ICAO

SAFETY

State of Global Aviation Safety

ICAO Safety Report 2025 Edition

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Note: The ICAO Regions based on the Member States accredited to each ICAO Regional Office are used in the report and are listed in Appendix 1. This document focuses primarily on scheduled commercial flights. The scheduled commercial flights data was based on the Official Airline Guide (OAG) combined with internal ICAO big data preliminary estimates.

Ensuring the Safety and Security of Every Flight

A specialized agency of the United Nations established in 1944, the International Civil Aviation Organization (ICAO), together with its 193 Member States and several industry groups, has achieved 80 years of success in delivering an outstanding performance of safe and secure international civil aviation system that connects the world for the benefit of all nations and people.

ICAO promulgates Standards and Recommended Practices (SARPs) to facilitate harmonized regulations in aviation safety, security, efficiency and environmental protection on a global level. Today, ICAO manages over 12 000 SARPs across 19 Annexes and seven Procedures for Air Navigation Services (PANS) to the Convention on International Civil Aviation (Chicago Convention), many of which are constantly evolving in tandem with the latest developments and innovations. ICAO also serves as the primary forum for cooperation in all fields of civil aviation among its Member States and aviation industry.

7 December 2024 marked the 80th anniversary of the signing of the Convention in Chicago, United States. International civil aviation is entering a new era marked by unprecedented challenges and new opportunities. In this context, ICAO has launched its comprehensive 2026–2050 Strategic Plan with Strategic Goals and High Priority Enablers to ensure a safe, secure and sustainable global aviation system.

The 42nd Session of the ICAO Assembly will be held from 23 September to 3 October 2025. To celebrate the most widely attended event of the aviation community and commemorate its 80th anniversary, ICAO has published a special edition of its safety report – State of Global Aviation Safety. The 2025 edition of this special safety report recognizes the achievements of aviation safety as well as the need to embrace the aviation's future development.

This edition of the report provides safety trends for the past six years as well as accident statistics and analysis for 2024. In addition, the report presents some global and regional safety initiatives or success stories on enhancing aviation safety.

Contents

Executive Summary

A 2024 safety overview is provided in Figure 1 through safety indicators such as the global accident rate, number of fatal accidents, total fatalities, total serious injuries and fatality rate for scheduled commercial air transport involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg.

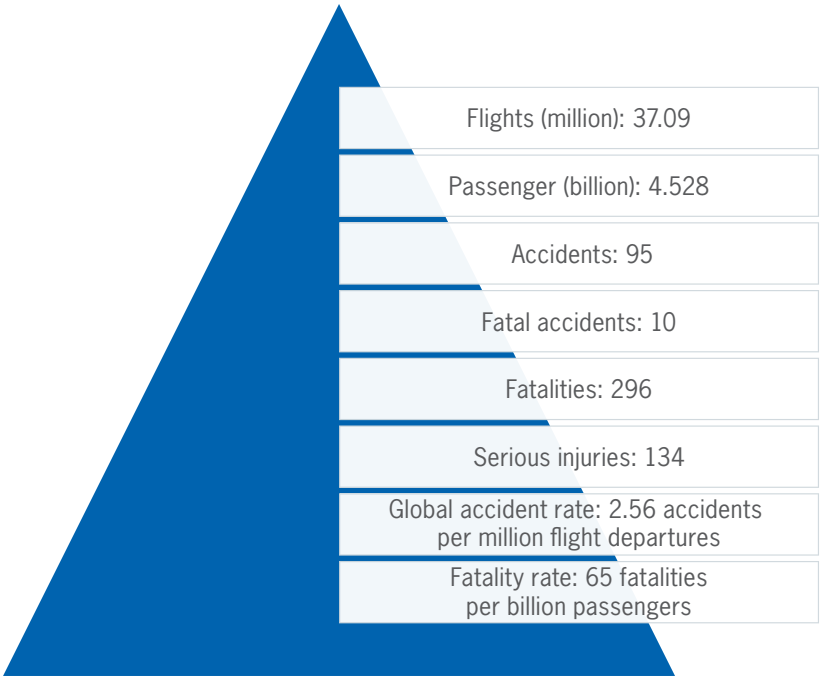


Figure 1. | Safety Overview 2024

According to ICAO Big Data, as indicated in Chart 1, the global passenger traffic continued to grow in 2024 with around 4.528 billion passengers transported worldwide, up from 4.17 billion passengers in 2023 and surpassed the pre-pandemic (2019) level of 4.5 billion passengers. The passenger traffic in 2024 increased 8.6 per cent from 2023. As indicated in Chart 2, the number of flight departures for scheduled commercial operations also increased by 5.2 per cent with over 37 million departures in 2024, compared to over 35 million in 2023, though slightly lower than the pre-pandemic (2019) level.

It is worth noting that the pre-pandemic year of 2019 is included for the statistics of trend in this report as a reference.

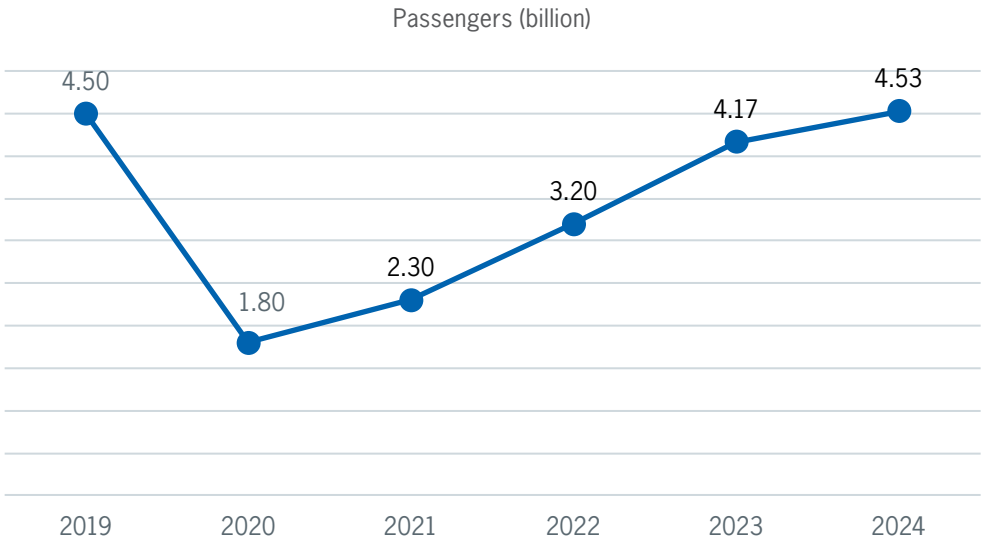


Chart 1. | Global traffic of passengers (billion)

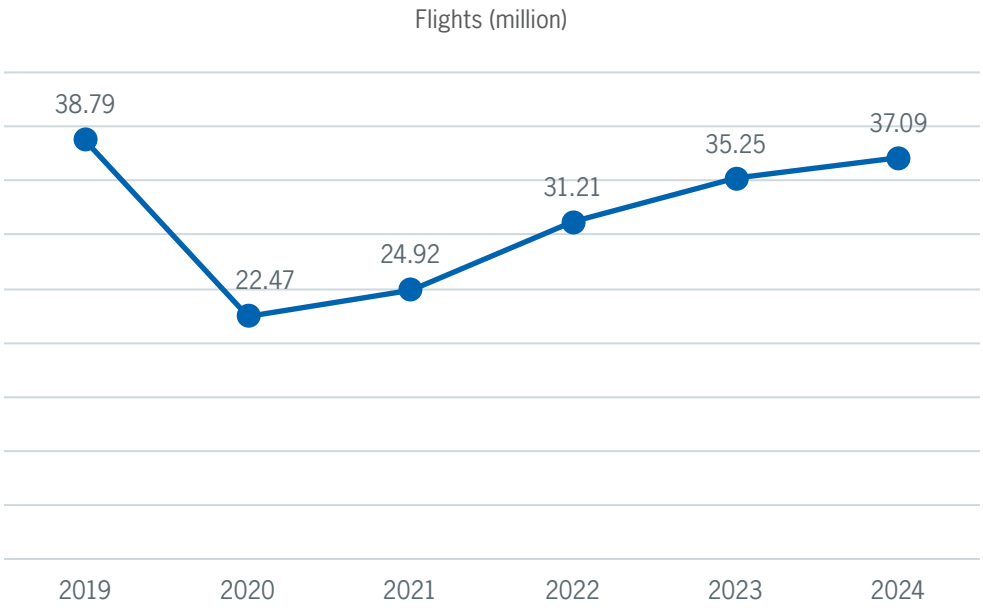


Chart 2. | Global traffic of flight departures (million)

Yearly accident statistics shown in Chart 3 indicate an increase in both the total number of accidents and the global accident rate in 2024. From 2023 to 2024, there was a 43.9 per cent increase in the total number of accidents, as reported by States. The global accident rate of 2.56 accidents per million departures in 2024 increased by 36.8 per cent from the 2023 rate of 1.87 accidents per million departures. As defined in ICAO Annex 13 — *Aircraft Accident and Incident Investigation*, the accidents used for these statistics were reviewed and validated by the ICAO Occurrence Validation Study Group (OVSG) using the ICAO Accident/Incident Data Reporting (ADREP) taxonomy and involved scheduled commercial operations of aircraft with a certified MTOW over 5 700 kg.

Nevertheless, if compared with the pre-pandemic year of 2019, both the total number of accidents and the global accident rate in 2024 were lower than the levels in 2019 noting that the total number of passengers transported in 2024 surpassed the 2019 level and the number of flight departures recovered close to the level in 2019.

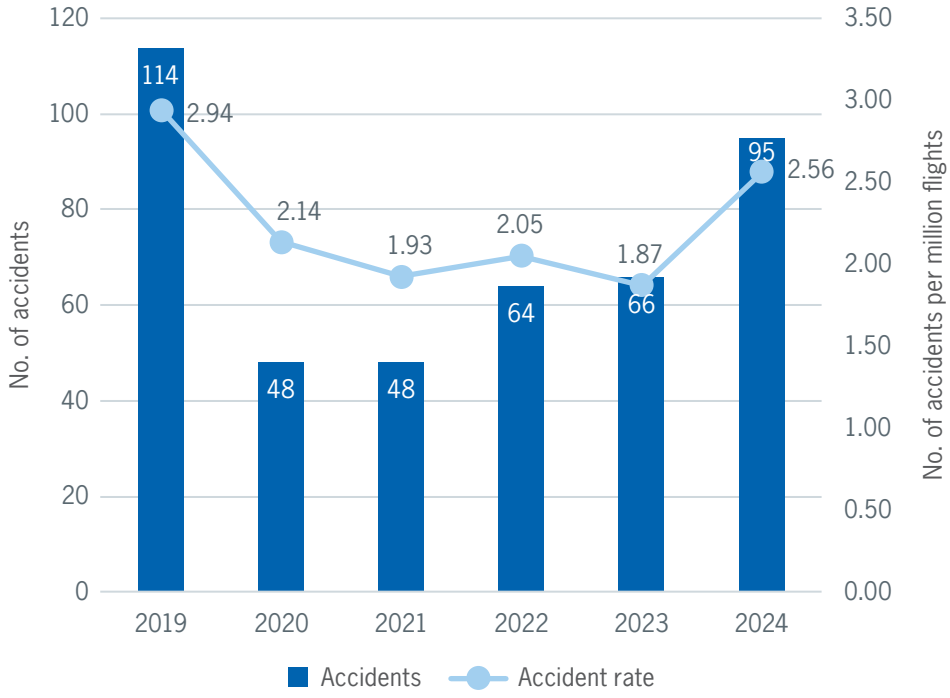


Chart 3. | Accident records: 2019–2024 scheduled commercial operations

In 2024, scheduled commercial air transport accidents resulted in 296 fatalities representing a significant increase from 72 in 2023, as well as an increase in the fatality rate of 65 fatalities per billion passengers from 17 per billion in 2023. The number of fatal accidents notably increased from one in 2023, to 10 in 2024. Table 1 and Figure 2 show the number of fatal accidents and associated fatalities by area of accreditation of ICAO Regional Office.

Table 1. | Number of fatal accidents by ICAO Region in 2024

ICAO Region	Number of fatal accidents	Number of fatalities
Asia and Pacific (APAC)	3	185
Eastern and Southern Africa (ESAF)	1	2
Europe and North Atlantic (EUR/NAT)	3	40
Middle East (MID)	1	1
North America, Central America and Caribbean (NACC)	1	6
South America (SAM)	1	62
Western and Central Africa (WACAF)	Nil	Nil

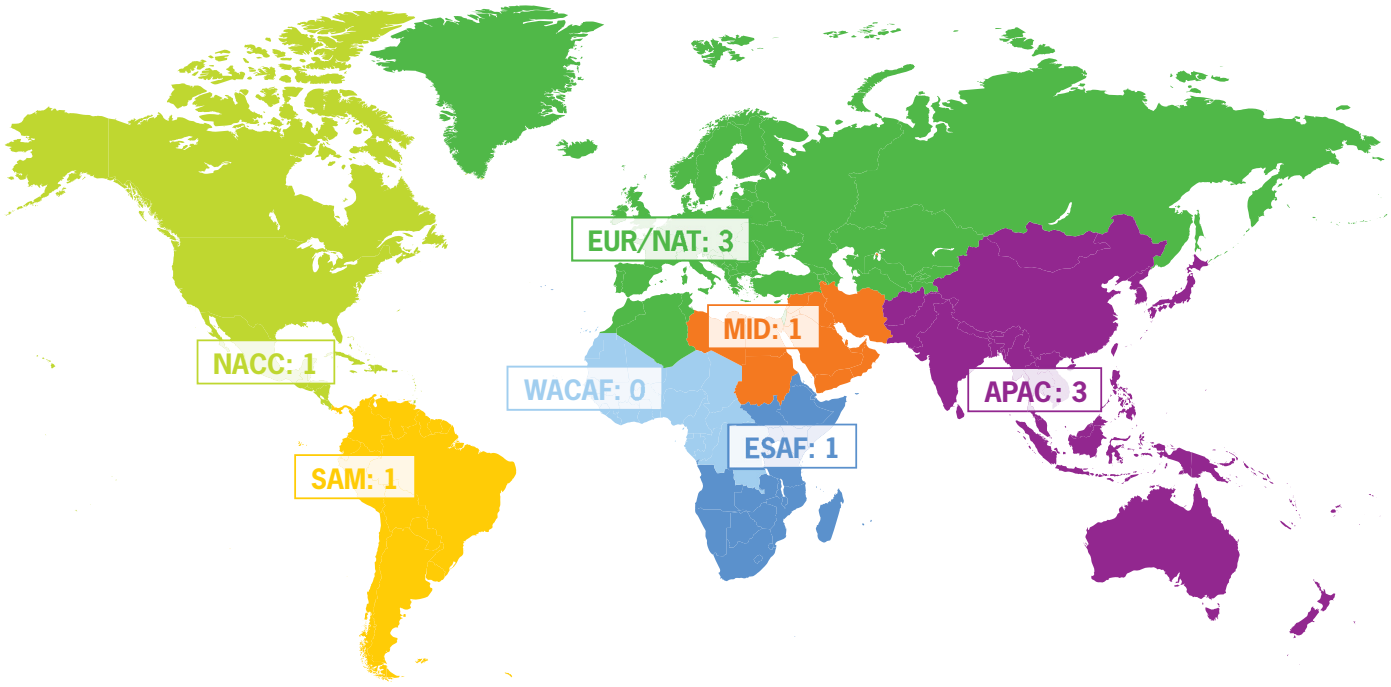


Figure 2. | Number of fatal accidents by ICAO Region in 2024

Charts 4 and 5 present data related to fatal accidents for scheduled commercial operations. Chart 6 provides a 10-year historical trend for scheduled commercial operations.

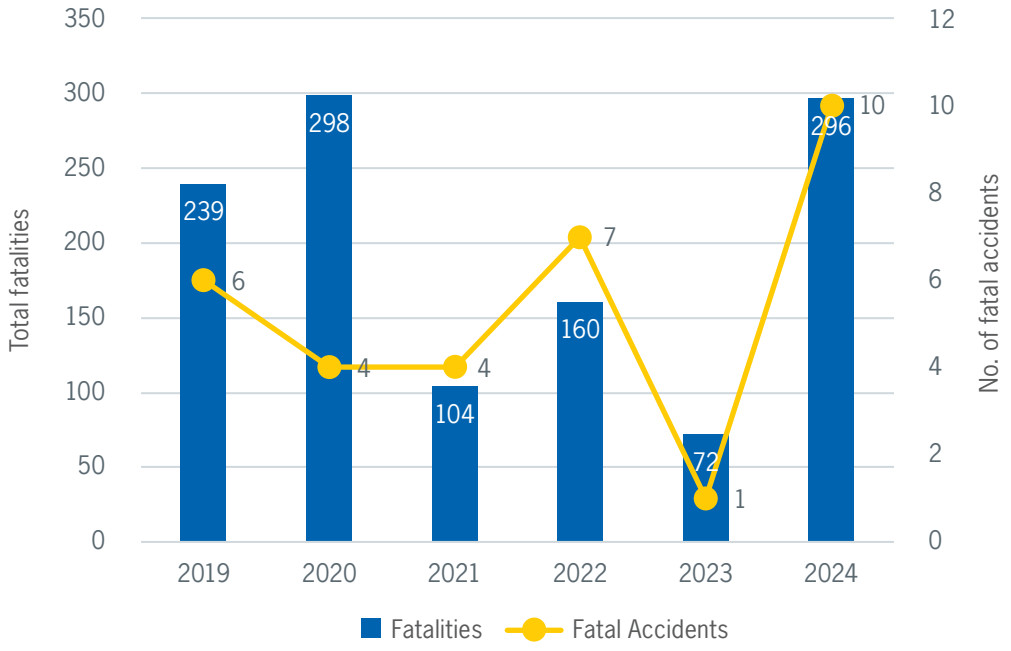


Chart 4. | Fatal accident records: 2019–2024 scheduled commercial operations

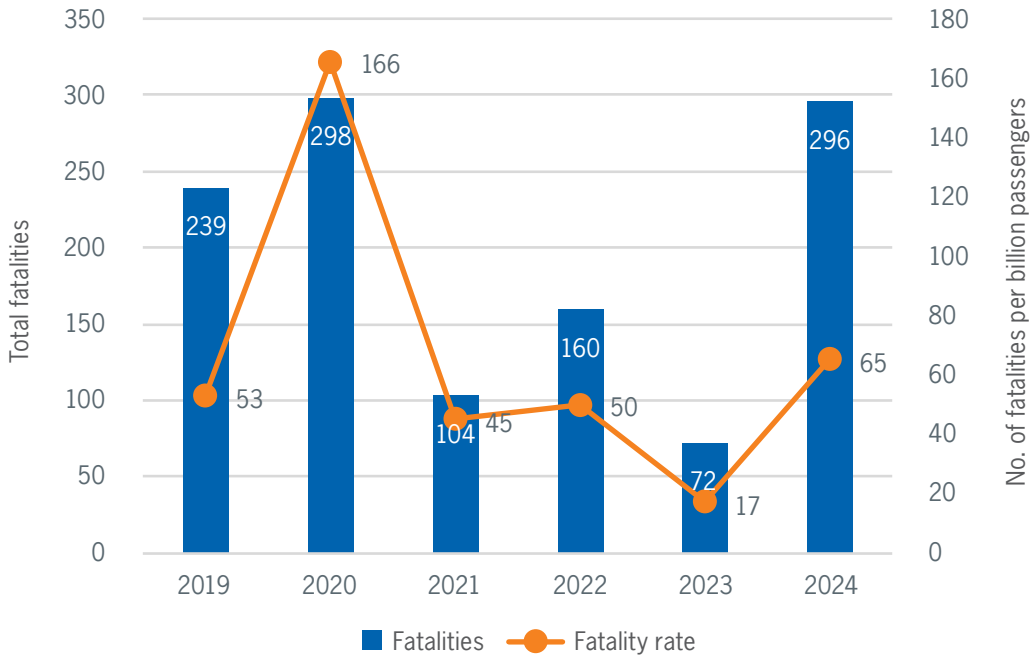


Chart 5. | Fatality records: 2019–2024 scheduled commercial operations

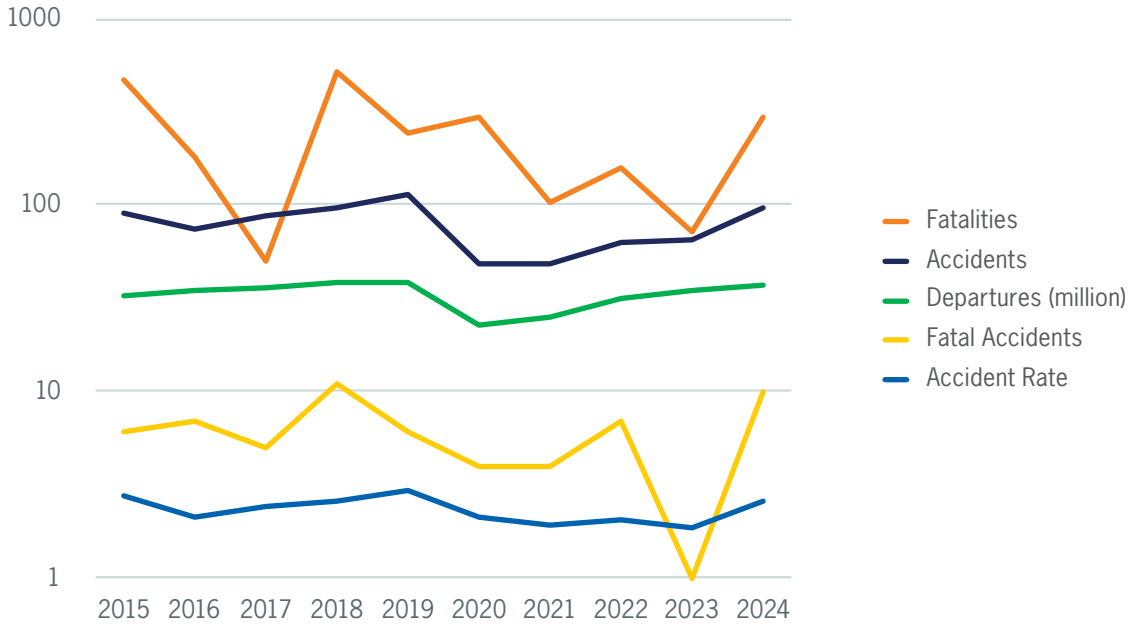


Chart 6. | Historical trends for scheduled commercial operations

In response to existing and emerging trends, ICAO is working in partnership with the international aviation community to achieve future safety improvements, with an emphasis on improving safety performance and reducing operational safety risk through standardization, implementation support and monitoring. The 2025 edition of the Safety Report – *State of Global Aviation Safety*, provides accident statistics and analyses with reference to the 2019 – 2024 period, as well as an update to some safety indicators in the ICAO Global Aviation Safety Plan (GASP). Results of analyses from the 2019 – 2024 safety reports are used as benchmarks for comparison. However, due to updates made during the intervening period, some minor differences might exist compared to the earlier editions.

In addition, the report presents some safety initiatives or success stories on enhancing aviation safety at the global and regional levels.

Eighty Years of Milestones on Improving Aviation Safety

In 1944, delegates from 54 nations invited by the United States Government attended an international civil aviation conference, held from 1 November to 7 December in Chicago, Illinois, to plan air routes and services and to discuss a new aviation convention. On 7 December 1944, the Convention on International Civil Aviation (Chicago Convention) was signed by 52 States. This landmark agreement laid the foundation for the Provisional International Civil Aviation Organization (PICAO) and on 4 April 1947 the permanent International Civil Aviation Organization (ICAO) was established.

This section records some milestones that mark the progress made in improving safety, in the past 80 years, including technological and regulatory breakthroughs impacting the aviation industry.

1944 Convention on International Civil Aviation, signed at Chicago on 7 December 1944.

1945 Pending ratification of the Convention by 26 States, the Provisional International Civil Aviation Organization (PICAO) was established. It functioned from 6 June 1945 until 4 April 1947.

1945 Commercial aviation took off using ex-military aircraft from World War II with unreliable piston engines and unpressurized cabins. There was no radio for communication and navigation was astral. At this time, it took 19 hours for a transatlantic flight.

1947 ICAO came into being on 4 April 1947, after the 26th ratification was received earlier that year. Later that year, ICAO became a specialized agency of the United Nations linked to the Economic and Social Council (ECOSOC).

1948 The first set of Standards and Recommended Practices relating to Personnel Licensing (Annex 1 to the Convention), Rules of the Air (Annex 2), Meteorological Codes (Annex 3), Aeronautical Charts (Annex 4), Dimensional Units for Air-Ground Communications (Annex 5), Operation of Aircraft (Annex 6) and Airworthiness of Aircraft (Annex 8) were adopted by the ICAO Council.

1949 The Standards and Recommended Practices relating to Aircraft Nationality and Registration Marks (Annex 7), Aeronautical Telecommunications (Annex 10) and the Facilitation of International Air Transport (Annex 9) were adopted by the ICAO Council.

1949 The instrument landing system (ILS) was included in the first edition of Annex 10. It was first used commercially in 1939, and in civil use of the equivalent of Category I landings since 1947.

1949 The need to limit pilots' flight and duty hours for the purpose of flight safety was recognized in the first edition of Annex 6. The Standards and Recommended Practices (SARPs) required the operator to be responsible for establishing flight time limits that ensured that "fatigue, either occurring in a flight or successive flights or accumulating over a period of time, did not endanger the safety of a flight".

1950 The Standards and Recommended Practices relating to Air Traffic Services (Annex 11) and Search and Rescue (Annex 12) were adopted by the ICAO Council.

1951 The Standards and Recommended Practices relating to Aircraft Accident and Incident Investigation (Annex 13) and Aerodromes (Annex 14) were adopted by the ICAO Council.

1951 ICAO adopted its phonetic alphabet for the letters and the numbers as a universal standard for communicating English letters over a phone or radio. The Organization completed its final version on 1 March 1956.

1953 The Standards and Recommended Practices relating to Aeronautical Information Services (Annex 15) for the promulgation of information essential to the safety, regularity and efficiency of air navigation were adopted by the ICAO Council.

1955 The first jet engine was built allowing aircraft to fly higher in bad weather. Voice transmission, air traffic control centers and more advanced navigation aids started.

1956 The final version of the ICAO alphabet (printed in Annex 10, Volume II, Chapter 5) was published and implemented by ICAO. It was adopted by many other international and national organizations, including the North Atlantic Treaty Organization (NATO), International Telecommunications Union (ITU) and the International Maritime Organization (IMO).

1958 The first commercial flight by a Boeing 707 jet airliner took place on Pan American World Airways flying from New York City to Paris. The flight time reduced to 9 hours.

1964 The first fully automatic landing using instrument landing system (ILS) occurred in March 1964 at Bedford Airport in the United Kingdom.

1965 The aircraft type designator database was developed.

1969 The turbo fan engine equipped jumbo jet Boeing 747 was introduced.

1969 Annex 14 recommended that the competent authorities take action to decrease the number of birds representing a hazard to aeroplanes, on or in the vicinity of aerodromes. Guidance material was also made available to provide effective measures for establishing whether birds, on or near an aerodrome, constitute a hazard to aircraft operations, with methods for discouraging their presence.

1972 The Standards and Recommended Practices relating to Environmental Protection (Annex 16) became applicable.

1974 The precision approach path indicator (PAPI) system was first devised. It is a visual aid which provides guidance information to help a pilot acquire and maintain the appropriate approach to a runway. The Standards and Recommended Practices for PAPI were adopted in Annex 14, Volume I in 1983 for world application. The PAPI system is now installed at many airports around the world, contributing to the safe operations of aircraft.

1975 The Standards and Recommended Practices relating to Security (Annex 17) became applicable.

1976 A feasibility study proves that it was possible and safe to reduce vertical separation between FL290 and 410 from 2 000 ft to 1 000 ft.

1976 The ICAO Council approved the Accident/Incident Data Reporting (ADREP) System that comprises the reporting requirements in Annex 13, a detailed standard taxonomy of hundreds of possible data elements for reporting on the circumstances of an accident or incident (the ADREP taxonomy), the reporting mechanism and the associated database to store the records collected.

1978 ICAO required the fitting of ground proximity warning systems to certain aeroplanes (provisions continued to be enhanced in subsequent amendments to Annex 6). The ground proximity warning system (GPWS) was introduced as a major mitigation for controlled flight into terrain (CFIT) occurrences.

1982 Aircraft equipped with "glass cockpit" were introduced. Combined with electronic cockpit displays, improved navigation performance and terrain avoidance systems (TAWS), CFIT accidents reduced significantly.

1983 ICAO established the Special Committee on Future Air Navigation Systems (FANS) with the task of studying, identifying and assessing new concepts and new technology, and making recommendations for the coordinated evolutionary development of air navigation for the next 25 years. The FANS concept, now called CNS/ATM systems, is a mix of satellite technology and the best of the line-of-sight systems designed to achieve overall optimum performance.

1984 Introduction in Annex 3 of new provisions related to the establishment of the new world area forecast system (WAFS), a worldwide ICAO system for the provision of aeronautical meteorological en-route forecasts in uniform standardized formats.

1984 The Standards and Recommended Practices relating to the Safe Transport of Dangerous Goods by Air (Annex 18) became applicable.

1984 The *Accident Prevention Manual* (Doc 9422) was published.

1985 ICAO first published Circular 195 regarding Airborne Collision Avoidance Systems (ACAS) and initiated a worldwide operational evaluation in the late 1980s. The relevant provisions were introduced in Annex 10, Volume IV, accordingly.

1987 Introduction in Annex 3 provisions for the preparation and dissemination of volcanic ash warnings, the foundation of the international airways volcano watch (IAVW).

1987 Aircraft using fly-by-wire (FBW) technology with flight envelope protection functions were introduced. This helps to protect against loss of control in-flight (LOC-I) accidents.

1993 Global Positioning System (GPS) was declared fully operational.

1994 The United States offered GPS to support the needs of international civil aviation; the ICAO Council accepted the offer. GPS use in aviation as the cornerstone of the ICAO Global Navigation Satellite System (GNSS) lead to several safety and efficiency related enhancements to air navigation.

1994 Introduction of carriage requirements for emergency locator transmitters (ELTs) to replace provisions regarding survival radio equipment and emergency location beacon in Annex 6.

1995 First operational use of controller-pilot data link communications (CPDLC) automatic dependent surveillance — contract (ADS-C) by Airways New Zealand and Qantas airlines.

1996 The Russian Federation offered the global navigation satellite system (GLONASS) to support the needs of international civil aviation; the ICAO Council accepted the offer.

1996 Requirements concerning pressure-altitude reporting transponders and carriage of airborne collision avoidance systems (ACAS) introduced to Annex 6. Subsequent widespread use of cooperative surveillance resulted in increased range for surveilled airspace, robust correlation of target and label, surveillance data processing systems (SDPS) and flight data processing systems (FDPS) "talking to each other" with consequent enabling of safety nets such as STCA, RAM, CLAM, MSAW.

1997 ICAO introduced the first version of the Global Aviation Safety Plan (GASP) that sets out the strategic planning and implementation policy to support prioritization and continuous improvement of aviation safety.

1997 First operational use of reduced vertical separation minimum between FL290 and 410 in the North Atlantic (NAT) Region.

1998 In recognition of special coordinated procedures required for safe winter operations, new provisions related to the de-icing/anti-icing of aircraft on the ground were introduced to Annex 6 with the supporting guidance material published in the first edition of the *Manual of Aircraft Ground De-Icing/Anti-Icing Operations* (Doc 9640).

1999 ICAO officially established the Universal Safety Oversight Audit Programme (USOAP). The USOAP included a systematic reporting and monitoring system on the implementation of safety-related Standards and Recommended Practices (SARPs) and continues performing audits to this day, serving as an essential component in the global aviation safety framework.

2001 International Standards and Recommended Practices (SARPs) on certification of aerodromes were introduced into ICAO Annex 14, Volume I. Over the years, aerodrome certification has proven to be an effective mechanism to ensure that aerodrome facilities and operations are in compliance with the relevant SARPs for safety, regularity and efficiency of aircraft operations at aerodromes.

2001 The initial Standards and Recommended Practices on safety management were introduced in Annexes 6, 11 and 14.

2001 ICAO adopted SARPs supporting Global Navigation Satellite System (GNSS) operations based on augmenting core satellite constellation signals to meet safety and reliability requirements. The GNSS SARPs and avionics standards were developed to meet recognized safety targets. Availability of GNSS-based vertical guidance, in addition to enabling efficiency gains via approaches with the lowest possible minima, contributes significantly to the reduction of controlled flight into terrain (CFIT). GNSS supports positioning, navigation and timing (PNT) applications and is the foundation of performance-based navigation (PBN), automatic dependent surveillance — broadcast (ADS-B) and automatic dependent surveillance — contract (ADS-C).

2001 ICAO introduced Standards and Recommended Practices and procedures for a wide range of subjects in relation to the implementation of ATS data link services (CPDLC, ADS-C, etc.)

2002 Amendments to Annex 14, Volume I were developed to include specifications on airport design to accommodate future aeroplanes larger than the Boeing 747-400, such as the Airbus A380.

2003 The progress report presented at the Eleventh Air Navigation Conference (AN-Conf/11) on the ICAO programme for the prevention of controlled flight into/towards terrain (CFIT). A major element of the programme was the approach and landing accident reduction (ALAR) effort based on the ALAR tool kit produced by the Flight Safety Foundation.

2003 *Human Factors Guidelines for Aircraft Maintenance Manual* (Doc 9824) was published. In November the same year, the ICAO provisions on the operation of the airborne collision avoidance system (ACAS II) became applicable.

2004 The framework for a comprehensive systems approach to safety, safety certification and regulation, and the concept of required total system performance (RTSP) was approved to ensure that future air traffic management (ATM) systems meet the expectations of the aviation community.

2004 The ADREP 2000 taxonomy was adopted by European Co-ordination Centre for Aviation Incident Reporting System (ECCAIRS) and ICAO started to use the ECCAIRS to operate its ADREP system, which facilitated the reporting and sharing of accident/incident information.

2006 In order to support the implementation of the harmonized safety management requirements in Annexes 6, 11 and 14, the first edition of the *Safety Management Manual* (Doc 9859) was published.

2007 The establishment of the Unmanned Aircraft Systems Study Group (UASSG) was approved as the subject of unmanned aircraft systems (UAS) was increasingly on the minds of the global aviation community. The UASSG would assist the Secretariat in coordinating the development of ICAO SARPs, procedures and guidance material for civil unmanned aircraft systems in order to support a safe, secure and efficient integration of UAS into non-segregated airspace and aerodromes.

2008 To reduce the number and complexity of transition areas between adjacent airspace using different units of measurement, new tables of cruising levels were developed, standardizing the metric flight level systems in use. These were incorporated in Annex 2. In addition to increased operational safety, the harmonization of level systems will greatly benefit global implementation of revised vertical separation minimum (RVSM).

2008 The *Technical Instructions for the Safe Transport of Dangerous Goods by Air* (Doc 9284) began to prohibit the use of aluminium cylinders for ethyl chloride and for certain mixtures of dangerous goods and provide guidance on assigning proper shipping names for mixtures or solutions.

2010 ICAO provisions were amended for underwater locator devices (ULDs) to have a 90-day operational duration instead of 30 days. ULDs, commonly known as “pingers”, are fitted to the flight recorders to locate the wreckage and recover the flight recorders when an aircraft crashes into water and submerges.

2010 The ICAO Council approved the establishment of a new fund dedicated to improving aviation safety. The Safety Fund (SAFE) allots resources to assistance projects using a performance-based approach, while limiting administrative costs and ensuring that voluntary contributions are used in a responsible, consistent, transparent and timely manner.

2011 The ICAO global Runway Safety Programme was launched. Since 2011 to 2018 the number of runway safety related accidents has declined by 43 per cent.

2012 ICAO introduced the Aviation System Block Upgrades (ASBU) framework to outline the strategy for modernizing the global air navigation system. The framework includes a set of operational improvements that harmonize avionic capabilities and the required air traffic management (ATM) ground infrastructure, as well as automation. These efforts would improve the efficiencies of the global system, ensuring global interoperability.

2013 The Standards and Recommended Practices relating to Safety Management (Annex 19) were adopted by the ICAO Council, marking the addition of a new Annex to the Chicago Convention in more than 30 years. The new Annex consolidated provisions from existing Annexes regarding safety management to support their harmonized evolution.

2014 Introduction in Annex 3, as a recommended practice, of the use of digital format for volcanic ash and tropical cyclone advisories, AIRMET information and the provision of METAR, SECI, TAF and SIGMET information paving the way for the future digital exchange of MET information.

2014 ICAO began to develop a comprehensive flight tracking system called Global Aeronautical Distress and Safety System (GADSS). The first stage was the adoption of Standards in Annex 6, Part I, which established the responsibility of the operator to track their flights throughout their area of operations, and the requirement for 15 minute reporting to be established in oceanic areas.

2014 ICAO launched the Online interactive application Airworthiness Information Network, a repository for States to directly update their information online to provide users with faster access to up-to-date information. This helps States establish contact with other States responsible for the continuing airworthiness of aircraft and equipment and facilitate the cross border transferability of aircraft.

2015 Introduction of the first edition of the Procedures for Air Navigation Services — Aerodromes (PANS-Aerodromes) (Doc 9981).

2015 ICAO published the *Manual on the Approval and Use of Child Restraint Systems* (Doc 10049) to encourage and harmonize the use of child restraint systems (CRS) and to ensure the safety of infants and young children who travel by air.

2016 Arresting system and Autonomous runway incursion warning system (ARIWS) were introduced to airports for the purpose of further improving safety and preventing runway incursions and runway excursions.

2017 ICAO launched the cross-border transferability (XBT) initiative with the aim of improving, standardizing and enhancing the efficiency of the cross-border transfers of aircraft and at the same time, ensuring that aviation keeps and improves its remarkable safety record.

2017 The first edition of the *Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones* (Doc 10084) was published to address issues related to the safety and security of civil aircraft in airspace flying over or near conflict zones.

2018 The first edition of the Procedures for Air Navigation Services – Aeronautical Information Management (PANS-AIM, Doc 10066) was published to complement the SARPs contained in Annex 4 and 15.

2018 The Global Runway Safety Action Plan (GRSAP) was developed in collaboration with the ICAO Runway Safety Programme Partners and provides recommended actions for all runway safety stakeholders, with the aim of reducing the global rate of runway excursions and runway incursions.

2019 To support States and users in addressing aviation safety risks arising from solar events, ICAO issued its new *Manual on Space Weather Information in Support of International Air Navigation* (Doc 10100). At the same time, the new space weather information service to support international air navigation commenced operations on 7 November 2019 to provide space weather advisories directly to aircraft operators and flight crew members.

2019 ICAO outlined its vision in its 2020-2022 edition of the GASP to achieve and maintain the aspirational safety goal of zero fatalities in commercial aviation operations by 2030 and beyond.

2019 The trial service of the space-based automatic dependent surveillance-broadcast (SB ADS-B) began. This service enhances air traffic controllers' abilities to provide operators with more planning and tactical options in oceanic airspace. This will include greater flexibility for severe weather avoidance, requests and approval of new oceanic routes, optimized speed, and requests for, and approval of, flight level changes.

2020 ICAO introduced implementation packages (iPacks). iPacks were designed to address States' capacity challenges by providing the tools and expert support that is needed for the effective implementation of ICAO Standards and Recommended Practices (SARPs) to ensure aviation safety, efficiency, security and sustainability.

2021 The SARPs driving important progress on the international safety and interoperability of remotely piloted aircraft systems (RPAS) became effective in July. The new provisions in Annex 8 cover certification requirements for remotely piloted aeroplanes and helicopters, in addition to the remote pilot stations (RPS) they are operated from.

2021 After more than a decade of development, review and preparation, the ICAO Global Reporting Format (GRF) went into effect for assessing and reporting runway surface conditions in order to mitigate the risk of runway excursions, the most common form of runway safety-related incident, through the harmonized observation and reporting of runway surface conditions.

2021 The first edition of ICAO's Human Performance Manual for Regulators (Doc 10151) was published with one primary goal in mind: to make it easier for people in the aviation system to do the right thing and to, therefore, avoid negative safety consequences.

2021 ICAO convened its first-ever international Symposium on Assistance to Aircraft Accident Victims and their Families, providing an important platform to enhance global cooperation towards their care and treatment. It also provided an overview of the regulatory framework related to Assistance to Aircraft Accident Victims and their Families, consistent with provisions in Annexes 9 and 13.

2022 ICAO started developing principles, practices and technical recommendations for developing and deploying interoperable trust frameworks that enable resilient, trusted and secure ground-ground, air-ground, and air-air exchange of digital information, and among both traditional and newly emerging aviation system stakeholders.

2023 ICAO's Universal Safety Oversight Audit Programme (USOAP) celebrated USOAP-1000, a milestone that marks the significant aviation safety improvements Member States had achieved in cooperation and assistance with and through ICAO.

2023 The introduction of a dual-frequency, multi-constellation (DFMC) global navigation satellite system (GNSS) reflecting the ongoing evolution of the global GNSS infrastructure and facilitate its fruition by international civil aviation. DFMC GNSS offers an opportunity to further enhance GNSS robustness, navigation performance and operational benefits.

2023 ICAO launched a new tool that enables States to verify electronic personnel licences (EPL), which recently became a recognized alternative to hard copies. Among the requirements, however, is that the EPLs, with changes to the technical standards that came into force on 3 November 2022, must be verifiable online and offline, without imposing an undue burden on another State.

2024 The Standards and Recommended Practices relating to the International Operations of Remotely Piloted Aircraft Systems (Annex 6, Part IV) were adopted by the ICAO Council. The new Part introduces provisions to enhance safety and accelerate the transformation of the global air navigation system, including the integration of Remotely Piloted Aircraft Systems (RPAS).

Safety Trends and Accident Statistics and Analysis – Scheduled Commercial Air Transport

The safety performance of the GASP is measured by a series of metrics as defined by the GASP indicators set in its 2023-2025 edition. Goal 1 of the GASP is to achieve a continuous reduction of operational safety risks. This reduction is achieved by a series of actions targeting the global high-risk categories of occurrences (G-HRCs). The target associated with this goal (Target 1.1) calls for the decrease of the global accident rate for commercial scheduled operations. Several indicators are linked to this target including number of accidents, fatal accidents and fatalities by State, region or globally, as well as accident rates (i.e. number of occurrences per million departures). GASP indicators also include the percentage of occurrences related to the G-HRCs.

Overall Safety Performance Indicator – Global Accident Rate

The global accident rate provides an overall indicator of safety performance for air transport operation. The accident rate is based on scheduled commercial operations involving fixed-wing aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg. Aircraft accidents are reviewed and validated by the ICAO Occurrence Validation Study Group (OVSG) using definitions provided in Annex 13 – *Aircraft Accident and Incident Investigation*.

Data on departures is collated by ICAO's Air Transport Bureau and comprises scheduled commercial operations that involve the transportation of passengers, cargo and mail for remuneration. Estimates are made where data has not been provided by States, and as new data is provided to ICAO, it will be incorporated into the database. It is worth noting that this may cause slight changes to the calculated rates from year to year.

Chart 7 shows the global accident rate trend (per million departures) over the previous six years, with 2024 having an accident rate of 2.56 accidents per million departures, an increase of 36.8 per cent from the previous year, the highest in the past five years, but a decrease of 12.8 per cent from the pre-pandemic year of 2019.

Accidents involving scheduled commercial operations of aircraft with a certified MTOW over 5 700 kg in 2024 are listed in Appendix 2.

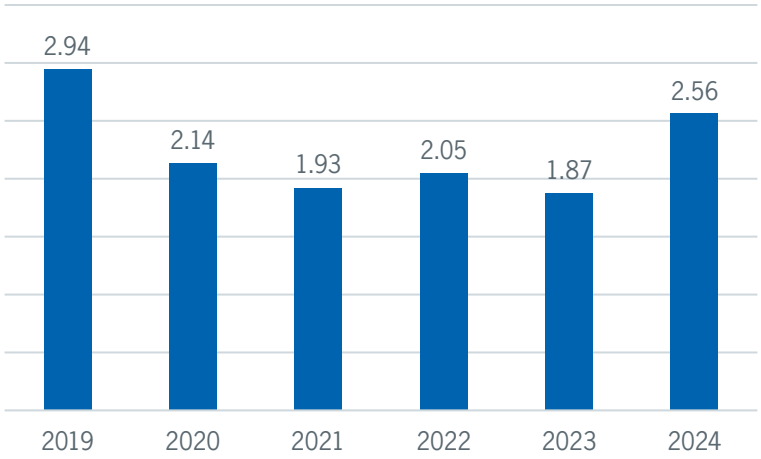


Chart 7. | Global accident rates (accidents per million departures)

Accident and Fatality Trend

The number of worldwide accidents and fatal accidents on scheduled commercial flights during the 2019–2024 period is shown in Chart 8. The year 2024 recorded the highest number of fatal accidents in the past six years.

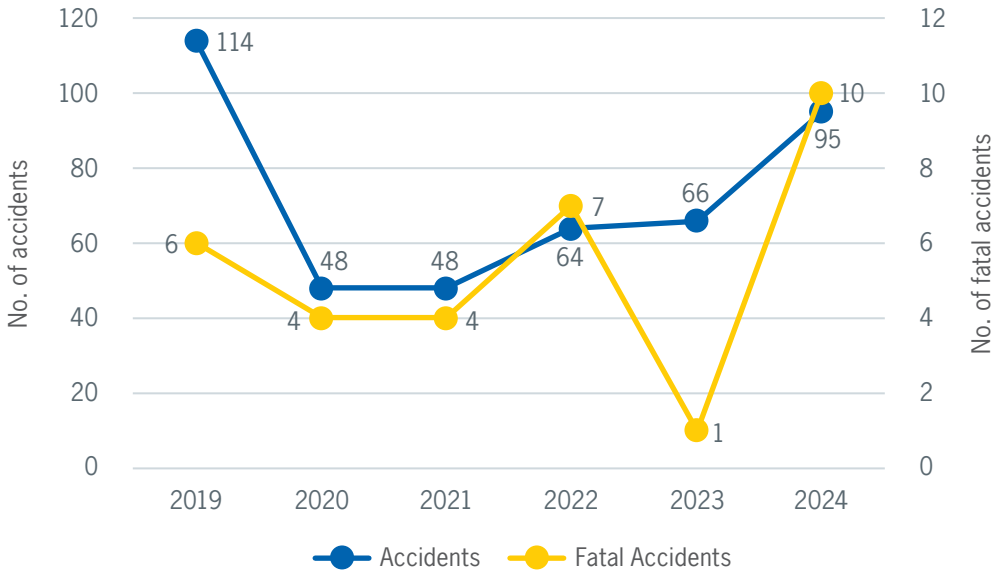


Chart 8. | Accident trend (2019–2024)

Between the years 2019 to 2024, in terms of the number of accidents, the highest count recorded was in 2019, with 114 accidents. The number of accidents significantly decreased in both 2020 and 2021; however, it is worth noting that during this period there was a significant decrease in both traffic of passengers and flights due to measures placed by governments aimed at minimizing the spread of COVID-19. Starting in 2022, as the last remaining pandemic restrictions were lifted, air transport began its way to recovery and the number of accidents began increasing. In 2024, the traffic of passengers and flights continued to increase with the total number of passengers surpassing the level in 2019, while the total flights were only 4.4 per cent lower than the level in 2019.

Meanwhile, compared to 2023, both the number of accidents and the number of fatal accidents increased. Chart 9 shows that the number of fatalities associated with the afore-mentioned fatal accidents significantly increased from 72 in 2023 to 296 in 2024.

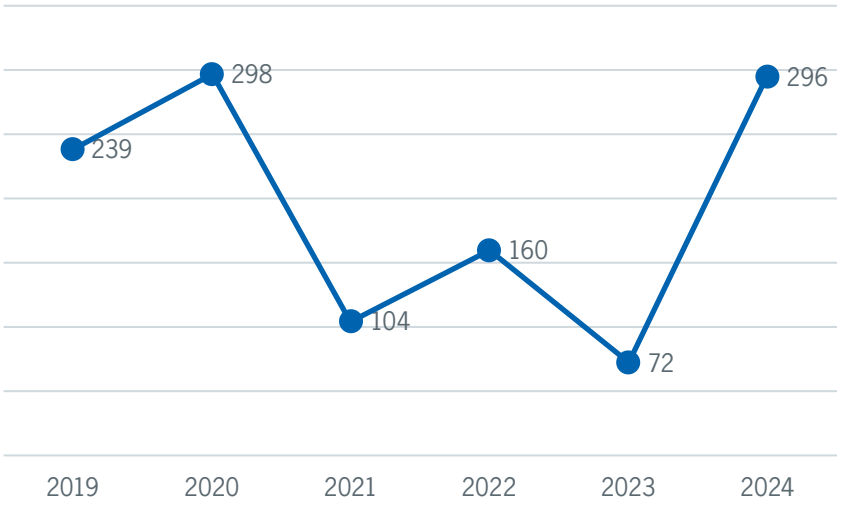


Chart 9. | Fatalities trend (2019–2024)

Accidents Overview by Occurrence Category

ICAO Member States are required to report accidents and serious incidents in accordance with Annex 13 through the ICAO Accident/Incident Data Reporting (ADREP) system. The OVSG validates and categorizes the accidents for commercial operations, including scheduled and nonscheduled, involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg using the ADREP taxonomy and the Commercial Aviation Safety Team (CAST)/ICAO Common Taxonomy Team (CICTT) taxonomy for occurrence categories. Detailed information about the CICTT occurrence categories can be found in Appendix 3.

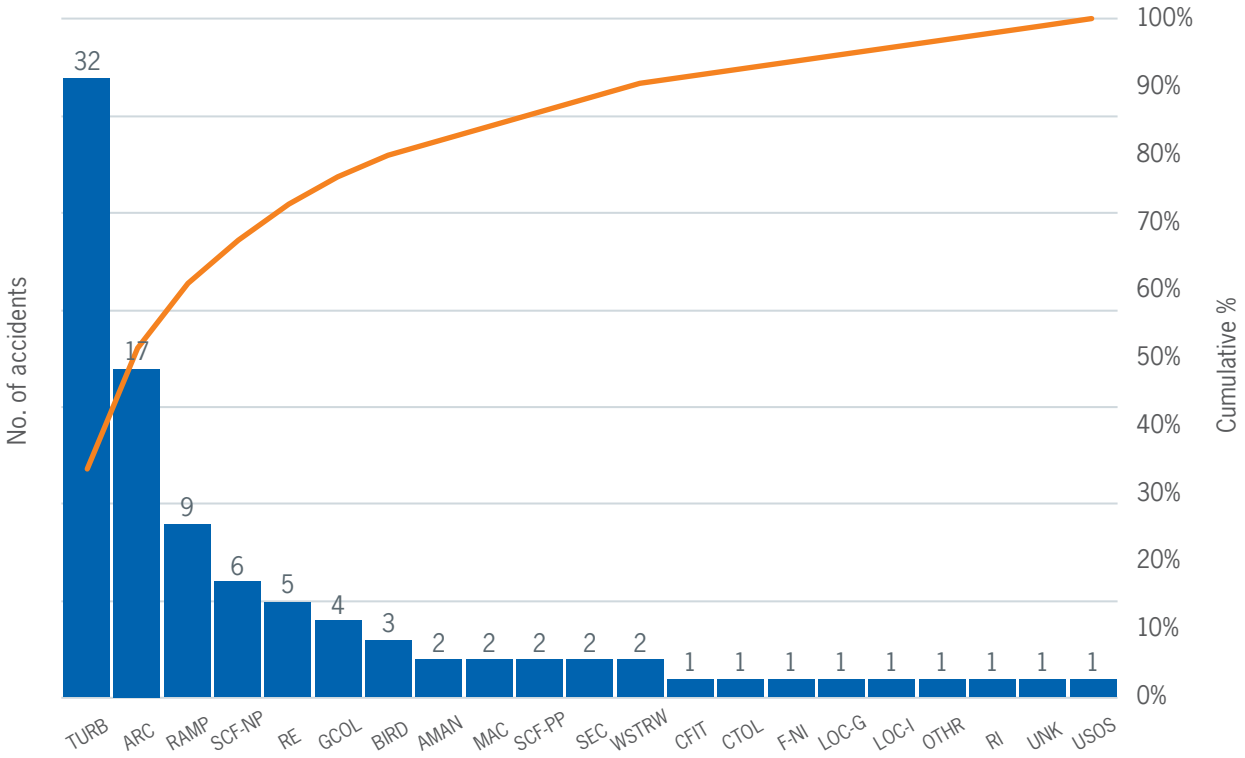


Chart 10. | Total accidents by occurrence category in 2024

Chart 10 provides an overview of the accidents in 2024 for scheduled commercial operations by CICTT occurrence categories. Chart 10 indicates that the turbulence encounter (TURB) occurrence category accounted for the most accidents followed by abnormal runway contact (ARC) and ground handling (RAMP) related accidents. The cumulative line indicates the total percentage of accidents as the occurrence categories are added from left to right, i.e. the total number of accidents related to TURB and ARC represented more than half of the total accidents in 2024.

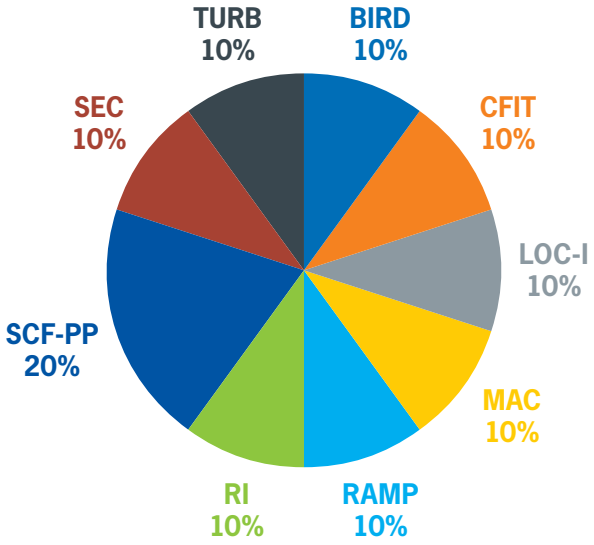


Chart 11. | Total fatal accidents by occurrence category in 2024

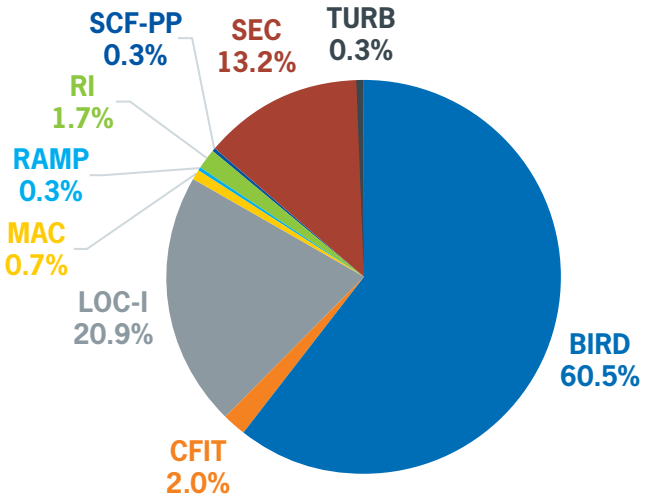


Chart 12. | Total fatalities by occurrence category in 2024

Charts 11 and 12 present the total fatal accidents distribution by occurrence category and the associated fatalities distribution by occurrence category in 2024, respectively. Over 80 per cent fatalities resulted from accidents related to loss of control-inflight (LOC-I) and bird strikes (BIRD) in 2024. The other occurrence categories involving fatal accident included security related (SEC), controlled flight into or towards terrain (CFIT), runway incursion (RI), airprox/TCAS alert/loss of separation/near midair collisions/midair collisions (MAC), ground handling (RAMP), system/component failure or malfunction (powerplant) (SCF-PP) and turbulence encounter (TURB).

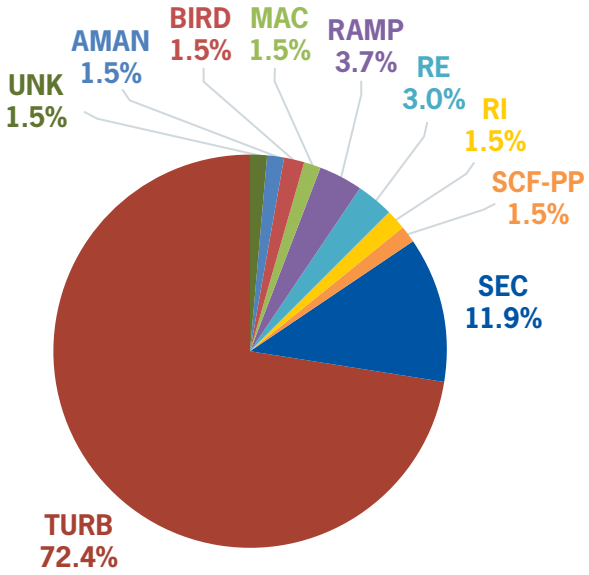


Chart 13. | Total serious injuries by occurrence category in 2024

Chart 13 presents the total serious injuries distribution by occurrence category in 2024. Around 75 per cent of total serious injuries resulted from turbulence related accidents. The other occurrence categories involved that caused serious injuries to passengers or crew members included SEC, RAMP, runway excursion (RE), RI, MAC, BIRD, abrupt maneuver (AMAN) and unknown or undetermined (UNK).

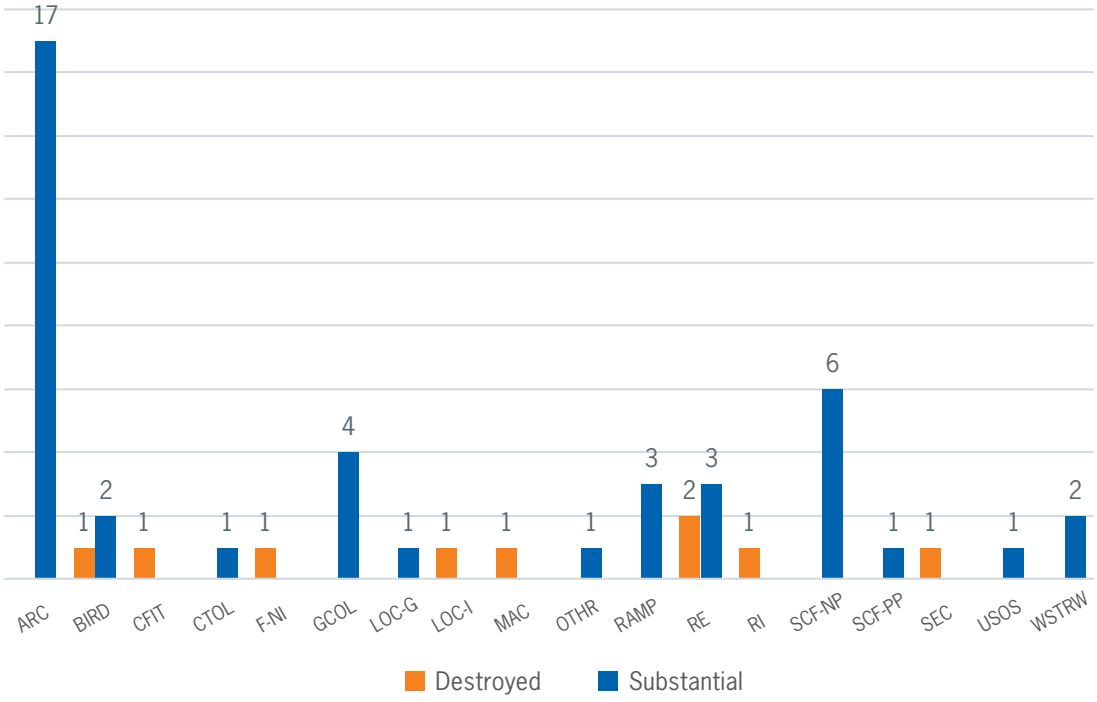


Chart 14. | Aircraft damage by occurrence category in 2024

Chart 14 shows aircraft damage by occurrence category in 2024. Nine airplanes were destroyed, resulting from accidents involving BIRD, CFIT, fire/smoke (non-impact) (F-NI), LOC-I, MAC, RE, RI and SEC. Seventeen airplanes sustained substantial damage from accidents related to ARC, accounting for the highest number and almost 3 times the next highest category SCF-NP. Other accidents causing substantial damage to aircraft involved the following occurrence categories: BIRD; collision with obstacle(s) during takeoff and landing (CTOL); ground collision (GCOL); loss of control on ground (LOC-G); other (OTHR); ground handling (RAMP); runway excursion (RE); system/component failure or malfunction (non powerplant) (SCF-NP); SCF-PP; undershoot/overshoot (USOS) and wind shear or thunderstorm (WSTRW).

Note 1.— The statistics for this section are based on the primary occurrence category of the accident if a series of categories were identified for this accident by the OVSG.

Note 2.— For the fatal accident that caused 132 fatalities in 2022 and was categorized as UNK in the 2023 edition safety report, ICAO has not received updated investigation information to support the recategorization by the OVSG.

Note 3.— For the fatal accident that caused 20 fatalities in 2018 and was categorized as UNK in the 2019 edition safety report, the occurrence category was updated to CFIT by the OVSG based on the investigation information available in the Final Report.

Global High-risk Categories of Occurrence

In the GASP, ICAO identifies a series of global high-risk categories of occurrence (G-HRCs) that should be addressed to mitigate the risk of fatalities.

Based on actual fatalities, high fatality risk per accident or the number of accidents and incidents, as well as results from the analysis of safety data collected from proactive and reactive sources of information from ICAO and other non-governmental organizations, ICAO has identified five G-HRCs as global safety priorities in the 2023-2025 edition of the GASP:

- controlled flight into terrain (CFIT);
- loss of control in-flight (LOC-I);
- mid-air collision (MAC);
- runway excursion (RE); and
- runway incursion (RI).

Chart 15 below shows that in 2024, the five G-HRCs for scheduled commercial air transport operations represented 25 per cent of fatalities, 40 per cent of fatal accidents, and 11 per cent of the total number of accidents.

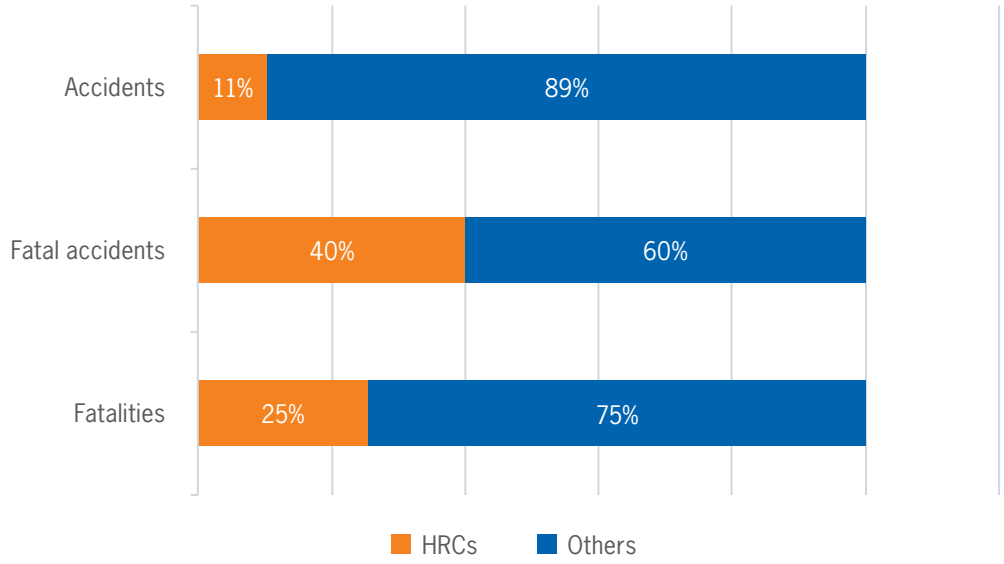


Chart 15. | G-HRCs accident distribution in 2024

A breakdown of the five G-HRCs and the respective distribution of accidents, fatal accidents and fatalities which occurred in 2024 are listed below and illustrated in Chart 16.

- 1 accident related to CFIT caused fatal injuries, accounting for 1 per cent of total accidents, 10 per cent of total fatal accidents and 2 per cent of total fatalities.
- 1 accident related to LOC-I resulted in fatal injuries, accounting for 1 per cent of total accidents, 10 per cent of total fatal accidents and 21 per cent of total fatalities.
- 2 accidents were related to MAC, one of which resulted in fatal injuries, accounting for 2 per cent of total accidents, 10 per cent of total fatal accidents and 1 per cent of total fatalities.
- 1 accident related to RI resulted in fatal injuries, accounting for 1 per cent of total accidents, 10 per cent of total fatal accidents and 2 per cent of total fatalities.
- There were 5 accidents related to RE resulting in substantial damage to aircraft or aircraft destroyed, accounting for 5 per cent of total accidents. No fatal injuries resulted from RE related accidents for scheduled commercial operations involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg in 2024 noting that the statistics in this report are based on the primary occurrence category if there are multiple categories assigned to one accident.

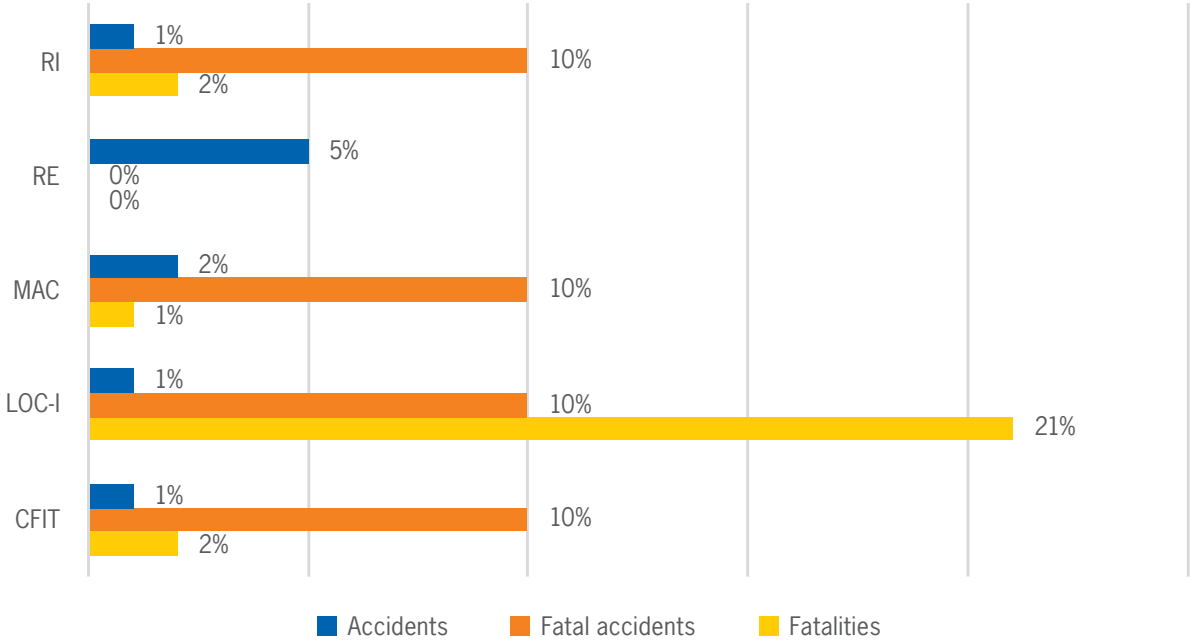


Chart 16. | G-HRC accident overview for 2024

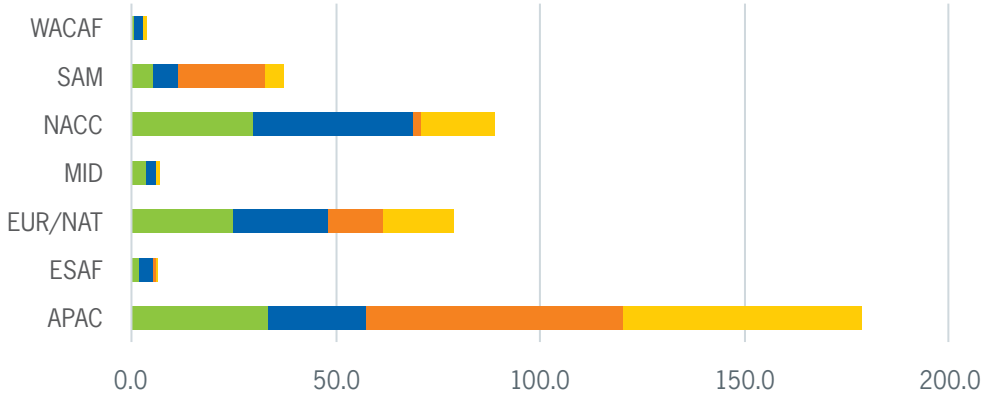
Regional Accident Statistics

To further analyze the state of aviation safety, the accident data for scheduled commercial air transport operations is categorized according to ICAO Region based on the contracting States accredited to each ICAO Regional Office, by State of Occurrence. Table 2 and Chart 17 provide details on the state of aviation safety in different regions for 2024 in the context of global outcomes. The States included in each ICAO Region used in this report can be found in Appendix 1.

Table 2. | Departures, accidents and fatalities by ICAO Region based on State of Occurrence in 2024

ICAO Region	Estimated departures (million)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities	Serious injuries
APAC	12.37	23	1.86	3	185	78
ESAF	0.78	3	3.85	1	2	1
EUR/NAT	9.23	22	2.38	3	40	23
MID	1.40	2	1.43	1	1	1
NACC	11.10	37	3.33	1	6	24
SAM	1.95	6	3.08	1	62	6
WACAF	0.26	2	7.62	0	0	1
World	**37.09**	**95**	**2.56**	**10**	**296**	**134**

It is worth noting that these statistics are based on ADREP data reported by the State of Occurrence in 2024. Partly due to the small number of departures, some regions experience a large fluctuation in the accident rate from year to year. For this reason, these numbers should be considered in relation to the total number of accidents to gain an overall perspective. More information about the regional safety trends can be found in the regional safety reports of each ICAO Region.



	APAC	ESAF	EUR/NAT	MID	NACC	SAM	WACAF
Traffic (%)	33.4	2.1	24.9	3.8	29.9	5.3	0.7
Accidents (%)	24.2	3.2	23.2	2.1	38.9	6.3	2.1
Fatalities (%)	62.5	0.7	13.5	0.3	2.0	20.9	0.0
Serious injuries (%)	58.2	0.7	17.2	0.7	17.9	4.5	0.7

Chart 17. | Share of traffic, accidents and fatalities by ICAO Region based on State of Occurrence in 2024

Accidents by ICAO Region

Chart 18 shows the percentage of accidents and related fatalities for each ICAO Region based on the State of Occurrence for scheduled commercial operations in 2024.

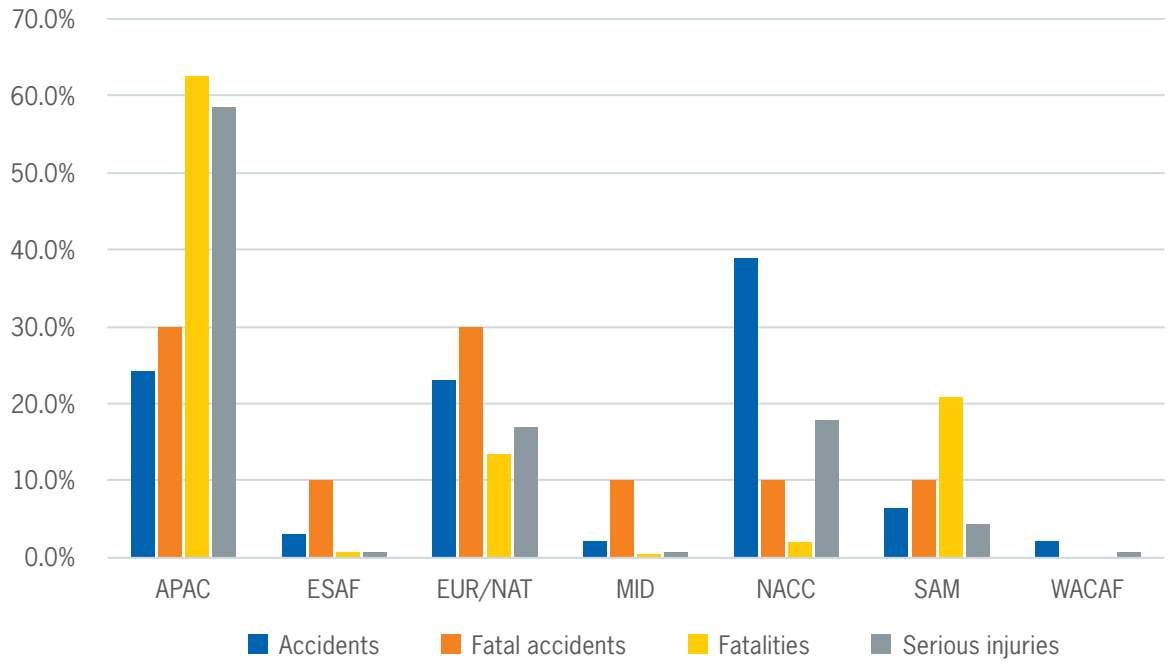


Chart 18. | Accident overview by ICAO Region in 2024

In 2024, the APAC, ESAF, EUR/NAT, MID, NACC and SAM Regions experienced a total of 10 fatal accidents of scheduled commercial operations involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg that resulted in 296 fatalities. All ICAO Regions experienced accidents that caused serious injuries to passenger or crew members.

Global Initiatives or Success Stories on Enhancing Aviation Safety

In addition to the development of SARPs and guidance materials, ICAO develops various programmes, initiatives or implementation tools to address the specific safety issues or implementation challenges in collaboration and coordination with its regional offices as well as other aviation stakeholders for the continuous improvement of aviation safety.

Global Navigation Satellite System Radio Frequency Interference (GNSS RFI)

The global navigation satellite system (GNSS) provides positioning, navigation and timing information, and is the backbone of modern aviation. Until recently, most pilots and industry professionals may have been unfamiliar with GNSS spoofing, but due to a rise in incidents, spoofing has become a major concern in aviation. GNSS is not only crucial in aviation but to other industries as well, including maritime, transport and agriculture.

GNSS vulnerability lies in its low transmission power. The GNSS signal from satellites is weak at the receiver antenna, making it susceptible to interference. Services provided by conventional aids can also be disrupted by interference, however, GNSS typically serves more aircraft simultaneously and the interference may affect wider geographic areas. Furthermore, GNSS civil signals and data messages are unencrypted, unauthenticated and lack security protocols leaving GNSS data vulnerable.

There are two forms of GNSS radio frequency interference (RFI): jamming and spoofing. Jamming refers to intentional radio frequency interference that blocks GNSS receivers from locking onto satellite signals, effectively rendering the system unusable or degraded for users in the affected area. Spoofing, on the other hand, involves broadcasting GNSS-like signals that deceive avionics into calculating incorrect positions and providing false guidance.

GNSS RFI continues to persist in several regions around the world, posing a significant and ongoing risk to civil aviation. While some instances of interference may be associated with conflict zones, many occurrences are unrelated to such areas, further complicating the challenge of addressing and mitigating their impacts.

Recognizing GNSS vulnerabilities

ICAO has been working to develop recommendations and guidance on GNSS RFI since 2003. At its 41st Session, the ICAO Assembly adopted Resolution 41-8/C, *Ensuring the resilience of ICAO CNS/ATM systems and services*, outlining a comprehensive policy to strengthen the resiliency of ICAO CNS/ATM systems and services, with a particular focus on GNSS. Furthermore, Recommendation 2.2/2, *Addressing global navigation satellite system interference and contingency planning* was approved by the Fourteenth Air Navigation Conference (AN-Conf/14), held in Montréal from 26 August to 6 September 2024.

- The *Convention on International Civil Aviation* (Chicago Convention, Doc 7300) and International Telecommunication Union (ITU) Regulations protect GNSS frequencies for aviation use. Furthermore, ICAO and ITU have established a memorandum of cooperation that sets a framework for enhanced cooperation between ICAO and ITU in matters related to harmful interference to GNSS with a potential impact on international civil aviation safety. In March 2025, ITU, ICAO and the International Maritime Organization (IMO) issued a joint statement to United Nations Member States, urging them to protect GNSS from harmful interference and outlined five key actions that Member States are expected to take. The joint statement “Protection of the radio navigation satellite service from harmful interference” is available at https://www.icao.int/Newsroom/Pages/Protect-satellite-navigation-from-interference-UN-agencies-urge.aspx.

For the short term, it is not foreseen that the issue of the GNSS RFI can be fully resolved. Hence, efforts are being focused on mitigation. ICAO, other international organizations and aviation industry have identified several actions and measures to mitigate the impact and likelihood of GNSS RFI.

ICAO is working on developing further guidance on spoofing as well as updating the *Performance-based Navigation (PBN) Manual* (Doc 9613) to better address GNSS disruption and implement PBN when GNSS is not available. The mid- to long-term solutions include the use of GNSS data authentication to enhance resilience toward GNSS spoofing, and redefining alternative position navigation and timing (A-PNT) technology and complementary position navigation and timing (C-PNT) to build resilient navigation.

Conclusion

Member States should **anticipate, regulate** and **mitigate** GNSS RFI.

- Anticipate by planning for potential disruptions, fostering coordination with all relevant stakeholders and raising awareness on its impact.

- Regulate by establishing clear guidelines and enforcing policies to safeguard GNSS systems from interference.

- Mitigate by implementing necessary strategies and measures such as maintaining a network of conventional navigation aids to ensure the uninterrupted provision of safe, efficient and secure air navigation services.

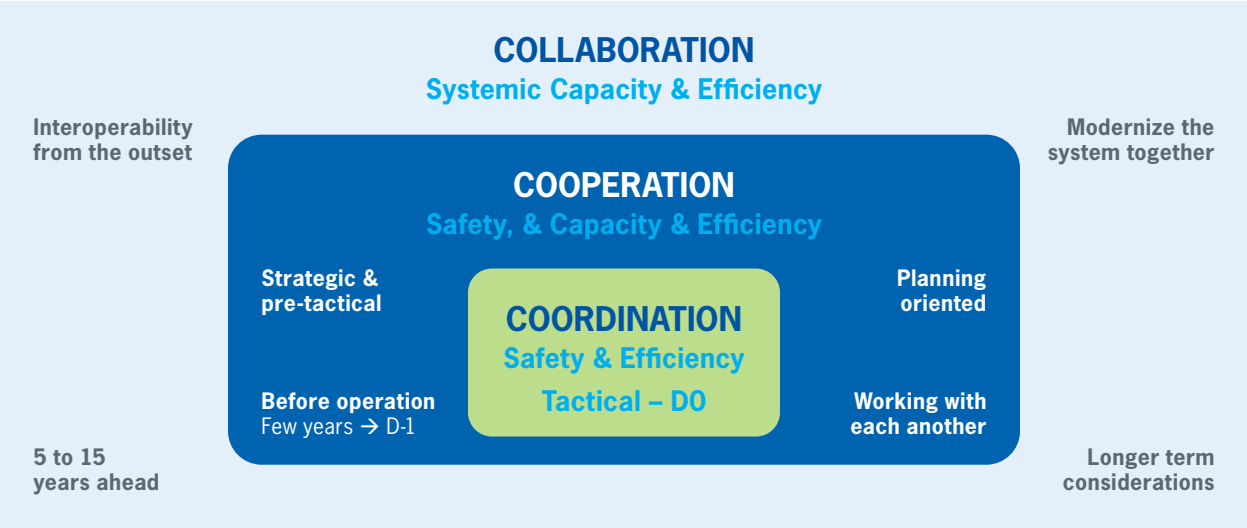
The Crucial Role of Civil-Military Cooperation in Aviation: Enhancing safety and improving Air Traffic Management and Airspace Optimization

In today's interconnected world, the skies are busier than ever. As air traffic grows, the demand for more efficient and secure use of airspace becomes increasingly critical. Civil-military cooperation in aviation has emerged as a vital component in ensuring the seamless operation of air traffic management (ATM), optimizing airspace use, and supporting peacetime and conflict-related operations. This collaboration not only enhances aviation safety and efficiency but also reinforces national and international security frameworks. The *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088), published in April 2021, provides comprehensive guidance for establishing and advancing the implementation of civil-military cooperation.

Air Traffic Management and the Flexible Use of Airspace (FUA)

Traditionally, airspace was divided rigidly between civil and military use, often leading to underutilized capacity and inefficient routing. ICAO is promoting a more dynamic model where airspace is allocated based on real-time operational requirements rather than permanent segregation. One of the most significant contributions of civil-military cooperation lies in the implementation of the flexible use of airspace (FUA) concept, which could be implemented as basic or enhanced FUA based on the need and complexity of the airspace.

Through close coordination, civil and military authorities share information and collaborate on the planning and execution of airspace usage. This allows previously restricted military zones to be temporarily opened for civilian traffic during periods of low military activity, thus improving route efficiency, reducing fuel consumption and minimizing delays.



Supporting Conflict Zones and Humanitarian Operations

Civil-military cooperation plays a vital role in conflict and crisis. In such environments, information is essential to determine if certain portion of the airspace should be avoided or mitigation measures should be implemented. Moreover, civilian air navigation services may be disrupted or non-operational, and military support becomes essential to ensure the safety and continuity of humanitarian operations, medical evacuations and disaster relief efforts.

Also, some services of the search and rescue (SAR) are provided by military authorities. Accordingly, it is crucial that the State ensure a high level of collaboration with the military authorities to arrange for the SAR missions to be conducted in accordance with the ICAO requirements.

For instance, during armed conflicts in regions, civil-military coordination has been essential for the exchange of information for the issuance of NOTAMs, closing or rerouting air traffic flows and managing complex airspace dynamics involving military operations, surveillance and civilian overflights.

Enhancing Safety and Situational Awareness

Another key benefit of civil-military cooperation is enhanced **situational awareness and safety**. Surveillance systems, including radar and satellite capabilities, can support civil and military operations by providing real-time data on airspace use and potential threats. This is particularly useful in addressing non-cooperative or unidentified aircraft, which may pose safety or security risks.

Joint training, exercises and information-sharing mechanisms help both sectors understand each other's protocols, leading to faster, coordinated responses to airspace incidents. Moreover, harmonized contingency planning ensures the continuity of air services in the event of armed conflict, cyberattacks, system failures or natural disasters.

Driving Innovation and Future Airspace Optimization

Looking ahead, civil-military cooperation will be critical in realizing next-generation airspace initiatives, such as free route airspace (FRA), unmanned aircraft systems (UAS) and advanced air mobility (AAM). These innovations demand high integration and trust between civil and military actors to ensure that emerging technologies and users can safely share the skies.

The increasing complexity of global airspace – with the rise of drones, space vehicles and more flexible flight operations – requires agile and resilient management structures. Civil-military synergy will be indispensable for balancing efficiency, safety and sovereignty in this evolving environment.

Conclusion

Civil-military cooperation is no longer a secondary aspect of aviation – it is a strategic imperative. Whether in optimizing day-to-day airspace usage, enhancing air traffic management or supporting operations in conflict zones, the collaboration between civil and military stakeholders underpins the resilience and adaptability of the global aviation system.

With continued dialogue, shared investment in technology and mutual trust, civil-military cooperation will remain a cornerstone of safe, secure and efficient skies for decades to come.

Over the past six years, ICAO has participated and organized a series of webinars and workshops aimed at raising awareness of the *Manual on Civil-Military Cooperation in Air Traffic Management* (Doc 10088) and enhancing civil-military cooperation across all ICAO Regions. Dedicated civil-military workshops to States were also conducted to agree on measures that improve sharing of information between all parties and ensure the safety of flight operations within their airspace. Additionally, a global implementation support project was established to foster civil-military cooperation in aviation and provide the necessary support to States and ICAO Regions.

The Evolution of Aeronautical Meteorological Service to Enhance Aviation Safety Against Turbulence Encounters

Growing Demands for Advanced Meteorological Service for International Air Navigation

Having recovered and returned to pre-pandemic levels, global air traffic is expected to increase further. To address recent economic and environmental pressures, enhancement of safety and efficiency of air transportation is becoming increasingly important. At all phases of flight, from around an aerodrome to cruising level, hazardous weather phenomena may often disrupt aircrafts' safe and efficient operations. Closely in line with technological advancements in the air navigation field, requirements for the provision of advanced aeronautical meteorological service have been evolving to achieve improved safety and efficiency of air transportation with rapid growth.

Technological innovations in the field of meteorology over the course of recent decades, has seen launches of a new generation of meteorological satellites (e.g. GOES-R, Himawari-8 &9, FY-4, METEOSAT, etc.) and the introduction of higher-performance numerical weather prediction systems. This rapid and dramatic evolution provides opportunities to enhance aeronautical meteorological information, to realize seamless support for stakeholders' decision-making in broader operational scenarios, including departure and landing, flight planning and selection of optimal air routes, and air traffic flow management (ATFM) and air traffic management (ATM).

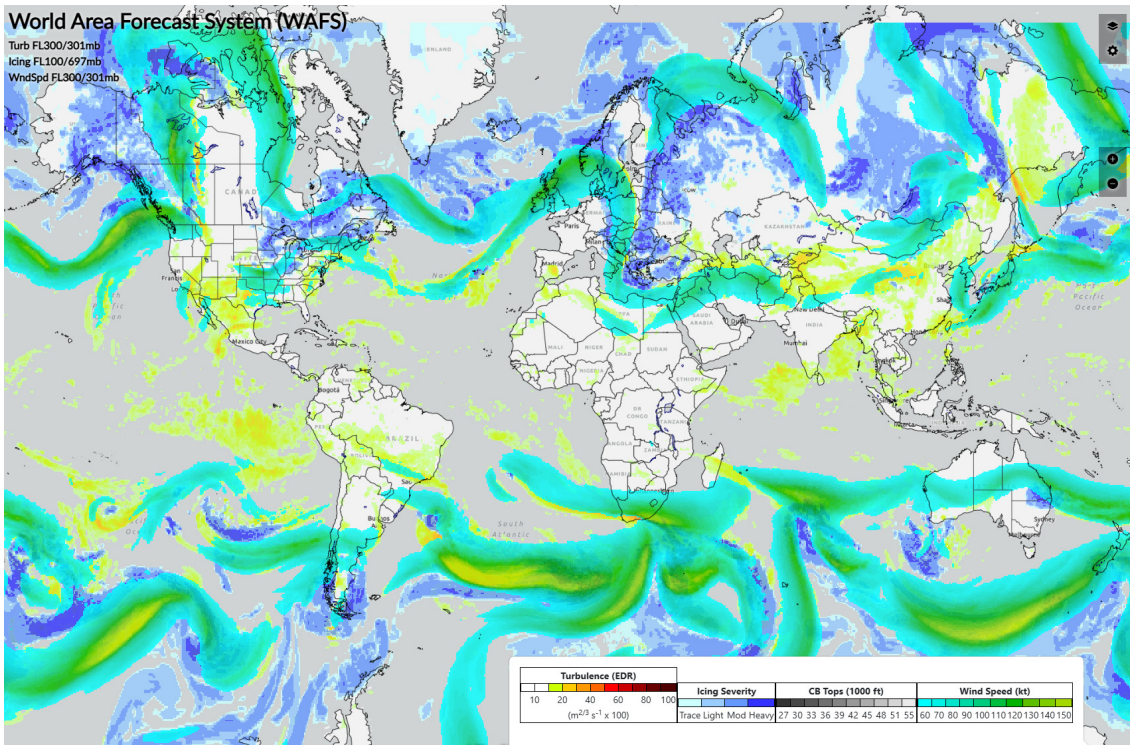


Image provided by the NOAA Aviation Weather Center, Kansas City, Missouri, USA, from their website at https://aviationweather.gov/wafs/.

Turbulence encounters

The Fourteenth Air Navigation Conference (AN-Conf/14) acknowledged that turbulence encounters were a major contributing factor to many accident or incident cases, and that renowned scientific research results indicated the likelihood of future increase of clear air turbulence, both in intensity and frequency along with strengthened jet streams due to climate change. Reaffirming such vulnerability of aircraft operations against turbulence, the Conference agreed on the proposed inclusion of turbulence encounters as part of the global operational safety risks addressed in the 2026-2028 edition of the Global Aviation Safety Plan (GASP)[1].

Furthermore, the Conference also agreed on the need to implement mitigation strategies, including the enhancement of availability of updated special air-reports, further improvement of meteorological forecast for clear air turbulence, and a means for collecting and sharing turbulence-related data among States and industry[2].

Future enhancement of meteorological information for turbulence safety

ICAO has promoted further development of meteorological information and services through a dedicated expert group and in coordination with the World Meteorological Organization (WMO).

Global implementation of air-ground communication infrastructure, such as Automatic Dependent Surveillance – Broadcast (ADS-B) version 3.0, will increase real-time information exchange on turbulence and its intensity, which enables aircraft to avoid potentially high-risk area of turbulence, especially for clear air turbulence. Establishment of coordinated data sharing framework will be sought as a solution to enhance global monitoring of turbulence encounters, as demonstrated by the International Air Transport Association (IATA) Turbulence Aware Platform[3].

The World Area Forecast System (WAFS), operated by the world area forecast centres (WAFCs) in London and Washington, plans to introduce advanced numerical weather forecasting technology enabled by the rapid computing infrastructure. The next-generation WAFS forecast information will contain forecast for en-route adverse weather conditions in finer horizontal, vertical and temporal resolutions, from November 2025. In addition, the two WAFCs plan to introduce new forecast information, which will indicate likelihood of clear air turbulence and mountain-induced turbulence individually, to further support precise flight planning with comprehensive risk assessment.

According to strong user requests for the provision of harmonized information on en-route hazardous meteorological conditions, ICAO is also developing a new concept of meteorological information service, the Hazardous Weather Information Services (HWIS), which can provide timely and harmonized short-term forecast information for en-route hazardous weather phenomena, like cumulonimbus cloud, turbulence and aircraft icing, using System Wide Information Management (SWIM) technology.

Successful implementation of these enhanced monitoring frameworks and advanced meteorological information and services will contribute to enhanced safety of aircraft operations against the increasing risk of turbulence encounters, as well as to efficiency and aviation environmental protection.

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[1] Recommendation 2.3/1, AN-Conf/14, https://portal.icao.int/icao-net/ICAO%20Documents/10209_cons_en.pdf
[2] Recommendation 2.3/2, AN-Conf/14, https://portal.icao.int/icao-net/ICAO%20Documents/10209_cons_en.pdf
[3] https://www.iata.org/en/services/data/safety/turbulence-platform/

Safe Integration of Unmanned Aircraft Systems/Advanced Air Mobility into the Legacy Aviation System

The rapid growth of unmanned aviation is apparent from unmanned aircraft systems (UAS) registration statistics. For example, as of 2025, the United States reported over a million registered unmanned aircraft, 412 505 commercial UAS registrations, and 438 673 certificated remote pilots[4]. In Australia, the number of RPAS operators' certificates (ROC) has seen significant growth, rising from 2 253 in 2021 to 2 849 by the end of June 2024. Still in Australia, there are currently 37 441 remote pilot license (RPL) holders, a 57 per cent increase from 2021 to 30 June 2024, and there has been a 105 per cent rise in beyond visual line-of-sight (BVLOS) operations from 2022 to 2023[5]. In Europe, as of April 2025, 1 669 510 UAS operators were registered, and 1 323 394 remote pilot certificates issued. It was reported that the number of applications for operational authorization of complex UAS operations in Switzerland *"more than quadrupled between 2021 and 2022 and then doubled again in the following year"*. It was also noted that, *"since the entry into force of EU drone regulations in Switzerland, the proportion of UAS services exported by Swiss drone companies has almost tripled (from around 24% in 2021 to 63% in 2023)*[6].

ICAO continues to make significant strides to support the safe and globally harmonized development of unmanned aircraft and advanced air mobility (AAM) operations.

Remotely Piloted Aircraft Systems

The Remotely Piloted Aircraft Systems Panel (RPASP) is developing provisions to enable the certified category of unmanned aircraft operations, namely internationally operated Remotely Piloted Aircraft Systems (RPAS), primarily under instrument flight rules (IFR), in controlled airspace and at controlled aerodromes, with no persons on board.

With the Council's adoption in 2024 of the new Part IV — *International Operations — Remotely Piloted Aircraft Systems* to Annex 6 — *Operation of Aircraft*, the first building blocks for a regulatory framework are now available to enable the international operation of RPAS. Like conventional aviation, operators will be required to hold an RPAS operator certificate (ROC), akin to an air operator certificate (AOC). This is a considerable step towards integration of RPAS into the conventional aviation system. It should be recalled that the ICAO Council had previously agreed to the regulatory structure for the issuance of remote pilot licences (2018), RPAS-specific airworthiness requirements (2021), and provisions for C2 Links frequency bands, procedures and systems (2021).

By March 2025, the RPASP had convened its 26th meeting, underscoring ICAO's commitment to developing Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and guidance material, for the safe integration of remotely piloted aircraft into the conventional aviation system. Notably, the panel's ongoing efforts address the complexities inherent to C2 Link, along with finalizing packages such as air traffic management (ATM), detect and avoid (DAA) and aerodrome integration.

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[4] https://www.faa.gov/node/54496
[5] https://www.casa.gov.au/sites/default/files/2022-06/the-rpas-and-aam-roadmap.pdf
[6] https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.bazl.admin.ch/dam/bazl/en/dokumente/Themen/Luftfahrtpolitik/studien_berichte_projekte/bericht_drohnen_2024.pdf.download.pdf/bericht_drohnen_2024.pdf&ved=2ahUKEwiTg73Su9iNAxWGAtsEHXz_CBMQFnoECCEQAQ&usg=AOvVaw1dxVI7K8f6hiS7gUPlLg_7

Advanced Air Mobility

At a foundational level, AAM can be described as a set of aviation activities involving the transport of people, goods, as well as other use cases such as data collection, agriculture, infrastructure inspections, in urban, regional, rural, remote areas, using advanced or innovative aviation capabilities.

The establishment of ICAO's Advanced Air Mobility Study Group (AAM SG) in 2022 marked a pivotal transition to addressing the complex, multi-layered and interconnected ecosystem of AAM. Building upon the work of the UAS Advisory Group (UAS-AG), the AAM SG is tasked, inter alia, with serving as a focal point for ICAO AAM-related work, in order to ensure global interoperability and harmonization. Its deliverables include developing a holistic framework and vision related to AAM, conducting a gap analysis of existing ICAO provisions and proposing recommendations for future work.

Unmanned Aircraft Systems Traffic Management

With the growth of UAS use cases, aviation is faced with the introduction of a new generation of highly automated aircraft that vary in size and weight. Most of those new aircraft do not have a pilot on board and, in many instances, may not even be piloted by a remote pilot. They instead rely on high levels of automation to perform their missions. The characteristics and number of those aircraft are such that the fitness-for-purpose of conventional aviation constructs, designed around human interactions, need to be carefully assessed. The equipment, size, range and missions are such that new tools are required, including services, rules and procedures to ensure cost-efficient, safe and fair access to the airspace. As a result, a new form of traffic management is required to ensure efficiency and ensure that safe separation from other aircraft and obstacles is maintained. UAS Traffic Management (UTM) is the response to this emerging need. Building upon ICAO's UTM Framework, the AAM SG is developing guidance material to assist States in deploying UTM systems, if and when they wish to do so.

To support broad engagement in this growing field, ICAO hosted its inaugural Advanced Air Mobility Symposium (AAM 2024), from 9 to 12 September 2024, at its headquarters in Montréal, Canada. Themed *"Advanced Air Mobility Global Harmonization and Interoperability: Challenges and Opportunities,"* the symposium attracted over 1 400 participants, including officials from 76 States, as well as industry leaders and innovators. The collaborative work conducted during this meeting addressed, inter alia, societal benefits of AAM, regulatory harmonization, infrastructure development and the integration of new technologies such as electric vertical take-off and landing (eVTOL) aircraft and unmanned aircraft systems (UAS). A significant outcome of AAM 2024 was the issuance of a global Call to Action, urging continued and further collaboration to achieve the following goals:

> ***Understanding AAM:*** Engage in comprehensive data collection, research and solution development to fully grasp and balance AAM's potential and challenges, and identify the role of each type of stakeholder involved.
>
> ***Building AAM infrastructure:*** Collaboratively work on developing affordable and scalable physical and digital infrastructure to support AAM systems worldwide, and explore utilization and enhancement of the current infrastructure.

Supporting, governing and regulating AAM: Cooperate in the establishment of adaptive, flexible and harmonized regulatory frameworks embracing innovation and compatible with current aviation frameworks, including through collaboration among international bodies, national governments and other relevant entities.

Capacity-building and implementation

To support Member States in implementing these advancements, ICAO has developed six structured training modules relevant to RPAS, UAS and UTM. These include four online courses covering UAS fundamentals, safety management, operations and regulations, as well as two instructor-led courses focusing on unmanned aviation fundamentals and RPAS operations implementation package (iPack).

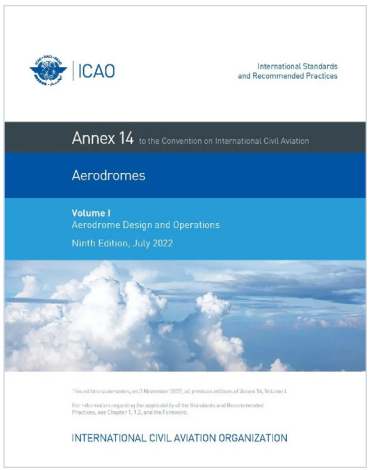
Additionally, ICAO has organized six drone enable symposia between 2017 and 2023, providing platforms for stakeholders to exchange information and build global consensus on unmanned aviation integration.

Continued Efforts in Enhancing Runway Safety

Runway safety continues to be a challenge in aviation safety. Runway incursion (RI) and runway excursion (RI) are identified as two of the five global high-risk categories of occurrences (G-HRCs) within the ICAO Global Aviation Safety Plan (GASP) framework. Since landings and take-offs are the most critical phases of flight, effective runway safety protocols are vital for guiding pilots, ground personnel and air traffic controllers through the complex layout of aerodromes.

In 2024, ICAO published the Second Edition of the Global Runway Safety Action Plan (GRSAP). The GRSAP outlines recommended actions for all runway safety stakeholders, including State civil aviation authorities (CAAs), regional safety oversight organizations (RSOOs), regional aviation safety groups (RASGs), aircraft operators, aerodrome operators, air navigation service providers (ANSPs) and the aerospace industry. It is complemented by two specific plans – the Global Action Plan for the Prevention of Runway Excursions (GAPPRE) and the Global Action Plan for the Prevention of Runway Incursions (GAPPRI) – developed through industry-led efforts under the framework of the ICAO Runway Safety Programme, in collaboration with the Runway Safety Programme Partners.

The ICAO Council has recently adopted amendments to Annex 14 – Aerodromes, Volume I – *Aerodrome Design and Operations*, including specifications for runway distance remaining signs (RDRS). These signs are a crucial part of effective runway excursion prevention, providing pilots with information on the remaining runway distance, which enhances situational awareness. This enables pilots to decide whether to initiate a go-around, adjust braking action, and optimize rollout and exit speeds. It is essential that pilots operating at aerodromes with RDRS are familiar with their purpose and use.



The Role of Health Promotion and Mental Wellbeing in Enhancing Aviation Safety

The prescribed upper age limit for commercial pilots has been a hotly debated topic in aviation for several years. One recommendation of the ICAO Medical Provisions Study Group (MPSG) was to consider migrating from a prescribed pilot upper age limit to an individualized, risk-based and performance-based standard, irrespective of chronological age.

ICAO subsequently conducted a survey: *Review of the Upper Age Limit for Pilots Engaged in Commercial Air Transport Operations* (via State letter 24/77), to obtain States' best practices pertaining to pilot upper age limits and to assess the feasibility of implementing a new and updated aviation medical risk management model. The advantages of implementing the new risk model, which is a combination of the application of bowtie and risk matrices, include: applicable to various types of aviation medical risk factors; use of measurable and non-measurable data; and flexibility for future adjustment based on evolving developments in science and technology.

The survey was distributed to Member States, international organizations and accident investigation authorities requesting information and data concerning: State regulatory requirements; capacities to implement various types of risk mitigation measures; medical certification procedures and resources; and the availability of operational and safety data to support implementation of mitigation measures.

Key outcomes of the survey highlighted the need to: improve the development of guidance material; standardize and strengthen the aviation medical system; enhance relevant data collection and data analysis; and support State implementation, notably the application of basic safety management principles through health promotion (ICAO Standards 1.2.4.2 and 1.2.4.3), to reduce future risks to flight safety during the transition period from a prescriptive upper age limit to performance-based individualized risk assessments.

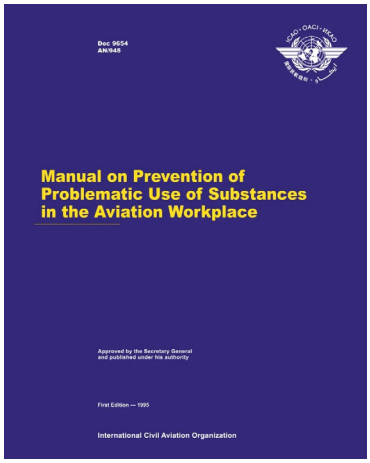
The health promotion Standards are also relevant to mental wellbeing in aviation. March 2025 marked the 10-year anniversary of the Germanwings accident that focused world attention on mental health in aviation. The ICAO Mental Health Working Group (MHWG), which was implemented in response to the Germanwings accident continues to meet monthly to share best practices and discuss mental health matters of importance to aviation safety.

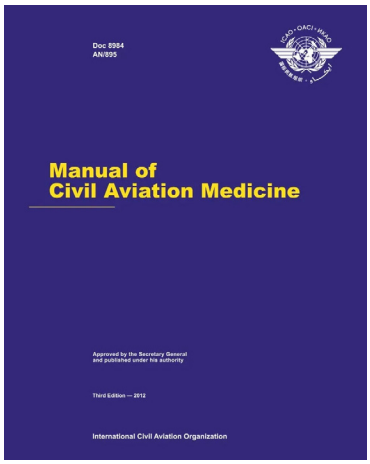
Notable publications to date from this group include: subject matter contained in the ICAO book *Fitness to Fly* (a joint publication by ICAO, the International Air Transport Association and the International Federation of Air Line Pilots' Associations); and contribution to the ICAO Electronic Bulletin (EB 2020/55) on mental health issued during the COVID-19 pandemic, recognizing the importance of the types of mental health support that need to be provided by different stakeholders at various levels within aviation.

Building on the above, the MHWG reviewed the ICAO mental health framework, which is applicable to all aviation personnel and not restricted to flight crew only. This review resulted in the development of a new ICAO manual: the *Manual of Health Promotion and Mental Wellbeing in Aviation Personnel*, scheduled for publication in 2025. This manual will include a newly developed *Aviation Medicine and Mental Health Lexicon* and guidance material on peer support.

In addition, the MPSG reviewed the *Manual on Prevention of Problematic Use of Substances in the Aviation Workplace* (Doc 9654) and updated chapters of the *Manual of Civil Aviation Medicine* (Doc 8984) concerning health promotion, both scheduled for publication in 2025. Furthermore, they provided comments for consideration relating to the *Manual on Critical Incident Response Programmes for Cabin Crew* (Doc 10185) and the *Manual of Human Performance* (Doc 10151), aligning the new manual to these documents as well.

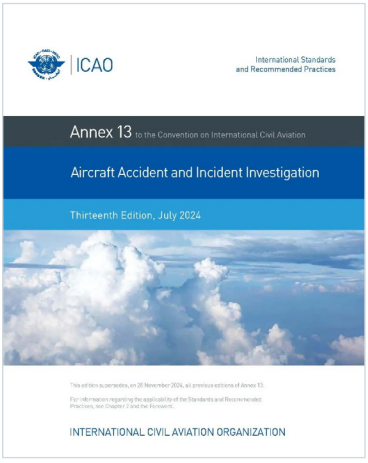
The value of health promotion, mental wellbeing advocacy and the ultimate effective application of individualized risk management should not be underestimated in terms of building trust within the aviation medical system and the resultant effect of enhanced aviation safety.





Importance of Timely Publication of Accident Investigation Final Reports

ICAO Annex 13 – *Aircraft Accident and Incident Investigation* contains the requirements that the State conducting the investigation of an accident or incident shall make the Final (investigation) Report publicly available within 12 months, if possible, in the interest of accident prevention.



In addition, the State conducting the investigation of an accident or incident involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg is required to send the Final Report to ICAO. Final Reports are recorded in an ICAO central database, the e-Library of Final Reports, which is publicly available on the ICAO website.

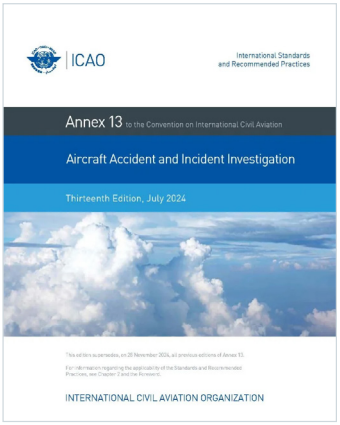
The Final Report of an aircraft accident or incident investigation is the foundation for initiating the safety actions which are necessary to prevent further accidents from similar causes. The Final Report on an accident establishes in detail what happened, how it happened and why it happened. The findings, causes and/or contributing factors of the Final Report led to safety recommendations so that appropriate preventive measures can be taken. The *Manual of Aircraft Accident and Incident Investigation*, Part IV — *Reporting* (Doc 9756) provides the associated guidance on implementing the aforementioned requirements.

The timeliness of publication of Final Reports ensures the effective dissemination of safety information including safety recommendations and lessons learned arising from accident or incident investigations. ICAO has been working on improving the timeliness and the release rate of accident investigation Final Reports since 2016 through a review of more than thousands of fatal accidents worldwide.

In 2017, it was found that only 41 per cent of fatal accidents involving civil-operated aircraft with a certified MTOW over 5 700 kg between 1990 and 2016 had made a Final Report publicly available. The average period for the publication of those Final Reports published by States was more than four years during the same period. For the period 2017-2022, the ratio of Final Reports made publicly available increased to 60 per cent, and the average period for the publication of Final Reports reduced to about 20 months. By 2024, 76 per cent of Final Reports were published from the investigations completed for the period 2017-2022.

At the same time, during the review, it was found that some States decided not to conduct an Annex 13 investigation for accidents considered to be outside the scope of Annex 13 (for example, State flight). The percentage of Final Reports published compared to investigations completed would be further increased if taking this into account.

ICAO Accident/Incident Data Reporting System



The ICAO Accident/Incident Data Reporting (ADREP) System comprises the reporting requirements in Annex 13, the ADREP taxonomy, the reporting mechanism and the database that stores the accident/incident records collected.

ICAO first began the development of its ADREP system in the 1970s to monitor safety trends and accident rates while facilitating the compliance of the requirements in Annex 13. The ICAO Council approved the system in 1976.

Annex 13 requires States to send notifications and accident/incident data reports of investigations to ICAO (Chapter 4 and Chapter 7, respectively). The *Manual of Aircraft Accident and Incident Investigation*, Part IV — Reporting (Doc 9756) provides the associated guidance.

The ICAO ADREP taxonomy defines hundreds of possible data elements for reporting an accident or incident, including the people, aircraft and operations involved in the event. The details of the ADREP taxonomy were previously provided in *Accident/Incident Reporting Manual* (Doc 9156, now obsolete) and were later incorporated into the *Safety Management Manual* (Doc 9859) and referenced in Doc 9756 though the current edition of Doc 9859 no longer includes the ADREP guidance. The ADREP taxonomy had been revised and updated many times in response to technological and administrative advances in aviation. The ADREP2000 version of the taxonomy was finalized in 2001 and subsequently incorporated into the old European Co-ordination Centre for Accident and Incident Reporting Systems (ECCAIRS 1). ICAO published the ADREP taxonomy that was documented in the format of the ECCAIRS 1 on the ICAO website in 2013. Recently, ICAO has commenced the work to update the ADREP taxonomy.

In 2004, ICAO adopted ECCAIRS 1 for its ADREP database. States submit the notification and the accident/incident data reports mainly via emails. Recently, the ADREP database has been transitioned to the cloud-based ECCAIRS 2 which provides direct online reporting and automated data transfer. Currently, the ADREP database contains approximately 45 000 records of accidents and incidents.

The accident and incident data for commercial air transport involving aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg are reviewed, validated and verified by the ICAO Occurrence Validation Study Group (OVSG) using the ADREP taxonomy to generate a dataset with reliability, validity and quality. This data enables ICAO to measure the progress made towards the achievement of the goals and targets presented in the Global Aviation Safety Plan. It provides the basis for the statistics and analysis in the ICAO annual safety report to monitor safety trends and global safety indicators. Moreover, it supports data-driven decision-making for other ICAO activities and the development of SARPs.

At the same time, the ICAO ADREP information is available for Member States with the understanding that the ADREP information will be used for accident investigation and prevention only.

Strengthening Wildlife Strike Reporting

The presence of wildlife (birds and other animals) on, or in the vicinity of an aerodrome poses a serious threat to aircraft operational safety.

Wildlife strikes continue to represent a significant safety concern for international civil aviation, with many of these occurrences, approximately 74 per cent, taking place on or in the vicinity of aerodromes. Analysis of data compiled under the ICAO Bird Strike Information System (IBIS) for the period 2016 to 2021 (Electronic Bulletin 2023/30) indicates that 24 per cent of reported wildlife strikes occurred during take-off phase, and 46 per cent during descent, approach or landing roll – critical moments when aircraft are most vulnerable.

To address this persistent risk, ICAO has significantly enhanced its data management and global coordination through the IBIS. Over the last two years, ICAO has achieved substantial milestones, including reaching 66 per cent of States with nominated national IBIS focal points. Additionally, ICAO has made great efforts to improve the consistency, quality, accuracy and completeness of wildlife strike data submissions from States.

These improvements have resulted in a more balanced global distribution of wildlife strike reports compared to earlier data sets, which were predominantly concentrated in the North American, Central American and Caribbean (NACC) and European and North Atlantic (EUR/NAT) Regions. More importantly, they have led to a substantial increase in the overall volume of data submitted. Between 2016 and 2021, ICAO received over 273 000 wildlife strike reports, an increase of approximately 280 per cent compared to the previous 8-year period. This marked growth in reporting reflects stronger engagement from States and has provided ICAO with a significantly more robust dataset. The improved data supports more comprehensive global and regional safety analyses, enabling more precise risk assessments and informing the prioritization of wildlife strike hazard mitigation strategies grounded in evidence-based trends.

Looking ahead, ICAO is advancing work on the integration of emerging technologies and the development of updated guidance material aimed at reducing the risk of wildlife strikes. Concurrently, ICAO is finalizing a new edition of the *ICAO Bird Strike Information System (IBIS)* (Doc 9332), which will provide enhanced guidance on data collection, validation and analysis methodologies.

Through these combined efforts – modernized data practices, technological integration and global harmonization – ICAO and its Member States are making strong progress toward reducing the frequency and severity of wildlife strikes, ultimately enhancing both safety and operational resilience in international civil aviation.

Implementation of the Global Aeronautical Distress and Safety System

ICAO has been working on the development of Standards and Recommended Practices and associated guidance for the implementation of the Global Aeronautical Distress and Safety System (GADSS) since 2014. This work was prompted by a review of existing Standards following two high profile accidents (AF447 and MH370) that indicated further improvements in aircraft tracking were both possible and warranted.

In 2024 the last piece of the GADSS was put into place with the operational declaration of the Location of an Aircraft in Distress Repository (LADR) and associated Operational Control Directory (OPS CTRL).

These systems, developed and hosted by the European Organisation for the Safety of Air Navigation (EUROCONTROL) on behalf of ICAO, serve as the main central location to access information on the last known position of an aircraft in distress, and to coordinate with all relevant stakeholders in order to quickly establish the need for a response from air traffic services, the operator, and search and rescue (SAR) personnel.

As of 1 January 2025, all new aircraft[7] (first issued with a Certificate of Airworthiness dated 1 January 2024 onwards) are required to carry a new piece of equipment, intended to detect a distress situation in flight and automatically begin transmission, at one-minute intervals or less, of the aircraft position. This is intended to identify the location of an aircraft to within 6 NM following a serious event such as a loss of thrust on all engines, a highly unusual air speed or attitude, and other specific conditions.

Triggering in-flight ensures that signals will be received from the aircraft that will enable SAR personnel to quickly establish the aircraft location, and the LADR will ensure that everyone associated with the incident will have access to the same information to work from.

GADSS has been developed to facilitate the tracking of aircraft, identify aircraft in distress to ensure a prompt response, and to ensure that vital flight data recording information related to serious incidents and accidents are retrievable to assist with analysis and prevention of future accidents. Its completion marks a significant milestone in aviation safety.

[7] Additional criteria apply, see Annex 6, Part I, 6.18 for details.

Safety Management Implementation Support Activities

State Safety Programme Implementation Package

An implementation package (iPack) for State Safety Programmes (SSP) was launched in the first quarter (Q1) of 2024. The goal of this iPack is to assist and guide States, civil aviation authorities (CAAs) and organizations responsible for the implementation of an SSP using a project-oriented approach with specific emphasis on Component 1, "State safety policy, objectives and resources" and Component 4, "State safety promotion". The iPack also addresses strategies for small States to achieve an effective SSP implementation. Following the completion of the SSP training course, the services of a dedicated subject matter expert (SME) on SSP development/implementation is provided for a duration of 20 workdays to assist the State in making progress. The SSP iPack is intended for remote (virtual) deployment, but in-person options are also available. Course material and SME services are provided in English, French and Spanish.

Safety Intelligence and Safety Performance Management Workshops

To address challenges shared by States through the ICAO Annex 19 – *Safety Management* Implementation Challenges Survey conducted in 2022, ICAO delivered five regional workshops between March 2023 and March 2024 to support States in developing safety intelligence and in implementing safety performance management as shown in Table 3 below:

Table 3. | Delivery of Safety Intelligence and Safety Performance Management Workshops

ICAO Region	Location	Workshop dates	No. of participants
APAC	ICAO RO Office, Bangkok	20 - 24 March 2023	23
WACAF	ICAO RO Office, Dakar	11 - 15 September 2023	20
ESAF	Addis Ababa, Ethiopia	18 - 22 September 2023	44
EUR/NAT	Baku, Azerbaijan	16 - 20 October 2023	27
NACC and SAM	San Jose, Costa Rica	18 - 22 March 2024	37

The objectives of the workshop included providing participants with knowledge and practical skills related to:

- understanding the importance and use of data for managing safety and making decisions;
- developing a safety intelligence strategy;
- developing safety objectives and safety performance indicators; and
- monitoring and managing safety performance.

The workshops consisted of presentations, sharing of experiences, discussions, hands-on exercises and case studies on the following topics:

- Overview of proposed amendments to Annex 19 (related to safety intelligence and safety performance management).
- Data governance and management.
- Sharing and exchange of safety data and safety information.
- Development of indicators.
- Safety performance monitoring and management.
- Safety data collection and processing system (SDCPS).
- Data visualization, reporting and communication of analysis results.
- Developing safety intelligence strategy.
- Implementation strategies and ideas.

Annex 19, Amendment 2 and the new *Safety Intelligence Manual* (Doc 10159)

Amendment 2 to Annex 19, adopted by the ICAO Council in June 2025, includes significant enhancements to Chapter 5 which boasts a new title, *Development of Safety Intelligence*. Safety intelligence is considered a fundamental element that supports all safety management processes and activities towards effective data-driven decision making. This helps organizations manage safety risks while achieving meaningful safety outcomes. The development of safety intelligence and its related aspects are essential elements in implementing SSPs and safety management systems (SMSs). The enhanced Chapter 5 clarifies the provisions related to the establishment of a safety data collection and processing system (SDCPS), which consists of a series of integrated processes and schemes to capture, store, aggregate, process and support the analysis of safety data and safety information. The amendment also strengthens the provisions related to analysis, and the sharing and exchange of safety information and safety intelligence within the aviation community.

To support the enhanced provisions in Annex 19, Amendment 2 and based on the interactions with and feedback from participants of the Safety Intelligence and Safety Performance Management Regional Workshops, ICAO has developed and published the new *Safety Intelligence Manual* (Doc 10159). The *Safety Intelligence Manual* includes content related to safety data collection, processing and analysis that was previously part of the fourth edition of the *Safety Management Manual* (Doc 9859), published in 2018, and will complement the fifth edition of Doc 9859. Most of the guidance related to the protection of safety data, safety information and related sources when used for safety management purposes will be moved to and consolidated in the *Manual on Protection of Safety Information*, Part II — *Protection of safety data, safety information and related sources* (Doc 10053). Doc 9859 and Doc 10053, Part II are expected to be published by end of 2025.

Safety Management Implementation website

The Safety Management Implementation (SMI) website (www.icao.int/smi) complements the safety management guidance material and serves as a repository for sharing practical examples and tools among the aviation community in support of effective safety management implementation. Since its initial launch in 2018, 179 practical examples, tools, promotional videos and practical guidelines to support ICAO provisions have been collected, validated and posted for sharing as shown in Table 4. The website will be expanded to reflect the updated structure of the safety management guidance material and practical examples, tools, etc., will continue to be collected for validation and posting.

Table 4. | Number of supporting examples on the SMI website by chapter of Doc 9859, *Safety Management Manual*, 4th edition

Chapter and Title		No. of examples
1.	Introduction	7
2.	Safety management fundamentals	16
3.	Safety culture	4
4.	Safety performance management	2
5.	Safety data collection and processing systems	24
6.	Safety Analysis	10
7.	Protection of safety data, safety information and related sources	5
8.	State safety management	72
9.	Safety management systems	39

Regional Cooperation in Aviation Safety

Regional cooperation plays a key role in improving global aviation safety through regional safety oversight organizations (RSOOs), regional accident and incident investigation organizations (RAIOs) and other regional cooperation mechanisms. These different types of mechanisms support States in a range of safety oversight and investigative activities. However, despite continuous development, many of these organizations still face some specific challenges.

To help strengthen these regional cooperation mechanisms to support their Member States, ICAO provides support to these mechanisms through various programmes and activities.

RSOO Cooperative Platform and RAIO Cooperative Platform

Both RSOO and RAIO cooperative platforms are excellent enablers for peer support amongst regional organizations. These cooperative platforms bring together 14 RSOOs (including other regional cooperation mechanisms) and six RAIOs and investigation cooperation mechanisms (comprising of approximately 150 Member States in total) to strengthen, build partnerships, facilitate the sharing of experiences and best practices between these organizations as well as facilitate interfacing with ICAO. ICAO also provides workshops on identified areas of need amongst the cooperative platform members.

RSOO and RAIO Assessment Programme

The RSOO and RAIO Assessment Programme assesses qualifications and capabilities of RSOOs and RAIOs using tools like those of the Universal Safety Oversight Audit Programme (USOAP). Since its adoption during the 40th Session of the ICAO Assembly, ICAO has made significant strides in advancing this assessment programme. In October 2024, ICAO conducted its first post-COVID RSOO and RAIO Assessment Programme of the Civil Aviation Safety and Security Oversight Agency of the East African Community (CASSOA).

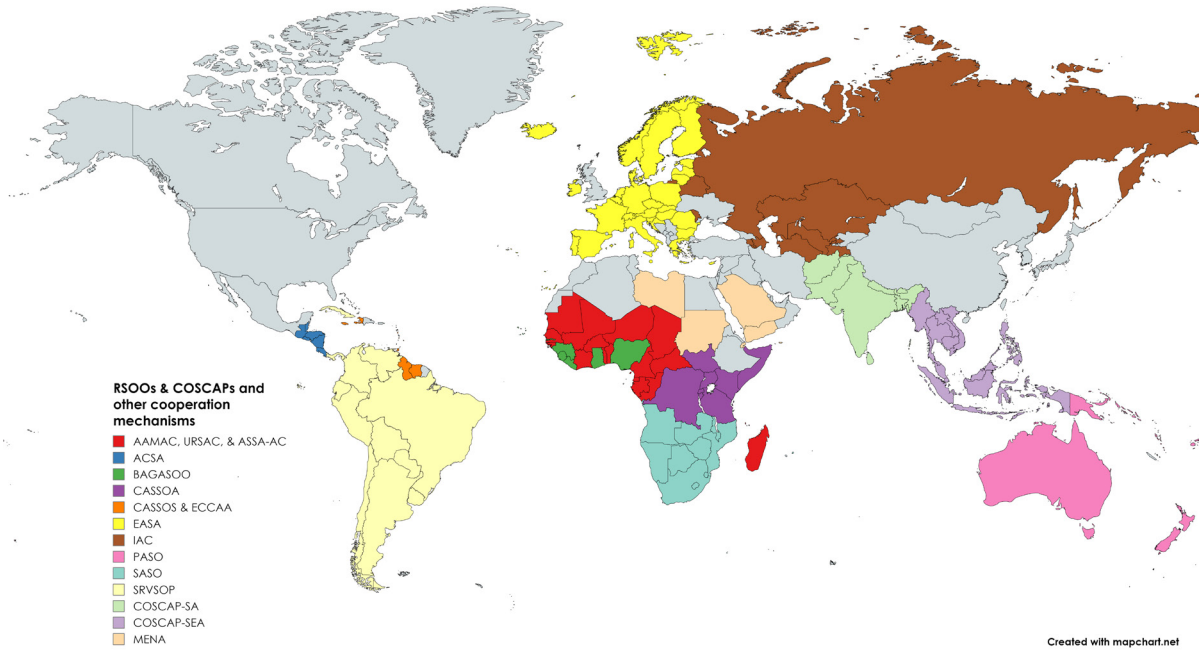
Updating of guidance material

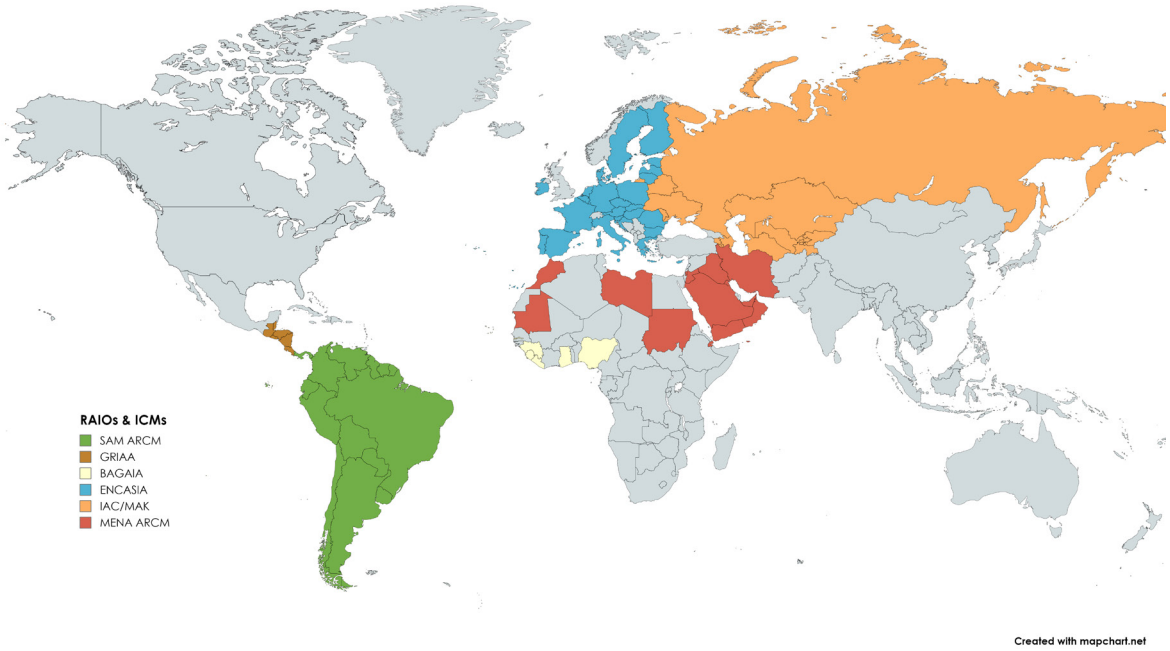
Updating of guidance material such as the *Safety Oversight Manual*, Part B – *The Establishment and Management of a Regional Safety Oversight Organization* (Doc 9734) is being undertaken to provide these organizations with the tools needed to enhance efficiency, optimize resources, and help States meet regulatory and oversight responsibilities.

Global Events

ICAO has held global events, bringing together these regional organizations, their Member States, industry and other stakeholders to increase awareness of their roles, activities and challenges with an aim to foster collaboration and further strengthen them. These events also enhance communication and dialogue between ICAO and the different regional cooperation mechanisms that support States' safety and accident investigation activities. In 2023, ICAO and the European Union Aviation Safety Agency (EASA) hosted the Second RSOO Forum on Global Aviation Safety (from 10 to 12 October 2023 in Nairobi, Kenya) and in 2024, ICAO and the General Civil Aviation Authority (GCAA) of the United Arab Emirates held the Aviation Safety and Aircraft Accident and Incident Investigation Symposium (from 19 to 21 November 2024 in Abu Dhabi, United Arab Emirates).

ICAO is dedicated to enhancing aviation safety and fostering cooperation with and among regional bodies and organizations, such as RSOOs and RAIOs so they can more efficiently support their States. These efforts focus on promoting capacity building, increasing awareness of their roles, integrating them into ICAO's framework and providing implementation support to address current and emerging safety challenges.





Status of Global Effective Implementation of State Safety Oversight System

The ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) focuses on States' capabilities to provide safety oversight and investigate aircraft accidents and incidents. The programme monitors States to plan activities that will determine the States' effective implementation (EI) of their safety oversight system, supported by ICAO's safety-related Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and guidance material.

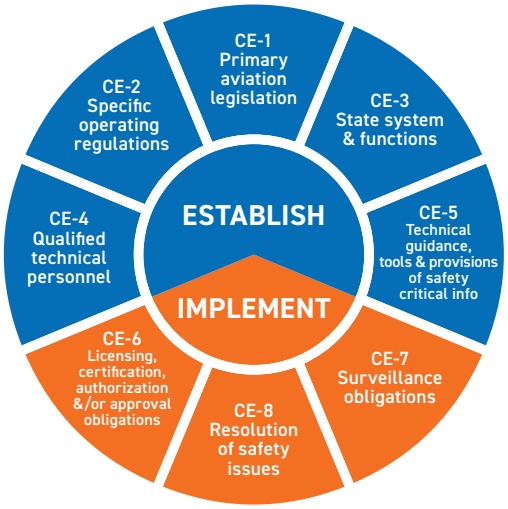
Over the past year, the States global average EI score increased slightly from 68.31 per cent in 2023 to 68.67 per cent in 2024. In addition, the number of States achieving the 2023-2025 GASP target of 75 per cent EI increased from 44 per cent in 2023 to 45 per cent in 2024.

Effective Implementation of a State Safety Oversight System

ICAO recognizes the efforts being made by all Member States to establish and maintain an effective safety oversight system capable of addressing all safety-related issues in all areas of aviation activities towards the achievement of the GASP targets.

To standardize the audits conducted under the USOAP CMA, ICAO established Protocol Questions (PQs), which are supported by ICAO Standards established in the Annexes to the Chicago Convention and other ICAO provisions. The PQs contribute to determine the EI of each of the eight critical elements (CEs):

- primary aviation legislation (CE-1);
- specific operation regulations (CE-2);
- State system and functions (CE-3);
- qualified technical personnel (CE-4);
- technical guidance, tools, and provisions of safety-critical information (CE-5);
- licensing, certification, authorization and/or approval obligations (CE-6);
- surveillance obligations (CE-7); and
- resolution of safety issues (CE-8).



The use of standardized PQs contributes to the transparency, quality, consistency, reliability and fairness of the USOAP CMA audits and the subsequent validation activities.

The PQs cover the following eight audit areas:

1) primary aviation legislation and civil aviation regulation (LEG);
2) civil aviation organization (ORG);
3) personnel licensing and training (PEL);
4) aircraft operations (OPS);
5) airworthiness of aircraft (AIR);
6) aircraft accident and incident investigation (AIG);
7) air navigation services (ANS); and
8) aerodromes and ground aids (AGA).

From 1 January 2022 to 31 December 2024, the USOAP CMA conducted a total of 97 USOAP CMA activities, which included audits, ICAO Coordinated Validation Missions (ICVMs), off-site validation activities, mandatory information requests (MIRs), State Safety Programme Implementation Assessments (SSPIAs) and workshops. Ten activities were postponed upon the State's request.

The audit areas with the lowest levels of EI are aircraft accident and incident investigation (AIG) (56.05 per cent) and aerodromes and ground aids (AGA) (66.38 per cent), while the Critical Element (CE) with the lowest level of EI are resolution of safety issues (CE-8) (57.14 per cent), surveillance obligations (CE-7) (63.07 per cent) and qualified technical personnel (CE-4) (63.21 per cent). ICAO identified 11 significant safety concerns (SSCs) and five SSCs identified by ICAO were resolved. As of 31 December 2024, nine SSCs remained unresolved, affecting six States. In this period, ICAO deployed the MIR mechanism to request information or documentation from four States for USOAP CMA review and validation, which have been closed satisfactorily. The increase of the average EI score for audited States to 68.67 per cent reflects States' efforts to build safety oversight capacity, particularly CEs 1 to 5. Six of ICAO's 193 Member States have not received a USOAP audit as of 2024.

In further review of the results by CE, Chart 19 shows that only CE-1 (primary aviation legislation) has achieved the global target of 75 per cent. CE-2 (specific operation regulations) is close to achieving the target (74.9).

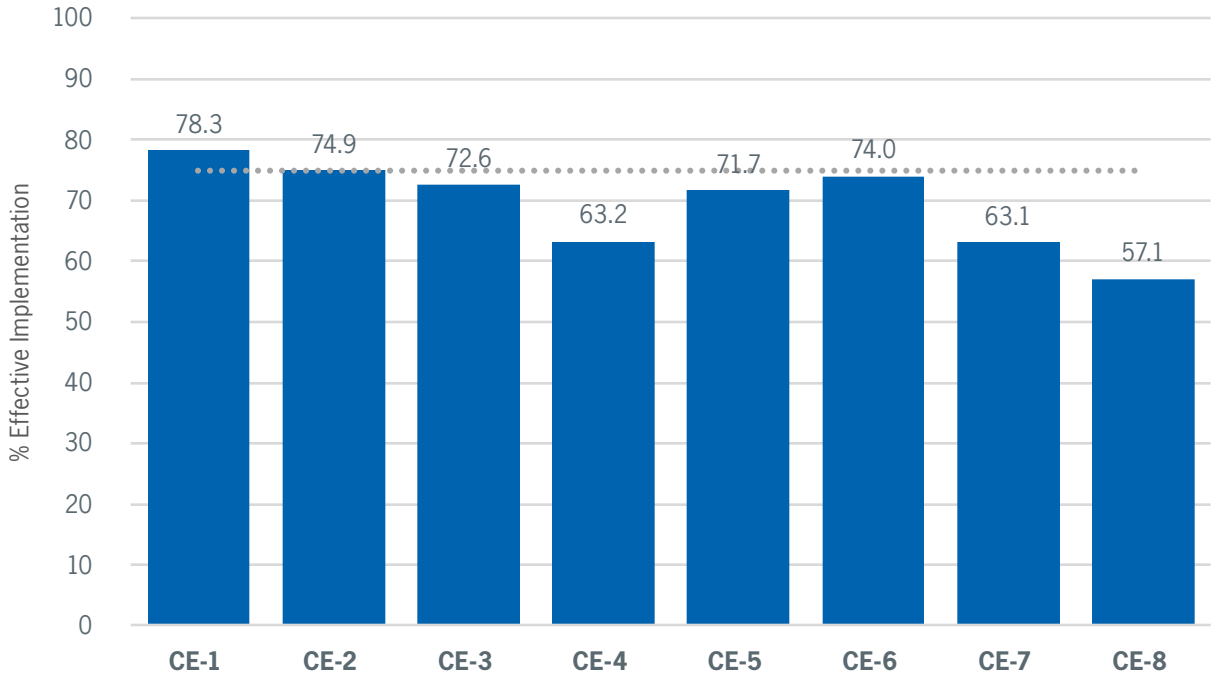


Chart 19. | USOAP Effective Implementation by Critical Element - 2024

The audit areas of LEG and AIR met the 75 per cent global target as evidenced in Chart 20. Additional information on past USOAP CMA results can be found in the USOAP Report published every three years, on the ICAO website at https://www.icao.int/safety/CMAForum/Documents/USOAP_REPORT_2022-2024.pdf.

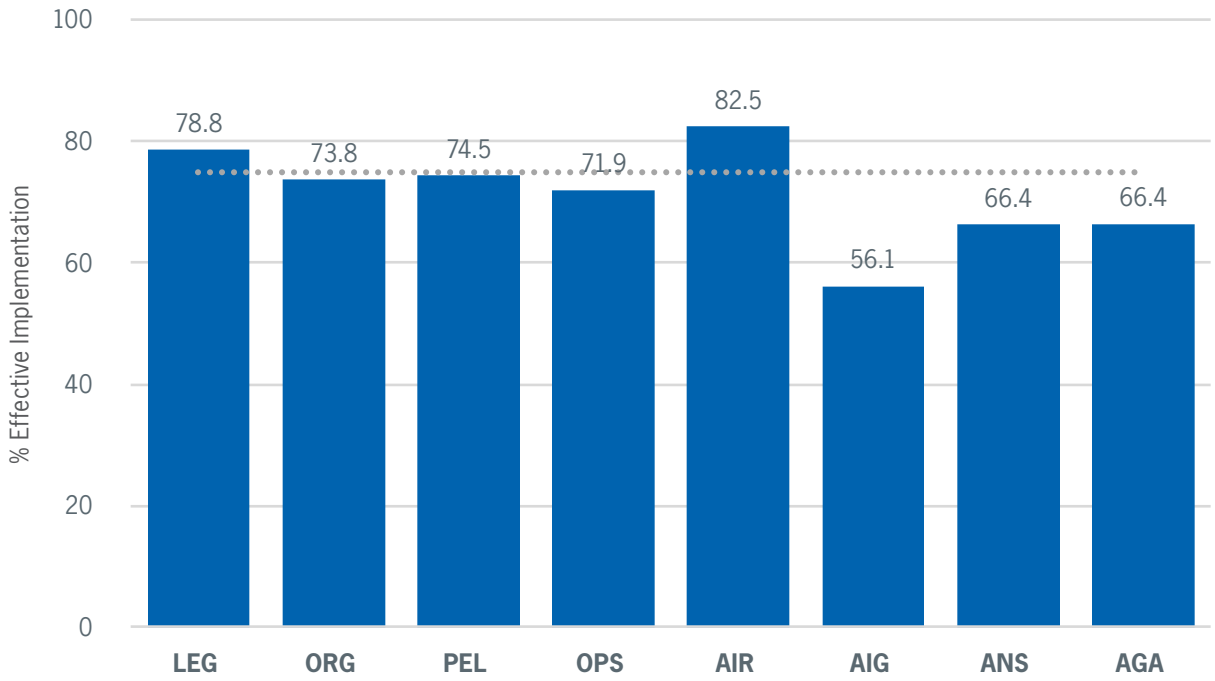
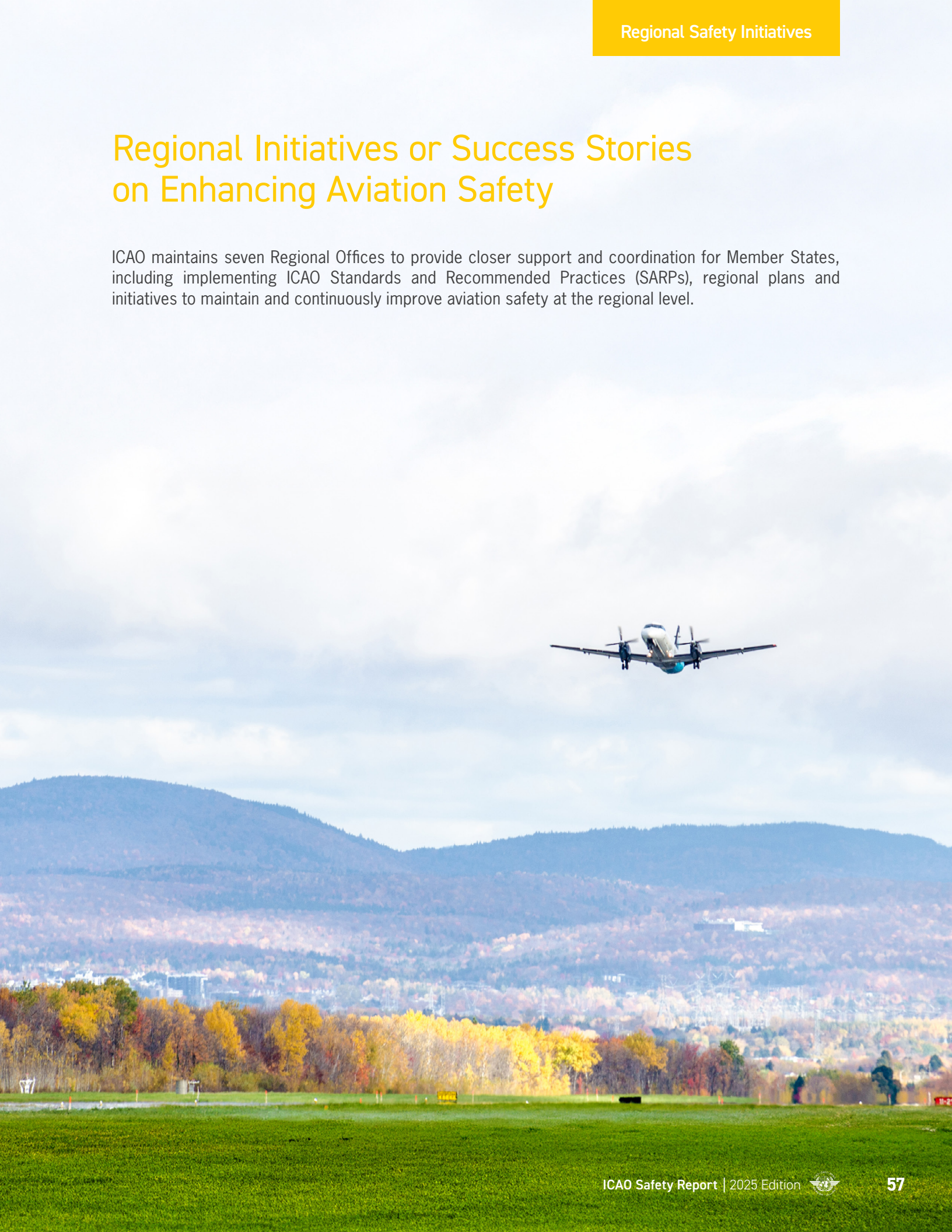


Chart 20. | USOAP Effective Implementation by Audit Area - 2024

Regional Initiatives or Success Stories on Enhancing Aviation Safety

ICAO maintains seven Regional Offices to provide closer support and coordination for Member States, including implementing ICAO Standards and Recommended Practices (SARPs), regional plans and initiatives to maintain and continuously improve aviation safety at the regional level.



Asia and Pacific Region

Flight Safety

The Global accident rate for the Asia and Pacific (APAC) Region showed a downtrend from 2022 to 2023. The accident rate decreased from 2.05 accidents per million departures in 2022 to 1.87 per million departures in 2023. Similarly, the Regional Aviation Safety Group Asia and Pacific Regions (RASG-APAC) accident rate also decreased from 1.38 per million departures to 0.78 per million departures over the same period. RASG-APAC's accident rate has remained lower than the global accident rate over the past decade. Overall, the five-year moving average accident rate, globally and for RASG-APAC, has shown a consistent downward trend.

The APAC Regional Office conducted Combined Action Team (CAT) technical assistance missions to Bangladesh, Maldives, Philippines and Thailand in 2024 and some follow up high-level support for Lao People's Democratic Republic. In the 2023-2024 period, CAT technical assistance was also provided by Regional Office to Viet Nam, China and Pakistan prior to their USOAP audits, contributing to an augmentation of almost 10 per cent to the USOAP effective implementation (EI) for these States.

The APAC Regional Office is focused on capacity building through provision of training. Seven Government Safety Inspector (GSI) courses were conducted. With funding assistance from the Federal Aviation Administration (FAA) and Boeing, GSI - AIR, OPS, PEL were organized in 2023-2024 for South Asia, Southeast Asian States and one GSI course (in AIR) took place in Fiji for Pacific Small Island Developing States (PSIDS). A total of 85 civil aviation authority (CAA) inspectors in the APAC Region were trained, and some of these participants are now ready to become instructors in their respective GSI areas.

With the assistance of Bangladesh, the APAC Regional Office developed a monitoring tool, which was updated in 2023/2024 to monitor States' progress on safety enhancement initiative (SEI) implementation, National Aviation Safety Plans (NASPs), APAC Regional Aviation Safety Plan (AP-RASP) and Global Aviation Safety Plan (GASP) SEI mapping and implementation. The tool is on currently on LIVE mode.

Air Traffic Management

Under the APAC Regional Airspace Safety Monitoring Advisory Group (RASMAG) airspace safety monitoring, the estimated vertical collision risk for Asia in 2023 remained within the Target Level of Safety (TLS), continuing a downward trend since 2017 due to ongoing safety enhancements. Specific airspaces, including the AKARA corridor, Southeast Asia, and the South Asia/Indian Ocean Region, also met the TLS.

The *Revised Guidance Material for Asia-Pacific reduced vertical separation minimum (RVSM) Airspace* introduced an enhanced process for identifying large height deviation (LHD) hotspots, resulting in the removal of nine hotspot areas in the APAC Region.

Additionally, ICAO APAC reviewed and updated the *Guidance Material for ATS Data Link Systems* to eliminate redundancies and formalize Performance-based Communication and Surveillance (PBCS) non-compliance reporting procedures.

Thereafter, three Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) airspace safety deficiencies related to safety data provision were also resolved in 2024 through ICAO-facilitated coordination, addressing lapses caused by unfamiliarity with reporting processes.

Aerodrome and Ground Aids

Currently (as of 19 March 2025) the achievement in aerodrome certification for international operations in the APAC Region is 91.35 per cent. This represents 338 out of 370 international airports in the Region being certified, a resounding success. This achievement can be attributed to the ICAO APAC Office concerted efforts and the Beijing Declaration (Asia Pacific Ministerial Conference on Civil Aviation (APACMC), 31 January to 1 February 2018, Beijing, China).

Eastern and Southern African Region

Introduction

Over the past years, the Eastern and Southern Africa (ESAF) Regional Office has been at the forefront of enhancing safety standards and practices in its 24 Member States. These contributions have not only strengthened the safety of aviation operations but have also set a trend for regional cooperation and collaboration. In the following section, we will examine three key activities that have significantly enhanced safety at the ESAF regional level.

Collaboration with Regional Safety Oversight Organizations

The ESAF Office has been instrumental in strengthening the two regional safety oversight organizations (RSOOs) in the Region – the Civil Aviation Safety and Security Oversight Agency (CASSOA) and the Southern Africa Development Community (SADC) Aviation Safety Organisation (SASO). While CASSOA's mandate includes both safety and security oversight, SASO is dedicated solely to safety oversight. Recognizing the critical importance of these organizations, the Regional Office was instrumental in advocating for their establishment within the frameworks of their respective Regional Economic Communities (RECs). This approach ensured strong support and commitment from Member States, facilitating their effective operationalization.

Peer Support initiative for Aerodrome Certification

The aerodrome certification process ensures that an aerodrome meets the minimum requirements necessary to guarantee the safety and efficiency of aircraft operations, thereby protecting passengers, equipment, crew and the surrounding environment.

The rate of aerodrome certification in the Region has steadily increased from 28 per cent to 52.5 per cent over the past five years. This success is attributed to the strategic approach adopted by the ESAF Regional Office. It includes capacity building through a peer support arrangement where an expert from a State that has certified at least one international aerodrome is assigned to support another State that has not certified any aerodrome. This peer support approach encompasses sharing of experiences and challenges encountered by different States and providing mutual support to ensure that "No Country is Left Behind" in the certification of international aerodromes.

Assistance to States through the Regional Office Safety Team Initiative

Over the years, significant progress has been made in enhancing aviation safety in the ESAF Region due to the sustained efforts and initiatives of the Regional Office Safety Team (ROST). The technical assistance provided by the ROST to States in the Region has been instrumental in improving the average effective implementation (EI) levels of the critical elements of the State safety oversight system, increasing from 54.79 per cent in 2019 to 61.6 per cent in 2024.

Beyond advancing EI across the Region, the ROST's support has been important in resolving all five Significant Safety Concerns (SSCs), bringing them to zero in 2022, and preventing the emergence of new SSCs. The ROST continues to provide ongoing technical assistance in addressing one SSC identified

in the Region in 2023. In addition to the technical assistance, the ESAF Regional Office Safety Team, in collaboration with Capacity Development and Implementation Bureau (CDI), has played a key role in successfully executing projects aimed at establishing and enhancing the State safety oversight systems of ESAF States.

European and North Atlantic Region

"Country Strategic Plan of Action" (COSPA): a collaborative "country strategy" to enhance aviation safety in Uzbekistan

In 2024, as endorsed at the 2023 Meeting of Directors General of Civil Aviation (DGCA) for the European and North Atlantic (EUR/NAT) Regions, the ICAO EUR/NAT Regional Office launched the implementation of a new collaborative pilot programme. This Country Strategic Plan of Action (COSPA) programme follows a country strategy to enhance aviation safety in Uzbekistan, ICAO's only "doubly landlocked" Member State. This initiative aligns with Uzbekistan's National Development Plan. It leverages existing implementation support mechanisms and programmes and introduces new initiatives to address priority needs. It brings together key partners which are engaged in supporting the development and implementation of the COSPA. The main goal is to enhance effectiveness, efficiency and collaboration in implementation support activities related to aviation safety.

Following the 2023 EUR/NAT-DGCA Meeting, Uzbekistan committed to being the first beneficiary of the COSPA pilot programme, with its Minister of Transport signing an agreement with ICAO in January 2024. Uzbekistan's COSPA aims to strengthen aviation safety through a structured and prioritized strategic approach in order to:

- Enhance the State's strategic aviation planning capabilities, in particular to help ensure the availability of sufficient and sustainable human and financial resources within the State aviation authorities, and develop a robust National Aviation Safety Plan (NASP).
- Increase the State's capabilities for safety oversight.
- Strengthen the State's aircraft accident and incident investigation system.
- Strengthen the State's safety management capabilities.
- Enhance operational safety.

The current COSPA partners include France (French Civil Aviation Authority (DGAC) and Bureau d'Enquêtes et d'Analyses (BEA)), the United States (Federal Aviation Administration (FAA) and National Transportation Safety Board (NTSB)), Airports Council International (ACI)/ACI-Europe, International Air Transport Association (IATA), Airbus, Boeing and the World Bank.

A strategic review board guides the delivery of the programme through a 3-year prioritized activity plan. The programme is regularly updated and progressed by a technical cooperation team to enhance coordination for delivery of the COSPA objectives.

Accident and Serious Incident Investigation Project for Central Asian States

In January 2025, the ICAO EUR/NAT Regional Office, in close cooperation with the Capacity Development and Implementation Bureau (CDI) and Air Navigation Bureau (ANB), launched a sub-regional project to strengthen the capabilities of Central Asian States (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) for the investigation of aircraft accidents and serious incidents. This initiative focuses on the establishment and effective operation of a national independent investigation authority by each State, making use of existing regional arrangements and bilateral agreements. It also addresses the

development and implementation of a system in each State to ensure the systematic, effective and independent investigation of aircraft accidents and serious incidents, from the timely initiation of the investigation up to the publication of the Final Report.

The project includes a root cause analysis of the current situation and challenges. The initial phase includes the collection of information and insights, gathered through surveys and interviews with representatives of the concerned States and the Interstate Aviation Committee (IAC), as the regional accident investigation organization active in the Central Asian sub-region. The project will produce recommendations to assist States in implementing an effective and independent accident and serious incident investigation system, in line with the provisions of Annex 13 — *Aircraft Accident and Incident Investigation*. These recommendations will be developed following a high-level consultation with the concerned States and organizations.

Middle East Region

The Fifth Safety Summit

Under the theme of *Collaborative Approach to Managing and Enhancing Aviation Safety*, the Fifth Middle East (MID) Region Safety Summit was held in Kuwait from 25 to 27 November 2024, bringing together over 100 participants from States, international organizations and industry stakeholders. The summit served as a platform to foster collaboration in aviation safety by aligning strategies, sharing experiences and addressing emerging challenges.

The Summit focused on the following key areas:

- Implementation of State safety programme (SSP) and safety management system (SMS).
- Establishing a robust safety risk management framework at the State level.
- Developing effective safety performance indicators (SPIs).
- Enhancing safety intelligence and data analysis capabilities.
- Assessment of SSP and SMS implementation.
- Addressing emerging threats such as global navigation satellite system (GNSS) interference and spoofing, Advanced Air Mobility (AAM) integration and cybersecurity risks.
- Advancing aerodrome certification and establishing Runway Safety Teams.

The summit reinforced the importance of strengthened collaboration among stakeholders to address aviation safety challenges; leveraging data-driven safety intelligence for informed decision-making; and capacity-building initiatives to enhance regional safety capabilities. A strong commitment was made to align regional safety strategies with ICAO Standards to ensure continuous improvement and resilience in addressing emerging challenges. Additionally, the MID Office's role in providing technical support and facilitating cross-State coordination was highlighted as critical to advancing aviation safety in the Region.

6th MID Region Safety Summit

The United Arab Emirates has graciously volunteered to host the Sixth MID Region Safety Summit in 2026. This reflects the United Arab Emirates's dedication to promoting aviation, safety and fostering regional collaboration.

North American, Central American and Caribbean Region

Enhancing State Safety Oversight Capacity

The ICAO North American, Central American and Caribbean (NACC) safety oversight system improvement project was launched as a response from the Regional Office to the need of Caribbean (CAR) States for real diagnostics and multidisciplinary technical support, due to low levels of State safety oversight performance. The main goals are to enable States to demonstrate compliance with ICAO Standards and Recommended Practices (SARPs) regardless of the audit methodology (Universal Safety Oversight Audit Programme (USOAP), International Air Safety Association (IASA), Safety Assessment of Foreign Aircraft (SAFA)) and to strengthen the pool of qualified inspectors across the region.

Key achievements include:

- **Development of the CRDET**, a standardized evaluation tool aligning international audit criteria across LEG, ORG, PEL, OPS, and AIR areas.
- **Formation of a regional team of experts**, with inspectors trained in international audit philosophies.
- **Successful evaluations** in Costa Rica, Honduras, and Guatemala, with clear diagnoses and tailored technical guidance.
- **Regional capacity building**, fostering knowledge exchange and cooperation among States.
- **Integration into the NACC Strategic Assistance Programme**, ensuring ongoing monitoring, virtual support and sustainability.

The project has had a strategic impact by giving States an updated perspective on their oversight systems and enhancing their preparedness for international audits. In 2025, the project will continue with follow-up missions and expand to Caribbean States such as Jamaica, Organization of Eastern Caribbean States (OECS), and Trinidad and Tobago, in coordination with the CAR Region Regional Safety Oversight Organization (RSOO), Agency on Aeronautical Safety for Central America (ACSA) and Caribbean Aviation Safety and Security Oversight System (CASSOS).

Strengthening the implementation of Accident Investigation in the Region

The Accident Investigation (AIG) Turnkey Project, led by ICAO's NACC Office, supports States in Central America and the Caribbean in strengthening their accident and incident investigation systems. Through a two-phase structure – initial theoretical workshops followed by in-situ technical assistance – the project aims to build national capacity, support the creation of investigation frameworks and lay the groundwork for future regional cooperation through Regional Accident and Incident Investigation Organizations (RAIOs).

All five theoretical sessions (Phase 1) have been completed, with participation from most States. This phase was funded by the United States (Federal Aviation Administration (FAA)) and Project RLA09801 Multi-Regional Civil Aviation Assistance Programme (MCAAP). For the implementation missions under Phase 2, funding was provided by the United States (FAA) for Central American States, and by Canada (Transport Canada) for Cuba, the Dominican Republic, and Barbados. Missions have been completed in Belize, Costa Rica, Cuba, the Dominican Republic (ongoing), and Honduras, which finalized all three missions in January 2025. Barbados is the next State to receive assistance.

The project has led to tangible outcomes such as updated legislation, procedures, databases and national AIG structures. A dedicated page in the integrated Safety Trend Analysis and Reporting System (iSTARS) under the NACC Region is under development to monitor implementation progress. The project looks to support other States based on fund availability and its success reinforces ICAO's leadership in regional safety improvements and offers a scalable model for global application.

South American Region

Continuous Improvement Programme

To continue supporting South American (SAM) States in achieving 95 per cent effective implementation (EI) by 2030, the SAM Office implemented the continuous improvement programme to strengthen the civil aviation systems of SAM States. The programme combines on-site missions with remote monitoring and follow-up activities, enabling the provision of support measures for States lagging in the USOAP CMA to improve their EI, while also helping States with good EI levels to maintain and enhance their current performance.

The continuous improvement programme allows for the development of specific support projects for States, based on improvement opportunities identified during on-site missions and other sources of information, including the regional dashboards in integrated Safety Trend Analysis and Reporting System (iSTARS).

Through this programme, the Regional Office established a system that enables States to sustain their civil aviation and safety oversight systems over time, mitigating the risk of EI drift and strengthening channels of communication, collaboration and trust.

The support provided by the Regional Safety Oversight Cooperation System (SRVSOP) has been a key element in the programme's success, contributing 45 per cent of the specialists in charge of the on-site missions and follow-up activities for the continuous improvement programme. Likewise, the high level of regulatory harmonization at the regional level, thanks to the Latin American Regulations (LAR), facilitates horizontal cooperation among States, generates efficiencies at multiple levels, and supports the development and implementation of practical solutions to common challenges – while ensuring compliance with ICAO Standards and Recommended Practices.

The SAM Region has improved its EI by nearly 10 points over the past 10 years, remaining above the global average. The continuous improvement programme aims to drive this growth as a result of strengthening civil aviation authorities through data and information-driven initiatives.

Regional Aviation Safety Group – Pan America

The Regional Aviation Safety Group – Pan America (RASG-PA), whose Secretariat was under the responsibility of the SAM Office from 2018 to 2024, was the first of its kind globally and has managed to maintain its leadership for 16 years. This group has succeeded in bringing together States, international organizations, and industry, not only to promote the implementation of the GASP at the regional level, but also to develop safety risk mitigation measures and fatality risk reduction through data analysis.

The region averages 0.8 fatalities per year over the past five years, making it one of the safest in the world.

Thanks to a project-based work programme and the active participation of all its members, over the past three years RASG-PA has: developed and made available to the public 11 advisory circulars and guidance material; led the creation of the Peruvian Collaborative Safety Team (PCAST); established the RASG-PA Safety Partners Programme with the active participation of the Region's top 10 airlines; organized two RASG-PA Safety Days to disseminate mitigation mechanisms; published two Safety Reports; produced a

video for the prevention of turbulence-related injuries; created the RASG-PA Turbulence Toolkit; carried out support missions for the establishment of new CSTs; and provided financial and technical support for projects related to language proficiency, PBN implementation on visual runways, implementation of Runway Safety Teams; and promoted a significant amendment to Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport — Aeroplanes* on flight data analysis.

The contribution of this group to the Region's safety is undeniable and its drive remains intact, constantly working on the development of new projects and the production of deliverables for the benefit of the Pan American States and the world.

Western and Central African Region

The Western and Central Africa (WACAF) Office provides support to States in all Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) related areas which has led to significant improvement in safety. The Safety Oversight level of effective implementation in the WACAF Region increased from 55.22 per cent to 60.96 per cent in the past 5 years. Latest examples of States' EI increase after USOAP CMA activities are Côte d'Ivoire (from 79.84 per cent to 93.89 per cent); Senegal (from 63.26 per cent to 84.89 per cent) and Sierra Leone (from 16.03 per cent to 72.66 per cent).

In the case of Sierra Leone for example, the Regional Office noticing that the civil aviation authority (CAA) did not have sufficient capacity to oversee the entity handling dangerous goods, coordinated a cooperation mechanism between Sierra Leone and Ghana CAAs for necessary support in this area. Same coordination involving Sierra Leone, Ghana, Côte d'Ivoire and Nigeria CAAs, as well as BAGASOO (RSOO) contributed to the successfully completion of the certification process of the Freetown international Airport.

Specific projects were developed and implemented by the WACAF Office under SAFE Fund in Gabon and currently in Sao Tome and Principe. The Gabon's Project implemented between 2016 and 2019 led to an increase of the EI from 26.07 per cent to 72.91 per cent. This success helped in developing a similar project for Sao Tome which is currently in its implementation phase. The Phase 1 of the SAFE-funded capacity building project for Sao Tome and Principe has been completed, establishing the fundamentals of the State safety oversight system. The Regional Office's support included the assistance from subject matter experts (SMEs) from the Region, seconded by their States, thus limiting costs and optimizing the resources allocated to the project.

The Airport Excellence (APEX) in Safety Programme is based on ICAO Standards and Recommended Practices (SARPs) and the Airport Council International (ACI) best practices, conducted by ACI in coordination with ICAO Regional Offices. The Programme assists airports in identifying safety gaps and vulnerabilities and setting roadmaps for aerodrome certification and safety enhancements. The first APEX review in the world was conducted in 2011 in Lome, Togo. At the end of 2024, all international airports in the WACAF region have been assessed through APEX reviews. The WACAF Office is supporting States in the implementation of plans of action to resolve identified deficiencies.

Support is provided by the WACAF Office to States through a specific project on aerodrome certification, enabling collaboration and cooperation between States and regional safety oversight organizations (RSOOs), and sharing of lessons learned. Experts from States and RSOOs that have already certified airports, assist counterparts in other countries under a peer review and support programme until the aerodrome certification requirement is achieved. At the end of 2024, 15 States (62.5 per cent) of the WACAF Region developed capacities for aerodrome certification through this mechanism, in certifying at least one international airport.

The implementation of a specific project is ongoing with the aim of assisting WACAF States to implement their State safety programme (SSP) through a phased approach that can ensure solid foundations for an SSP and then progress towards achieving the Global Aviation Safety Plan (GASP) and Regional Aviation Safety Plan (RASP) Goal 3, and related targets. Activities conducted so far include the development of generic documentation supporting SSP implementation by States' experts, under the coordination of the

WACAF Office, and the conduct of several technical remote and on-site assistance and capacity-building activities to support States. By the end of 2024, the overall implementation of SSP foundation Protocol Questions in the WACAF region was 67.7 per cent.

Support is also provided by the WACAF Office to States for the development and publication of the National Aviation Safety Plans (NASPs). To date, seven States have published their NASPs.

Appendix 1

ICAO Regions

The ICAO Regions used for statistics in this report are based on the Member States accredited to each ICAO regional office. ICAO maintains seven regional offices to provide closer support and coordination for Member States: Asia and Pacific (APAC) Office; Eastern and Southern African (ESAF) Office; European and North Atlantic (EUR/NAT) Office; Middle East (MID) Office; North American, Central American and Caribbean (NACC) Office; South American (SAM) Office; and Western and Central African (WACAF) Office. More information about ICAO regional offices can be found at www.icao.int/secretariat/RegionalOffice/Pages/default.aspx.

APAC (39)

Afghanistan
Australia
Bangladesh
Bhutan
Brunei Darussalam
Cambodia
China
Cook Islands
Democratic People's Republic of Korea
Fiji
India
Indonesia
Japan
Kiribati
Lao People's Democratic Republic
Malaysia
Maldives
Marshall Islands
Micronesia (Federated States of)
Mongolia
Myanmar
Nauru
Nepal
New Zealand
Pakistan
Palau
Papua New Guinea
Philippines
Republic of Korea
Samoa
Singapore
Solomon Islands
Sri Lanka
Thailand
Timor-Leste
Tonga
Tuvalu
Vanuatu
Viet Nam

Appendix 1

ESAF (24)

- Angola
- Botswana
- Burundi
- Comoros
- Djibouti
- Eritrea
- Eswatini
- Ethiopia
- Kenya
- Lesotho
- Madagascar
- Malawi
- Mauritius
- Mozambique
- Namibia
- Rwanda
- Seychelles
- Somalia
- South Africa
- South Sudan
- Uganda
- United Republic of Tanzania
- Zambia
- Zimbabwe

EUR/NAT (56)

- Albania
- Algeria
- Andorra
- Armenia
- Austria
- Azerbaijan
- Belarus
- Belgium
- Bosnia and Herzegovina
- Bulgaria
- Croatia
- Cyprus
- Czechia
- Denmark
- Estonia
- Finland
- France
- Georgia
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Israel
- Italy
- Kazakhstan
- Kyrgyzstan
- Latvia
- Lithuania
- Luxembourg
- Malta
- Monaco
- Montenegro
- Morocco
- Netherlands
- North Macedonia
- Norway
- Poland
- Portugal
- Republic of Moldova
- Romania
- Russian Federation
- San Marino
- Serbia
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Tajikistan
- Tunisia
- Türkiye
- Turkmenistan
- Ukraine
- United Kingdom
- Uzbekistan

MID (15)

- Bahrain
- Egypt
- Iran (Islamic Republic of)
- Iraq
- Jordan
- Kuwait
- Lebanon
- Libya
- Oman
- Qatar
- Saudi Arabia
- Sudan
- Syrian Arab Republic
- United Arab Emirates
- Yemen

NACC (22)

- Antigua and Barbuda
- Bahamas
- Barbados
- Belize
- Canada
- Costa Rica
- Cuba
- Dominica
- Dominican Republic
- El Salvador
- Grenada
- Guatemala
- Haiti
- Honduras
- Jamaica
- Mexico
- Nicaragua
- Saint Kitts and Nevis
- Saint Lucia
- Saint Vincent and the Grenadines
- Trinidad and Tobago
- United States

SAM (13)				
Argentina	Brazil	Ecuador	Paraguay	Uruguay
Bolivia (Plurinational State of)	Chile	Guyana	Peru	Venezuela (Bolivarian Republic of)
	Colombia	Panama	Suriname	

WACAF (24)				
Benin	Chad	Gabon	Mali	Senegal
Burkina Faso	Congo	Gambia	Mauritania	Sierra Leone
Cameroon	Côte d'Ivoire	Ghana	Niger	Togo
Cabo Verde	Democratic Republic of the Congo	Guinea	Nigeria	
Central African Republic	Equatorial Guinea	Guinea-Bissau	Sao Tome and Principe	
		Liberia		

Appendix 2

List of accidents involving scheduled commercial operations of aircraft with a certified maximum take-off weight (MTOW) over 5 700 kg in 2024

Local date	Aircraft make/model /master series	State of Occurrence	ICAO Region	Occurrence category	Highest damage	Total fatalities	Total serious injuries
2024-01-02	AIRBUS A350-900; DE HAVILLAND DHC8-300	Japan	APAC	RI; F-POST	Destroyed	5	2
2024-01-05	BOEING 737-800	Argentina	SAM	ARC	Substantial	-	-
2024-01-05	BOEING 737-9	United States	NACC	SCF-NP	Substantial	-	-
2024-01-10	BOEING 737-900	United States	NACC	ARC	Substantial	-	-
2024-01-17	AIRBUS A320-200	Germany	EUR/NAT	RAMP	Substantial	-	-
2024-01-18	DE HAVILLAND DHC8-400	Ethiopia	ESAF	SCF-NP; ARC	Substantial	-	-
2024-01-21	AIRBUS A350-900	Canada	NACC	ARC	Substantial	-	-
2024-01-23	BAE JETSTREAM 3100-3200	Canada	NACC	CFIT; F-POST	Destroyed	6	-
2024-01-31	BOEING 787-9	Japan	APAC	TURB	None	-	1
2024-02-08	AIRBUS A321-200; AIRBUS A321-200	United States	NACC	GCOL	Substantial	-	-
2024-02-09	AIRBUS A300-600	Germany	EUR/NAT	ARC	Substantial	-	-
2024-02-10	BOEING 777-200	United States	NACC	TURB	None	-	2
2024-02-18	EMBRAER ERJ 190-200	Serbia	EUR/NAT	CTOL; RE	Substantial	-	-
2024-02-18	BOEING 767-300	Colombia	SAM	TURB	None	-	1
2024-03-05	DE HAVILLAND DHC8-300	Kenya	ESAF	MAC	Destroyed	2	-
2024-03-08	BOEING 737-8	United States	NACC	LOC-G; RE	Substantial	-	-
2024-03-09	AIRBUS A330-300	China	APAC	TURB	None	-	1
2024-03-09	BOEING 737-700	United States	NACC	TURB	None	-	1
2024-03-11	BOEING 787-9	New Zealand	APAC	UNK; AMAN	None	-	2
2024-03-14	BOEING 737-800	United States	NACC	TURB	None	-	1
2024-03-20	BOEING 787-9	Japan	APAC	WSTRW	Substantial	-	-

Local date	Aircraft make/model /master series	State of Occurrence	ICAO Region	Occurrence category	Highest damage	Total fatalities	Total serious injuries
2024-03-23	BOEING 767-300	Panama	NACC	ARC	Substantial	-	-
2024-03-28	BOEING 757-232	United States	NACC	TURB	None	-	1
2024-04-01	BOEING 787-8	Japan	APAC	TURB	None	-	1
2024-04-03	BOEING 737-700	United States	NACC	TURB	None	-	2
2024-04-03	BOEING 717-200	United States	NACC	TURB	None	-	1
2024-04-07	BOEING 737-8	Canada	NACC	RAMP	Minor	-	1
2024-04-13	DE HAVILLAND DHC8-400	Canada	NACC	ARC	Substantial	-	-
2024-04-16	BOEING 787-9	New Zealand	APAC	TURB	None	-	1
2024-04-26	BOEING 757-200	United States	NACC	TURB	None	-	1
2024-05-04	BOEING 737-800	Australia	APAC	TURB	None	-	1
2024-05-05	FOKKER F27-050	Comoros	ESAF	RE; SCF-NP	Substantial	-	1
2024-05-09	BOEING 737-300	Senegal	WACAF	RE; UNK	Destroyed	-	1
2024-05-19	AIRBUS A330-300	China	APAC	TURB	None	-	2
2024-05-20	BOEING 757-300	Germany	EUR/NAT	AMAN	None	-	1
2024-05-21	BOEING 777-300	Myanmar	APAC	TURB	Minor	1	56
2024-05-26	BOEING 787-9	Türkiye	EUR/NAT	TURB	None	-	1
2024-05-29	EMBRAER ERJ190-100	Netherlands	EUR/NAT	SEC	None	1	-
2024-05-31	AIRBUS A330-200	Chad	WACAF	WSTRW	Substantial	-	-
2024-06-04	DE HAVILLAND DHC8-400	Canada	NACC	ARC	Substantial	-	-
2024-06-04	AIRBUS A319-100	Thailand	APAC	OTHR	Substantial	-	-
2024-06-27	AIRBUS A320-200	Germany	EUR/NAT	ARC	Substantial	-	-
2024-06-28	DE HAVILLAND DHC8-400	Canada	NACC	ARC	Substantial	-	-
2024-07-01	BOEING 787-9	Atlantic Ocean	SAM	TURB	Minor	-	4
2024-07-02	AIRBUS A330-300	Indonesia	APAC	SCF-PP; F-NI; EVAC	Substantial	-	1
2024-07-14	AIRBUS A320-200	Spain	EUR/NAT	RAMP	None	-	1

Local date	Aircraft make/model /master series	State of Occurrence	ICAO Region	Occurrence category	Highest damage	Total fatalities	Total serious injuries
2024-07-16	AIRBUS A320-200	United States	NACC	AMAN	None	-	1
2024-07-20	DE HAVILLAND DHC8-400	Japan	APAC	BIRD	Substantial	-	-
2024-08-04	BOEING 777-200	United States	NACC	TURB	None	-	1
2024-08-07	BOEING 737-700	United States	NACC	TURB	None	-	1
2024-08-08	AIRBUS A321-200	United States	NACC	TURB	None	-	1
2024-08-09	ATR ATR72-200	Brazil	SAM	LOC-I; ICE; SCF-NP	Destroyed	62	-
2024-08-18	BOEING 737-800	Russian Federation	EUR/NAT	ARC	Substantial	-	-
2024-08-19	BOEING 737-700	United States	NACC	TURB	None	-	1
2024-08-21	BOEING 737-800	United Kingdom	EUR/NAT	RAMP	Substantial	-	-
2024-08-23	BOEING 737-400	Afghanistan	APAC	RE	Substantial	-	-
2024-08-24	BOEING 737-500	Spain	EUR/NAT	RAMP; OTHR	None	-	1
2024-08-31	AIRBUS A330-300; AIRBUS A350-1000	United States	NACC	GCOL	Substantial	-	-
2024-09-04	BOEING 787-9	Korea Republic of	APAC	TURB	None	-	1
2024-09-06	BOEING 787-9	China	APAC	TURB	None	-	2
2024-09-09	ATR ATR42-500	Indonesia	APAC	RE; SCF-PP	Destroyed	-	2
2024-09-09	AIRBUS A321-200	India	APAC	ARC	Substantial	-	-
2024-09-10	AIRBUS A350-900; BOMBARDIER CL600 2D24-900	United States	NACC	GCOL	Substantial	-	-
2024-09-11	AIRBUS A330-200; AIRBUS A330-900	France	EUR/NAT	GCOL	Substantial	-	-
2024-09-15	AIRBUS A321-200	Greece	EUR/NAT	ARC	Substantial	-	-
2024-09-19	BOEING 757-200	United States	NACC	MAC; AMAN	None	-	2
2024-09-24	AIRBUS A320-200	Belgium	EUR/NAT	ARC	Substantial		-
2024-10-01	BOEING 737 Max 8	Italy	EUR/NAT	SCF-NP	Substantial	-	-
2024-10-08	ATR ATR72-600	India	APAC	USOS	Substantial	-	-
2024-10-18	AIRBUS A321-200	Ireland	EUR/NAT	ARC	Substantial	-	-
2024-10-21	BOEING 787-9	China	APAC	ARC	Substantial	-	-

Local date	Aircraft make/model /master series	State of Occurrence	ICAO Region	Occurrence category	Highest damage	Total fatalities	Total serious injuries
2024-10-24	DE HAVILLAND DHC-8-400	Canada	NACC	ARC	Substantial	-	-
2024-10-24	BOEING 737-9	United States	NACC	SCF-NP	Substantial	-	-
2024-10-24	BOEING 737 MAX 8	Canada	NACC	BIRD	Substantial		-
2024-10-28	AIRBUS A330-300	Saudi Arabia	MID	RAMP	None	1	-
2024-11-03	BOEING 767-300	Jamaica	NACC	TURB	None	-	1
2024-11-09	BOEING 737-400	Brazil	SAM	F-NI	Destroyed	-	-
2024-11-09	AIRBUS A310-300	United Arab Emirates	MID	TURB	None	-	1
2024-11-12	ATR ATR72-500	Finland	EUR/NAT	RAMP	None	-	1
2024-11-15	BOEING 787-9	Japan	APAC	TURB	None	-	2
2024-11-18	BOEING 757-200	United States	NACC	TURB	None	-	1
2024-11-19	BOEING 767-300	Canada	NACC	RE; SCF-NP	Substantial	-	-
2024-11-20	EMBRAER ERJ170-200	United States	NACC	TURB	None	-	2
2024-11-21	AIRBUS A220-300	Switzerland	EUR/NAT	RAMP	Substantial	-	-
2023-11-21	AIRBUS A330-300	Sweden	EUR/NAT	ARC	Substantial	-	-
2024-11-23	BOEING 777-200	Brazil	SAM	TURB	None	-	1
2024-11-27	BOEING 737-400	Canada	NACC	SCF-NP	Substantial	-	-
2024-12-03	BOEING 787-9	Pacific Ocean	APAC	TURB	None	-	1
2024-12-16	BOEING 737-800	United Kingdom	EUR/NAT	RAMP	None	-	1
2024-12-23	AIRBUS A220-300	Austria	EUR/NAT	SCF-PP; F-NI	None	1	1
2024-12-25	EMBRAER ERJ190-100	Kazakhstan	EUR/NAT	SEC	Destroyed	38	16
2024-12-26	BOEING 737-9	United States	NACC	TURB	None	-	2
2024-12-28	DE HAVILLAND DHC8-400	Canada	NACC	SCF-NP	Substantial	-	-
2024-12-29	BOEING 737-800	Republic of Korea	APAC	BIRD; ARC; F-POST; RE; ADRM	Destroyed	179	2
2024-12-29	BOEING 767-300	United States	NACC	TURB	None	-	1

Appendix 3

CICTT Aviation Occurrence Categories (May 2021)

Code	Description
ADRM	**Aerodrome:** Occurrences involving Aerodrome design, service, or functionality issues.
AMAN	**Abrupt Maneuver:** The intentional abrupt maneuvering of the aircraft by the flight crew.
ARC	**Abnormal runway contact:** Any landing or takeoff involving abnormal runway or landing surface contact.
ATM	**ATM/CNS:** Occurrences involving Air Traffic Management (ATM) or Communication, Navigation, Surveillance (CNS) service issues.
BIRD	**Bird:** Occurrences involving collisions/near collisions with bird(s).
CABIN	**Cabin safety events:** Miscellaneous occurrences in the passenger cabin of transport category aircraft.
CFIT	**Controlled flight into/towards terrain:** In-flight collision or near collision with terrain, water, or obstacle without indication of loss of control.
CTOL	**Collision with obstacles during takeoff and landing:** Collision with obstacle(s) during takeoff or landing while airborne.
EVAC	**Evacuation:** Occurrence in which either, (a) a person(s) was/were injured during an evacuation, (b) an unnecessary evacuation was performed, (c) evacuation equipment failed to perform as required, or (d) the evacuation contributed to the severity of the occurrence.
EXTL	**External load related occurrence:** Occurrences during or as a result of external load or external cargo operations.
FUEL	**Fuel related:** One or more powerplants experienced reduced or no power output due to fuel exhaustion, fuel starvation/mismanagement, fuel contamination/wrong fuel, or carburetor and/or induction icing.
F-NI	**Fire/smoke (non-impact):** Fire or smoke in or on the aircraft, in flight, or on the ground, which is not the result of impact.
F-POST	**Fire/smoke (post-impact):** Fire/Smoke resulting from impact.

Code	Description
GCOL	**Ground collision:** Collision while taxiing to or from a runway in use.
GTOW	**Glider towing related events:** Premature release, inadvertent release or non-release during towing, entangling with towing, cable, loss of control, or impact into towing aircraft/winch.
ICE	**Icing:** Accumulation of snow, ice, freezing rain, or frost on aircraft surfaces that adversely affects aircraft control or performance.
LALT	**Low altitude operations:** Collision or near collision with obstacles/objects/terrain while intentionally operating near the surface (excludes takeoff or landing phases).
LOC-I	**Loss of control in-flight:** Loss of aircraft control while, or deviation from intended flightpath, in flight. Loss of control inflight is an extreme manifestation of a deviation from intended flightpath. The phrase "loss of control" may cover only some of the cases during which an unintended deviation occurred.
LOC-G	**Loss of control-ground:** Loss of aircraft control while the aircraft is on the ground.
LOLI	**Loss of lifting conditions enroute:** Landing en route due to loss of lifting conditions.
MAC	**Airprox/ ACAS alert/ loss of separation/ (near) mid-air collisions:** Air proximity issues, Traffic Collision Avoidance System (TCAS)/Airborne Collision Avoidance System (ACAS) alerts, loss of separation as well as near collisions or collisions between aircraft in flight.
MED	**Medical:** Occurrences involving illnesses of persons on board an aircraft
NAV	**Navigation errors:** Occurrences involving the incorrect navigation of aircraft on the ground or in the air.
OTHR	**Other:** Any occurrence not covered under another category.
RAMP	**Ground handling:** Occurrences during (or as a result of) ground handling operations.
RE	**Runway excursion:** A veer off or overrun off the runway surface.
RI	**Runway incursion:** Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft.
SEC	**Security related:** Criminal/Security acts which result in accidents or incidents (per Annex 13 to the Convention on International Civil Aviation).

Code	Description
SCF-NP	**System/component failure (non-powerplant):** Failure or malfunction of an aircraft system or component other than the powerplant.
SCF-PP	**System/component failure (powerplant):** Failure or malfunction of an aircraft system or component related to the powerplant.
TURB	**Turbulence encounter:** In-flight turbulence encounter.
UIMC	**Unintended flight in IMC:** Unintended flight in Instrument Meteorological Conditions (IMC).
UNK	**Unknown or undetermined:** Insufficient information exists to categorize the occurrence.
USOS	**Undershoot/overshoot:** A touchdown off the runway/helipad/helideck surface.
WILD	**Wildlife:** Collision with, risk of collision, or evasive action taken by an aircraft to avoid wildlife on the movement area of an aerodrome or on a helipad/helideck in use.
WSTRW	**Wind shear or thunderstorm:** Flight into wind shear or thunderstorm.

Notes

Notes

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