EASA
European Union Aviation Safety Agency

2019-2023 EPAS

Strategic priorities, enablers and key actions

What is the European Plan for Aviation Safety?

The European Plan for Aviation Safety (EPAS) is the instrument to prioritise and manage actions to maintain and further improve aviation safety and environmental protection, while ensuring efficiency, proportionality and level playing field.

EPAS is the aviation safety action plan derived from the main safety risks identified at European level and a key element of the European aviation safety strategy. EPAS is built on a proactive approach to support the future growth of aviation while securing a high and uniform level of safety for all Member States (MSs). This proactive approach allows the European Commission (EC), the European Aviation Safety Agency (EASA) and MSs to take the necessary actions at the right time in order to prioritise the risks to be managed and to face the challenges posed by the increasing complexity and continued growth in civil aviation, as well as to ensure safe, secure and environmental friendly implementation of new business models and new technologies.

The overall safety objective is to maintain and whenever feasible to further improve the present safety performance level of the European aviation system in the face of upcoming changes. In the field of air traffic management (ATM), the performance ambitions adopted with the ATM Master Plan (ATM MP) reflect this overall objective.

EPAS is a five-year plan that is constantly being reviewed and improved through annual updates. The plan is an integral part of EASA's work programme and is developed by EASA, in close consultation with the EASA MSs and industry. It is consistent with the ICAO Global Aviation Safety Plan (GASP).

What is new in this edition?

The 2019-2023 edition:

- proposes an initial alignment with the ATM Master Plan;
- integrates safety information from the Standardisation Annual Report, in addition to that stemming from the Annual Safety Review (ASR);
- takes into consideration the New Basic Regulation (Regulation (EU) 2018/1139);
- includes a set of safety performance indicators;
- reflects the real capacity of the EU regulatory system; and
- contains a new action for States to develop Safety Plans for Aviation Safety reflecting the priorities and actions identified in EPAS.

Strategy

The EPAS strategy derives from the EC's Aviation Strategy and EASA's strategic plan. The safety priorities are based on the European Safety Risk Portfolios published in the ASR. The efficiency and level playing field priorities are based on stakeholder feedback. The environmental priorities are based on the European Aviation Environmental Report (EAER) 2016 and are aligned with the 2019 issue of said report.

Distribution of actions per driver

EPAS is divided into four drivers, which correspond to different chapters in the document.

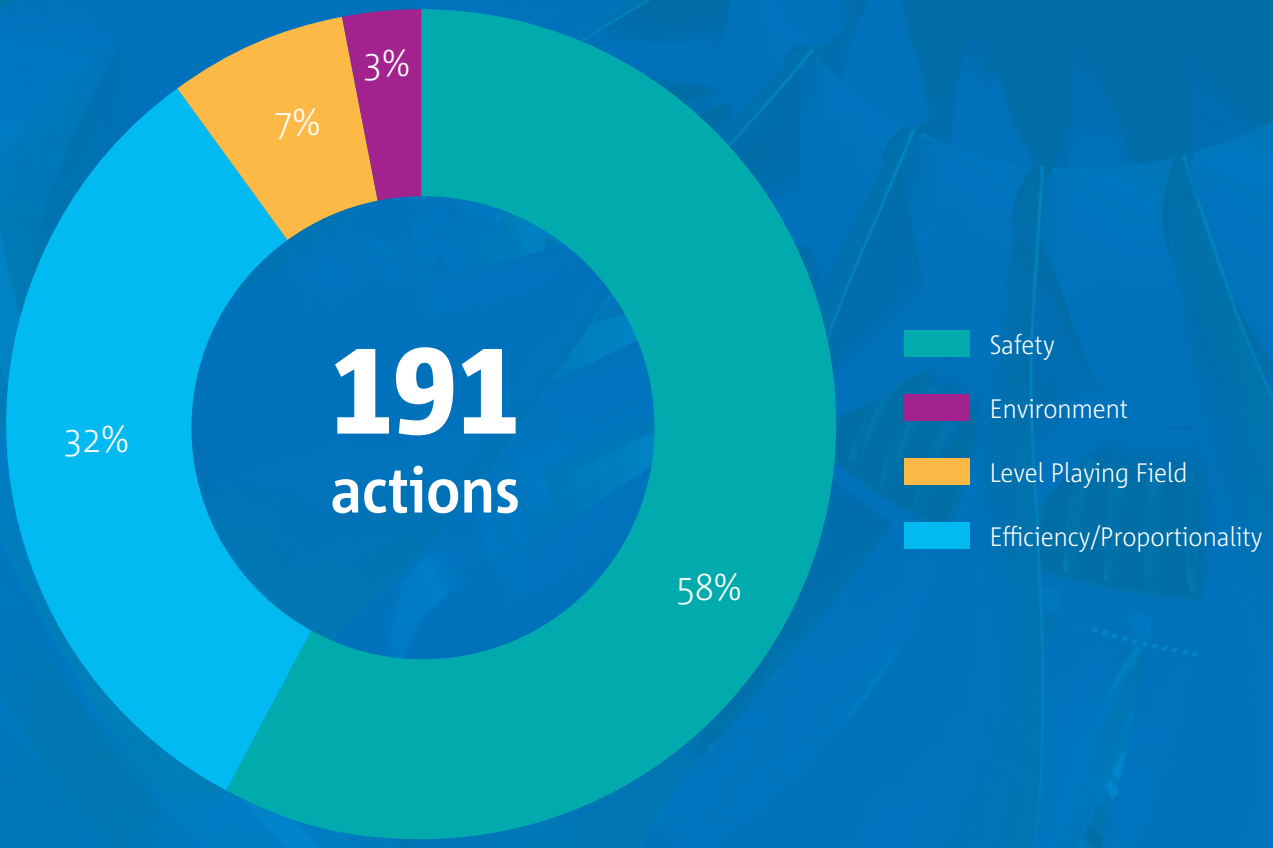
Safety: actions in this category are driven by the need to improve the current level of safety in aviation.

Efficiency/Proportionality: actions in this category are primarily driven by the need to ensure that rules are cost-effective in achieving their objective, as well as proportionate to the risks identified.

Level playing field: actions in this category are mainly driven by the need to ensure that all players in a certain segment of the aviation market can benefit from the same set of rules, thereby promoting innovation, supporting fair competition and ensuring free movement of persons and services. Level playing field actions will directly contribute to maintaining or even increasing the current level of safety.

Environment: actions in this category are driven by the need to improve the current environmental protection in the aviation sector, while striving to ensure a level playing field globally.

Safety is the driver with the majority of the actions in the plan, followed by efficiency/proportionality. Furthermore, in most cases, actions addressing efficiency, environment and level playing field also have a safety component.



Strategic priorities

Systemic safety

Improve safety by improving safety management

Despite the fact that the last years have clearly brought continued improvements in safety across every operational domain, the latest accidents and serious incidents underline the complex nature of aviation safety and the significance of addressing human factor aspects. Aviation authorities and organisations should anticipate new emerging threats and associated challenges by further developing their safety risk management capabilities.

Key actions:

- Support States in implementing State Safety Programmes and State Safety Plans
- Encourage international harmonisation of SMS implementation and the application of human factor principles
- Ensure that competent authorities have the ability to evaluate and oversee operators' management systems
- Incorporate safety management requirements in initial and continuing airworthiness

Impact of security on safety

Cybersecurity

Citizens travelling by air are more and more exposed to cybersecurity threats. In order for the new generation of aircraft to have their systems connected to the ground in real time, ATM technologies require internet and wireless connections between the various ground centres and the aircraft. The multiplication of network connections and the surge in digitalisation of aviation systems increases the vulnerability of the whole system. It is essential that the aviation industry and authorities share knowledge and learn from experiences to ensure systems are secure from individuals/organisations with malicious intent.

Key actions:

- Develop and implement a strategy for cybersecurity in aviation
- Implement a regulatory framework for cybersecurity covering all aviation domains
- Introduce new cybersecurity provisions in the certification specifications

Conflict zones

Since the tragic downing of Malaysian Airlines flight MH17, there is a consensus that States shall share their information about possible risks and threats in conflict zones. Numerous initiatives have been taken to inform the airlines about risks on their international flights.

An EU high-level task force was set up to define further actions to be taken at European level in order to provide common information on risks arising from conflict zones. The task force handed over its final report on 17 March 2016. It contains recommendations for various stakeholders and a proposal to set up a conflict zone alerting system at European Level, through cooperation between MSs, European institutions, EASA and other aviation stakeholders.

Key action:

- Disseminate information to air operators in order to mitigate the risk associated with overflying conflict zones

Human factors and competence of personnel

EASA monitors data relating to human performance and assesses feedback from stakeholders through the Human Factors Collaborative Analysis Group (HF CAG). As the aviation system changes, it is imperative to ensure that human factors and the impact on human performance are taken into account, both at service provider and regulatory levels.

Key actions:

- Introduce evidence- and competency-based training into all licences and ratings
- Review learning objectives and syllabi for commercial pilot licences
- Improve the fidelity of flight simulators
- Support competent authorities with training and expertise to attract suitably qualified staff

Data4Safety

Data4Safety (also known as D4S) is a data collection and analysis programme that aims at gathering and processing all data that may support the management of safety risks at European level. This includes safety reports (or occurrences), flight data (i.e. data generated by the aircraft via the flight data recorders), surveillance data (air traffic data), weather data — these being only a few from a much longer list.

An initial proof of concept (PoC) phase has been launched with a limited number of partners to test the technical challenges as well as the governance structure of such a programme. After a year, a number of key-building blocks have been achieved. In particular:

- the partnership principles have been framed into a programme charter;
- the data protection rules have been agreed upon and captured into the rules and procedures document and in a data sharing and protection agreement template; and
- the use cases for the PoC phase have been agreed upon and specified.

Operational safety

Address safety risks in Commercial Air Transport (CAT) aeroplane operations and NCC business operations

During 2017, there were no fatal accidents involving European air operator certificate (AOC) holders performing CAT passenger/cargo. Likewise, no fatal accidents occurred in non-commercial air operations with complex motor-powered aircraft (NCC) business operations with aeroplanes having a maximum take-off weight above 5 700 kg. In this category, there were 15 non-fatal accidents; however, the number of non-fatal accidents was lower than the average of the previous 10-year period.

In 2017 the number of serious incidents in this category increased in comparison with the average of the previous 10-year period, with 99 serious incidents recorded in 2017 in comparison with the 10-year period average of 79,2.

This operational domain remains the greatest focus of the EASA safety activities. The CAGs and Advisory Bodies (ABs) will help EASA to learn more about the safety challenges faced by airlines and manufacturers.

Aircraft upset in flight (loss of control)

Aircraft upset or loss of control is the most common accident outcome for fatal accidents in CAT aeroplane operations. It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or aircraft flight parameters, regardless of whether the flight crew realised the deviation in a timely manner and whether it was possible to recover or not. It also includes the triggering of stall warning and envelope protections.

Key actions:

- Review and promote training provisions on recovery from upset scenarios
- MSs to address loss of control in flight by taking actions at national level and measuring their effectiveness

Runway excursions

Runway excursion covers materialised runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centred or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing.

Key actions:

- Require on-board technology to reduce runway excursions
- Improve aircraft performance in CAT operations
- Promote and implement the European Action Plan for the Prevention of Runway Incursions (EAPPRI) and Excursions (EAPPRE)
- MSs to address runway safety by taking actions at national level and measuring their effectiveness

Rotorcraft Safety Roadmap

The EASA Executive Committee reviewed European and worldwide rotorcraft safety data and decided to launch a strategic approach and to set an ambitious target to reduce the number of rotorcraft accidents and incidents. As an initial step, EASA launched in mid-2018 an external task force, tasked to deliver a Rotorcraft Safety Roadmap focusing on safety and transversal issues that are affected by the different domains including training, operations, initial and continuing airworthiness, environment and innovation.

The vision of the roadmap is to 'achieve significant safety improvement for Rotorcraft with a growing and evolving aviation industry'. This roadmap will be the backbone of the rotorcraft-related actions in future EPAS editions.

The following objectives have been defined in order to deliver this vision:

- Improve overall rotorcraft safety by 50 % within the next 10 years
- Make positive and visible changes to the rotorcraft safety trends within the next 5 years
- Develop performance-based and proportionate solutions that help maintain competitiveness, leadership and sustainability of European industry

Address safety risks in General Aviation in a proportionate and effective manner

In the last years, accidents involving recreational aeroplanes have led to an average of 92 fatalities per year in Europe (based on 2007-2016 figures, excluding fatal accidents involving microlight airplanes), which makes it one of the sectors of aviation with the highest yearly number of fatalities. Furthermore, in 2017, there were 34 accidents causing 62 fatalities in non-commercial operations with aeroplanes and 25 fatal accidents causing 27 fatalities in the domain of sailplane operations (the 2007-2016 average is 29 fatalities per year in Europe).

Although it is difficult to precisely measure the evolution of safety performance in General Aviation due to lack of consolidated exposure data (e.g. accumulated flight hours), it is reasonable to assume that more initiatives and efforts are needed to mitigate risks leading to these fatalities.

EASA, in cooperation with its ABs, is launching the GA Roadmap 2.0. It will concentrate on making GA safer and cheaper thanks to innovation and technology.

Key actions:

- Improve the dissemination of safety promotion and training material by authorities, associations, flying clubs, and insurance companies targeting flight instructors and/or pilots
- Encourage the installation and use of modern technology (e.g. moving maps, envelope protection, tablet applications, avoidance systems, angle of attack indicators, etc.)
- Address airspace infringement risks through an EU-wide promotion campaign

Safe integration of new technologies and concepts

Establishing and maintaining a high uniform level of civil aviation safety remains the highest objective for the integration of new technologies and business models. EASA will increasingly be taking an integrated approach to the introduction of new technologies and concepts, considering the total aviation system.

New operating concepts and business models

Some new business models such as those responding to the increased demand for flying in the cities, 'urban air mobility' or those generated by the increased digitalisation in the aviation industry, the introduction of more autonomous vehicles and platforms, single-pilot operations and completely autonomous cargo aircraft, will challenge the way authorities regulate and oversee the aviation system. New aviation partners are seeking new business models to provide more services to citizens, ranging from parcel delivery by air within the cities to flying air taxis. These new business models and operations need to be performed in a safe and secure manner to maintain the confidence that citizens have in the air transport system. EASA has a key role to play in this area.

Key actions:

- Support competent authorities in the practical implementation of cooperative oversight
- Improve the understanding of operators' governance structures

Ensure the safe operation of drones

The number of drones within the EU has multiplied over the last two years. Available data shows the increase of drones coming closer to manned aviation (both aeroplanes and helicopters), thereby confirming the need to mitigate the associated risk — 10 non-fatal accidents were included in the European Central Repository in 2017 and the number of high-risk incidents reported significantly increased over the last 5 years.

The introduction of new airspace users should not degrade the level of safety. Rules should ensure that all risks are identified and appropriately mitigated, taking into account the opportunity provided by new technologies or, when they are not mature enough, identifying appropriate operational limitations.

Key actions:

- An opinion and draft AMC & GM were published in February 2018 and the draft implementing/delegated acts are being processed.
- A first set of standard scenarios is planned to be adopted in 2019 to facilitate the obtainment of authorisations for well-defined operations.
- For the fully-certified drone category, EASA opinions and decisions will be issued between Q2/2019 and Q2/2023. In the meantime, certification of large drones could be done using Part 21 and Special Conditions.

An outlook on EASA's future work:

- Drafting the necessary standards to support the performance-based rule in cooperation with standardisation and industry
- Developing the necessary actions to ensure a uniform implementation of rules in cooperation with MSs, including promoting the safe operation of drones to the general public
- Developing the regulatory framework for the safe integration of drones in the airspace

Electric and hybrid aircraft

Innovation in any industry is a key factor influencing its competitiveness, growth and employment potential. The increasing number of new aircraft manufacturers and suppliers working on electric aircraft systems & propulsion indicates there are very strong prospects as well as demand, from industry and governments, for hybrid propulsion and eventually fully electric aircraft.

Environmental benefits, in terms of emissions and noise, as well as social enhancements (e.g. mobility and accessibility) are equally determining factors. Development efforts will cover electrical systems, electrical urban taxis, electrical helicopter emergency medical services (HEMS), etc. To encourage the safe integration of new technological advancements in the wider electrical aviation sector overall, flexibility in the approach on all types of concepts, variations and design types will be enhanced.

At the end of 2018, EASA launched a public consultation on its proposal for airworthiness standards to enable the certification of small Vertical Take-off and Landing (VTOL) aircraft. This is to develop the first component of the regulatory framework to enable the safe operation of air taxi and electric VTOL (eVTOL) aircraft in Europe. By spring 2019, the first fully electric propulsion small aircraft type model is planned to be type-certificated. Other ongoing projects are including two applications for eVTOL. Additionally, the first positive investigations for large transport aeroplanes have been conducted.

Enable the implementation of new technologies developed by SESAR[1]

EPAS also caters for the regulatory and implementation needs of the SESAR essential operational change and other new technological advancements. Global interoperability, civil-military cooperation and compatibility with other regions, such as NextGen, will form an integral part of EASA's work in impact assessment and future rulemaking or other related actions. Furthermore, EPAS provides a proactive and forward-looking view to the implementation of essential operational changes that support safety improvements required to safely manage the SESAR target operational concept.

Key actions:

- Support the datalink operations
- Performance-based navigation implementation in the European ATM network
- Implementation of the regulatory needs of the SESAR common projects

Enable all-weather operations

The European industry should have the capability to take full advantage of the safety and economic benefits generated through new technologies and operational experience. This represents a widely recognised interoperability subject touching on a wide range of areas. Aircraft operations have always been influenced by the weather. Whilst modern aircraft design and the availability of weather observations and forecasts contribute to a predominantly very safe flying environment, there remain occasions where severe weather events have been identified as being a contributing factor in the causal chain of accidents and incidents.

Since 2015, EASA has increased its focus on weather-related challenges and, as part of that work, has sought to identify whether the meteorological information available to pilots could be enhanced.

Key action:

- Review and update the AWO rules in all aviation domains.

1 Single European Sky ATM Research

Environment

Ensuring sustainability is a huge challenge for the aviation industry, MSs and EASA. Sustainable aviation is about combatting climate change and reducing the health effects from aircraft noise and air pollution. It is also about ensuring that European industry stays competitive in a rapidly changing world. The introduction of novel technologies (including electric air taxis, drones and hybrid systems) requires particular attention from an environmental perspective.

Key actions:

- Implement ICAO Committee on Aviation Environmental Protection (CAEP) amendments
- Develop PM regulations and guidelines
- Obtain high-quality technical expert support on standardisation issues.

In addition, EASA is also involved in the following activities:

- Environmental fraud prevention
- Development of an ecoLabel/LifeCycle assessments concept
- Sustainable fuels project
- REACH[2] monitoring process together with the European Chemicals Agency

2 REACH is the European Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals. The main aims of REACH are to ensure a high level of protection for human health and the environment, including the promotion of alternative test methods, as well as the free circulation of substances on the internal market and the enhancement of competitiveness and innovation.

Strategic enablers

Research

The European aviation industry has gone through a successful development in the past decades placing Europe at a leading position in the global competitive market. Significant elements of this success story are the European aviation research and innovation programmes as well as the MS and industry research activities. Therefore, these initiatives are of high relevance to the setting-up of EPAS actions. They contribute to EASA's objectives for ensuring the highest level of aviation safety, security and environmental protection in Europe.

The 2019-2023 EPAS includes 19 research tasks.

Safety promotion

EASA is launching a new safety promotion strategy with an increasingly proactive approach to the way EASA communicates with the European aviation community. This will position EASA as a safety promotion leader in Europe and worldwide having influence and a recognised brand, the EASA 'Safety Together!' brand. Understanding that different aviation stakeholders have very different needs in terms of information and communication channels, the strategy will take a domain-based approach. It will be split into operational domains such as aircraft operations, aerodromes and ground handling, General Aviation, rotorcraft and drones.

International cooperation

One of the EC's 10 key priorities is that the EU becomes a stronger global actor. EASA supports the EU and cooperates with national, regional and international organisations alike in order to enhance global aviation safety, and supports the free movement of European products and services.

The strategic priorities at an international level are the following:

- Strive, through international cooperation, that citizens' interests for safety and environmental protection are being met at global level
- Ensure a global playing field for European industry
- Enable the European approach, in particular by promoting the recognition of the European system at ICAO level

Digitalisation

Aviation moves into the digital era at an unprecedented pace. Almost all aviation sectors are affected by those developments. Aircraft manufacturers are moving from trend monitoring of key components to using increasingly connected digital systems, such as on-board sensors and digital engine twins.

EASA is engaged in defining its roadmap to digitalisation in order to determine the following:

- changes needed in the regulatory system to accompany and benefit from industry digitalisation;
- actions needed to keep abreast of digitalisation issues, in particular in relation to product certification and operations;
- key EASA digitalisation activities needed, both for external purposes (e.g. e-licence for pilots) or internal purposes (e.g. digitalisation of processes); and
- actions needed to implement EU's digital agenda and e-government action plan.

Technical training

According to ICAO Annex 19 'Safety Management', qualified technical personnel is a critical element (CE-4) of the State safety oversight system. Annex 19 stipulates that States shall establish minimum qualification requirements for the technical personnel performing safety-related functions and provide for appropriate initial and recurrent training to maintain and enhance their competence at the desired level.

EASA will therefore continue to focus on the following key areas:

- Maintenance and further development of the competence of EASA staff based on training programmes specifying initial and recurrent training subjects
- Further harmonisation of training and assessment standards for aviation inspectors within the EASA system, together with the Common Training Initiative Group
- Implementation support to aviation authorities and aviation organisations and support to universities and similar educational institutions through lectures
- Support international cooperation through dedicated training services
- Continuous improvement of the European Central Question Bank, used for knowledge examinations of commercial pilots; taking into account EPAS priorities, where relevant for the training of pilot competencies

Oversight

Having proper oversight capabilities is a key prerequisite for the State Safety Portfolio as well as EPAS actions' implementation. Authority requirements, introduced in the rules developed under the first and second extension of the EASA scope, define what MSs are expected to implement when performing oversight of the organisations under their responsibility.

In particular, they introduced the concept of risk-based oversight with the objective of addressing safety issues with a consideration to efficiency. Likewise, the cooperative oversight approach is explored in terms of how competent authorities could work together, as well as how EASA could evaluate whether the existing safety regulatory system adequately addresses risks resulting from the increased complexity of the aviation industry, and the number of interfaces between organisations, their contracted services and regulators.

This EPAS edition introduces two new EPAS indicators related to MSs' oversight capabilities (based on the Standardisation rating) and the status of compliance with SMS requirements in aviation organisations (based on information provided by MSs on the number and type of related findings).

To support MSs, this EPAS edition includes four projects identifying focused attention topics for oversight. They include both actions for EASA, led by its Standardisation team, as well as oversight actions led by MSs.

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Where can I find more information?

The full EPAS document and related materials can be found at
www.easa.europa.eu/easa-and-you/safety-management/european-plan-aviation-safety

Inquiries concerning the EPAS can be sent to:
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Have a look at our new communication campaign:

#haveasafeflight

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