish and maintain an accident and incident database to facilitate the effective analysis of information on actual or potential safety deficiencies obtained, including that from its incident reporting systems, and to determine any preventive actions required.*

[95] Recommendation 8.6: *A State should, following the identification of preventive actions required to address actual or potential safety deficiencies, implement these actions and establish a process to monitor implementation and effectiveness of the responses.*

### 4.3. Identification of policy packages

To determine possible EU policy action, the Commission has considered first the possible application of an isolated intervention in each of the issues identified. However none of the policy measures taken in isolation presented above can achieve the objective of contributing to the reduction of aircraft accidents through use of occurrence data. In order to address the four problem drivers identified, the Commission proposes three policy packages besides the baseline scenario. All three policy packages are capable of reaching on a standalone basis the four specific objectives set out in section 3.2.

(a) Overview of policy packages

| Policy packages / Problem drivers | Policy package 1 | Policy package 2 | Policy package 3 |
|---|---|---|---|
| Collection of occurrences is not optimal | Policy measures A1; B1; C1; D1; E1 | Policy measures A2; B2; C2; D2; E2 | Policy measures A2; B2; C3; D2; E3 |
| Low quality of information and incompleteness of data | Policy measures A1; B1; C; D1 | Policy measures A2; B2; C; D2 | Policy measures A3; B2; C; D2 |
| Obstacles to adequate access to ECR information | Policy measures A and B | Policy measures A and B | Policy measures A and B |
| Lack of occurrence analysis at Member States and at EU levels | Policy measures A1; B1; C1 | Policy measures A2; B2; C2 | Policy measures A3; B3; C2 |

(b) Policy package 1 – A better use of existing requirements to the benefit of a more proactive safety system

The first policy package (PP1) aims at **improving the current system in establishing the basic elements of a complete occurrence reporting system and its contribution to aviation safety improvement through amendment to the legislation only to the necessary minimum and adoption of recommendations and guidance wherever possible**. It contains the less intense policy measures identified above.

PP1 addresses the issues mentioned under problem driver 1 through the adoption of guidance material allowing clarification and better implementation of the existing legislation together with recommendation to implement agreed international requirements. This is complemented by development of training where appropriate. The policy measures included in PP1 allow a better, more harmonised collection of occurrences in EU Member States and clarifies the source of misunderstandings.

Regarding problem driver 2, PP1 continues and complements on-going development of guidance and training and therefore contributes to the improvement of the quality of occurrence data. In addition the Commission continues to monitor the completeness of occurrence reports sent by the Member States to the ECR.

On problem driver 3, PP1, through the modification of an implementing regulation to the Directive, grants full access to ECR data to competent authorities and, as a necessary corollary, restricts the use of data to safety enhancement purposes only.

Problem driver 4, which relates to areas not present in the existing legislation, is addressed through the adoption of recommendation requesting Member States to implement agreed international requirements related to the analysis of occurrences and the adoption of consequent measures in order the eliminate the safety risks identified. It is completed by development of a common EU risk classification scheme allowing a better prioritisation of actions.

This policy package has been considered as the favourite option by 14.8% of the respondents to the public consultation.

(c) Policy package 2 – The establishment of comprehensive occurrence reporting systems in the EU and its Member Sates contributing to a more proactive safety system for Europe

The second policy package (PP2) consists of a more ambitious package of policy measures entailing a substantial revision of EU legislation on occurrence reporting. PP2 seeks to **improve the current system by establishing the necessary legislative requirements for ensuring an efficient occurrence reporting system at all levels (organisation, national authorities and EU level) and to contribute to the reduction of aircraft accidents through the establishment, at all levels, of processes for the analysis of data collected, the adoption of corrective or preventive measures where relevant and monitoring of the system efficiency in terms of safety improvements**.

PP2 addresses problem driver 1 issues with the following policy measures: strengthen and complement the existing provisions on "Just Culture" issue notably by including the definition of "Just Culture" in the legislation, reinforcing the principle according to which employees are protected from blame expect in cases of gross negligence and establish a national focal point where individuals could report breaches to "Just Culture" principles and which could propose measures to be taken by Member States when relevant; simplify and harmonise reporting requirements by defining reportable occurrences and the conditions to report[96]; impose the establishment of VORS[97].

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[96] This complies with Commission objectives of simplification and of better clarity of the legislation as expressed in the Commission Communication on "*Smart Regulation in the European Union*" (COM (2010)543) and this policy measure is supported by 76.3% of the respondents to the public consultation.

[97] This would not require a lot of change in the Member States as 23 of them have already established a VORS.

Regarding problem driver 2 this package includes the harmonisation of reporting process and the standardisation of data entry processes[98]; the development of guidance material and training; the introduction of mandatory quality checking and the development of automatic data quality checker tools; the introduction of mandatory data fields[99].

On problem driver 3, PP2, as PP1, opens full ECR data access to competent authorities and restricts the use of data to safety enhancement purposes on the basis of already existing provision in Regulation (EU) No 996/2010.

Finally problem driver 4 is addressed by the introduction into EU law of the obligation to analyse occurrences collected from MORS and VORS at organisation, Member State and European levels; the adoption of corrective or preventive safety actions where appropriate and the introduction of monitoring the efficiency of actions taken; the development of a common EU risk classification scheme[100].

Under PP2, the European Aviation Safety Agency (EASA) is entrusted with additional responsibilities. The Agency coordinates and manages a network gathering Member States' safety analysts with the purpose of performing safety analysis to support the European Aviation Safety Programme and Plan and to determine key risk areas for Europe.

This policy package has been ranked first favourite option by contributors to the public consultation and is supported by most of the Member States.

(d) Policy package 3 – The European centralised approach

This policy package (PP3) aims at **improving the current system by transferring Member States occurrence reporting competencies to the EU level and establish, as in PP2, requirements for occurrence analysis together with the adoption of necessary safety actions and improvement monitoring**. Under PP3, the responsibility to establish and manage occurrence reporting scheme(s) would be centralised at European level and transferred to a European entity, the European Aviation Safety Agency (EASA). PP3 builds on PP2 but replace the involvement of Member States authorities by EASA.

In order to address problem driver 1, PP3 includes most of the policy measures described in PP2 but the system differs in the sense that occurrences are either collected by organisations and sent directly to the European level, without going through the State level, or collected directly by EASA. Regarding VORS, Member States schemes are replaced by a unique European Voluntary Reporting Scheme where everything which is not collected by organisations and sent to EASA is collected directly by the Agency. In addition EASA is designated as the European focal point for report of breaches to "Just Culture".

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98 This would bring benefits notably in improving data quality according to 19 Member States (see Annex 1).

99 This policy measure is supported by both public consultation respondents (80.3%) and Member States.

100 This policy measure is unanimously supported by Member States and is supported by the 73.8% respondents to the public consultation.

On problem driver 2, PP3 imposes that occurrence reports are sent to EASA through a single data format (the ECCAIRS data format)[101]. Policy measures similar to the ones developed in PP2 are developed to address problem driver 2.

Problem driver 3 partly disappears in PP3 as occurrence reports are received directly by EASA which manages the European Central Repository fed by the reports EASA collects. The limitation of data use is similar to the policy measure described in PP2.

Regarding problem driver 4, PP3 includes the obligation to analyse occurrence reports at organisation level and at EU level, as well as the requirement to address them through corrective actions and to monitor the actions taken by organisations and assess their efficiency in terms of safety improvement. At EU level the analysis of occurrence reports contributes to update the European Aviation Safety Programme. Similarly to PP2, a common EU risk classification scheme is developed.

This policy package has not been presented in the public consultation but the policy measure which would establishing the European voluntary occurrence reporting system has been submitted to respondents to the public consultation and has been supported by 26.2% of respondents.

(e) Support to legislative change

While not giving indication on the content of such a review, the principle of an EU legislation comprehensive review, as foreseen in PP2 and PP3, is supported by the European Parliament and the Council which included a formal request for such a review in Recital 3 of Regulation (EU) No 996/2010. Member States confirmed their support to the modification of existing rules in their replies to the questionnaire sent by the Commission[102]. In addition, the Commission has underlined the necessity of revising the current legislation in the White Paper 2011 "*Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system*" and reaffirmed it in the Commission Communication on "*Setting up a Safety Management System for Europe*"[103]. In complement to that unanimous institutional support, the European Network of Civil Aviation of Safety Investigation Authorities (ENCASIA) expressed its "*strong support*" to the revision. Finally public consultation respondents ranked PP2 as their favourite option.

## 4.4. Legal instrument

The current European legislation on occurrence reporting in civil aviation is in the form of a Directive and two implementing Regulations. The legal instrument was considered to be adequate at the time the legislation was adopted as it aimed to introduce certain requirements into EU law whilst leaving Member States a degree of flexibility regarding the implementation of the agreed requirements. However the problem description in section 2.2 underlines that this choice of legal instrument has in a large part led to the considerable heterogeneity in the way the legislation has been implemented by Member States. While PP1 attempts to ensure more

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101 Few respondents to the public consultation and to the Member States questionnaire have expressed their support to this policy measure.

102 See Annex 1.

103 See section 1.1 for references to these acts.

harmonisation in the implementation of the Directive through guidance material, recommendations and very limited legislative change, PP2 and PP3 are constructed in the form of a regulation. A number of reasons justify this choice.

In first place, the fact that these policy packages establish rights and obligations for the European Aviation Safety Agency prevents the use of a directive. Indeed, directives are acts of the European Union which require Member States to achieve a particular result without dictating the means of achieving that result. While a regulation is applicable in Member States' internal law immediately after its entry into force, a directive must first be transposed by the Member States and can lead to diverging while not contradicting national laws. As directives by their very nature are result orientated they should not be used to lay down detailed instructions for the Member States. For this same reason, if the intention is also to establish rights and obligations for an EU institution or other body, such as an Agency, directives are not appropriate instruments since directives should not lay down detailed rules. Such rights and obligation should instead be laid down using regulations which are binding as to all contents, self-executing and do not normally require any implementing measures. Consequently, not only the legislation establishing EASA and the implementing rules to that legislation, but also any other legislation establishing rights and obligations for EASA are adopted in the form of a regulation. The same applies in PP2 and PP3 as they establish rights and obligations for EASA.

The second reason is that many shortcomings and problem areas identified with the current legal framework are linked to divergent implementation among Member States and therefore the practice resulting from the present Directive clearly shows that a directive is not the appropriate instrument to achieve unanimous application of the law in an area where it is needed for safety reasons.

The third reason is that similar to Directive No 94/586/EC[104] which has been replaced by a regulation[105], the Commission considers that the system has reached a certain level of maturity and that the EU and its Member States are ready to move towards a system which imposes similar requirements and in a more harmonised way.

The fourth reason is that the use of a regulation has been broadly supported by Member States and by respondents to the public consultation[106].

Finally, replacing the Directive and its implementing Regulations by a regulation is compliant with the objectives enshrined in Commission Communication on Smart Regulation in the European Union[107] notably in terms of EU legislation simplification and clarifying the legislation.

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104 Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents; Official Journal L 319 , 12/12/1994 P. 14.

105 Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation

106 See annexes 1, 2 and 3.

107 COM(2010)543

## 5. ANALYSIS OF IMPACTS

### 5.1. Introduction and rating of impacts[108]

Traditional impacts such as economic, social and environmental impacts or the impact on fundamental rights will be assessed but most importantly the impact on aviation safety has to be assessed as it is an essential criterion for determining the best policy package. In the following subsections policy packages will notably be assessed in relation to the capacity to address the problems identified in section 2 and to reach the objectives presented in section 3. The different impacts will be presented and a rating of the specific impact for each policy package will conclude the subsection. The impacts will be rated in terms of negative (-) and positive (+) impacts.

### 5.2. Impact on aviation safety[109]

Compare to the baseline scenario, PP1 would impact positively on the collection of occurrence data and therefore allow a better overview of safety deficiencies. Data quality and completeness would also be improved but the lack of formal legislative requirement for mandatory data fields could limit the harmonisation of data and involve a lack of certain safety information being available in the databases. By the adoption of a recommendation suggesting that Member States analyse the data collected through occurrence reporting schemes, to take appropriate corrective or preventive actions and to monitor the efficiency of the system in terms of safety, as required by international obligations, PP1 brings certain safety benefits compared to the baseline scenario. However the non-binding status of the recommendations and the lack of legal enforcement tools ensuring their implementation would limit the efficiency of PP1 in terms of safety improvement. Indeed, it would be for the Member States to decide on a voluntary basis about the application of recommendations.

Therefore, although compared to the baseline scenario PP1 would impact positively on aviation safety, the benefits would not be sufficient to facilitate a decreased number of accidents in a context of air traffic growth.

Compared to the baseline scenario, PP2 would allow a much better understanding of the safety situation and of its shortcomings. Indeed, in combining an efficient and wide collection of occurrences together with better quality and more complete data, PP2 would allow organisations, Member States and the European Union to have a complete set of data which would give a much more accurate picture of potential safety risks than at present. In addition, requiring an analysis of occurrences reported at the level of organisation, Member States and EU level with the obligation to address safety deficiencies identified by the adoption of corrective measures where appropriate, PP2 would allow an important diminution of the identified safety risks. Finally the adoption of an EU risk classification scheme would allow both Member States and the EU to better focus its efforts from a data driven perspective.

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108 This section provides the qualitative and quantitative assessment of impacts for each policy package described above in comparison to the baseline scenario impacts as described in section 2.4.

109 As explained in section 2.4 an accurate quantification of the safety impact is not possible and therefore the assessment of the safety impact would rather be qualitative.

Therefore, even in the perspective of air traffic growth, PP2 would bring large benefits in terms of safety by establishing a systematic collection, dissemination, analysis and use of occurrence reports for safety improvements, at each necessary level, all across Europe, and therefore contribute to reduce the number of aircraft accidents and fatalities.

The impact of PP3 on aviation safety is difficult to assess precisely as if it would have contradictory effects among Member States. It should lead to important safety improvements in certain Member States[110], but, at the same time, it would impact negatively in the Member States which have already established efficient safety management systems. In addition, each Member State would not be able to exercise an appropriate safety oversight of its airspace. Indeed Member States, as competent authorities for the certification of organisations, would be deprived of the direct knowledge of occurrences in areas they certify[111] and would not be able to exercise a direct follow up of organisations they certificate. Moreover, it would prevent States from addressing obligations under their State Safety Programmes.

Furthermore, achieving a good level of reporting culture is, in several Member States, the result of many years' efforts during which mutual trust has been built notably by the guarantee that data will only be used for safety purposes. Therefore under PP3 organisations could be more reluctant to report to EASA as they are to their national authority because their reporting could lead to an increased number of EASA standardisation inspections. At the same time the level of reporting from other sources would be impacted positively as a higher number of individuals may prefer to report directly to EASA rather reporting to their employer and fear blame. However if this consequence would be beneficial for the level of direct reporting towards the EU level, by depriving the organisation of the knowledge of its safety deficiencies, it would not result in a global positive safety impact. Finally, as more than 110,000 occurrences reports are received every year in the European Union on average, it would be unrealistic to assume that EASA would be able to systemically analyse and address all the occurrences received or at least oversee if they have been correctly addressed by the organisation which collected and transferred it.

Therefore implementing this option would have a very positive impact on certain Member States' safety and a very negative one on some others (among which those with the largest air traffic) and when looking from a global EU perspective it would not have a strong positive impact on aviation safety.

In summary, while all three options have a positive impact on aviation safety compared to the baseline scenario, only PP2 would have a sufficient positive impact on accident rate to absorb the increased traffic and reduce the number of accidents and related fatalities.

| Option | Impact on Safety |
|---|---|
| Policy Package 1 | + |

110 E.g. States with no or almost no analysis and corrective actions processes implemented

111 Notably Air Operator's Certificate (AOC) for the airlines they certify.

| | |
|---|---|
| Policy Package 2 | +++ |
| Policy Package 3 | + |

## 5.3. Economic impacts

Evaluate with accuracy each option economic impact compared to the baseline scenario is extremely difficult. As has been demonstrated in section 2, accidents do not happen in a linear way and forecasting the level of decrease in accident rate or number would not be based on solid evidence.

### *5.3.1. Economic impact of Safety Management Systems*

In order to compare the economic impact of policy packages with the baseline scenario, it is necessary to compare the costs of accidents in a system mostly reactive to the costs of implementing a proactive and evidence based system.

CAST[112] evaluates the cost of implementing safety enhancements in the context of a comprehensive safety management system around $500 million (€392 million), spread out over 10 years[113]. The organisation estimates that implementing the most promising safety enhancements was expected to reduce the $76 (€60) accident cost per flight[114] by $56 (€44) per flight, saving the industry more than $600 million (€471 million) a year[115]. According to this study it means that in a reactive system the costs of accidents, which are reflected on all flights, are evaluated around $76 (€60) per flight while in a proactive system these costs are reduced to $20 (€16) per flight. This reduction results from the decreased number of accidents (therefore of their cost) and takes into account the costs of implementing safety enhancements.

Based on CAST study[116] it would mean that, with safety enhancements based on the collection, analysis and follow up of occurrences, accident cost per flight in 2030 would decreased from €1,014 million in the baseline scenario (see section 2.4.2) to €270.4 million by year (€16 by 16.9 million flights). This means a saving of €743.6 million by year for 2030 compare to the baseline scenario. This number is also much below the accident cost per flight in 2010 (€570 million) with a traffic 1.8 times more important.

This underlines that the financial investments necessary for implementing safety enhancements notably through the collection and analysis of occurrences are less onerous than the costs incurred by an accident.

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112 CAST (Commercial Aviation Safety Team) is an U.S. government-aviation industry partnership that has developed an integrated, data-driven strategy to reduce the commercial aviation fatality rate in the United States; http://www.cast-safety.org.

113 This has been evaluated for the period 1998-2007.

114 See section 2.4.2

115 These savings are in cost avoidance (not profit), including loss of life, aircraft, devaluation of stock prices, insurance fees, and other indirect legal costs (http://www.cast-safety.org/faq.cfm).

116 While the CAST study is a US study, its results can be extrapolated to a European context, as it compares the cost of introducing safety management systems to the costs of accidents for the aviation community in general in a comparable safety environment.

This assumption is confirmed by a study from the Centre for Aviation Safety Research in 2011[117] which compares the cost of implementing safety management systems (SMS) to the cost of accidents and presents a return on investment model for SMS. This study demonstrates that SMS provide significant financial benefit to organisations by instituting a proactive process of identifying risks and hazards followed by appropriate corrective actions which eliminate the hazards or reduce the risks to an acceptable level. It also affirms that it is "*a better use of aviation company funds to invest in SMS programs that will prevent accidents than to forego SMS and absorb the financial impact of accident that could have been avoided*".

However, if the principle of economic benefit is commonly agreed, the value of potential financial savings for each policy package compared to the baseline scenario is impossible to determine with accuracy as the number of accidents avoided cannot be determined and the level of safety enhancements under each policy package cannot be precisely quantified. It can be asserted that in the context of air traffic growth, PP1, by providing safety improvements, would have an economic impact at best only very slightly positive compared to the baseline scenario while PP3 would have a limited positive economic impact proportional to its impact on safety. PP2, by imposing the appropriate basis and elements for comprehensive safety management systems at each necessary level, would allow savings close to the one estimated in the paragraph above according to CAST figures and would therefore bring important economic benefits compared to the baseline scenario.

*5.3.2. Impact on the industry*

The current Directive does not address the industry, it only imposes requirements on individuals and on Member States. However it has been underlined in section 2.2 that most occurrences are collected from individuals by organisations in the context of their safety management system and then sent to Member States. In addition basic requirements regarding the establishment of occurrence reporting systems and of analysis mechanisms are already imposed on some industry players by other EU legislations. Indeed these requirements are enshrined in the EASA Basic Regulation (EC) No 216/2008[118] and are imposed on design, manufacture and maintenance organisations (Annex I paragraph 3.a.4), on operators (Annex IV paragraph 8.a.5), aerodromes (Annex Va paragraph B.2.b), air navigation service providers (Annex Vb paragraph 5.a.vii). However while legislative requirements impose on the industry the establishment of occurrence reporting systems, it appears from the various consultations held by the Commission that these requirements are respected in very different ways depending on the organisation and the Member State they are registered in. In addition the lack of detailed requirements and of implementation means may contribute to the existing discrepancies.

Overall, in the area of commercial air transport most industry players have already established a safety management system and would not be strongly impacted by the

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117 *Aviation Safety Management Systems Return on Investment Study*, Centre for Aviation Safety Research, Parks College of Engineering, Aviation and Technology, Saint Louis University, February 2011.

118 Regulation (EC) No 216/2008 of 20/02/2008 of the European Parliament and of the Council 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, 19/03/2008, p. 1*

obligation to collect, analyse and address occurrences. The impact of new requirements imposing to provide specific information, as the introduction of mandatory data fields, has been evaluated in the section related to administrative burdens[119]. On the non-commercial air transport the impact would be null as the obligation to report is already exists in the current legislation and the responsibility to analyis and assess occurrences would be on Member States in PP2 and on EASA in PP3. More detailed information on the economic impact on the industry is enclosed in Annex 10.

In summary, the economic impact of PP1 on the industry compare to the baseline scenario would be non-existent as it does not impose legislative requirements on organisations. Regarding PP2, depending on the organisation concerned and the level of maturity of its reporting system, the economic impact would vary from zero to limited. For PP3, although the impact of most of the policy measures would be similar to those identified for PP2, the policy measure imposing to send data into the ECCAIRS data format would however require certain investment[120].

### *5.3.3. Impact on Member States[121]*

As has been explained in section 2.2 there are significant discrepancies in the occurrence reporting systems maturity level among the Member States. Therefore the impact of the different policy packages compare to the baseline scenario would very much vary depending on this level of maturity. In addition, the precise number of individuals currently allocated to tasks related to the implementation of Directive 2003/42/EC and other occurrence reporting related tasks cannot be determined precisely for most of the Member States[122]. Therefore without an accurate knowledge of the impact on Member States in the baseline scenario it is even more difficult to define with precision the impact of the different policy packages.

Regarding PP1, as for PP2, the economic impact would be non-existent on certain Member States which already have developed mature systems, on other Member States the impact would go from very limited in PP1 to possibly more important impact with stronger requirements in PP2. This additional economic impact may involve additional human resources to cover the data analysis tasks and follow up actions in the Member States which have yet to develop such activities. This would impact between 15 and 20 Member States which will have to reallocate or have additional human resources in order to cover the new requirements. New requirements such as quality checking[123] may require some investment with the necessity to organise training at the initial stage. The cost of risk classifying occurrences has been evaluated in the section on administrative burdens (section 5.3.5).

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119 See Annex 9.

120 This cost is evaluated in the section related to administrative burdens (section 5.3.5).

121 In the Member States, occurrence reporting obligations are carried out either by the Civil Aviation Authority, by the Safety Investigation Authorities, by both or by an independent entity.

122 See Annex 1 for more details.

123 17 States have already some form of process for checking the quality of data, although the majority of these involved manual processes requiring human intervention.

Regarding PP3, the economic impact compare to the baseline scenario would clearly be positive as occurrence reporting competencies are transferred from Member States to EASA. Therefore it means that Member States would be able to save human resources in a level equivalent to the level of individuals allocated to occurrence reporting tasks in the baseline scenario.

### *5.3.4. Impact in the internal market and competitiveness of EU companies*

No matter what transport mode, accidents always reduce confidence in the safety of the transport system. It is particularly true in aviation transport where accidents usually involve a high number of fatalities and have a strong negative impact on public confidence in this particular mode of transport. Indeed it has been observed that accidents have an impact on the airline market value and on the level of tickets sold by the airline which has had an accident. Therefore by contributing to a reduction in the number of accidents involving European air carriers and European citizens, positive economic impacts would be expected with the implementation of the policy packages in proportion to their impact on aviation safety. Only PP2 further strengthen the sense that EU air carriers and aircraft of European design are safe and reliable, and therefore provide a positive impact on the internal market and the competitiveness. The quantitative dimension of its impact is however difficult to assess, mainly due to lack of a reliable methodology to assess the number of accident which would be avoided.

### *5.3.5. Administrative burdens*

Policy package 1 does not change any information obligation within the occurrence reporting system. The policy package operates primarily through providing better guidance, training and support within the present setup. This means that the policy option will not result in significant changes in administrative burdens compared to the baseline scenario. Policy packages 2 and 3 impacts are summarised in the figures below and more detailed information is attached in Annex 9.

It comes out of the analysis that policy package 2 is the most cost effective regarding the impact on administrative burdens.

**Figure 6: Administrative burdens in policy packages 2 and 3**

| | *Annual* | *One time* |
|---|---|---|
| **Policy Package 2** | + €831,133 | / |
| **Policy Package 3** | + €2,234,585 | + €300,000 |

**Figure 7: Administrative burdens on business**

| | *Annual* | *One time* |
|---|---|---|
| **Policy Package 2** | + €321,000 | / |
| **Policy Package 3** | + €321,000 | + €300,000 |

**Figure 8: Administrative burdens on public authorities**

| | *Annual* |
|---|---|
| **Policy Package 2** | |
| **Member States** | + €510,133 |
| **EU budget** | / |
| **Policy Package 3** | |
| **Member States** | - €236,415 |
| **EU budget** | + €2,150,000 |

*5.3.6. EU Budget*

The EU budget would be affected by policy packages 1, 2 and 3 compared to the baseline scenario. Regarding the European Central Repository, in the current situation, the Commission is already supporting the technical tool (ECCAIRS) allowing the collection of occurrences. The amount yearly allocated to this tool is on average around €500,000 and would be slightly increased in all three packages by between €50,000 and €100,000. On the development of the common EU risk classification scheme, its economic impact in all policy packages is the same and would be around € 90,000 for the development of the scheme, the support and the organisation of training and would not be renewed every year. It would be allocated for a period of 18 months. In PP2, the formalisation and development of the EASA analysis coordination role would notably require additional resources which are estimated around to €365,000[124].

In PP3, the transfer of competencies from Member States to EASA would have a strong impact on the EU budget as an important number of staff would have to be hired by EASA to deliver the tasks previously done by Member States. The centralising of the collection of occurrences their analysis and the monitoring of actions taken by organisations in a single entity would allow for a better use of resources than have it collected in 27 Member States and therefore would not require hiring an equivalent number of staff. However, the collection and assessment of around 120,000 occurrences every year, notably in order to detect trends, identify precursors, and assess risks, would require important additional resources for the Agency. Today the safety analysis section of EASA has no direct regulatory function except the requirement to produce an Annual Safety Review. A complete centralisation of reporting in Europe would involve a very high workload. The standing database of more than half a million records would have to be constantly searched for patterns and trends of events to ensure a truly proactive approach to safety. The total estimated budget costs would amount to €11.9 million[125].

[124] Costs details are enclosed in Annex 11.
[125] Costs details are enclosed in Annex 11.

In summary, in comparison to the baseline scenario, the impact on the EU budget would be increased by around €165,000 in PP1, €530,000 in PP2 and €12.065 million in PP3.

*5.3.7. Summary table of the economic impact of implementing the various PP*

Summarise all the elements described in section 5.3 in a single table is not easy as many impacts are different depending the Member State concerned or the area of the industry. In addition various unknown elements such as the number of accidents which might be avoided as well as the subsequent benefit for the aviation market makes it even more difficult to evaluate the balance between the negative and the positive economic impacts compared to the baseline scenario. Therefore it is not possible to compare economic impacts of the various policy packages on the basis of accurate money value savings but the comparison is based on a qualitative global evaluation of all the economic impacts mentioned in the paragraphs above.

| Option | Economic impact |
|---|---|
| Policy Package 1 | Zero |
| Policy Package 2 | From - to ++ |
| Policy Package 3 | From - to ++ |

## 5.4. Social impacts

*(1) Standards and rights related to job quality*

As detailed in section 2.2.1b), in the baseline scenario aviation professionals are afraid to report occurrences notably because of the fear being blamed or fired by their employer. This situation is not only prejudicial to aviation safety but also creates difficulties in the relationship between employees and their employer and creates a negative working environment for employees. This situation can vary considerably depending on the legislative environment of a Member State or the internal company policy of an organisation. All three packages would, with varying impact, improve this situation compared to the baseline scenario. PP1 would clarify existing requirements with the adoption of guidance material to support the current provisions. PP2 would clarify and expend existing legislative provisions notably with the imposition of requirements directly on an employer; it would also open a possibility for individuals to report breaches of the law through the establishment of national focal points. PP3 would complement PP2 initiatives with the establishment of a voluntary occurrence reporting scheme at EU level where individuals could directly report occurrences without fearing blame from their employer or their regulatory authority. In addition, provisions regarding the access to ECR data and its use would be implemented in each policy package notably to limit it strictly to safety purposes. This would be complemented in PP2 and PP3 by measures regarding the access and use of data collected at national level. All these measures would impact positively on the working conditions of aviation professionals compared to the baseline scenario, while the impact would be greater in PP2 and PP3 than in PP1.

*(2) Employment*

In the baseline scenario, several causes may lead aviation employees to lose their jobs. Firstly the risk for employees of being dismissed for having reported irregularities, including of their own making, which would be addressed by the measures detailed in paragraph (1) above. Secondly an increased number of accidents might impact negatively the aviation industry market share and might also lead to civil or criminal litigations and affect professional careers. This issue would be solved in proportion of the safety impact presented in section 5.2. Therefore PP1 would have a limited positive impact on employment while PP2 and PP3 would be more efficient in terms of limiting employees' risk of losing their job.

*(3) Personal data*

Occurrence reports often contain personal data such as reporter's name and details. The current Directive in its Article 8 forbids names or addresses of individual persons to be recorded in Member States' occurrence databases. PP1 would not impact the current situation while PP2 and PP3 would guarantee a better level of protection of personal data through a direct implementation of disidentification and the inclusion of new provisions regarding the data collected by organisations.

*(4) Public health and safety*

Public health and safety are impacted by aircraft accidents and therefore policy packages would impact it positively compared to the baseline scenario in proportion of their impact on aviation safety.

*(5) Summary of social impacts*

| Option | Social impact |
|---|---|
| Policy Package 1 | + |
| Policy Package 2 | From ++ to +++ |
| Policy Package 3 | From ++ to +++ |

## 5.5. Environmental impacts

Policy packages involve very few environmental impacts. In the baseline scenario they are limited to environmental damages caused by aircraft accidents and therefore the situation would be impacted in proportion to the improvements involved by the policy packages on aviation safety as described in section 5.2.

## 5.6. Impact on fundamental rights

All Commission proposals have to be compatible with the Charter of Fundamental Rights of the European Union, and it is thus necessary to assess the potential impacts of the proposed policy packages on the fundamental rights as laid down in the Charter compared to the baseline scenario. Aviation safety is directly linked to the most important basic human right, the right to life and of physical integrity. Aviation passengers have no control on their mean of transport and therefore have a legitimate right to safe air transport. The proposed policy packages are expected to have overall positive impacts on the right of EU citizens to safe communication by air. The

intensity of these impacts would be related to the intensity of the safety impacts discussed in section 5.2.

### 5.7. Impacts on simplification of existing legislation

PP1's impact on the simplification of existing legislation would be zero as the Directive and its two implementing Regulations would remain applicable and only a few articles of the implementing rules would be modified.

PP2 and PP3 would however have a positive impact compared to the baseline scenario as it would lead to the replacement of the Directive and the two Commission Regulations by a single act, a regulation from the European Parliament and the Council, which would be directly applicable 20 days after its publication in the Official Journal of the European Union in all Member States as national legislation and would therefore not require national implementing measures.

### 5.8. Impacts on third countries

Third countries operators and passengers would benefit from a safer European sky. Policy packages would therefore impact third countries in proportion of the intensity of safety improvements involved by each policy package as described in section 5.2.

### 5.9. Summary of impacts compared to the baseline scenario

| | Policy Package 1 | Policy Package 2 | Policy Package 3 |
|---|---|---|---|
| **Safety impact** | LOW POSITIVE<br>Safety improvement but insufficient to absorb traffic growth | HIGH POSITIVE<br>Important safety improvement sufficient to decrease accident rate | LOW POSITIVE<br>Safety improvement undermined by a number of elements |
| **Economic impacts** | | | |
| Impact on the industry | ZERO<br>No new legislative requirement | MEDIUM POSITIVE<br>Additional cost largely offset by the economic benefit of a reduced number of accidents | LOW NEGATIVE<br>More costs and, as limited impact on aviation safety, limited benefit for the industry |
| Impact on Member States | ZERO<br>No new legislative requirement | LOW NEGATIVE<br>Additional cost for some Member States | HIGH POSITIVE<br>Member States responsibilities transferred to EASA |
| Impact on internal market and competitiveness | LOW POSITIVE<br>Impact proportional to safety impact | HIGH POSITIVE<br>Impact proportional to safety impact | LOW POSITIVE<br>Impact proportional to safety impact |
| Administrative | ZERO | LOW NEGATIVE - | MEDIUM NEGATIVE - |

| | | | | |
|---|---|---|---|---|
| | burdens /year | | €831,133 | €2.235 MILLION |
| | Impact on EU budget / year | CLOSE TO ZERO - €165,000 | LOW NEGATIVE - €530,000 | HIGH NEGATIVE - €12.1MILLION |
| **Social impacts** | | | | |
| | Standards and rights related to job quality | LOW POSITIVE<br>Only guidance no additional legislative requirement | MEDIUM POSITIVE<br>Legislation provisions protecting employees | HIGH POSITIVE<br>Impact proportional to safety impact and set up of a VORS at EU level |
| | Employment | NEUTRAL | LOW POSITIVE | LOW POSITIVE |
| | Personal data | ZERO | MEDIUM POSITIVE | MEDIUM POSITIVE |
| | Public health and safety | LOW POSITIVE<br>Impact proportional to safety impact | HIGH POSITIVE<br>Impact proportional to safety impact | LOW POSITIVE<br>Impact proportional to safety impact |
| **Environmental impacts** | | CLOSE TO ZERO | CLOSE TO ZERO | CLOSE TO ZERO |
| **Impacts on fundamental rights** | | LOW POSITIVE<br>Impact proportional to safety impact | HIGH POSITIVE<br>Impact proportional to safety impact | LOW POSITIVE<br>Impact proportional to safety impact |
| **Impacts on simplification of exiting legislation** | | ZERO | HIGH POSITIVE<br>Directive and two implementing rules replaced by a Regulation | HIGH POSITIVE<br>Directive and two implementing rules replaced by a Regulation |
| **Impacts on third countries** | | LOW POSITIVE<br>Impact proportional to safety impact | HIGH POSITIVE<br>Impact proportional to safety impact | LOW POSITIVE<br>Impact proportional to safety impact |

## 6. COMPARING THE POLICY OPTIONS

Policy packages will be assessed regarding their contribution to the realisation of the policy objectives, as set in Section 3, in light of the following evaluation criteria:

• **effectiveness** – the extent to which options achieve the objectives of the proposal;

• **efficiency** – the extent to which objectives can be achieved at least cost;

• **coherence** – the extent to which options are coherent with the overarching objectives of EU policy, and the extent to which policy options are likely to limit trade-offs across the economic, social, and environmental domain.

### 6.1. Effectiveness

PP1 would have a limited effectiveness in achieving the specific objectives (SO). SO1 (improve occurrence collection) would be insufficiently achieved as PP1 would not ensure a harmonisation of reporting among Member States and would not allow sufficient clarification of reporting lines and of flow of information. The issue of "Just Culture" would be partly addressed but the legislative requirements ensuring a proper implementation of the principles would not be adopted. SO2 (get complete and good quality data) would not be fully achieved whilst significant improvements are expected. PP1 would ensure the achievement of SO3 (give broader access to ECR data and restrict its use to safety purposes). PP1 would have limited effectiveness in achieving SO4 (identify safety concerns through occurrence analysis and address them) because the lack of legislative requirements would limit the implementation of recommendations.

PP2 would be effective in achieving SO1, with a clarification of reporting requirements, a harmonisation of reporting lines in the Member States and the establishment of rules ensuring better protection to the reporter. The standardisation of the occurrence reporting process and the establishment of mandatory data fields and of quality checking processes, together with the development of guidance material and training, would allow PP2 to effectively achieve SO2. It would also be effective in the achievement of SO3. SO4 would be effectively achieved by PP2 with the introduction of legislative requirements ensuring an analysis of occurrences together with the adoption of appropriate measures.

Whilst PP3, overall, is effective in achieving the four SO, it would not be as effective as PP2 in achieving the general objective of aviation safety improvement as defined in section 3.1. And SO1 would not be fully achieved as organisations would be more reluctant to send their occurrences to EASA than to their national authority.

### 6.2. Efficiency

PP1 contains measures requiring very low implementation or administrative costs and contribute to achieve the SO but in a limited way which does not make this policy the most efficient in achieving the objectives.

PP2 implies certain costs mainly related to the introduction of new requirements regarding the use of data collected for safety improvements which has an impact varying from very limited to more substantial depending on the organisation or the Member State concerned, and a moderate impact on EU budget. These costs are expected to be offset by the important safety and economic benefits resulting from a decreased number of accidents Therefore PP2 can be considered as introducing efficient measures.

PP3 implies important economic savings for Member States but very high implementation costs for the EU budget (€12.1 million). Its expected safety benefits being less significant than in PP2, the decreased number of accidents may not be sufficient to offset the negative economic impacts. Therefore PP3 appears to be less efficient than PP2.

### 6.3. Coherence

All policy packages are more or less coherent with the overarching objectives of EU policy. Indeed, all policy packages are designed to reach the specific objectives without implying significant negative impacts or addressing one type of impact to the expense of another. However, whilst all PP present a limited trade-off between the different types of impacts, PP2 presents the most limited trade-off.

### 6.4. Preferred option

In terms of an effective contribution to the reduction of aircraft accidents and to the better protection of the public travelling on European air carriers, PP2 is the most attractive option. PP3 offers many benefits but is not the most efficient to achieve the specific objectives. PP1 completely achieves only the specific objective SO3.

PP1 is not costly and easy to implement, while PP3 is the most costly for the EU budget and may not reach the full safety benefits expected by a change of policy.

In terms of coherence PP2 ranks highest as it provides the most limited trade-off between the positive safety and social impacts on the one hand, and the economic impacts on the other.

According to the Financial Regulation (Article 27) and its Implementing Rules, ex ante evaluations are required where the resources mobilised exceed €5 million. Given that the preferred policy package will have an estimated impact on EU Budget of €0.53 million, the Commission has considered that the additional requirements contained in an ex-ante evaluation (e.g. full cost effectiveness analysis) are not applicable in this situation.

In view of the above the recommended package is PP2 as the benefits obtained are far greater than the costs. It is expected to contribute to improve aviation safety through a better collection of occurrences, an improved quality of data, a more appropriate access to information and the introduction of requirements regarding the use of occurrences for contributing to a reduction of aircraft accidents.

## 7. MONITORING AND EVALUATION

The Commission would properly evaluate the implementation of the occurrence reporting Regulation five years after its adoption by the European Parliament and the Council and assess whether the adopted legislation should be revised.

In addition, the Commission will continually monitor a set of core indicators which will be used to measure how the policy measures would achieve the operational objectives.

**Figure 9: Monitoring indicators**

| Operational objectives | Indicators | Source of data |
|---|---|---|
| **SO1: improve occurrences collection** | | |

| | | |
|---|---|---|
| Reach a higher occurrence collection rate in the EU through a harmonisation and clarification of reporting obligations | • Reporting rate level<br>• Member States assessment of the collection level of reportable occurrences | Information provided by Member States analysts in the context of the Network of Analysts<br>Questionnaires sent to stakeholders (Member States, EASA, industry, employees' associations) three years after the adoption of the legislation |
| Clarify and develop legislative requirements related to "Just Culture | • Number of complaints received by national focal points<br>• Stakeholders' opinion on "Just culture" level<br>• Use of occurrences by judicial authorities | National focal points<br>Just Culture related fora and groups in Europe<br>Questionnaires sent to stakeholders (Member States, EASA, industry, employees' associations) three years after the adoption of the legislation |
| Impose the establishment of voluntary reporting schemes | • Number of voluntary systems established | Questionnaires sent to stakeholders (Member States, EASA, industry, employees' associations) three years after the adoption of the legislation |
| Clarify of the flow of information notably with regards to organisations | • Rate of occurrences received from organisations and from individuals in Member States national databases | Questionnaires sent to Member States three years after the adoption of the legislation |
| **SO2: get complete and good quality data** | | |
| Standardise data entry processes | • Number of occurrences sent by each Member State to the ECR | ECR occupancy status provided by the Commission Joint Research Centre |
| Establish mandatory data | • Rate of mandatory data fields filled by Member | ECR occupancy status provided by the |

| | | |
|---|---|---|
| fields | States | Commission Joint Research Centre |
| Establish data quality checking processes | • Number of processes established<br>• Level of quality improvement | Information provided by Member States analysts in the context of the Network of Analysts<br>Feedback from the ECCAIRS taxonomy group<br>Questionnaires sent to Member States and industry three years after the adoption of the legislation |
| **SO3: give broader access to ECR data and restrict its use to safety purposes** | | |
| Grant full access to ECR data to appropriate safety authorities | • Level of access to ECR data | Access rights allocated by the Commission Joint Research Centre |
| Establish confidentiality rules and safeguards regarding potential misuse of the data. | • Member States' opinion about the use of ECR data<br>• Use of data by press or by judicial authorities | Questionnaire sent to Member States three years after the adoption of the legislation<br>Opinion of the ECCAIRS Steering Committee |
| **SO4: identify safety concerns through occurrence analysis and address them** | | |
| Create an obligation to analyse occurrence data and to identify actual or potential safety hazards | • Number of occurrences analysed<br>• Size of departments in charge of occurrence reporting in Member States | Questionnaires sent to stakeholders (Member States, EASA, industry, employees' associations) three years after the adoption of the legislation<br>Standardisation inspections<br>European Central Repository |

| | | |
|---|---|---|
| Adopt preventive or corrective actions where appropriate | • Number of actions adopted<br>• Aviation accident rate | Questionnaires sent to stakeholders (Member States, EASA, industry, employees' associations) three years after the adoption of the legislation<br>EASA and Member States' annual safety reviews<br>European Central Repository |
| Oversee the efficiency of those actions and create a common EU risk classification scheme for classifying occurrences. | • Number of additional corrective actions imposed by Member States<br>• Number of occurrences risk classified<br>• Possible determination of key risk areas for Europe | Questionnaire sent to Member States three years after the adoption of the legislation<br>European Central Repository<br>Information provided by the Network of Analysts |