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Doc 10004

Global Aviation Safety Plan

2020-2022



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION



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AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

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EXECUTIVE SUMMARY

Safety is a top priority in aviation. The purpose of the Global Aviation Safety Plan (GASP) is to continually reduce fatalities, and the risk of fatalities, by guiding the development of a harmonized aviation safety strategy, and developing and implementing regional and national aviation safety plans. A safe aviation system contributes to the economic development of States and their industries. The GASP promotes the implementation of a State's safety oversight system, a risk-based approach to managing safety as well as a coordinated approach to collaboration between States, regions and industry. States are encouraged to support and implement the GASP as the strategy for the continuous improvement of global aviation safety.

ICAO recognizes the need for its safety strategy to evolve and ensure its sustained effectiveness and efficiency in the changing regulatory, economic and technical environments. The 2020-2022 edition of the GASP maintains some key elements from its previous edition, such as goals for States to improve their effective safety oversight capabilities and to progress in the implementation of State safety programmes (SSPs). Main changes in the plan include new goals and targets for States, regions and industry, as well as tools to measure States' safety oversight capabilities. This edition of the plan also recognizes the importance of safety risk analyses at national and regional levels. It incorporates guidelines and a structure by which States, groups of States or entities within a region identify hazards and mitigate operational safety risks through the assistance of regional aviation safety groups as well as regional coordination. The vision of the GASP is to achieve and maintain the aspirational safety goal of zero fatalities in commercial operations by 2030 and beyond, which is consistent with the United Nations' *2030 Agenda for Sustainable Development*. The plan's mission is to continually enhance aviation safety performance internationally by providing a collaborative framework for States, regions and industry. This is supported by a series of goals:

Goal 1 is to achieve a continuous reduction of operational safety risks.

Goal 2 calls for all States to strengthen their safety oversight capabilities.

Goal 3 is also aimed at individual States and calls for the implementation of effective SSPs.

Goal 4 calls for States to increase collaboration at the regional level to enhance safety.

Goal 5 aims to expand the use of industry programmes.

Goal 6 focuses on the need to ensure the appropriate infrastructure is available to support safe operations.

To achieve the GASP goals, authorities within the State need to provide sufficient resources and qualified technical personnel for the effective implementation of the State's safety enhancement initiatives. In order to mitigate the risk of fatalities, States, regions and industry need to address the high-risk categories of occurrences (HRCs). The selection of types of occurrences which are deemed global HRCs (previously referred to as "global safety priorities" in the 2017-2019 edition of the GASP) is based on actual fatalities from past accidents, high fatality risk per accident or the number of accidents and incidents. The following HRCs, in no particular order, have been identified for the 2020-2022 edition of the GASP: controlled flight into terrain; loss of control in-flight; mid-air collision; runway excursion; and runway incursion.

The GASP includes the global aviation safety roadmap, which serves as an action plan to assist the aviation community in achieving its goals through a structured, common frame of reference for all relevant stakeholders.

Each region and each State should use the GASP to develop a regional aviation safety plan and national aviation safety plan, respectively, which includes industry participation. The regional or national aviation safety plan presents the strategic direction for the management of aviation safety at the regional or national level, for a set time period and should be developed in line with the GASP's goals, targets and HRCs.

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GLOSSARY

DEFINITIONS

Acceptable level of safety performance (ALoSP). The level of safety performance agreed by State authorities to be achieved for the civil aviation system in a State, as defined in its State safety programme, expressed in terms of safety performance targets and safety performance indicators.

Adequate. The state of fulfilling minimal requirements; satisfactory; acceptable; sufficient.

Audit. A systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements and audit criteria are fulfilled.

Audit area. One of eight audit areas pertaining to the Universal Safety Oversight Audit Programme (USOAP), i.e. primary aviation legislation and civil aviation regulations (LEG); civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

Critical elements (CEs). The critical elements of a safety oversight system encompass the whole spectrum of civil aviation activities. They are the building blocks upon which an effective safety oversight system is based. The level of effective implementation of the CEs is an indication of a State's capability for safety oversight.

Effective implementation (EI). A measure of the State's safety oversight capability, calculated for each critical element, each audit area or as an overall measure. The EI is expressed as a percentage.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Safety. The state in which risks associated with aviation activities, related to, or in direct support of the operation of aircraft, are reduced and controlled to an acceptable level.

Safety audit. A USOAP CMA audit that a State requests and pays for (on a cost recovery basis). The State determines the scope and date of a safety audit. Also see definition of *audit*.

Safety data. A defined set of facts or set of safety values collected from various aviation related sources, which is used to maintain or improve safety.

Note.— Such safety data is collected from proactive or reactive safety-related activities, including but not limited to:

- a) *accident or incident investigations;*
- b) *safety reporting;*
- c) *continuing airworthiness reporting;*
- d) *operational performance monitoring;*
- e) *inspections, audits, surveys; or*
- f) *safety studies and reviews.*

Safety enhancement initiative (SEI). One or more actions to eliminate or mitigate risks associated with contributing factors to a safety occurrence or to address an identified safety deficiency.

Safety information. Safety data processed, organized or analysed in a given context so as to make it useful for safety management purposes.

Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

Safety oversight. A function performed by a State to ensure that individuals and organizations performing an aviation activity comply with safety-related national laws and regulations.

Safety performance. A State or a service provider's safety achievement as defined by its safety performance targets and safety performance indicators.

Safety performance indicator. A data-based parameter used for monitoring and assessing safety performance.

Safety performance target. The State or service provider's planned or intended target for a safety performance indicator over a given period that aligns with the safety objectives.

Safety risk. The predicted probability and severity of the consequences or outcomes of a hazard.

Significant safety concern (SSC). Occurs when the State allows the holder of an authorization or approval to exercise the privileges attached to it, although the minimum requirements established by the State and by the Standards set forth in the Annexes to the Convention are not met, resulting in an immediate safety risk to international civil aviation.

State safety programme (SSP). An integrated set of regulations and activities aimed at improving safety.

ABBREVIATIONS AND ACRONYMS

ACI	Airports Council International
ALoSP	Acceptable level of safety performance
ANC	Air Navigation Commission
ANS	Air navigation services
APV	Approaches with vertical guidance
ASBU	Aviation system block upgrade
ASIAP	Aviation Safety Implementation Assistance Partnership
ATM	Air traffic management
ATS	Air traffic services
BARS	Basic aviation risk standard
BBB	Basic building blocks
CAA	Civil aviation authority
CANSO	Civil Air Navigation Services Organisation
CAP	Corrective action plan
CAST	Commercial Aviation Safety Team
CE	Critical element
CFIT	Controlled flight into terrain
CICTT	CAST/ICAO Common Taxonomy Team
CMA	Continuous monitoring approach
COSCAP	Cooperative development of operational safety and continuing airworthiness programme

EASA	European Aviation Safety Agency
EI	Effective implementation
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAA	United States Federal Aviation Administration
FSF	Flight Safety Foundation
GADSS	Global Aeronautical Distress and Safety System
GANP	Global Air Navigation Plan
GASOS	Global aviation safety oversight system
GASP	Global Aviation Safety Plan
GASPRG	Global Aviation Safety Plan Roadmap Group
GASP-SG	Global Aviation Safety Plan Study Group
HLSC	High-level Safety Conference
HRC	High-risk categories of occurrences
IAOPA	International Council of Aircraft Owner and Pilot Associations
IATA	International Air Transport Association
IBAC	International Business Aviation Council
ICCAIA	International Coordinating Council of Aerospace Industries Associations
IFALPA	International Federation of Airline Pilots' Associations
IFATCA	International Federation of Air Traffic Controllers' Associations
IOSA	IATA Operational Safety Audit
ISAGO	IATA Safety Audit for Ground Operations
IS-BAO	International Standard for Business Aircraft Operations
ISSG	Industry Safety Strategy Group
ISTARS	integrated Safety Trend Analysis and Reporting System
LOC-I	Loss of control in-flight
NCLB	No Country Left Behind
PANS	Procedures for Air Navigation Services
PIRG	Planning and implementation regional group
RAIO	Regional accident and incident investigation organization
RASG	Regional aviation safety group
RSOO	Regional safety oversight organization
SAFE	Safety Fund
SARPs	Standards and Recommended Practices
SDG	Sustainable development goals
SEI	Safety enhancement initiatives
SM ICG	Safety Management International Collaboration Group
SMS	Safety management system
SPI	Safety performance indicator
SSC	Significant safety concern
SSP	State safety programme
UN	United Nations
USOAP	Universal Safety Oversight Audit Programme

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PART I

PLANNING

Chapter 1

INTRODUCTION

1.1 ICAO STRATEGIC OBJECTIVE ON SAFETY

1.1.1 Safety is the highest priority of the International Civil Aviation Organization (ICAO) Strategic Objectives. This Strategic Objective aims to enhance global civil aviation safety and focuses primarily on a State's effective safety oversight and its capabilities in the management of safety. The objective is set in the context of growing passenger and cargo movements, and the need to address efficiency and environmental sustainability. A safe aviation system contributes to the economic development of States and their industries. The Global Aviation Safety Plan (GASP) outlines the key safety enhancement initiatives (SEIs) for the next triennium in order to achieve ICAO's Safety Strategic Objective.

1.1.2 More information on the Strategic Objectives can be found on the ICAO website at www.icao.int.

1.2 WHAT IS THE GASP?

The GASP presents the strategy which supports the prioritization and continuous improvement of aviation safety. In Resolution A39-12: *ICAO Global planning for safety and air navigation*, the Assembly recognized the importance of a global framework to support the Safety Strategic Objective of ICAO. In addition, the Assembly resolved that the GASP, along with the *Global Air Navigation Plan* (GANP, Doc 9750), shall provide the framework in which regional and national aviation safety plans will be developed and implemented, thus ensuring harmonization and coordination of efforts aimed at improving international civil aviation safety, capacity and efficiency. The global aviation safety roadmap, presented in the GASP, serves as an action plan to assist the aviation community in achieving the GASP goals through a structured, common frame of reference for all relevant stakeholders. The GASP is complemented by the GANP, which presents the strategy to achieve a global interoperable air navigation system for all users, during all phases of flight, and which meets agreed levels of safety, provides for optimum economic operations, is environmentally sustainable and meets national security requirements.

1.3 HISTORY OF THE GASP

1.3.1 ICAO introduced the first version of the GASP in 1997 by formalizing a series of conclusions and recommendations developed during an informal meeting between the Air Navigation Commission (ANC) of ICAO and industry. The GASP was used to guide and prioritize the technical work programme of ICAO and was updated regularly to ensure its continuing relevance.

1.3.2 In May 2005, a meeting with industry identified the need to broaden the GASP to provide a common frame of reference for all stakeholders. Such a plan would allow a more proactive approach to aviation safety and help coordinate and guide safety policies and initiatives worldwide to reduce the accident risk for commercial aviation. It was then decided that industry representatives from the Industry Safety Strategy Group (ISSG) would work together with ICAO to develop a common approach for aviation safety. The global aviation safety roadmap, developed by the ISSG, provided the foundation upon which the GASP 2007 edition was based. In March 2006, ICAO held the Directors General

of Civil Aviation Conference (DGCA/06) on a global strategy for aviation safety, which welcomed the development of the global aviation safety roadmap and recommended that ICAO develop an integrated approach to SEIs, based on the roadmap. The global aviation safety roadmap would provide a global framework for the coordination of safety policies and initiatives.

1.3.3 In 2013, during its 38th Session, the Assembly urged ICAO to complete the development of a global aviation safety roadmap in support of the GASP. The second High-level Safety Conference held in 2015 (HLSC 2015) agreed on the need for ICAO to develop a global aviation safety roadmap in support of the GASP, in collaboration with States, regional aviation safety groups (RASGs), aviation safety partners and industry.

1.3.4 The 2014-2016 edition was published in 2013 and included GASP objectives for States to achieve, through the implementation of an effective safety oversight system, a State safety programme (SSP) and safety capabilities necessary to support future aviation systems.

1.3.5 In 2015, ICAO established the Global Aviation Safety Plan Roadmap Group (GASPRG) to undertake necessary actions to assist ICAO in updating the GASP, particularly in relation to the development of a new global aviation safety roadmap that would support the implementation of the GASP. The GASPRG was composed of subject matter experts from States, regions and industry. It included participation by all the organizations previously involved in the ISSG.

1.3.6 The 2017-2019 edition of the GASP was published in 2016 and maintained the objectives presented in the 2014-2016 edition. The 2017-2019 edition included the introduction of the new global aviation safety roadmap, developed by the GASPRG, to assist the aviation community in achieving the objectives presented in the GASP. It provided a structured, common frame of reference for all relevant stakeholders from States, regions and industry.

1.3.7 The GASP has significantly changed since its introduction in 1997 and has evolved through continual consultations and reviews. The 2020-2022 edition of the GASP includes a new set of goals, targets and indicators, in line with the United Nations' *2030 Agenda for Sustainable Development*. The global aviation safety roadmap was maintained and expanded to encompass organizational challenges and operational safety risks. The 2020-2022 edition of the GASP was developed through the efforts of the GASP Study Group (GASP-SG), a joint industry-regulatory expert group established by ICAO to ensure that the plan and its content reflect the needs of the aviation community at the international, regional and national levels.

1.4 PURPOSE OF THE GASP

1.4.1 The purpose of the GASP is to continually reduce fatalities, and the risk of fatalities, associated with accidents by guiding the harmonized development and implementation of regional and national aviation safety plans. States, regions and industry facilitate the implementation of the GASP through coordinated SEIs. The GASP seeks to assist States, regions and industry in their respective safety planning and implementation by:

- a) establishing GASP goals, targets and indicators;
- b) providing a framework for planning and implementation of SEIs;
- c) presenting the global aviation safety roadmap, which can be used to achieve the GASP goals and to set specific targets at both national and regional levels as well as for industry partners; and
- d) providing a methodology to guide States in the identification of hazards and emerging issues, and the management of safety risks.

1.4.2 Through the GASP, ICAO continues to prioritize global action in areas of aviation safety by addressing the currently identified high-risk categories (HRCs) of occurrences: controlled flight into terrain; loss of control in-flight; mid-air collisions; runway excursions; and runway incursions. SEIs in these areas contribute to the reduction of the global accident rate and the continuous reduction of fatalities.

1.5 GASP PRINCIPLES

The GASP contains a vision which states the intent behind this plan. It also includes a mission statement, which reflects what ICAO seeks to achieve through the GASP. A set of values are presented in the plan, which aim to guide SEIs and enable the GASP to meet its purpose.

Vision: To achieve and maintain the goal of zero fatalities in commercial operations by 2030 and beyond.

Mission: To continually enhance international aviation safety performance by providing a collaborative framework for States, regions and industry.

Values: GASP strives to enhance global civil aviation safety by:

- a) promoting a positive safety culture;
- b) recognizing and promoting the aviation sector's responsibility for the safety of the public;
- c) encouraging collaboration, teamwork and shared learning in the management of safety;
- d) protecting safety data and safety information;
- e) promoting the sharing and exchange of safety information;
- f) taking data-driven decisions;
- g) prioritizing actions to address operational safety issues through a risk-based approach;
- h) allocating resources to identify and analyse hazards, and address their consequences or outcomes through a risk-based approach; and
- i) proactively managing emerging issues.

1.6 SCOPE OF THE GASP

1.6.1 The GASP is a strategic document that enables States, regions and industry to adopt a flexible, step-by-step approach for safety planning and implementation. In accordance with ICAO Standards and Recommended Practices (SARPs), States must develop their safety oversight capabilities and implement an SSP. The GASP is a means for States to achieve compliance with ICAO safety-related SARPs and to go beyond the minimum level of compliance by proactively enhancing safety through the management of operational safety risks. The GASP assists States to identify deficiencies and prioritize actions so they can meet their safety responsibilities by providing an implementation strategy presented in the global aviation safety roadmap. The GASP further assists States in strengthening their capabilities in the management of safety through a structured process founded on the critical elements (CEs) of a State safety oversight system. A State's safety responsibilities comprise both safety oversight and safety management, collectively implemented through an SSP.

1.6.2 Although the GASP provides a global perspective, regional SEIs, including those involving individual States, should be coordinated through the RASGs to address specific safety concerns in line with the GASP goals and targets. In addition, States, regions and industry should prioritize SEIs to first establish effective safety oversight capabilities and then address operational safety risks effectively.

1.6.3 The GASP and GANP support each other by recognizing the need for appropriate infrastructure to support safe operations. The coordination of activities between the RASGs and the planning and implementation regional groups (PIRGs) are key to the successful implementation of the GASP and the GANP, respectively, since increases in air navigation capacity and improvements in efficiency must be done in a safe manner and appropriate safety nets are required to prevent accidents.

Note.— The Safety Management Manual (Doc 9859) contains guidance related to a State's safety management responsibilities.

1.7 GASP REVIEW PROCESS

1.7.1 The GASP is reviewed and updated prior to each session of the ICAO Assembly, every three years.

1.7.2 During the consultation process for the revision of the 2017-2019 edition of the GASP, States commented that the GASP, including the global aviation safety roadmap, should continue to benefit from broad consultation with States, regions and industry. Feedback also included requests that ICAO maintain the GASPRG beyond the task of completing the roadmap and engage the group in the development of the 2020-2022 edition of the GASP. In Resolution A39-12: *ICAO global planning for safety and air navigation*, the Assembly encouraged ICAO to continue the development of the global aviation safety roadmap. In an effort to best address the revision of the GASP, the Secretariat conducted an in-depth review of the GASP development process. As a result, the existing GASPRG was expanded to encompass a better regional representation and further involve States and industry in the development process and was renamed the GASP-SG.

1.7.3 The GASP is developed through the efforts of the GASP-SG, a joint regulatory-industry expert group established by ICAO to ensure that the plan and its content reflect the needs of the aviation community at the international, regional and national levels.

1.7.4 The ANC reviews the GASP as part of its work programme and consults with States and non-governmental organizations on proposed amendments. The consultation is conducted via the State letter process or alternatively through an Air Navigation Conference or a High-level Safety Conference. The ANC then reports to the Council and provides the following input:

- a) review of the global progress made in improving aviation safety performance and in the implementation of SSPs and safety management systems (SMS), as well as any relevant risk mitigations;
- b) recommendations by RASGs;
- c) lessons learned by States, regions and industry;
- d) possible changes in future aviation needs, regulatory contexts and other influencing factors;
- e) results of research, development and validation on operational and technological matters which may affect the global aviation safety roadmap; and
- f) proposed amendments to the GASP's content.

1.7.5 The GASP is under the authority of the ICAO Council to ensure consistency among the GASP, the other ICAO global plans, and the ICAO Strategic Objectives. The Council approves the GASP prior to eventual budget-related developments and endorsement by the ICAO Assembly. After approval by the Council, the GASP is presented to the following session of the Assembly for endorsement by Member States.

1.8 RELATIONSHIP WITH OTHER GLOBAL PLANS

1.8.1 The Convention on International Civil Aviation establishes ICAO's objective to foster "the planning and development of international air transport". Air transport is a key enabler for sustainable economic and social development. ICAO's global plans are essential in supporting safe, secure, efficient, economically viable and environmentally responsible air transportation. They provide a means to advance ICAO's Strategic Objectives and ensure that no country is left behind. The ICAO global plans include: the GASP, the GANP and the Global Aviation Security Plan (GASeP).

1.8.2 Safety is critical when planning implementation of air navigation operational improvements, in line with the GANP, to determine if these improvements can be implemented in a safe manner. A safety risk assessment provides information to identify hazards that may arise from, for example:

- a) any planned modifications in airspace usage;
- b) the introduction of new technologies or procedures; or
- c) as a result of the decommissioning of older navigational aids.

1.8.3 A safety risk assessment also enables the assessment of potential consequences (e.g. a mid-air collision). Based on the results of a safety risk assessment, mitigation strategies may be implemented to ensure an acceptable level of safety performance (ALoSP) is maintained with any air navigation operational improvement. Any operational improvement to enhance the performance of the air navigation system, should be built on the basis of a safety risk assessment.

1.8.4 The GASP complements the GANP by providing States and service providers with the tools to implement a safety management approach through SSPs and SMS. The GANP, through the evolution of the system described in the conceptual roadmap and the operational improvements detailed in the technical frameworks, supports the goals within the GASP and the GASeP by enhancing safety and security of the air navigation system as reflected in the performance ambitions.

1.8.5 Safety and security are of paramount importance in aviation. The travelling public's perception of a safe aviation system is also linked to how secure the system is in actuality. Fatalities that result from acts of unlawful interference affect the public's perception of aviation safety. The GASeP provides the foundation for States, industry and other stakeholders to work together with the shared and common goal of enhancing aviation security worldwide. It aims to achieve key priority outcomes, such as developing a security culture and improving oversight. The GASP goals and targets support the GASeP by providing best practices and models that can be as effective in managing security as they are in safety management. These include: effective oversight, organizational culture, risk management and assurance processes. The GASeP in turn supports the GASP's vision of zero fatalities. The overall cumulative improvements to aviation security globally enhance the security, safety, facilitation and operations of the international civil aviation system. There is also a need to assess safety risks stemming from mitigation actions in the area of security. Integrated risk management principles have the benefit of harmonizing risk management measures and avoiding negative interference of sector-specific mitigation strategies.

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Chapter 2

ROLES AND RESPONSIBILITIES

2.1 GENERAL

An individual State's responsibility for safety oversight is the foundation upon which a safe global air transport system is built. States that experience difficulties in carrying out safety oversight functions can impact the state of international civil aviation. Despite the decreasing trend in the global accident rate, fatalities associated with scheduled commercial operations persist. Meanwhile, as air traffic volume is expected to increase, the pressure to reduce the global accident rate is compounded. A series of identified HRCs needs to be addressed to reduce fatalities and the risk of fatalities (refer to Chapter 3). The GASP provides a collaborative framework for States, regions and industry to support the management of organizational challenges and operational safety risks.

2.2 STAKEHOLDERS — ROLES AND RESPONSIBILITIES UNDER THE GASP

2.2.1 Key aviation stakeholders for the GASP include, but are not limited to, ICAO, States, RASGs, regional safety oversight organizations (RSOs), regional accident and incident investigation organizations (RAIOs), cooperative development of operational safety and continuing airworthiness programmes (COSCAPs), and industry. The PIRGs also play a key role, coordinating with the RASGs.

2.2.2 All aviation stakeholders need to be involved in the effort to continually improve safety. In addition to the development of SARPs, ICAO supports the implementation of the GASP by providing resources, implementation tools and assistance via different programmes and initiatives, such as the No Country Left Behind (NCLB) initiative. States that may be in a position to do so can also provide assistance to other States in achieving the GASP goals.

2.2.3 The GASP provides a strategy for the continuous improvement of aviation safety at the international level. States and regions are responsible for the development of national and regional aviation safety plans, in line with the GASP. National and regional SEIs should be adapted based on challenges faced by States and other stakeholders concerned. The following sections describe the specific roles of ICAO, States, regions and industry with regard to the implementation of the GASP.

2.3 THE ROLE OF ICAO

ICAO plays a role in coordinating and monitoring the implementation of the GASP at the global and regional levels. The role of ICAO within the GASP includes the following:

- a) promoting collaboration at the global level to enhance safety;
- b) coordinating activities of the RASGs to ensure they are aligned with the GASP;
- c) ensuring close coordination between the RASGs and the PIRGs;

- d) encouraging the active participation of States and industry in the RASGs;
- e) encouraging the active involvement of regional mechanisms, such as RSOOs, RAIOS and COSCAPs, in RASG activities;
- f) implementing a global aviation safety oversight system (GASOS) with the goal of strengthening national and regional safety oversight capabilities, accident investigation and SSPs;
- g) encouraging States with effective safety oversight systems to provide assistance to other States, where practicable;
- h) providing data and tools to support the monitoring of GASP implementation;
- i) facilitating the sharing and exchange of safety information and best practices across regions;
- j) facilitating access to resources and technical assistance by States; and
- k) facilitating training and workshops.

2.4 THE ROLE OF STATES

The role of States within the GASP includes the following:

- a) addressing significant safety concerns (SSC) as a priority;
- b) acquiring the necessary expertise, either directly or through access to workshops, pools of experts, etc.;
- c) developing and implementing a national aviation safety plan, taking into account the regional aviation safety plan and the GASP (refer to Part II, Chapter 2);
- d) ensuring the effective implementation of the eight CEs of a State safety oversight system (see Chapter 3, Figure I-3-1);
- e) building upon safety oversight systems to adopt a safety management approach under the SSP (the Annex 19 — *Safety Management* SARPs are intended to assist States in managing aviation safety risks. States shall require that applicable service providers under their authority implement an SMS (Chapter 3, 3.3.2 refers));
- f) providing technical assistance to other States, where practicable;
- g) participating actively in the activities of the RASG;
- h) sharing safety information with the RASG and ICAO (including the status of national SEIs); and
- i) allocating resources to actively and continuously participate in the regional groups.

2.5 THE ROLE OF REGIONS

2.5.1 In the context of the GASP, the term “region” refers to a group of States and/or entities working together to enhance safety within a geographic area.

2.5.2 At the regional level, RASGs are the main drivers of the safety planning process. They are composed of States, regional entities and industry, among others. RASGs build on work already done by States and/or existing regional organizations such as the COSCAPs and RSOOs. They serve as regional cooperative fora integrating global, regional, national and industry efforts in continuing to enhance aviation safety worldwide. RASGs eliminate duplication of effort through the establishment of cooperative regional safety programmes. This coordinated approach significantly reduces both financial and human resource burdens on States and allows for the delivery of measurable safety improvements.

2.5.3 The role of the RASGs within the GASP includes the following:

- a) supporting and monitoring progress towards the achievement of the GASP goals at the regional level;
- b) developing and implementing a regional aviation safety plan consistent with the GASP and coordinating its implementation at the regional level (refer to Part II, Chapter 1);
- c) structuring their work in line with the GASP to address organizational challenges, operational safety risks, emerging issues and safety performance management;
- d) identifying safety risks and issues of priority, and encouraging States to initiate action using the roadmap;
- e) coordinating and tracking regional SEIs and GASP indicators;
- f) monitoring regional safety performance indicators (SPIs) and identifying where action is needed;
- g) providing technical assistance to States in their respective regions (e.g. by identifying subject matter experts, conducting workshops and facilitating training); and
- h) serving as the focal point to coordinate regional efforts and programmes related to the GASP aimed at mitigating operational safety risks.

2.5.4 As an integral part of the GASP, RASGs, together with RSOOs, coordinate all activities undertaken to address regional safety issues ensuring harmonization to the extent practicable. RSOOs play an important role by supporting the establishment and operation of safety oversight systems and analysing safety information at the regional level. A number of States face difficulties resolving safety deficiencies due to a lack of resources. ICAO has taken the initiative to address this issue by facilitating the establishment of RSOOs through which groups of States can collaborate and share resources to improve their safety oversight capabilities. There are a growing number of RSOOs, several of which are already well established, while some are expected to become fully operational over the next few years. RSOOs cover, in a general sense, a number of legal fora and institutional structures including international intergovernmental organizations, such as the European Aviation Safety Agency (EASA) and the Pacific Aviation Safety Office (PASO). Less institutionalized projects, established under the ICAO COSCAP, also play a key role in the GASP. The regional aviation safety plan, referred to in 2.5.3 b) above, may be supplemented by aviation safety plans developed by RSOOs.

Note.— Guidance related to the establishment and management of an RSOO is provided in the Safety Oversight Manual, Part B — The Establishment and Management of a Regional Safety Oversight Organization (Doc 9734, Part B).

2.5.5 RAIOS facilitate the implementation of accident and incident investigation systems by allowing States to share the necessary financial and human resources, thus enabling them to meet their accident investigation obligations under the Convention on International Civil Aviation.

Note.— Guidance related to the establishment and management of an RAIO is provided in the Manual on Regional Accident and Incident Investigation Organization (Doc 9946).

2.6 THE ROLE OF INDUSTRY

2.6.1 In the context of the GASP, the term “industry” refers to service providers, such as: operators of aeroplanes or helicopters; approved maintenance organizations; organizations responsible for the type design or manufacture of aircraft, engines or propellers; approved training organizations; air traffic services (ATS) providers; and operators of aerodromes, as well as non-governmental organizations and other entities that form part of the aviation industry, as appropriate.

2.6.2 Industry should engage in SMS implementation to continually identify hazards and address operational safety risks, as well as work collaboratively with ICAO, the regions and individual States on safety information exchange, safety monitoring and auditing programmes. Non-governmental organizations should work with their members to help them develop their SPIs and provide guidance material and training to assist with addressing HRCs and SMS implementation. In order to ensure congruence between SSP and SMS indicators, States need to actively engage service providers in the development of SMS SPIs. Additionally, service providers should use a harmonized approach in the development of their SPIs, as part of their SMS.

Note.— Doc 9859 contains guidance related to service providers' SPIs.

2.6.3 Industry should actively support the implementation of the GASP. Industry stakeholders should review the roadmap to identify SEIs and actions that support national and regional aviation safety plans. To this end, industry should actively participate in, and contribute to, the RASGs to enhance safety in a coordinated manner.

Chapter 3

CHALLENGES AND PRIORITIES IN SAFETY PLANNING

3.1 GENERAL

3.1.1 This chapter presents safety-related challenges and priorities that are deemed of concern to the international aviation community. These challenges are derived from the analysis of safety data collected from proactive and reactive safety-related activities conducted by ICAO. The challenges identified are used to assist ICAO in defining priorities for global action, which then serve as the basis for the development of the GASP goals and targets. The identification of safety-related challenges and the prioritization of areas that require action are key steps in the safety planning process. Safety data used to identify challenges and define priorities includes, but is not limited to: accident or incident investigations; safety reporting; continuing airworthiness reporting; operational performance monitoring; inspections, audits, surveys; and safety studies and reviews. This chapter provides background information on the goals and targets selected for the 2020-2022 edition of the GASP.

3.1.2 When a State, region or industry conducts its own data-driven analysis to identify challenges and determine priorities, it should consider its strengths, weaknesses, opportunities and threats. These provide a foundation and context for developing a State's or region's aviation safety plan in line with the GASP goals and targets (refer to Part I, Chapter 4). Several factors affect the way the GASP is implemented at the regional and national levels. These should be considered as part of the analysis and should include: political, legal, economic, socio-cultural, and technological factors.

3.1.3 The analysis undertaken by ICAO led to the identification of challenges that have been addressed in the GASP. These challenges are primarily related to a State's responsibilities for the management of safety. Section 3.3 of this chapter presents the findings from the analysis of operational safety risks that served to identify the HRCs deemed as global safety priorities, additional operational safety risk categories that States and regions should consider, and emerging issues. In addition, the analysis examined the need for appropriate infrastructure to support safe operations (refer to Section 3.4). Findings from the analysis included in this chapter were used to develop the GASP goals and targets presented in Part I, Chapter 4.

3.2 ORGANIZATIONAL CHALLENGES

Organizational challenges are systemic issues which take into consideration the impact of organizational culture, and policies and procedures on the effectiveness of safety risk controls. Organizations include entities in a State, such as the civil aviation authority (CAA) and service providers, such as operators of aeroplanes, ATS providers and operators of aerodromes. Organizations should identify hazards in systemic issues and mitigate the associated risks to manage safety. A State's responsibilities for the management of safety comprise both safety oversight and safety management, collectively implemented through an SSP.

3.2.1 Ensuring effective safety oversight as part of the SSP

3.2.1.1 Safety oversight is a function by means of which States ensure effective implementation of the safety-related SARPs and associated procedures contained in the Annexes to the Convention on International Civil Aviation and related ICAO documents. Safety oversight also ensures that the national aviation industry provides a safety level equal to, or better than, that defined by the SARPs. States have overall safety oversight responsibilities, which emphasize a State's commitment to safety in respect of the State's aviation activity. The eight critical elements (CEs) of a safety oversight system are presented in Figure I-3-1. States must establish CE-1 through CE-5 prior to the implementation of CE-6 through CE-8 in order to provide effective safety oversight and safety management. An individual State's responsibility for safety oversight is the foundation upon which a safe global air transport system is built. States that experience difficulties in carrying out safety oversight functions can impact the state of international civil aviation.



Figure I-3-1. Critical elements (CEs) of a State's safety oversight system

3.2.1.2 States should work to continually improve their effective implementation of the eight CEs of the State's safety oversight system in all relevant areas, as appropriate to their aviation system complexity. Through collaborative efforts, the level of effective implementation of the CEs of a State's safety oversight system can increase, particularly in those regions where a State faces shortages of human, financial or technical resources. Collaboration may involve the establishment of organizations that provide safety solutions in regions experiencing resource constraints. Effective safety oversight requires investment in human and technical resources to achieve the GASP goals and to ensure that SEIs yield the intended benefits. States may rely on assistance provided by ICAO, other States and/or organizations, including RSOOs and RAIOS.

3.2.1.3 States may voluntarily consider delegating safety functions, including those related to certification and surveillance, to competent States and/or organizations, such as safety oversight organizations under the GASOS.

3.2.1.4 Furthermore, States may consider delegating activities to other competent organizations, such as trade associations, industry representative organizations or other bodies that may collect, analyse and protect safety data and safety information on their behalf, provide training or conduct monitoring activities.

3.2.1.5 Although States may delegate functions to other States and/or organizations, including RSOOs, they remain responsible for their obligations under the Convention on International Civil Aviation. However, subject to agreements under Article 83 *bis*, a State of Registry may elect to transfer certain functions and duties, together with the responsibilities, to the State of the Operator in the case of lease, charter or interchange of aircraft. The primary purpose of the transfer of certain functions under an Article 83 *bis* agreement is to enhance safety oversight capabilities by transferring responsibility for oversight to the State of the Operator, recognizing that this State may be in a better position to carry out these functions. However, before agreeing to transfer any functions, the State of Registry should determine that the State of the Operator is fully capable of carrying out the functions to be transferred in accordance with the Convention on International Civil Aviation and SARPs.

3.2.2 Ensuring effective safety management as part of the SSP

3.2.2.1 States should build upon fundamental safety oversight systems to fully implement SSPs. As per Annex 19, States shall require that applicable service providers under their authority implement an SMS. The SMS enables service providers to capture and transmit safety information, which contributes to safety risk management. An SSP requires the implementation of a risk-based approach that achieves an ALoSP. In this context, the role of the State evolves to include the establishment and achievement of safety performance targets, as well as effective oversight of its service providers' SMS. Individual States should provide safety information derived from their SSPs to their respective RASGs to contribute to regional safety risk management activities.

3.2.2.2 An SSP requires increased collaboration across operational domains to identify hazards and manage risks. The analysis of various forms of safety data is needed to develop effective mitigation strategies specific to each State or region. This requires ICAO, States, regions and industry to work closely together on safety risk management. In addition, collaborative efforts between key stakeholders, including service providers and regulatory authorities, are essential to the achievement of safety performance targets established through a State's SSP or service providers' SMS. Through partnerships with such key stakeholders at national and regional levels, safety data should be analysed to support maintenance of SPIs related to the risks and the major components of the aviation system. Key stakeholders should reach agreements to identify appropriate SPIs, determine common classification schemes and establish analysis methodologies that facilitate the sharing and exchange of safety information, in accordance with ICAO provisions on the protection of safety information.

3.2.2.3 Implementation of SSPs and SMS involve regulatory, policy and organizational changes that may require additional resources or different personnel qualifications, depending on the degree to which each of the SSP and SMS elements have already been implemented. Additional resources may also be needed to support the collection, analysis and management of information required to develop and maintain a risk-based decision-making process. In some cases, States in need of such resources may obtain assistance through the RASGs, RSOOs or other competent States or organizations. In addition, technical capabilities should be developed to collect, analyse and protect safety data and safety information, identify safety trends and disseminate results to relevant stakeholders. An SSP may require investments in the technical systems that enable analytical processes, as well as knowledgeable and skilled professionals required to support the programme.

3.3 OPERATIONAL SAFETY RISKS

3.3.1 Operational safety risks arise during the delivery of a service or the conduct of an activity (e.g. operation of an aircraft, airports or of air traffic control). Operational interactions between people and technology, as well as the operational context in which aviation activities are carried out, are taken into consideration to identify performance limitations and hazards. States, regions and industry should conduct regular national and regional risk analyses, taking into consideration the HRCs presented in this chapter.

3.3.1.1 **Regional operational safety risks** — The RASGs should utilize available data to determine the region's operational safety risks which include global HRCs and additional regional operational safety risks. The time period and measurement of progress for the implementation of SEIs should be determined using the roadmap.

3.3.1.2 **National operational safety risks** — States should review and analyse available safety data to determine their operational safety risks, which include global HRCs and additional national or regional operational safety risks. States may also seek assistance, or delegate data collection/analysis to another State, from RSOOs or other competent States or organizations. States should address national operational safety risks. In addition, States should take into account the HRCs listed in the GASP and the regional operational safety risks (established by the RASG) when determining their national operational safety risks. This assessment should be data-driven. As with the regions, States should determine a time period for the implementation of SEIs and be able to measure their progress.

3.3.2 Based on the regional and national analyses, the State/region should conduct an assessment of the number of operational safety risks that can be managed and prioritize them according to the safety risk management process. In addition, the State/region should develop a method of measuring the progress of any initiative taken in that given time period.

3.3.3 High-risk categories of occurrences

The vision of the GASP is to achieve and maintain the goal of zero fatalities in commercial operations by 2030 and beyond. A series of HRCs need to be addressed to mitigate the risk of fatalities. The types of occurrences deemed global HRCs (previously referred to as "global safety priorities") were selected based on actual fatalities, high fatality risk per accident or the number of accidents and incidents. Based on results from the analysis of safety data collected from proactive and reactive sources of information (e.g. accidents, incidents, events), as well as from ICAO and other non-governmental organizations, the following HRCs, in no particular order, have been identified for the 2020-2022 edition of the GASP:

- a) controlled flight into terrain (CFIT);
- b) loss of control in-flight (LOC-I);

- c) mid-air collision (MAC);
- d) runway excursion (RE); and
- e) runway incursion (RI).

Note.— Information on accident statistics, the HRCs and other safety data is found on the ICAO website at: www.icao.int/safety/Pages/Safety-Report.aspx.

3.3.3.1 Controlled flight into terrain

CFIT is an in-flight collision with terrain, water or obstacle without indication of loss of control. Accidents categorized as CFIT involve all instances where an aircraft is flown into terrain in a controlled manner, regardless of the crew's situational awareness. CFIT accidents involve many contributing factors, including: procedure design and documentation; pilot disorientation; and adverse weather. Requirements for aircraft to be equipped with ground proximity warning systems have significantly reduced the number of CFIT accidents. Despite the absence of CFIT accidents involving transport category aircraft over the past few years, CFIT accidents often have catastrophic results when they occur, with very few, if any, survivors. Therefore, there is a high fatality risk associated with these events.

3.3.3.2 Loss of control in-flight

A loss of control in-flight (LOC-I) is an extreme manifestation of a deviation from intended flight path. Accidents categorized as LOC-I involve a loss of control in-flight that is not recoverable. LOC-I accidents often have catastrophic results with very few, if any, survivors. Therefore, there is a high fatality risk associated with these events. LOC-I events involve many contributing factors that can be categorized as being either aeroplane systems-induced, environmentally induced, pilot/human-induced or any combination of these three. Of the three, pilot-induced accidents represent the most frequently identified cause of LOC-I accidents. The number of fatalities resulting from LOC-I events involving commercial air transport aeroplanes has led to an examination regarding current training practices, such as the introduction of upset prevention and recovery training requirements for flight crew members.

3.3.3.3 Mid-air collision

A mid-air collision refers to a collision between aircraft while both are airborne. Mid-air collisions can be the result of a level bust due to a loss of separation between aircraft. Mid-air collisions involve many contributing factors, including: traffic conditions; air traffic controller workload; aircraft equipment; and flight crew training. Requirements for aircraft to be equipped with traffic alert and collision avoidance system/airborne collision avoidance system (TCAS/ACAS) have significantly reduced the number of mid-air collisions. However, when they occur, mid-air collisions often have catastrophic results with very few, if any, survivors. Therefore, there is a high fatality risk associated with these events.

3.3.3.4 Runway excursion

A runway excursion is a veer off or overrun off the runway surface. The term "runway excursion" is a categorization of an accident or incident which occurs during either the take-off or landing phase. The excursion may be intentional or unintentional. For example, the deliberate veer off to avoid a collision brought about by a runway incursion. Runway excursions involve many contributing factors, including unstabilized approaches and the condition of the runway. The high number of accidents resulting from runway excursions involving commercial air transport aeroplanes has led to several initiatives regarding runway safety. The term "runway safety" describes a series of occurrence categories, including: abnormal runway contact; ground collision; runway excursion; runway incursion; loss of control on the ground;

collision with obstacle(s); and undershoot/overshoot. However, runway excursions remain predominant in terms of number of occurrences. Although statistically the majority of runway excursions are survivable, the fatality risk remains significant. The outcome of a runway excursion (e.g. whether it is survivable) is based on several factors, including the speed at which an aircraft touches down or departs the runway end during the excursion (high energy excursions), runway contamination and the characteristics of the runway end safety area at the aerodrome.

3.3.3.5 Runway incursion

A runway incursion is 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 take-off of aircraft. Incursions produce an increased risk of collision for aircraft occupying the runway. When collisions occur outside the runway (e.g. on a taxiway or on the apron), the aircraft and/or vehicles involved are usually travelling relatively slowly. However, when a collision occurs on the runway, at least one of the aircraft involved will often be travelling at considerable speed (high energy collisions) which increases the fatality risk. Runway incursions involve many contributing factors, including: aerodrome design; pilot and air traffic controller workload; and use of non-standard phraseology. Although statistically very few runway incursions result in collisions, there is a high fatality risk associated with these events. The collision between two B747s at Los Rodeos Airport, Tenerife, in 1977, was the result of a runway incursion and remains the worst accident in aviation history, with the highest number of fatalities.

3.3.4 Additional categories of operational safety risks

3.3.4.1 In addition to the HRCs, States and regions should consider the remaining risk categories for which sufficient data exists, as identified in 3.3.1.1 and 3.3.1.2.

3.3.4.2 ICAO has developed a dedicated site on its secure portal for the RASGs to list additional operational safety risks. For consistency of reporting, States and regions are encouraged to use the aviation occurrence categories from the Commercial Aviation Safety Team (CAST)/ICAO Common Taxonomy Team (CICTT).

Note.— Additional information on the CICTT is found on the ICAO website at <https://www.icao.int/safety/airnavigation/AIG/Pages/Taxonomy.aspx>.

3.3.5 Emerging issues

3.3.5.1 Emerging issues include concepts of operations, technologies, public policies, business models or ideas that might impact safety in the future, for which insufficient data exists to complete typical data-driven analysis. It is important that the international aviation community remain vigilant on emerging issues to identify potential safety risks, collect relevant data and proactively develop mitigations to address them. The management of emerging issues, particularly potential safety risks, can provide opportunities to foster innovation. The use of new technologies, procedures and operations should therefore be encouraged.

3.3.5.2 ICAO developed a dedicated site on its secure portal for the RASGs to list emerging issues and potential safety risks. For consistency of reporting, States and regions should use the existing categories in the CICTT and advise of the need to create and/or modify the categories.

Note.— Additional information on the dedicated site for additional operational safety risks and emerging issues is found on the ICAO website at <https://www.icao.int/gasp>.

3.4 APPROPRIATE INFRASTRUCTURE TO SUPPORT SAFE OPERATIONS

3.4.1 In addition to the safety-related challenges and operational safety risks, the GASP supports the implementation of the GANP, by requiring appropriate infrastructure to support the provision of the essential services outlined in the basic building blocks (BBB). The BBB framework describes the backbone of any robust air navigation system by defining the essential air navigation services to be provided for international civil aviation according to ICAO SARPs and Procedures for Air Navigation Services (PANS). These are essential services in the areas of aerodrome operations, air traffic management, search and rescue, meteorology and aeronautical information. Once these essential services are being provided, they constitute the baseline for any operational improvement to enhance the performance of the system (aviation system block upgrades (ASBU)). In addition to the essential services, the BBB framework identifies the end users of these services as well as the assets necessary to be deployed to provide these services (communications, navigation and surveillance infrastructure).

3.4.2 The BBB is an independent framework, not a block of the ASBU framework. The BBB do not represent any evolutionary step, but the baseline. This baseline is defined by the basic services agreed by the States under the Convention on International Civil Aviation so that international civil aviation may be developed in a safe and orderly manner. The ASBU framework defines a group of operational improvements within some areas of the air navigation system on which the aviation community agreed to work on in order to maintain or improve the performance of that system (ASBU threads). An ASBU element is a specific change in operations designed to improve the performance of the air navigation system under specified operational conditions.

Note.— Additional information on the BBB framework is found in the Global Air Navigation Plan, (GANP, Doc 9750) as well as on the ICAO website at <https://www4.icao.int/ganpportal>.

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Chapter 4

GASP GOALS, TARGETS AND INDICATORS

4.1 GENERAL

4.1.1 The GASP goals were developed using the structure presented in the United Nations (UN) *2030 Agenda for Sustainable Development*, which contains a series of sustainable development goals (SDGs) and targets (refer to <https://sustainabledevelopment.un.org/sdgs> for more information). This Agenda is a plan of action for people, planet and prosperity. It contains seventeen UN SDGs that balance the three dimensions of sustainable development: economic; social; and environmental. ICAO's Strategic Objectives are strongly linked to fifteen of the seventeen SDGs and ICAO is fully committed to work in close cooperation with States and other UN Bodies to support related targets.

Note.— Additional information on the contribution of each ICAO Strategic Objective to the UN SDGs can be found at www.icao.int/about-icao/aviation-development/Pages/SDG.aspx.

4.1.2 The GASP goals are the results toward which efforts in aviation safety are directed. They present the desired outcomes that ICAO's Safety Strategy (as presented in the GASP) aims to produce. The GASP goals are written in a manner that describes high-level outcomes that States, regions or industry must aim to achieve. Each of the GASP goals contains specific targets. Targets are specific desired outcomes from the actions taken by States, regions and industry to achieve the goals, at a certain point of time. The GASP targets are written in a manner that identify who the specific actions are directed to (e.g. States) and which indicators should be tracked to demonstrate progress towards the goal. Some goals contain more than one target and each of the GASP targets is linked to a series of indicators. Indicators are a measurement index used to evaluate if the GASP yields the expected results by States, regions and industry. The GASP indicators provide evidence about whether the desired outcomes occurred, and measure the progress in the activities related to the GASP targets. They are written in a manner that references quantitative data (e.g. number or percentage). Some indicators refer to occurrences (e.g. number of accidents) that are deemed an outcome of deficient management of aviation safety. Others refer to activities conducted by States or other stakeholders (e.g. completion of corrective action plans (CAPs)), deemed to improve management of aviation safety. Ultimately, the GASP indicators are used to measure the achievement of the GASP goals.

4.1.3 The GASP goals, targets and indicators are presented in Table I-4-1. These goals are derived from the analysis presented in Part I, Chapter 3, which identified safety-related challenges and the prioritization of areas that require action to enhance safety. The following sections provide detailed information regarding each of the goals and targets, as well as the associated indicators.

4.2 KEY CONCEPTS AND METRICS USED IN THE GASP GOALS

4.2.1 This section provides a detailed explanation of some of the key metrics used in the GASP goals, targets and indicators. Some of these concepts are new or represent an evolution from previous metrics used by ICAO to measure safety performance.

4.2.2 Accident rate

ICAO's primary indicator of safety in the global air transport system is the accident rate based on scheduled commercial operations involving fixed-wing aircraft with a maximum certificated take off mass greater than 5 700 kg. Aircraft accidents are categorized using the definition provided in Annex 13 — *Aircraft Accident and Incident Investigation* and the details of each accident are reviewed by the ICAO Safety Indicators Study Group to assure the accuracy of the data. Departures data is collated by the ICAO Air Transport Bureau using a combination of inputs. Estimates are made where data has not been provided by States, otherwise State data and commercial sources are used to obtain the best estimate of the actual number of departures. As new data is provided to ICAO, it is incorporated into the database, which may result in small changes to the calculated rates from year to year. The fatal accident rate is based on accidents that involve one or more fatal injuries using the definition provided in Annex 13.

4.2.3 Priority protocol questions for a safety oversight system

4.2.3.1 There are currently about 1 000 protocol questions (PQs). Although all the Universal Safety Oversight Audit Programme (USOAP) PQs contribute equally to the effective implementation (EI) score, they do not all equally impact the operational safety risk. For example, those PQs relating to documentation, although important, have a less direct impact to operational safety risk. Some PQs, if found to be unsatisfactory, could have a significant impact on operational safety and could indicate an elevated risk of an SSC. Many States are finding it a challenge to address a significant proportion of the PQs. Given that these States face difficulty addressing all the PQs, it is worthwhile to give them an indication of which PQs may require closer attention or priority.

4.2.3.2 The term “priority PQs” refers to PQs that have a higher correlation to operational safety risks. The identification of priority PQs is important so that States can focus their resources accordingly. It should be noted that the whole set of PQs continue to be essential to comprehensively assess the effective implementation of a safety oversight system by a State.

4.2.4 SSP foundational PQs

The term “foundation of an SSP” refers to a subset of the USOAP PQs that have been identified as fundamentals and are considered as prerequisites for sustainable implementation of the full SSP. These are referred to as “SSP foundational PQs”. SSP foundational PQs are grouped into subject areas derived from Annex 19 and Doc 9859. States can prioritize and address these PQs when conducting the SSP gap analysis or while defining the SSP implementation/action plan. The concept of “foundation of an SSP” is intended to replace the 60 per cent EI score previously used in the GASP as a threshold to progress into implementation of the SSP. The intent is that these PQs be included in the SSP implementation planning to ensure sustainability. The full list of SSP foundational PQs can be found using the SSP Foundation tool available via the ICAO integrated Safety Trend Analysis and Reporting System (iSTARS) at www.icao.int/safety/iStars.

4.2.5 Safety oversight index

4.2.5.1 The safety oversight index of a State is an indicator of its safety oversight capabilities. Every audited State has a safety oversight index. It is a number greater than zero where the number one represents a level at which the safety oversight capabilities of a State would indicate the minimum expected capabilities considering the number of departures, as a proxy to the size of that State's aviation system.

Note.— Analysis has shown that annual commercial scheduled departure volumes represent very well the safety oversight activity levels of States. In order to even better reflect those levels for the operational oversight activities, only departures of flag carriers of that State are considered over the safety oversight index of the operations category (refer to 4.2.5.3).

4.2.5.2 The safety oversight index is a mathematical function comparing a State's EI score and traffic volume to a safety oversight target EI score which is computed using a global log-linear regression. The safety oversight index will tend to decrease over time if traffic increases and the EI score remains unchanged. Details on the mathematical model used, as well as the rationales behind the model, are available via the iSTARS at www.icao.int/safety/iStars.

4.2.5.3 The safety oversight index is broken down into three functional categories, as follows:

- a) **operations** – this category groups EI scores for USOAP audit areas related to personnel licensing and training (PEL), aircraft operations (OPS) and airworthiness of aircraft (AIR);
- b) **air navigation** – this category groups EI scores for USOAP audit areas related to aerodromes and ground aids (AGA) and air navigation services (ANS); and
- c) **support functions** – this category groups EI scores for USOAP audit areas related to primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG) and aircraft accident and incident investigation (AIG).

4.2.5.4 The safety oversight index is a new concept introduced into the 2020-2022 edition of the GASP and serves as one of several indicators of a State's safety oversight capabilities. States should focus on achieving all of the GASP targets and continually improve their EI score as part of their responsibilities for the management of safety.

4.2.5.5 The Safety Oversight Index application (available on iSTARS) should be used by a State, in addition to its EI score, as one of the tools to assess its safety oversight capabilities.

4.2.5.6 ICAO utilizes the safety oversight index to identify and prioritize States that will receive assistance, from ICAO and other entities, to help them improve their safety oversight system. These States should increase their compliance efforts and reach out for assistance. ICAO also uses the safety oversight index to determine which States are best suited for partnering with ICAO, as well as with regional entities, to assist other States in improving their safety oversight system. Such States are encouraged to collaborate internationally but still work on improving their own system.

4.3 DESCRIPTION OF GASP GOALS, TARGETS AND INDICATORS

4.3.1 The GASP contains an aspirational safety goal to achieve and maintain zero fatalities in commercial operations by 2030 and beyond. This goal is deemed "aspirational" as it represents an ambition of achieving an even safer aviation system. The year 2030 has been selected as the time frame for reaching this goal as it is when the traffic volume is forecasted to double. It is also the target year presented in the UN SDGs *Agenda for Sustainable Development*. The GASP is aligned with the timelines of this agenda since the GASP goals contribute to the achievement of the UN SDGs.

4.3.2 A series of goals support this aspirational safety goal. The 2020-2022 edition of the GASP contains six goals. Some of the goals are derived from the three objectives contained in the previous, 2017-2019 edition of the GASP, which called for States to implement effective safety oversight systems, implement SSPs and move towards predictive risk management. During the consultation process to update the GASP, ICAO received feedback from States and non-governmental organizations, requesting a greater emphasis on the management of operational safety risks in the GASP goals. As a response to this feedback, the goals also now address organizational challenges (ORG) and operational safety risks (OPS). The goals presented in this chapter supersede the objectives presented in the 2017-2019 edition of the GASP.

4.3.3 **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 HRCs. It addresses operational issues which States, regions and industry may face, as well as operational safety risks that must be mitigated as part of national and regional aviation safety plans.

4.3.3.1 **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, fatal accident and fatality rates (i.e. number of occurrences per million departures). GASP indicators also include the percentage of occurrences related to the HRCs.

4.3.4 **Goal 2** is aimed at States individually and seeks to strengthen their safety oversight capabilities. This goal calls for all States to progress in their implementation of the eight CEs and address organizational challenges faced by States when implementing a safety oversight system. There are two targets associated with this goal.

4.3.4.1 **Target 2.1** calls for all States to improve their score for the EI of the CEs of the State's safety oversight system in a progressive manner that would result in incremental increases, until a high overall EI score is reached. As part of this target, States should focus primarily on the priority PQs. GASP indicators related to this target examine: the overall EI score; activities by States, such as the number of those having fully implemented the priority PQs; and the percentage of required CAPs submitted by States to ICAO via the Online Framework (OLF) to address findings from USOAP continuous monitoring approach (CMA) activities.

4.3.4.2 **Target 2.2** calls for all States to reach a safety oversight index greater than one in all categories by 2022. The concept of the safety oversight index is described in 4.2.5 of this chapter. GASP indicators related to this target include the percentage of States maintaining a safety oversight index greater than one in all categories and the percentage of each category with a safety oversight index greater than one at the global level.

4.3.5 **Goal 3** is also aimed at individual States and calls for the implementation of effective SSPs. The goal addresses organizational challenges faced by States when implementing an SSP and includes the implementation of SMS by service providers within individual States, in accordance with Annex 19. Two targets are linked to this goal and they represent a phased approach to SSP implementation.

4.3.5.1 **Target 3.1** calls for all States to implement the foundation of an SSP by 2022. GASP indicators related to the foundation of an SSP include the number of States having implemented the foundation of an SSP, as well as the percentage of PQs deemed satisfactory related to the SSP foundation.

4.3.5.2 Once States have reached Target 3.1, they can then progress into **Target 3.2**, which calls for the implementation of an effective SSP by 2025. An "effective SSP" refers to an SSP that actually achieves the objectives that it is intended to achieve. Effectiveness of an SSP will be measured by the SSP-related PQs, which will be included as part of the USOAP CMA activities to assess States' implementation of ICAO safety management provisions. The target for an effective SSP encompasses SMS implementation among service providers. GASP indicators for an effective SSP include safety management-related activities, such as the number of States that require applicable service providers under their authority to implement an SMS and the number of States that have implemented a national aviation safety plan.

4.3.6 **Goal 4** is aimed at the regions as defined in the GASP. It calls for States to increase collaboration at the regional level to enhance safety. Three targets are associated with this goal.

4.3.6.1 **Target 4.1** urges States that do not expect to meet GASP Goals 2 and 3, to use a regional safety oversight mechanism, another State or other safety oversight organization's ICAO-recognized functions, in seeking assistance to strengthen their safety oversight capabilities. GASP indicators related to this target include the number of States requiring assistance as well as the number seeking that assistance. States should seek assistance with sufficient lead time to reach the other targets in the GASP related to safety oversight capabilities, set for 2022. States may benefit from the GASOS, presented in Appendix C.

4.3.6.2 **Target 4.2** calls for all States to contribute information on safety risks, including SSP SPIs, to their respective RASGs by 2022. This target aims at building up each RASG's safety risk management capabilities. GASP indicators for this target include the number of States and service providers contributing information on safety risks to RASGs, as well as the number of States that are sharing their SSP SPIs with the RASGs.

4.3.6.3 **Target 4.3** calls for all States with effective safety oversight capabilities and an effective SSP to actively lead RASGs' safety risk management activities by 2022. A State with effective safety oversight capabilities is one which has, or is expected to meet, GASP Goal 2 in addition to having an effective SSP in place. The intent behind this target is to call upon "Champion States" in each region to lead the RASGs' safety risk management activities. As these States have effective safety oversight capabilities and an effective SSP, they are in the best position to contribute to regional safety management activities, including hazard identification. GASP indicators for this target encompass activities such as the number of RASGs that have a regional aviation safety plan.

4.3.7 **Goal 5** of the GASP is directed at industry and aims to expand the use of industry programmes. Two targets are linked to this goal.

4.3.7.1 **Target 5.1** calls for all service providers to use globally harmonized SPIs as part of their SMS by 2020, taking into account operational needs. The term "globally harmonized SPIs" refers to the use of globally harmonized metrics for the development and monitoring of service providers' SPIs. The GASP indicator related to this target involves the number of service providers using globally harmonized metrics for their SPIs. The use of these harmonized metrics facilitates safety risk management at the regional and international levels.

4.3.7.2 **Target 5.2** relates to the increase in the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes, such as the Airports Council International (ACI) Airport Excellence (APEX) in Safety programme, the Civil Air Navigation Services Organisation (CANSO) and European Organisation for the Safety of Air Navigation (EUROCONTROL) maturity assessment within the Standard of Excellence in Safety Management Systems, the Flight Safety Foundation (FSF) Basic Aviation Risk Standard (BARS), the International Air Transport Association (IATA) Operational Safety Audit (IOSA), and the International Business Aviation Council (IBAC) International Standard for Business Aircraft Operations (IS-BAO). While such programmes do not replace the need for safety oversight by States, ICAO recognizes the benefits of these programmes, which have a positive effect on operational safety among service providers. The GASP indicator related to this target focuses on the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes.

4.3.8 **Goal 6** focuses on the need to ensure the appropriate infrastructure is available to support safe operations. Its associated target calls for all States to implement the air navigation and airport core infrastructure by 2022. The GASP indicator for this target is the number of States having implemented the air navigation and airport core infrastructure elements. This is linked to the activities outlined in the GANP (refer to Part I, Chapter 3, section 3.4).

4.3.9 The GASP contains a global aviation safety roadmap, which presents SEIs for States, regions and industry to address each of the goals described in this chapter. The roadmap provides a flexible approach to implementing a national and regional safety strategy, in line with the GASP (refer to Part II, Chapter 3).

Table I-4-1. GASP goals, targets and indicators

ICAO ASPIRATIONAL SAFETY GOAL “ZERO FATALITIES BY 2030 AND BEYOND”			
Goal	Target		Indicators
Goal 1: Achieve a continuous reduction of operational safety risks	1.1¹	Maintain a decreasing trend of global accident rate	• Number of accidents • Number of accidents per million departures (accident rate) • Number of fatal accidents • Number of fatal accidents per million departures (fatal accident rate) • Number of fatalities • Number of fatalities per passengers carried (fatality rate) • Percentage of occurrences related to high-risk categories (HRCs)
Goal 2: Strengthen States' safety oversight capabilities	2.1	All States to improve their score for the effective implementation (EI) of the critical elements (CEs) of the State's safety oversight system (with focus on priority PQs) as follows: by 2022 – 75 per cent by 2026 – 85 per cent by 2030 – 95 per cent	• Overall global EI score • Overall EI score per State • Overall regional EI score • Number of States that met the EI score as per the timelines • Number of States that have fully implemented the priority PQs related to a safety oversight system • Percentage of priority PQs implemented by a State • Percentage of each priority PQs implemented globally • Number of States timely updating the filing of differences • Percentage of required corrective action plans (CAPs) submitted by States (using OLF) • Percentage of completed CAPs per State (using OLF)
	2.2	By 2022, all States to reach a safety oversight index greater than 1, in all categories	• Number of States maintaining a safety oversight index greater than 1 in all categories • Percentage of States maintaining a safety oversight index greater than 1 in all categories • Percentage of each category with a safety oversight index greater than 1 globally • Safety oversight index per State, per category

1. Legend: ORG related targets – Yellow / OPS related targets – Green.

Goal 3: Implement effective State safety programmes (SSPs)	3.1	By 2022, all States to implement the foundation of an SSP	• Number of States having implemented the foundation of an SSP • Percentage of each subject area implemented globally • Percentage of satisfactory SSP foundational PQs • Percentage of required CAPs related to the SSP foundational PQs submitted by States (using OLF) • Percentage of required CAPs related to the SSP foundational PQs completed per State (using OLF)
	3.2	By 2025, all States to implement an effective SSP, as appropriate to their aviation system complexity	• Number of States having implemented an effective SSP • Level of maturity achieved in Annex 19 PQs, per State • Number of States that require applicable service providers under their authority to implement an SMS • Number of States that have implemented a national aviation safety plan
Goal 4: Increase collaboration at the regional level	4.1	By 2020, States that do not expect to meet GASP Goals 2 and 3, to use a regional safety oversight mechanism, another State or other safety oversight organization's ICAO-recognized functions in seeking assistance to strengthen their safety oversight capabilities	• Number of States requiring assistance/support • Number of States actively seeking assistance • Number of States that received assistance • Number of States offering assistance
	4.2	By 2022, all States to contribute information on safety risks, including SSP safety performance indicators (SPIs), to their respective regional aviation safety group (RASGs)	• Number of States contributing information on safety risks to RASGs • Number of States that are sharing their SSP SPIs with RASGs • Number of States forwarding information on safety matters to States, RASGs or other stakeholders
	4.3	By 2022, all States with effective safety oversight capabilities and an effective SSP, to actively lead RASGs' safety risk management activities	• Number of States with effective safety oversight capabilities and an effective SSP, leading RASGs' safety risk management activities • Number of RASGs that have a regional aviation safety plan

Goal 5: Expand the use of industry programmes	5.1	By 2020, all service providers to use globally harmonized SPIs as part of their safety management system (SMS)	Number of service providers using globally harmonized metrics for their SPIs
	5.2	By 2022, increase the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes	Number of service providers participating in the corresponding ICAO-recognized industry assessment programmes
Goal 6: Ensure the appropriate infrastructure is available to support safe operations	6.1	By 2022, all States to implement the air navigation and airport core infrastructure	Number of States having implemented the air navigation and airport core infrastructure elements

Chapter 5

SAFETY PERFORMANCE MEASUREMENT

5.1 MEASURING SAFETY PERFORMANCE RELATED TO THE GASP

The safety performance of the GASP is measured by a series of metrics as defined by the GASP indicators. Elements used to measure safety performance related to the GASP include, but are not limited to:

- a) number of fatalities (as the main indicator);
- b) accident rate;
- c) fatal accident rate;
- d) priority PQs for a safety oversight system;
- e) safety oversight index;
- f) SSP foundational PQs; and
- g) PQs related to safety management.

5.2 SAFETY INFORMATION-SHARING AND EXCHANGE

5.2.1 The RASGs play a key role in measuring safety performance and evaluating the success of the GASP. Through the regional aviation safety plans, RASGs set regional goals and targets and determine a series of SEIs to help them achieve these goals and targets. RASGs also use the GASP indicators related to the targets to measure if the SEIs attain their desired outcomes. The regional aviation safety plans are supported by national aviation safety plans developed by States in the region as well as those of other stakeholders, such as regional and non-governmental organizations.

5.2.2 Safety information-sharing and exchange is at the centre of safety performance measurement. The RASGs are in an ideal position to share and exchange safety information due to the composition of their membership, which encompasses representation from States, regions and industry, including but not limited to operators, air navigation services providers, operators of aerodromes and aircraft manufacturers. All these stakeholders bring valuable information of hazards and emerging issues that can feed into the regional safety risk management process.

5.2.3 Some RASGs already conduct safety risk assessments to mitigate risks at the regional level. One of the GASP targets calls for all States to contribute information on safety risks, including SSP SPIs, to their respective RASGs. The intent behind this target is to expand the RASGs' safety risk management capabilities by promoting the sharing of safety-related information. Individual States and service providers within a region should contribute information on safety risks to their RASGs. To further promote safety information-sharing and exchange, States with effective safety oversight capabilities and an effective SSP should actively engage in their RASGs' safety risk management activities. These States are in the best position to contribute to regional safety management activities, such as hazard identification due to

their mature SSPs, available data and experience in the area of safety risk management. In addition, the RASGs should also encourage States that do not expect to meet GASP Goals 2 and 3 to share their safety concerns with the RASGs as a source of information on regional safety issues. Safety information collected by the RASGs serves a dual purpose: to identify and prioritize SEIs to mitigate safety risks as part of the planning process; and to measure the effect of the SEIs as part of the safety assurance process. This information is used to determine if the GASP goals and targets are met at the regional level.

5.3 PROGRESS REPORTING

5.3.1 The timely and accurate reporting of safety information at the international, regional and national levels is critical to verify whether the goals are being achieved and to monitor the implementation of the SEIs of the roadmap. ICAO, the RASGs and partner organizations publish reports on safety as part of their commitment to monitor the progress of their safety goals. Combined, these reports provide perspectives that are both global in nature as well as specific to individual areas, such as flight operations. An analysis of multiple SPIs is essential to assess safety performance globally.

5.3.2 ICAO publishes an annual *Safety Report*, the key components of which include updated analyses of the level of effective implementation of safety oversight systems by States, accident statistics and accident rates. The global accident rate provides an overall indicator of safety performance. The *Safety Report* focuses on trends in those accident categories that have historically accounted for a significant number of occurrences and fatalities. In addition, as of 2021 the *Safety Report* will include a progress report related to GASP implementation by presenting the status of GASP goals and targets at the global and regional levels. These reports and additional information can be found on the ICAO website at www.icao.int/safety.

5.4 RESPONSIBILITIES FOR EVALUATION

RASGs are responsible for continuously evaluating the progress of the GASP goals and targets, as presented in the regional aviation safety plans, to determine if these were met within the allotted timeframe. Each State is responsible for submitting pertinent information from the national aviation safety plan to the RASG, to enable the compilation of regional results. Other stakeholders, such as non-governmental organizations to which specific goals and targets are addressed, should also report back to the respective RASGs to contribute to the evaluation. RASGs have adequate procedures in place to ensure reliable and consistent data flow. ICAO Regional Offices are responsible for working with their respective RASGs to produce a report which is submitted to ICAO Headquarters and serves as the basis of the *State of Global Aviation Safety Report*, presented to the Assembly. The results of this evaluation will also serve as feedback for the revision of subsequent editions of the GASP.