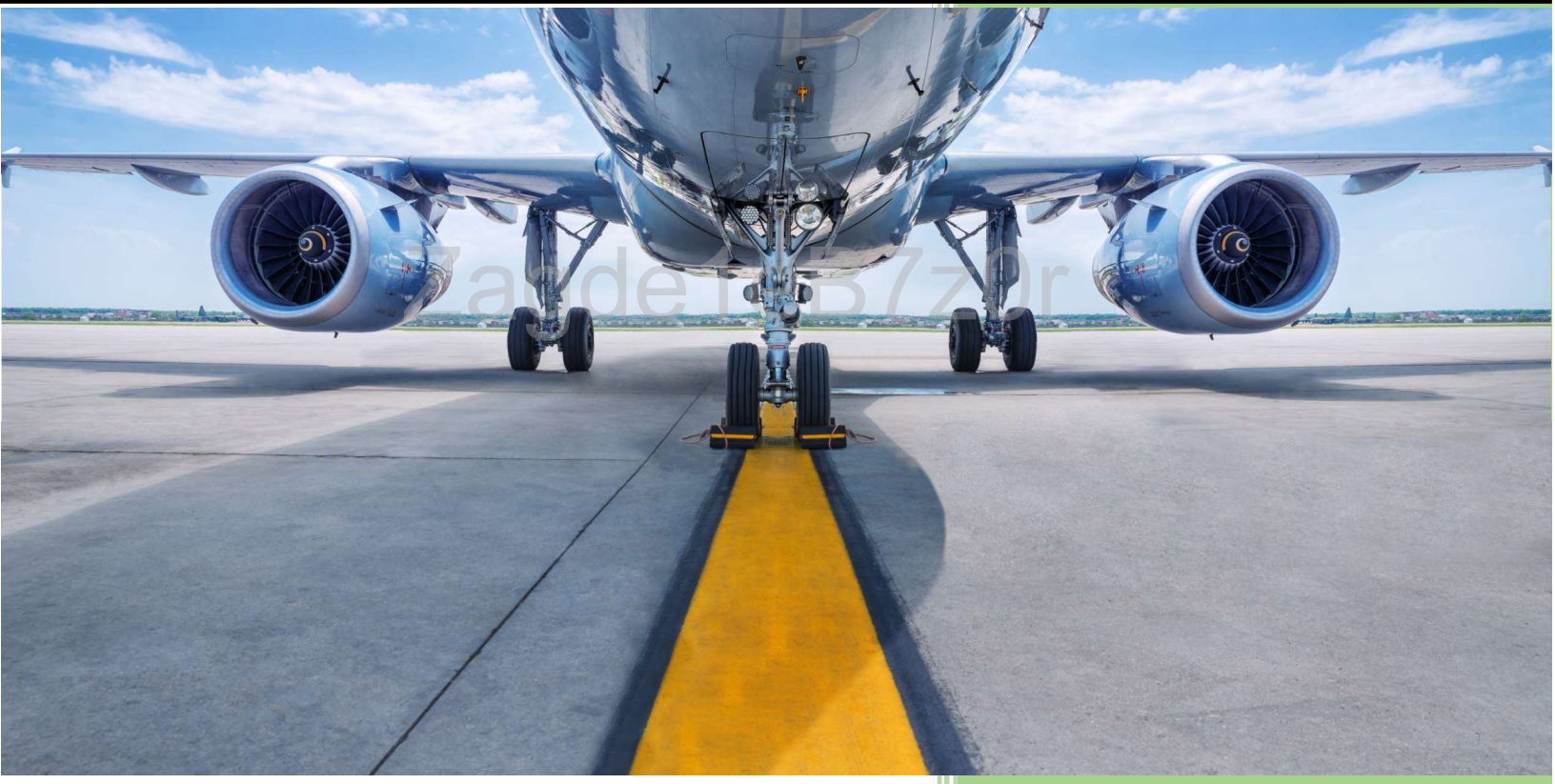
دولـــة قطـــر
State of Qatar

2024-2028

Qatar National Aviation Safety Plan (NASP)



الهيئة العامة للطيران المدني
CIVIL AVIATION AUTHORITY
QATAR قطـر

"Continuous improvement towards excellence."

THE STATE OF QATAR

NATIONAL AVIATION SAFETY PLAN

(2024 – 2028)

"CONTINUOUS IMPROVEMENT TOWARDS EXCELLENCE"

Foreword

Safety is the top priority in the civil aviation system of the State of Qatar. A safe aviation system contributes to the economic development of the State of Qatar and its industries. As air transport is of critical importance for the economy, community, and market access, the State of Qatar is committed to enhancing aviation safety and to the resourcing of supporting activities.

While the COVID-19 pandemic has severely impacted international air travel, we are confident that the global aviation community will reach and exceed soon the pre-pandemic traffic and growth levels for a more connected world. In this regard, as the recovery from the COVID-19 pandemic and the return to normal operations happens, aviation safety must remain a top priority for the civil aviation community, both nationally and globally.

The purpose of the Qatar National Aviation Safety Plan (NASP) is to continually reduce the risk of fatalities through the development and implementation of a national aviation safety strategy in the State of Qatar. It details the State of Qatar's commitment to continuously improve aviation safety management capabilities to reduce the risks of aviation operations. Thus, all stakeholders are encouraged to support and implement the NASP as the strategy for the continuous improvement of aviation safety in the State of Qatar.

The Qatar National Aviation Safety Plan (NASP) complements the State Safety Programme (SSP) of the State of Qatar. Through the Qatar NASP and SSP, aviation stakeholders in the State of Qatar affirm their commitment to continuous improvement, sufficient resourcing of activities, and increased collaboration for effective safety management at the national level. This commitment also supports the goal of an increased level of aviation safety worldwide with the help of cooperation between the regional and global actors of civil aviation.

ICAO Assembly resolution *"A40-1: ICAO global planning for safety and air navigation"* recognizes the importance of effective implementation of national aviation safety plans. It resolves that States should develop and implement national aviation safety plans, in line with the goals of the Global Aviation Safety Plan (GASP, Doc 10004). At the international level, the GASP sets forth a strategy that supports the prioritization and continuous improvement of aviation safety.

While GASP presents a global perspective, the Middle East Regional Aviation Safety Plan (MID-RASP) presents the strategic direction for the management of aviation safety at the regional level. In line with the ICAO GASP and MID-RASP, the NASP of the State of Qatar presents the strategic direction for the management of aviation safety at the national level.

The Qatar National Aviation Safety Plan (NASP) establishes the State of Qatar's safety goals, targets, and initiatives consistent with the ICAO Global Aviation Safety Plan and the Middle East Regional Aviation Safety Plan. In order to address the issues listed in global and regional plans and enhance aviation safety at the national level, the 5 years NASP of the State of Qatar contains the following goals in line with the GASP and MID-RASP:

- ✓ ***Goal 1**: Achieve a continuous reduction of operational safety risks;*
- ✓ ***Goal 2**: Further strengthen the State of Qatar's safety oversight capabilities;*
- ✓ ***Goal 3**: Continue to implement an effective State Safety Programme (SSP);*
- ✓ ***Goal 4**: Increase collaboration at the regional level to enhance safety;*
- ✓ ***Goal 5**: Expand the use of industry programmes and safety information sharing networks; and*
- ✓ ***Goal 6**: Ensure the appropriate infrastructure is available to support safe operations.*

Operational and organizational 'roadmaps' containing various safety enhancement initiatives and actions have been developed by the State of Qatar to achieve these goals. The level of performance will be measured via associated State safety performance indicators and targets.

The Qatar Civil Aviation Authority (QCAA) will periodically review the safety performance of the initiatives listed in the NASP to ensure the achievement of national safety goals and targets. Through close monitoring of the SEIs, the State of Qatar will adjust the NASP and its initiatives, if needed, and update the NASP accordingly to ensure the timely implementation of SEIs to address safety deficiencies and mitigate risks.

The Qatar NASP contents represent the State of Qatar's commitment to maintain an acceptable level of safety performance both above the regional and global levels through a series of actions monitored by the Qatar Civil Aviation Authority (QCAA). This commitment is based on a continuous improvement philosophy on the way towards achieving excellence in the aviation safety performance levels of the State of Qatar.

The Qatar Civil Aviation Authority promotes and regulates the safety of aviation in the State of Qatar. The QCAA is committed to developing and implementing effective strategies, legislative frameworks, and processes to ensure that aviation activities under its administration and regulatory oversight achieve the highest practicable level of safety performance. This commitment is formulated in the State Safety Policy Statement of Qatar, basing the foundation of the Qatar State Safety Programme Manual.

The main enabler for reaching effective safety management in a State is the harmony of all the State Safety Programme (SSP) stakeholders via maximum collaboration, coordination, and communication between all concerned entities. As such, the synergy between the SSP stakeholders is crucial for a safe aviation system in the State of Qatar. In this regard, the State of Qatar will utilize the necessary means for an increased harmony between its SSP stakeholders.

Consequently, all the Qatar SSP stakeholders are called upon to contribute to the implementation of the Qatar National Aviation Safety Plan within the scope of their respective competencies and responsibilities, as defined in the Qatar State Safety Programme Manual. All the stakeholders should keep on improving their safety management capacity within their scope of activities in accordance with the State of Qatar's philosophy in aviation safety management which is formulated as *"Continuous Improvement Towards Excellence"*.

Mohamed Faleh Al Hajri
Acting President
Qatar Civil Aviation Authority
(SSP Accountable Executive)

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Definitions

Accident Investigation Authority. The authority designated by a State as responsible for aircraft accident and incident investigations within the context of Annex 13.

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).

Contributing Factors. Actions, omissions, events, conditions, or a combination thereof, which, if eliminated, avoided or absent, would have reduced the probability of the accident or incident occurring, or mitigated the severity of the consequences of the accident or incident. the identification of contributing factors does not imply the assignment of fault or the determination of administrative, civil or criminal liability.

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 analyzed 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

AIIA	Accident and Incident Investigation Authority
ACI	Airports Council International
ADRM	Aerodrome
AGA	Aerodrome and Ground Aids
AIG	Aircraft Accident and Incident Investigation
ALAR	Approach and Landing Reduction
ANS	Air Navigation Services
ANSP	Air Navigation Service Provider
APV	Approaches with Vertical Guidance
ARC	Abnormal Runway Contact
ASBU	Aviation System Block Upgrade
ASR	Annual Safety Report
ATM	Air Traffic Management
ATS	Air Traffic Services
BIRD	Bird Strike
CAST	Commercial Aviation Safety Team
CE	Critical Element
CFIT	Controlled Flight into Terrain
CICTT	CAST/ICAO Common Taxonomy Team
CMA	Continuous Monitoring Approach
EI	Effective Implementation
FDAP	Flight Data Analysis Programme
FIR	Flight Information Region
F-NI	Fire/ Smoke (Non-Impact)
GADSS	Global Aeronautical Distress and Safety System
GANP	Global Air Navigation Plan
GASP	Global Aviation Safety Plan
GPWS	Ground Proximity Warning System
HRC	High Risk Categories of Occurrences
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IOSA	IATA Operational Safety Audit
ISAGO	IATA Safety Audit for Ground Operations

iSTARS	Integrated Safety Trend Analysis and Reporting System
LOC-I	Loss of Control In-flight
MAC	AIRPROX/ TCAS alert/ loss of separation/ near miss collisions/ mid-air collisions
MTOW	Maximum Take-Off Weight
NASP	National Aviation Safety Plan
OPS	Flight Operations (USOAP Audit Area)
ORG	Civil Aviation Organization (USOAP Audit Area)
QCAA	Qatar Civil Aviation Authority
QAAI	Qatar Aviation Accident and Incident Investigation Authority
RAMP	Ground Handling
RASG	Regional Aviation Safety Group
RASP	Regional Aviation Safety Plan
RE	Runway Excursion (departure or landing)
RI	Runway Incursion
RS	Runway Safety
RSOO	Regional Safety Oversight Organization
RST	Runway Safety Team
SARPs	Standards and Recommended Practices
SCF-NP	System/Component Failure or Malfunction – Non-power plant
SCF-PP	System/Component Failure or Malfunction - Power plant
SDCPS	Safety Data Collection and Processing System
SEI	Safety Enhancement Initiatives
SMS	Safety Management Systems
SPI	Safety Performance Indicator
SSC	Significant Safety Concern
SSO	State Safety Oversight
SSP	State Safety Programme
TCAS	Traffic Collision and Avoidance System
UAS	Unmanned Aircraft Systems
UPRT	Upset Prevention and Recovery Training
USOAP	Universal Safety Oversight Audit Programme
USOS	Undershoot/ Overshoot

SECTION 1

"INTRODUCTION"

SECTION 1. INTRODUCTION

1.1 Overview of the NASP

The State of Qatar is committed to enhancing aviation safety and to the resourcing of supporting activities. The purpose of this national aviation safety plan (NASP) is to continually reduce fatalities, and the risk of fatalities, through the development and implementation of a national aviation safety strategy.

A safe aviation system contributes to the economic development of the State of Qatar and its industries. The NASP promotes the effective implementation of Qatar´s safety oversight system, a risk-based approach to managing safety, as well as a coordinated approach to collaboration between the State of Qatar, other States, and industry. All the Qatar SSP stakeholders are invited to support and implement the Qatar NASP as the strategy for the continuous improvement of aviation safety in the State of Qatar.

It should be noted that the National Aviation Safety Plan (NASP) complements the State Safety Programme (SSP) of the State of Qatar and through the NASP and SSP, aviation stakeholders affirm their commitment to the ongoing improvement of aviation safety, sufficient resourcing of activities and increased collaboration at the global, regional, and national level.

Operational and organizational 'roadmaps' containing various safety enhancement initiatives and actions have been developed to achieve the safety goals included in the SSP of the State of Qatar. The level of the aviation safety performance of the State of Qatar will be measured via the respective safety performance indicators (SPIs) and safety performance targets (SPTs).

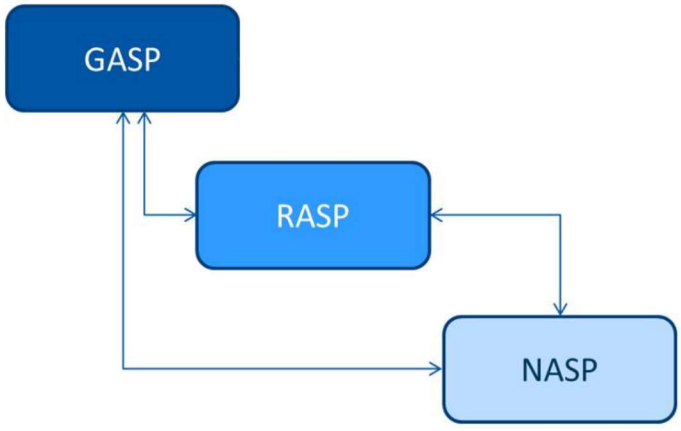

Figure 1. Relationship between the global, regional, and national aviation safety plans

The NASP of the State of Qatar is in full alignment with the ICAO Global Aviation Safety Plan (GASP, Doc 10004), the Middle East Regional Aviation Safety Plan (MID RASP), ICAO Global Aviation Safety Roadmap (Doc 10161), ICAO Manual on Monitoring Implementation of Regional and National Aviation Safety Plans (Doc 10162), and the ICAO Manual on the Development of Regional and National Aviation Safety Plans (Doc 10131).

1.2 Structure of the NASP

The Qatar National Aviation Safety Plan (NASP) collects the actions deemed necessary to achieve the safety objectives set in the Qatar State Safety Program. In particular, both the safety actions required by ICAO through the global and regional aviation safety plans (i.e., GASP and MID-RASP) and the actions identified by QCAA based upon the collected national safety data are part of the NASP.

With the NASP, Qatar Civil Aviation Authority (QCAA) aims the following objectives:

- Implement the strategic decisions adopted in the Qatar State Safety Programme (SSP);
- Meet the ICAO safety management requirements;
- Put in place the safety actions identified in the GASP and MID-RASP by ICAO that are relevant for the State of Qatar;
- Put in place the safety actions identified at National level based on the collected safety data; and
- Fulfil the safety risks mitigation actions identified at both national, regional, and global level.

The Qatar NASP presents the strategy for enhancing aviation safety in the State of Qatar for a period of five (5) years. Specifically, to identify the national actions, QCAA conducts periodic analysis of the Safety Recommendations issued by the Qatar Air Accident Investigation Unit (QAAI), the data collected in the *"Safety Web"* (QCAA's online mandatory and voluntary occurrence reporting system), and the evidence collected during certification and surveillance activities. Therefore, the Qatar NASP is not a static document. It evolves along with the information received in the GASP and MID-RASP periodic updates by ICAO and the national safety data analysis.

This document comprises seven (7) sections as follows:

1. Introduction;
2. Purpose of the Qatar NASP, including links to both the ICAO MID-RASP and the ICAO GASP;
3. The State of Qatar's strategic approach to managing safety in civil aviation, including national safety goals, targets and indicators;
4. Organizational/systemic safety issues, such as challenges related to SSP and SMS implementation, and initiatives to address them;
5. Operational safety issues and initiatives to address them;
6. Emerging and other safety issues, and initiatives to address them; and
7. Monitoring and oversight of the effective implementation of the NASP.

Although the SSP is rather a stable document addressing the governing processes to inform, maintain, or improve safety at the State level, the NASP, by nature, is a dynamic document, that is annually updated. It captures the latest safety objectives to be met; the new actions to be taken; the new activities to manage the most recent aviation safety risks; and, finally, the safety performance to be achieved within the concerning period for Qatar's national civil aviation system.

1.3 Relationship between the NASP and the State Safety Programme (SSP)

The International Civil Aviation Organization (ICAO) requires Member States to establish and maintain a State Safety Programme (SSP) for the management of civil aviation safety in relation to the aviation activities under their responsibility. In accordance with this requirement, the State of Qatar has established a State Safety Programme (SSP) commensurate with the size and complexity of its civil aviation ecosystem. The Qatar SSP is being maintained with a continuous improvement philosophy towards achieving an effective safety management both at the State and service provider levels in the State of Qatar.

The Qatar SSP describes how the safety management of civil aviation in the State of Qatar is structured and how responsibilities are assigned. It highlights the issues such as but not limited to the policy development, supervision, and enforcement procedures for the relevant SSP stakeholders. It also explains the relationship between all the different responsible actors and their responsibilities within the Qatar SSP requirements. Nonetheless, the Qatar SSP contains the safety objectives that guide the efforts of the government and the aviation industry, each with its responsibilities for civil aviation safety.

In addition to the SSP, ICAO requires States also to develop a National Aviation Safety Plan (NASP) in which the strategic direction for the management of aviation safety for a set time period is presented. As the State of Qatar has fully implemented a State Safety Programme (SSP), the Qatar NASP demonstrates commitment to the implementation of additional initiatives for the improvement of safety in the State (e.g., strengthening the SSP and achieving the State's safety objectives). The Qatar NASP (2023-2027) is the implementation of this requirement and describes the actions the State of Qatar wants to work on for the next five years. It has been developed in line with the GASP goals, targets, and high-risk categories of occurrences (HRCs). As safety comes first, in the aviation policy and in all decisions that are made, the execution of this plan delivers an important contribution to achieve the expected safety performance in the State of Qatar.

Through an effective SSP, the State of Qatar identifies and mitigates national operational safety risks. The Qatar SSP provides safety information to the NASP and allows the State of Qatar to manage its aviation activities coherently and proactively, measure the safety performance of its civil aviation system, monitor the implementation of the Safety Enhancement Initiatives (SEIs), and address any identified hazards and deficiencies. The NASP is one of the key documents produced as part of Qatar´s SSP documentation. It is how the State of Qatar defines and drives the implementation of SEIs generated by the SSP process and drawn from the ICAO Global Aviation Safety Plan (GASP) and the Middle East Regional Aviation Safety Plan (MID-RASP). It also allows the State of Qatar to determine initiatives to strengthen the SSP or otherwise needed to achieve its safety objectives. Safety intelligence gathered through the SSP also contributes to other national plans, such as the air navigation plan. Further information on Qatar's SSP can be found at https://www.caa.gov.qa/en-us/CivilAviationRegulations/Pages/State-Safety-Program.aspx.

1.4 Responsibility for the NASP development, implementation, and monitoring

The Qatar Civil Aviation Authority (QCAA) is responsible for the development, implementation, and monitoring of the National Aviation Safety Plan (NASP), in collaboration with concerned stakeholders including the national aviation industry.

The NASP is one of the key documents produced by the QCAA as part of the State Safety Programme (SSP) of the State of Qatar to describe the activities in order to assure the highest level of safety for the civil aviation ecosystem of the State of Qatar in compliance with the national and international aviation safety management legislation. The roles and responsibilities for aviation safety management in the State of Qatar is summarized in the below table:

	REGULATORY SCHEME	SAFETY POLICIES, PROGRAMMES AND PLANS	IMPLEMENTATION OF THE PLANS AS PRESENTED IN THE PROGRAMMES
Global and Regional Level	• **ICAO Annex 19 – Safety Management:** *Standards and Recommended Practices (SARPs)* • **ICAO Doc 9859 – Safety Management Manual (SMM):** *Guidance*	**ICAO Global Aviation Safety Plan (GASP) and Middle East Regional Aviation Safety Plan (MID-RASP):** • Global and regional key risks • Action items for the identified key risks • Responsibilities	**Responsibility for the safety at ICAO (Global and regional levels):** • Global and regional risk portfolio maintenance • Annex 19, ICAO SMM, GASP and RASP update and implementation • Monitoring and oversight of the safety management implementation by the States
State Level	• **Law 15:** *Primary aviation legislation* • **Amiri Decree 66:** *QCAA Organization* • **Amiri Decree 67:** *QAAI Organization* • **QCAR 91:** *Safety Management Regulation*	**Qatar State Safety Programme (SSP):** • System description • Safety policy, goals, and objectives • Responsibilities and functions **Qatar National Aviation Safety Plan (NASP):** • National key risks • Action items for the identified key risks • Responsibilities	**Responsibility for the safety at the State / national level:** • National risk portfolio maintenance • SSP & NASP update, implementation, and oversight • Monitoring and oversight of the safety management implementation by the stakeholders both at the State and service provider levels • Contributing to ICAO safety management efforts both regionally and globally

Service Provider Level	**Service Providers Specific Operating Processes and Procedures:**
	Implementation of an SMS in accordance with the requirements of the QCAR 91 – Safety Management
		Safety Management Systems (SMS) of Service Providers:
		• System description
		• Safety policy, goals, and objectives
		• Responsibilities and functions
			Responsibility for the safety at the service provider level:
			• Responsible for the safety of their operations
			• Safety management implementation considering the Qatar SSP and NASP
			• Produce safety information for the:
			  ○ Organization's SMS
			  ○ State safety management
			  ○ Demonstration of the SMS performance
			• Working to achieve State safety objectives.

Table 1. Roles and responsibilities in aviation safety management in the State of Qatar

Regarding the above-mentioned roles and responsibilities, it should be noted that each stakeholder will have their own safety information, different risk, and performance assessment methods. The most important point to be mentioned here is the issue that each organization should implement safety management commensurate with the size and complexity of their own operations and tailored to their exact structure.

The Qatar NASP is a rolling five-year plan; therefore it should be noted that the plan described in this document corresponds to the 5 years' period from the years 2024 to 2028.

The Qatar NASP has been developed in consultation with the aviation stakeholders in the State of Qatar including both State organizations and service providers. It has been developed in full alignment with the most recent version of the ICAO GASP, ICAO MID-RASP, and the ICAO Doc 10131. The following diagram depicts the above-mentioned development process.

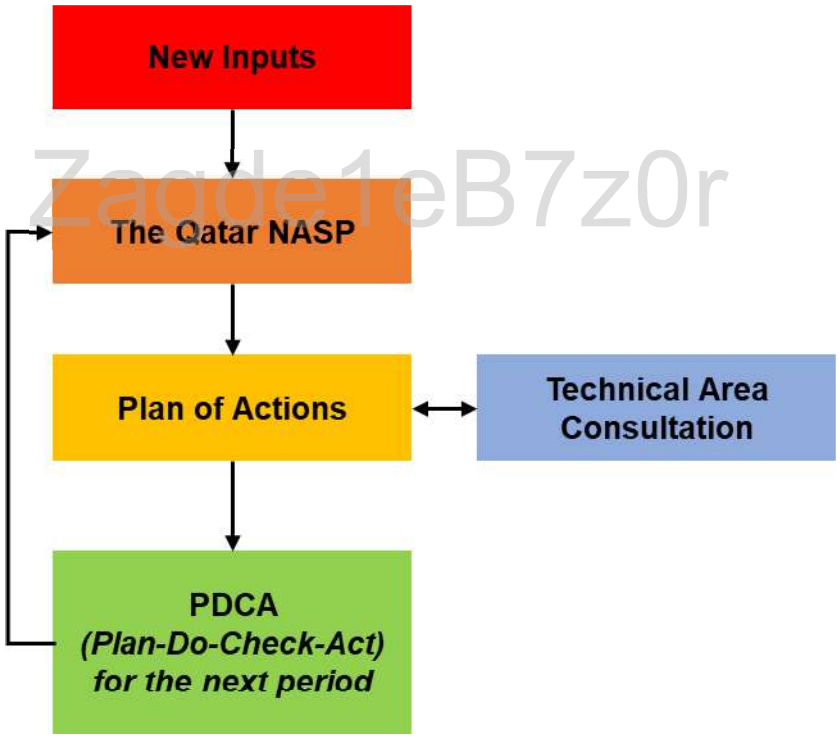

Figure 2. NASP development process

The new inputs to the NASP which require new action points can come from various national, regional, and international sources, both State and industry.

With the development of the Qatar NASP, QCAA considers the most recent ICAO indications provided in the GASP and MID-RASP, analyses the safety data and information collected at national level via respective safety reporting mechanisms and other means included in its SDCPS. The QCAA ensures the

contents of the Qatar NASP to be coordinated with all concerned parties having roles in the State safety management scheme of the State of Qatar.

QCAA believes in the importance of synergy between all the national, regional, and international aviation safety management stakeholders and strives for an increased harmony within the global aviation safety community. In accordance with this principle, during the development and drafting of the Qatar NASP, the QCAA Safety and Risk Management Section (ASD/SRM) has performed a thorough research on the related materials publicly shared by other regional and global aviation safety stakeholders for further improvement of the document and also for a better planning via benefiting from the best practices shared by the international aviation safety management community. Main motive behind the whole process is the State of Qatar's philosophy of continuous improvement towards excellence in safety management.

The Qatar NASP has been prepared by the QCAA Safety and Risk Management (SRM) Section; reviewed for any changes and/or additions by the Safety Review Board (SRB) first, and the Qatar State Safety Program (SSP) stakeholders later; and approved by the SSP Accountable Executive - President of the QCAA.

It should be clearly understood that the execution of the Qatar National Aviation Safety Plan (NASP) does not detract from the fact that the government organizations and service providers with an SMS have the responsibility to determine potential hazards and analyze the greatest risks and to mitigate these risks whenever necessary.

Once published, the Qatar NASP will be inserted into the SSP data-sharing platform and will bind all related SSP stakeholders both at the State and service provider domains.

1.5 National safety issues, goals, and targets

In order to enhance aviation safety at the national level, the Qatar National Aviation Plan (NASP) contains the following goals in line with the most recent ICAO GASP and ICAO MID-RASP:

- **Goal 1:** Achieve a continuous reduction of operational safety risks;
- **Goal 2:** Further strengthen the State of Qatar's safety oversight capabilities;
- **Goal 3:** Continue to implement an effective State Safety Programme (SSP);
- **Goal 4:** Increase collaboration at the regional level to enhance safety;
- **Goal 5:** Expand the use of industry programmes and safety information sharing networks; and
- **Goal 6:** Ensure the appropriate infrastructure is available to support safe operations.

The State safety management process of Qatar aims to identify the main risks of aviation activities and to identify and implement the necessary mitigation actions. It consists of a series of activities that are described in the State safety management documents (i.e., SSP, NASP, ALoSP and Safety Report)

which are closely interconnected. The overall structure of the State safety management process of the State of Qatar is depicted in the following figure.

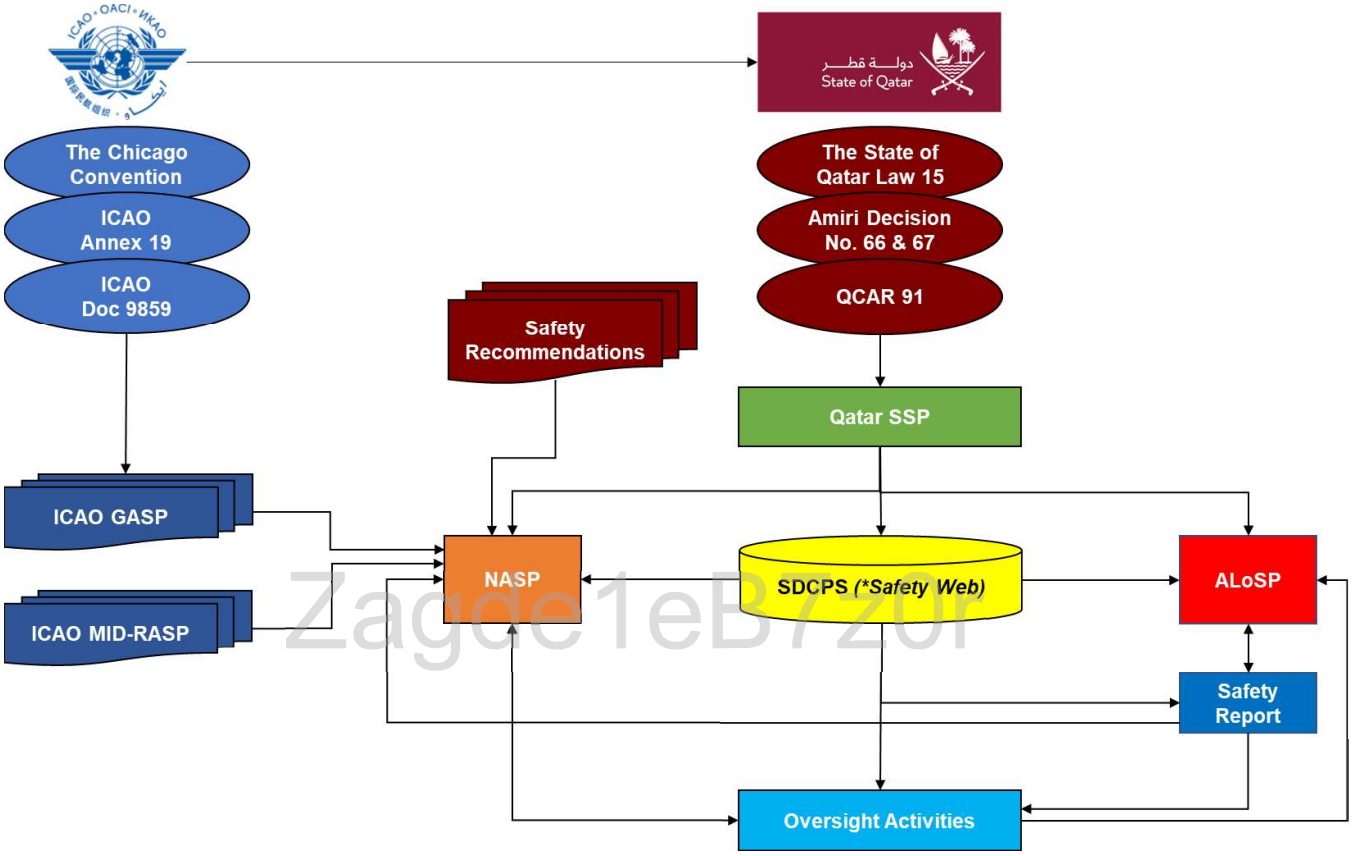

Figure 3. Overview of the State safety management process in the State of Qatar

The State safety management processes are closely connected to the State safety oversight activities. The State safety management activities in the State of Qatar are managed and coordinated by the QCAA Safety and Risk Management (SRM) Section under the Air Safety Department on behalf of the President of the QCAA, interfacing with both internal and external involved entities.

The Qatar NASP encompasses the main identified risks in the aviation sector at the State of Qatar, the strategic State safety objectives, and the measures to achieve them.

The Safety and Risk Management (SRM) Section of the QCAA analyses the data collected by the Safety Data Collection and Processing System (SDCPS) namely “Safety Web” in order to identify potential national risk areas not included in the ICAO GASP and ICAO MID-RASP. These analysis results are brought to the attention of the Safety Review Board (SRB) to carry out its activities as described in the Qatar SSP Manual.

The following safety issues in the State of Qatar have been considered of the utmost priority because they are organizational or systemic issues, which impact the effectiveness of safety risk controls:

1) Strengthening the aircraft accident and incident investigation capabilities at the national level;
2) Enhancement of the State Oversight on Dangerous Goods;
3) The new competencies required for an effective safety management at the State level;
4) Continuous promotion of a positive safety culture throughout the aviation community within the State of Qatar;
5) Impact of Security on Safety:
6) Establishing Runway Safety Teams (RST) at International Aerodromes;
7) Ensure the Safe Operations of UAS/RPAS (drones); and
8) Implementing an Effective Safety Management.

In addition, in accordance with the most recent indications from the ICAO and the results of the national safety risk management activities of the State of Qatar, the Qatar NASP addresses the following national safety issues as five main operational high-risk categories:

1) Loss of Control in Flight (LOC-I);
2) Controlled Flight into Terrain (CFIT);
3) Runway Excursion (RE);
4) Runway Incursion (RI); and
5) Mid-Air Collision (MAC).

In addition, there are three more operational key safety risk areas of relevance to the civil aviation system of Qatar which are given below:

6. Ground Safety;
7. Operational Damage; and
8. Air Navigation Services (ANS).

These safety issues have been identified via the safety data and information derived from the State of Qatar's Safety Data Collection and Processing System (SDCPS), which include information from mandatory and voluntary safety reports, accident and incident investigation reports, safety oversight activities, State of Qatar's safety performances and trends, and industry engagements.

The Qatar NASP also addresses emerging safety issues that may pose safety risks for aviation activities. 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 State of Qatar remain alert on emerging issues to identify potential safety risks, collect relevant data, and proactively develop mitigations to address them.

In this manner, the Qatar NASP addresses the following emerging issues, which were identified by Qatar's State Safety Data Collection and Processing System (SDCPS):

1) Communicable Diseases (e.g., COVID-19 Pandemic);
2) GNSS Outages / Vulnerability;
3) Civil Drones (UAS / RPAS);
4) Impact of security on safety;
5) Laser Attacks;
6) Cyber Attacks; and
7) Bird Strikes (BIRD).

The above mentioned organizational/systemic, operational, and emerging safety issues are being explained in detail under the upcoming respective sections of the Qatar NASP.

The Safety Enhancement Initiatives (SEIs) included in the Qatar NASP are collected under three categories in parallel with the safety issues given before. As already indicated, these categories are organizational/systemic safety issues (ORG), operational safety issues (OPS), and emerging safety issues (EME). The first category includes actions at the organizational and system level of civil aviation, the issues in the second category typically originated from operational problems, while the third category includes those relating to new or innovative issues that may pose a risk to the civil aviation ecosystem of the State of Qatar. Detailed information on the SEIs is given in the Appendix to the Qatar NASP.

The QCAA Safety and Risk Management (SRM) Section periodically reports to the Safety Review Board (SRB) on the progress of the actions and any critical issues included in the Qatar NASP. Based on the feedback provided by the QCAA SRM Section, the Safety Review Board (SRB) considers the need to propose any change/addition to the Qatar NASP.

1.6 Operational Context

There are 2 certified aerodromes in the State of Qatar[1]; Doha and Hamad International Airports.

The establishment of Doha FIR/SRR was agreed during the 10th meeting of the International Civil Aviation Organization (ICAO) Council 225th Session that was held on 11 March 2022. The implementation was planned to be done in a phased approach manner. In accordance with the subject plan, Qatar's airspace has been established in full after the success of the completion of the second phase of ICAO's plan for a full, first-ever establishment of airspace for Qatar known as the "Doha FIR".

There were **243793 movements** in the State of Qatar in the year of **2022**. There are currently **3 air operator certificates (AOCs)** issued by the State of Qatar, and of those there is **1 issued to operators**

[1] https://www.caa.gov.qa/en-us/Pages/AIM.aspx

conducting international commercial air transport operations. The State of Qatar also has **1 helicopter operator**. There are currently **44 domestic heliports** registered in the State of Qatar.

For more details and most updated information regarding the operational context, please consult to the associated aeronautical information provided by the Qatar Aeronautical Information Management (AIM) Division in the form of the Integrated Aeronautical Information Package (IAIP) consisting of the following elements:

- Aeronautical Information Publication (AIP);
- Amendment service to the AIP (AIP AMDT);
- Supplement to the AIP (AIP SUP);
- NOTAM and Pre-flight Information Bulletins (PIB);
- Aeronautical Information Circulars (AIC); and
- Checklists and list of valid NOTAMs.

The Qatar Aeronautical Information Management (AIM) service can be accessed via below link:

https://www.caa.gov.qa/en-us/Pages/AIM.aspx.


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SECTION 2

“PURPOSE OF THE QATAR NATIONAL AVIATION SAFETY PLAN”

SECTION 2. PURPOSE OF THE QATAR NATIONAL AVIATION SAFETY PLAN

The Qatar NASP is the master planning document containing the strategic direction of the State of Qatar for the management of aviation safety for a period of 5 years (2023 to 2027) and beyond. This plan lists national safety issues, sets national aviation safety goals and targets, and presents a series of safety enhancement initiatives (SEIs) to address identified safety deficiencies and achieve the national safety goals and targets.

The Qatar NASP has been developed using international safety goals and targets and High Risk Categories of Occurrences (HRCs) from both the ICAO GASP and the MID RASP. The SEIs listed in the Qatar NASP support the improvement of safety at the wider regional and international levels and include several actions to address specific operational safety risks and recommended SEIs for individual States set out in the MID RASP. The State of Qatar has adopted these SEIs and has included them in this plan. Cross-references are provided to the ICAO MID RASP for individual SEIs where relevant.

In addition, there are various national, regional, and international safety data and safety information sources that help Qatar SSP to identify safety issues and plan related actions in the Qatar NASP holistically. The subject sources feeding the content of the Qatar NASP are illustrated below.

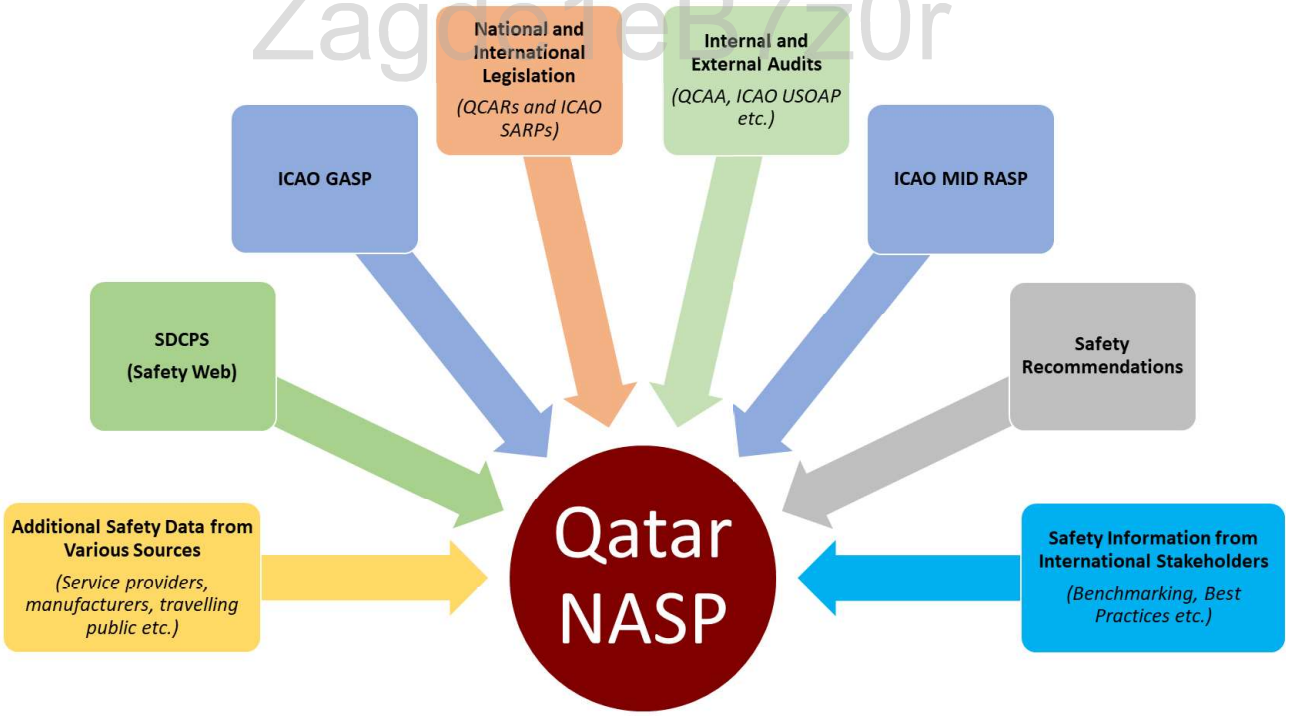

Figure 4. The sources feeding the NASP content

The Qatar NASP presents the safety priorities in line with the ones contained in the ICAO MID-RASP. These safety priorities have been developed via the information contained in the ICAO GASP. They

consist of organizational/systemic issues, operational safety risks, and emerging risks as well as region-specific issues. It should be noted that the region-specific issues have been identified via the safety risk assessment activities of the ICAO Middle East Regional Aviation Safety Group (ICAO RASG-MID) and published in the MID Region Annual Safety Reports.

Additionally, the State of Qatar's strategic approach to managing safety at the national level is to address the local operational issues and other safety issues in a timely manner. Therefore, the Qatar NASP strategic approach would focus on managing the risks raised from organizational/systemic safety issues, operational safety issues, and emerging safety issues as indicated in the figure below.

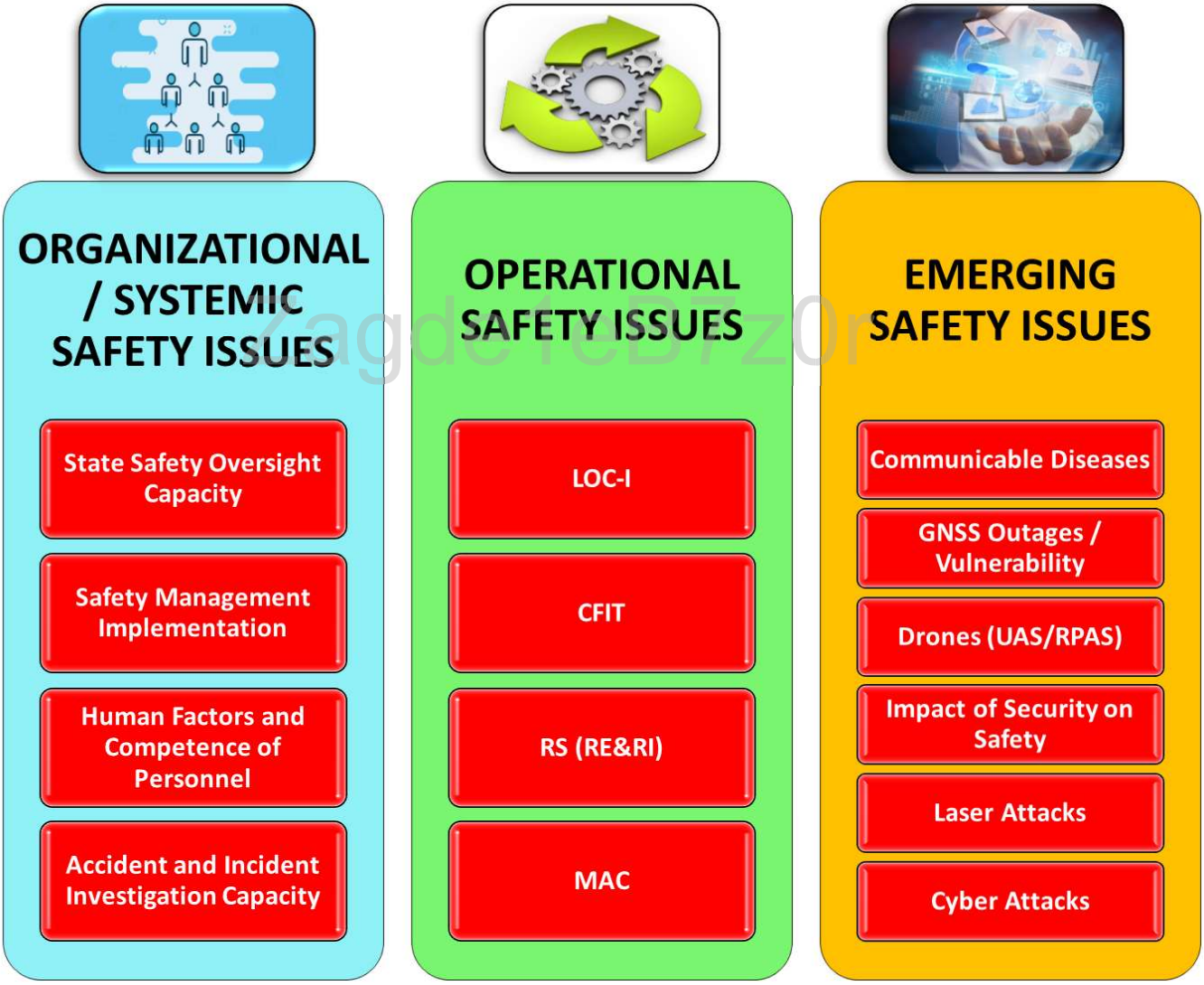

Figure 5. Safety priorities of the State of Qatar


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SECTION 3

"THE STATE OF QATAR'S STRATEGIC APPROACH TO MANAGING AVIATION SAFETY"

SECTION 3. THE STATE OF QATAR'S STRATEGIC APPROACH TO MANAGING AVIATION SAFETY

Safety risk management is the awareness and understanding of all safety concerns related to our organization, system, and operations. It is also about prioritizing and addressing these safety concerns through dedicated actions. It is the management of business activities and applying principles, frameworks, and processes for preventing accidents and injuries, and minimizing other risks.

An important part of safety risk management is the identification of all hazards, and the assessment of their probability and impact to calculate their overall risk values. If a risk cannot be accepted, then the related hazard must be mitigated to an acceptable safety level. As such, the Safety Risk Management (SRM) process of the State of Qatar is illustrated in the following diagram:

Figure 6. The State safety risk management (SRM) process in the State of Qatar

Safety risk management addresses both operational risks (safety risks related to ground handling, runway incursions, drones etc.) and organizational/systemic risks (safety management, safety culture, training and competency of the personnel etc.).

The Qatar NASP presents the SEIs derived from the SSP, including Qatar's safety risk management process and safety data collection and processing systems (SDCPS), as well as the work undertaken by

service providers in the development and implementation of their safety management systems (SMS). This plan is developed and maintained by the Qatar Civil Aviation Authority (QCAA), in coordination with all stakeholders and is updated annually (at least).

The strategic safety objective of the State of Qatar is defined as: ***"The continuous improvement of aviation safety through a progressive reduction in the number of accidents / serious incidents and related fatalities in the state of Qatar to be lower than the ICAO MID Region and global average, based on reactive, proactive and predictive safety management practices."***

The State of Qatar's Acceptable Level of Safety Performance is measured via various activities based on three approaches summarized below.

1. **Compliance Based Approach (CBA):** This approach is related to the conventional State safety oversight mechanisms. The data (description of the finding, technical area, finding level, closure date etc.) originates from the results of the audits, inspections, or other means of surveillance.
2. **Risk Based Approach (RBA):** This approach is closely related to the statistical safety data and information derived from the occurrences reported through MOR and/or VOR channels for the collection, analysis and information sharing processes.
3. **Performance Based Approach (PBA):** This approach affects the whole safety environment. The data originates from the results of the SMS assessments, audits, inspections, organizational risk profiling, and safety management performance of the service providers.

The Qatar NASP includes the following national safety goals and targets, for the management of aviation safety, as well as a series of indicators to monitor the progress made towards their achievement. They are tied to the goals, targets, and indicators listed in the ICAO GASP and the ICAO MID-RASP and include additional national safety goals, targets, and indicators.

#	Goal	#	Safety Indicator	Safety Target	Link to GASP and RASP
1.	**Achieve a continuous reduction of operational safety risks**	**1.1.**	Number of accidents per million departures	National average rate of accidents to be below the regional average rate (baseline 2016)	*Linked to Goal 1 and Target 1.1 of the GASP; and Goal 1 of the MID-RASP.*
		1.2.	Number of fatal accidents per million departures	National average rate of fatal accidents to be below the regional average rate (baseline 2016)	
		1.3.	Number of fatalities per million departures	Number of fatalities per billion passengers carried (fatality rate) to be below the regional average rate (baseline 2018)	
		1.4.	Number of Runway Excursion accidents per million departures	National average rate of Runway Excursion accidents to be below the regional average rate (baseline 2016)	

		1.5.	Number of Runway Incursion accidents per million departures	National average rate of Runway Incursion accidents to be below the regional average rate (baseline 2018)	
		1.6.	Number of LOC-I related accidents per million departures	National average rate of LOC-I related accidents to be below the regional rate (baseline 2016)	
		1.7.	Number of CFIT related accidents per million departures	National average rate of CFIT related accidents to be below the regional rate (baseline 2016)	
		1.8.	Number of Mid-Air Collision (accidents)	Zero Mid Air Collision accident (baseline 2018)	
		1.9.	Number of Near Mid-Air Collision (serious incidents)	Decreasing trend of Near Mid-Air Collision (AIRPROX) within the airspace of Qatar	
2.	**Further strengthen the State of Qatar's safety oversight capabilities (Progressively Increase the USOAP-CMA EI Scores)**	**2.1.**	USOAP-CMA Effective Implementation (EI) results:		*Linked to Goal 2 and Target 2.1 of the GASP; and Goal 2 of the MID-RASP.*
			a) EI Score overall	National overall EI score to be above 95% by 2030.	
			b) EI Scores by area	EI score for each area to be above 85% by 2030.	
			c) EI Scores by Critical Element (CE)	EI score for each CE to be above 85% by 2030.	
		2.2.	Number of Significant Safety Concerns (SSC)	a) No Significant Safety Concern (SSC)	
				b) SSC, if identified, to be resolved as a matter of urgency, and in any case within 12 months from its identification.	
3.	**Continue to implement an effective State Safety Programme (SSP)**	**3.1.**	Continuous progress in implementing the foundations of the SSP:		*Linked to Goal 3 and Target 3.1 of the GASP; and Goal 3 of the MID-RASP.*
			a) Update of the SSP Gap Analysis on ICAO iSTARS	Quarterly	
			b) Update of the SSP implementation plan of the State of Qatar	Quarterly	
			c) SSP Foundation level	%100 by 2026.	
		3.2.	Continuous progress in implementing an effective SSP:		*Linked to Goal 3 and Target 3.2 of the GASP; and Goal 3 of the MID-RASP.*
			a) Implementation of an effective SSP as per ICAO SSP maturity levels	%100 by 2026.	

			b) Acceptance and ongoing surveillance of individual service providers' SMS	Periodically (in accordance with the QCAA audit plans)	
			c) Update of the national aviation safety plan (NASP)	Annually	
			d) Providing information on safety risks, including SSP SPIs, to the RASG-MID	Annually	
4.	**Increase collaboration at the regional level to enhance safety**	**4.1.**	Attendance to the RASG-MID meetings	In a continuous basis (+%80)	*Linked to Goal 4 and Target 4.1 and 4.2 of the GASP; and Goal 4 of the MID-RASP.*
		4.2.	Providing required data related to accidents, serious incidents, and incidents to the MID-ASRG	Annually	
		4.3.	Percentage of SEIs implemented in accordance with the agreed timeframe	80% of the SEIs	
5.	**Expand the use of industry programmes and safety information sharing networks**	**5.1.**	Use of the IATA Operational Safety Audit (IOSA), to complement safety oversight activities.	Maintain eligible airlines of the State of the Qatar to be certified IATA-IOSA at all times.	*Linked to Goal 5 and Target 5.2 of the GASP; and Goal 5 of the MID-RASP.*
		5.2.	Use of the IATA Safety Audit for Ground Operations (ISAGO), to complement safety oversight activities.	Maintain eligible Ground Handling service providers of the State of the Qatar to be certified IATA-ISAGO at all times. *(Note: The IATA Ground Handling Manual (IGOM) endorsed as a reference for ground handling safety standards by all MID States.)*	
6.	**Ensure the appropriate infrastructure is available to support safe operations**	**6.1.**	Number of certified International Aerodromes as a percentage of all International Aerodromes in the State of Qatar	100% of the International Aerodromes certified	*Linked to Goal 6 and Target 6.1 of the GASP; and Goal 6 of the MID-RASP.*
		6.2.	Number of established Runway Safety Teams (RST) at the International Aerodromes in the State of Qatar.	100% of the International Aerodromes having established an RST	

Table 2. Safety goals, safety performance indicators (SPI), and safety performance targets (SPT) of the State of Qatar

The SEIs in this plan are implemented through Qatar's existing safety oversight capabilities and the service providers' SMS. SEIs derived from the ICAO global aviation safety roadmap were identified to achieve the national safety goals and targets presented in the NASP. Some of the national SEIs are linked to overarching SEIs at the regional and international levels and help to enhance aviation safety globally. The full list of the SEIs is presented in the appendix to the NASP.

Qatar's Centralized State Safety Data Collection and Processing System developed in-house is compatible with ECCAIRS & ICAO ADREP Taxonomy. With fully ICAO ADREP compliant SRM tools, it gets the data directly from the service providers as they upload the occurrences in real time. Then daily, QCAA conducts a Safety Action Preparatory Group Meeting involving all Air Safety Department section representatives led and facilitated by the QCAA SRM Section. The scope of the meeting is to perform an initial assessment of the occurrences reported, and then to monitor the effectiveness of the analysis and the remedial actions taken by the service providers according to safety management principles. The data is then exported from the Safety Web to our SRM Centric Analysis. This has enabled us to deliver monthly safety occurrence summary reports as well as safety intelligence and an in-depth annual State Safety Report. The data on departures has been acquired from AND AIS which serves as a reference datum for the analysis.

SECTION 4

"ORGANIZATIONAL / SYSTEMIC SAFETY ISSUES"

SECTION 4. ORGANIZATIONAL / SYSTEMIC SAFETY ISSUES

Organizational / systemic safety issues are system-wide problems that affect aviation as a whole and play a role in accidents and incidents. As they underlie operational issues, improvements in these can have an implicit effect on operational causes.

In this regard, in addition to the operational, emerging, and other safety issues, the State of Qatar has identified the key safety risks which are related with organizational challenges and systemic issues. These risks and their associated safety enhancement initiatives have been included in the Qatar NASP as well.

Organizational / systemic safety issues are given priority in the Qatar NASP since they are aimed at enhancing and strengthening the State of Qatar's safety oversight capabilities and the management of aviation safety at the national level.

The eight critical elements (CEs) of a safety oversight system are defined by ICAO. The State of Qatar is committed to the effective implementation of these eight CEs, as part of its overall safety oversight responsibilities, which emphasize Qatar's commitment to safety in respect of its aviation activities. The eight CEs are presented in the figure below.

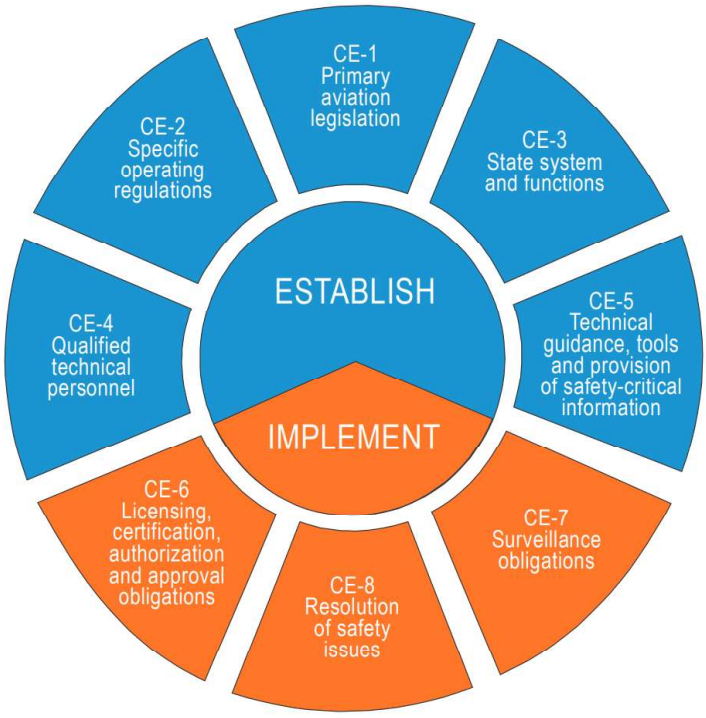

Figure 7. Critical elements of the State safety oversight system *(Ref: ICAO)*

The latest ICAO activities, which aim to measure the effective implementation of the eight CEs of the Qatar's safety oversight system, as part of the ICAO Universal Safety Oversight Audit Programme (USOAP), have resulted in the following scores:

Overall EI score							
90.11%							
EI score by CE							
CE-1	**CE-2**	**CE-3**	**CE-4**	**CE-5**	**CE-6**	**CE-7**	**CE-8**
93.1%	95.4%	81.67%	95.35%	83.64%	95.11%	87.37%	84.62%
EI score by Audit Area							
LEG	**ORG**	**PEL**	**OPS**	**AIR**	**AIG**	**ANS**	**AGA**
100%	80%	92.94%	92.37%	97.98%	71.95%	94.5%	86.99%

Table 3. ICAO USOAP EI scores for the State of Qatar

The safety oversight index (SOI) of a State is an ICAO indicator of its safety oversight capabilities. Every State audited by ICAO has an SOI. It is a number greater than zero, where "1" represents a level at which the safety oversight capabilities of a State would indicate the minimum expected capabilities considering the number of departures as an indication of the size of that State's aviation system. The calculations conducted by ICAO of Qatar's SOI have resulted in the following scores:

Overall Safety Oversight (SOI) Index	*Safety Oversight Operations Index*	*Safety Oversight Air Navigation Index*	*Safety Oversight Support Index*
1.38	1.28	1.49	1.36

Table 4. ICAO USOAP Safety Oversight Index (SOI) scores for the State of Qatar

The safety oversight system and the SSP are closely connected in terms of the safety objectives that each seeks to achieve. Both address the functions and responsibilities of the State; the former primarily with regard to safety oversight, and the latter with regard to safety management and safety performance.

There are clearly some aspects of safety management within the eight CEs that reflect the transition to a proactive approach in managing safety. For example, surveillance obligations (CE-7) can be considered an element of safety assurance and primary aviation legislation (CE-1) and specific operating regulations (CE-2) were also reflected in the original SSP framework as important safety risk controls.

The State Safety Oversight (SSO) and the State Safety Programme (SSP) responsibilities have been integrated in the second edition of the ICAO Annex 19 and are collectively referred to as the State's safety management responsibilities. This evolution is presented in the figure below.

Figure 8. Integrated State Safety Programme (SSP) *(Ref: ICAO)*

The following safety issues in the context of the civil aviation system of the State of Qatar have been considered of the utmost priority because they are organizational or systemic issues, which impact the effectiveness of safety risk controls. They were identified based on analysis from the ICAO USOAP data, accident and incident investigation reports, safety oversight activities over the past 2 years, and the SSP, as well as based on regional analysis conducted by *ICAO RASG-MID.* These issues are typically organizational in nature and relate to challenges associated with the conduct of State safety oversight

functions, implementation of the SSP at the national level, and the level of SMS implementation by national service providers. They take into consideration organizational culture, policies, and procedures within the concerned stakeholders. These safety issues are in line with those listed in the ICAO GASP, as well as the ones presented in the ICAO MID-RASP:

- **ORG 01**: ***Strengthening the aircraft accident and incident investigation (AIG) capability at the national level***

  This is the area where the State of Qatar received the lowest effective implementation (EI) score during the most recent ICAO USOAP audit. Therefore, it has been placed as a high-priority issue to resolve.

- **ORG 02**: ***Enhancing the State Safety Oversight on Dangerous Goods***

  States should work to continually improve their effective implementation of the eight CEs of the State safety oversight system in the area of OPS which also encompasses dangerous goods. This safety issue is recommended by the ICAO MID-RASP to be included in the NASP.

- **ORG 03**: ***Building the new competencies required for effective safety management at the State level***

  As a result of the new activities involved, various competencies are required for civil aviation personnel to perform their safety management related tasks properly. The gaps regarding the required competencies should be addressed carefully to support the QCAA inspectors in performing their safety management duties effectively.

- **ORG 04**: ***Continuous promotion of a positive safety culture throughout the aviation community within the State of Qatar***

  The State of Qatar has a mature SDCPS system easing the mandatory and voluntary safety reporting activities which helps increase the reporting levels. This contributes to the improvement of the positive safety culture among the aviation community. However, as this is a never-ending process, the continuous promotion of a positive safety culture via different means is one of the main priorities in the safety management strategy of the State of Qatar.

- **ORG 05**: ***Impact of security on safety***

  The safety action in this area is aimed at mitigating the security-related safety risks. The safety action in this area also includes the mitigation of the risks posed by flying over zones where an armed conflict exists. Managing the impact of security on safety is a strategic priority in the ICAO MID region and it is recommended by ICAO MID-RASP to be included in the NASP.

- **ORG 06**: ***Establishing Runway Safety Teams (RST) at the international aerodromes***

  Many States have difficulties with the development of the Runway Safety Programme and the establishment of Runway Safety Teams (RSTs) at airports as an effective means to reduce runway related accidents and incidents. This safety issue is recommended by the ICAO MID-RASP to be included in the NASP.

- **ORG 07**: ***Ensuring the safe operations of the Unmanned Aircraft Systems (UAS/RPAS/Drones)***

  The civilian use of UAS has increased remarkably in recent years. Research and development into the civilian applications of unmanned aircraft is a dynamic and rapidly evolving area. Control and guidance systems are now available that enable these aircraft to perform a variety of tasks that were previously unachievable, unreasonably expensive, or involved too much personal risk. As a result, it is obvious that the Unmanned Aircraft Systems (UAS) will have an increasing presence in controlled and uncontrolled airspace.

  In addition, the available evidence demonstrates an increase in drones coming into close proximity with manned aviation (both aeroplanes and helicopters) and the need to mitigate the associated risk. In connection with this, the national UAS regulations need to be developed to ensure safe operations of UAS and to mitigate the risk of the Mid-Air Collision (MAC).

- **ORG 08**: ***Implementing an effective safety management***

  Management of safety in a systematic and proactive way enables authorities and organizations to set up management systems that take into consideration potential hazards and associated risks before aviation accidents occur. This global move is at the core of ICAO Annex 19. This safety area would enable further work to improve reporting processes, occurrence investigation at the organizational level, and also the continued development of integrated data collection taxonomies.

NOTES:

In order to address the issues listed above, the State of Qatar will implement a series of safety enhancement initiatives (SEIs), some of which are derived from the ICAO Global Aviation Safety Roadmap (Doc 10161). The full list of the SEIs is presented in the Appendix to the Qatar NASP.

SECTION 5

"OPERATIONAL SAFETY ISSUES"

SECTION 5. OPERATIONAL SAFETY ISSUES

Operational safety issues are more directly linked to the actions of an individual person, organization, or operational area or to environmental factors, including weather events. At the operational level, threats may directly cause a situation to develop into an occurrence, incident, or accident.

Operational safety issues are closely related to the events reported during operations. The relationship between this type of issue and the final outcomes or end-states can be supported by data. Thus, the State of Qatar publishes an Annual Safety Report (ASR) which includes a full analysis of accidents and incidents that occurred during the year.

In this regard, the summary of the data regarding the accidents occurred in the State of Qatar in the period of 2021-2022 involving the commercial air transport and general aviation aircraft registered in Qatar, is shown in the table below.

Year	*Fatal accidents*	*Non-fatal accidents*
Commercial air transport occurrences in Qatar		
2021-2022 [year to year, average]	**0**	**0**
2023 [current year]	**0**	**0**
General aviation aircraft occurrences in Qatar		
2021-2022 [year to year, average]	**0**	**0**
2023 [current year]	**0**	**0**
Occurrences involving commercial air transport aircraft registered in Qatar		
2021- 2022 [year to year, average]	**0**	**0**
2023 [current year]	**0**	**0**
Occurrences involving general aviation aircraft registered in Qatar		
2021-2022 [year to year, average]	**0**	**0**
2023 [current year]	**0**	**0**

Table 5. The summary of the data regarding the accidents that occurred between 2021-2022 in the State of Qatar or involving commercial air transport and general aviation aircraft registered in Qatar

Changes to the operating environment and the increased adoption of technologies may pose risks to operations. Globally and regionally, there are five high risk categories that have been identified as key safety priorities by ICAO because of the number of fatalities and risk of fatalities associated with such events.

In this regard, the following five national high-risk categories of occurrences (HRCs) have been identified in the context of the civil aviation system of the State of Qatar based on analyses from mandatory and voluntary safety reporting systems, accident and incident investigation reports, safety oversight activities over the past 3 years, the SSP, as well as based on regional analysis conducted by the ICAO RASG-MID and on the operational safety risks described in the ICAO GASP.

1) **Loss of Control In-Flight (LOC-I);** parent category having TURB, ICE, Upset Recovery, Low Airspeed / Approach to Stall as precursors,
2) **Runway Excursion (RE);** a precursor category monitored under the parent category of RS (Runway Safety) having CTOL, RI, RE, WILD, ARC & USOS as precursors,
3) **Runway Incursion (RI);** a precursor category monitored under the parent category of RS (Runway Safety) having CTOL, RI, RE, WILD, ARC & USOS as precursors,
4) **Controlled Flight Into Terrain (CFIT);** parent category being monitored actively,
5) **Mid-Air Collision (MAC);** a precursor category monitored under the parent category of ANS related occurrences having ATM/CNS, NAV, and MAC as precursors.

These HRCs are in line with those listed in the most recent version of the GASP, as well as the ones presented in the ICAO MID-RASP.

In addition to the above, there are three more operational key safety risk areas of relevance to the State of Qatar's aviation ecosystem. These safety risks were identified based on data and information from the State of Qatar's Safety Data Collection and Processing System (SDCPS), which includes information from mandatory and voluntary safety reports, accident and investigation reports, safety oversight activities, State of Qatar's safety performances and trends, and industry engagements. These are:

6. **Ground Safety (GS);** parent category having Ground Collision (G-COL), Ground Handling (RAMP), Loss of Control – Ground (LOC-G), Evacuation (EVAC), Fire/Smoke Post Impact (F-POST) and Aerodrome (ADRM) as precursors;
7. **Operational Damage (OD);** parent category having System/Component Failure or Malfunction (Powerplant) (SCF–PP), System/Component Failure or Malfunction (Non-Powerplant) (SCF–NP), and Fire/Smoke Non-Impact (F-NI) as precursors; and
8. **Air Navigation Services (ANS);** parent category of ANS related occurrences having ATM/CNS Events (ATM), Navigation Errors (NAV), and AIRPROX/TCAS/Loss of separation/Near - Mid-Air Collision (MAC) as precursors.

The operational safety risks are being followed within the State safety risk management scheme. The safety performance of each category is being measured and periodical trends are being monitored. If the periodic trend of any risk reaches an alert level, the required measures are taken immediately in

accordance with the Qatar SSP procedures. Detailed safety information and analysis results are duly recorded within the SSP documentation.

The Qatar NASP includes safety enhancement initiatives (SEIs) that address the risks raised from national operational safety issues. The national operational safety issues are derived via lessons learned from operational occurrences and a data-driven approach as well as the indications included in the ICAO global and regional safety plans. These SEIs may include actions such as rulemaking, policy development, targeted safety oversight activities, safety data analysis, and safety promotion.

For further clearance, each operational safety issue has been described below with its scope and context.

- **OPS 01**: ***LOC-I / Aircraft upset in flight***
    - Loss of control usually occurs because the aircraft enters a flight regime that is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight crew involved. Prevention of loss of control is a strategic priority.
    - In addition, Aircraft upset or loss of control is the key risk area with the highest risk related to fatal accidents in Commercial Air Transport (CAT) aeroplane operations having a maximum take-off weight above 5700 kg.
    - It includes uncontrolled collisions with terrain, but also occurrences where the aircraft deviated from the intended flight path or intended aircraft flight parameters, regardless of whether the flight crew realized the deviation and whether it was possible to recover or not. It also includes the triggering of stall warnings and envelope protections.

- **OPS 02**: ***Runway Safety (RS) (Mainly RE & RI & ARC during landing)***
    - Runway Excursion (RE) covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties in maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centered or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing.
    - Runway Incursion (RI) refers to the incorrect presence of an aircraft, vehicle, or person on an active runway or in its areas of protection, which can potentially lead to runway collision as the most credible accident outcome.
    - Abnormal Runway Contact (ARC) refers to any landing or takeoff involving abnormal runway or landing surface contact. Events such as hard/heavy landings, long/fast landings, off-center landings, crabbed landings, nose wheel first touchdown, tail strikes, and wingtip/nacelle strikes are included in this category.

- **OPS 03**: ***CFIT / Controlled Flight into Terrain***
    - It comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences, which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc.

- There was no fatal accident involving the operators of the State of Qatar during this period. This key risk area has been raised by some MID States and in other parts of the world that makes it an area of concern.

- **OPS 04**: ***Mid-Air Collision (MAC) / Airborne Conflict - Loss of separation between civil and military aircraft***
  - Refers to the potential collision of two aircraft in the air. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories, or airspace infringements.
  - Although there has been no aeroplane mid-air collision accident in recent years within the State of Qatar, this key risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in the Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation. This is one specific safety issue that is a main priority in this key risk area.

- **OPS 05**: ***Ground Safety (GS)***

  Ground operations involve all aspects of aircraft handling at airports as well as aircraft movement around the aerodrome, except on active runways. The safety challenges of ground operations arise, in part, directly from those operations; for example, ensuring that aircraft are not involved in collisions and that the jet efflux from large aircraft does not endanger small ones.

  Even more important, ground operations involve the preparation of aircraft for departure and must be done in such a way that the subsequent flight will be safe; for example, correct loading of cargo and baggage, sufficient and verified fuel of adequate quantity and quality, and the correct use of Aircraft Ground De/Anti-Icing facilities, where appropriate.

  Ground Safety (GS) related occurrences are mainly:

  - Ground Collision (G-COL) refers to the occurrences involving collision while taxiing to or from a runway in use.
  - Ground Handling (RAMP) refers to occurrences during (or as a result of) ground handling operations.
  - Loss of Control – Ground (LOC-G) refers to the occurrences involving loss of aircraft control while the aircraft is on the ground.
  - Evacuation (EVAC) refers to the occurrences in which either:
    - a person(s) was/were injured during an evacuation,
    - an unnecessary evacuation was performed,
    - evacuation equipment failed to perform as required, or
    - evacuation contributed to the severity of the occurrence.

- Fire/Smoke Post Impact (F-POST) refers to the occurrences involving fire or smoke resulting from impact.
- Aerodrome (ADRM) refers to the occurrences involving Aerodrome design, service, or functionality issues.

- **OPS 06**: ***Operational Damage (OD)***

Operational Damage (OD) is briefly the failure or malfunction of an aircraft system or component. The aircraft systems are mainly divided into four system groups:

- engine or fuel system;
- flight control or structure;
- landing gear or hydraulic; and
- instrumentation / communication / navigation, electrical.

Operational Damage (OD) related occurrences are mainly:

- System/Component Failure or Malfunction (Powerplant) (SCF–PP) refers to the occurrences involving failure or malfunction of an aircraft system or component related to the powerplant.
- System/Component Failure or Malfunction (Non-Powerplant) (SCF–NP) refers to the occurrences involving failure or malfunction of an aircraft system or component other than the powerplant.
- Fire/Smoke Non-Impact (F-NI) refers to the occurrences involving fire or smoke in or on the aircraft, in flight, or on the ground, which is not the result of impact.

- **OPS 07**: ***Air Navigation Services (ANS)***

Air Navigation Services (ANS) means air traffic services; communication, navigation, and surveillance services; meteorological services for air navigation; and aeronautical information services. Air Navigation Services (ANS) related occurrences are mainly:

- ATM/CNS Events (ATM) refers to the occurrences involving Air Traffic Management (ATM) or Communication, Navigation, Surveillance (CNS) service issues.
- Navigation Errors (NAV) refers to the occurrences involving the incorrect navigation of aircraft on the ground or in the air.
- Airprox/TCAS Alert/Loss of Separation/Near Midair Collisions/Midair Collisions (MAC) refers to the occurrences involving 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.

NOTES:

- In order to address the safety risks associated with the identified operational safety issues, the State of Qatar will implement a series of safety enhancement initiatives, some of which are derived from the ICAO Global Aviation Safety Roadmap, ICAO GASP, and ICAO MID-RASP. The full list of the SEIs is presented in the appendix of the NASP.
- The aviation occurrence categories from the "CAST/ICAO Common Taxonomy Team (CICTT)" were used to assess risk categories in the process of determining national operational safety issues. The CICTT Taxonomy can be accessed electronically via the ICAO web page given in the following link: *https://www.icao.int/safety/airnavigation/AIG/Pages/Taxonomy.aspx*.

SECTION 6

"EMERGING AND OTHER SAFETY ISSUES"

SECTION 6. EMERGING AND OTHER SAFETY ISSUES

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.

The State of Qatar's aviation community must 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.

An emerging safety risk can be seen as the safety risk of an issue that is new or increasing. In light of the available national, regional, and global safety data and information, the Qatar NASP has identified the issues below as emerging safety issues for the State of Qatar's aviation ecosystem:

1. Communicable Diseases (e.g., COVID-19 Pandemic);
2. GNSS Outages / Vulnerability;
3. Civil Drones (UAS / RPAS);
4. Impact of security on safety;
5. Laser Attacks;
6. Cyber Attacks; and
7. Bird Strikes (BIRD).

Each emerging safety issue has been described briefly below to highlight its scope and context.

- **EME 01**: ***Communicable Diseases (e.g., COVID-19 Pandemic)***
    - The COVID-19 pandemic has caused significant and unprecedented challenges to the aviation sector, however, commercial international passenger operations never shut down in the State of Qatar.
    - The State of Qatar has implemented the ICAO CART Recommendations and published associated guidance in line with the ICAO CART guidance documents (TOGD etc.). The national aviation stakeholders have been fully involved in the process.
    - The State of Qatar knows an effective safety management both at the State and service provider levels with a positive safety culture and strong safety commitment are critical not only in addressing COVID-related safety risks but also in addressing other existing and emerging aviation safety risks.
    - In light of the experience gained during the COVID-19 period, the State of Qatar has reinforced its safety management capability with integrated risk management skills. This approach has helped the Qatar SSP to transform its structure to a more resilient form that is capable of coping with any future challenges including communicable diseases.

- **EME 02**: ***GNSS Outages / Vulnerability***
  - Global Navigation Satellite System (GNSS) outages/vulnerabilities may lead to navigation/surveillance degradation.
  - Global Navigation Satellite Systems (GNSS) jamming and/or possible spoofing has intensified in geographical areas surrounding the conflict zone and other areas.
  - The effects of GNSS jamming and/or possible spoofing may be observed by aircraft in various phases of their flights, in certain cases leading to re-routing or even to change the destination due to the inability to perform a safe landing procedure.
  - Under the present conditions, it is not possible to predict GNSS outages and their effects. The magnitude of the issues generated by such an outage would depend upon the extent of the area concerned, duration, and phase of flight of the affected aircraft.
  - The State of Qatar considers the hazards to aviation caused by the GNSS outages/vulnerability. The QCAA monitors the trends of the GNSS outages/vulnerability related occurrences and takes required actions when needed.

- **EME 03**: ***Civil Drones (UAS/RPAS)***
  - Unmanned aviation or remotely piloted aircraft systems is a growing domain of aviation that is emerging rapidly. There is currently a planned activity underway to enhance the national legislative and operational safety framework for drones in the State of Qatar.
  - *"QCAR No. 005 of 2017 - Regulation establishing Formal Technical Requirements and Administrative Procedures Relating to Unmanned Aircraft Systems (UAS)"* has been published as the national regulation for UAS/RPAS in the State of Qatar.
  - The coordination of the growing volume of UAS/RPAS activities with the traditional aviation system requires a new proactive approach to the assessment of the associated risks and actions for mitigating those risks.
  - The State of Qatar manages the risks associated with UAS/RPAS activities as part of the State safety risk management framework. The QCAA monitors the trends of the UAS/RPAS related occurrences and takes required actions when needed.

- **EME 04**: ***Impact of security on safety***
  - Security is concerned with malicious, intentional acts to disrupt the performance of a system. Safety focuses on the negative impact on the concerned systems' performance caused by unintended consequences of a combination of factors.
  - The crash of flight MH17 immediately raised the question of why the airplane was flying over an area where there was an ongoing armed conflict. Similar events occurred in the ICAO MID region. Thus, military or terrorist conflicts may occur in any State at any time and pose risks to civil aviation. Therefore, it's important for governments, aircraft operators, and other airspace users such as air navigation service providers (ANSPs), to work together to share the most up-to-date conflict zone risk-based information possible to assure the safety of civilian flights.

- In addition, effective security measures may have negative impacts on safety, and vice versa. In some cases, the management of the inherent risk of one may affect the other domain in unforeseen ways, such as in the following examples:
  - reinforced cockpit doors necessitated due to security risks may have safety implications on the operation of an aircraft;
  - restrictions on the carriage of personal electronic devices in the cabin may displace the security risk from the cabin to the cargo hold, leading to heightened safety risks; and
  - changing routes to avoid flying over conflict zones may result in congested air corridors that pose a safety issue.
- The crash of flight MH17 has shown that safety and security are intertwined. Thus, close cooperation between both domains is necessary to manage the risks related to flying over conflict zones and other risks at the interface of safety and security as well as possible.
- The State of Qatar considers the effects of the security measures may have negative impacts on safety, and vice versa. The QCAA Aviation Safety and Security Departments are in full coordination for required actions when needed.

- **EME 05**: ***Laser Attacks***

- Concerns about the hazards to aviation caused by the use and misuse of lasers in navigable airspace (in particular for pilots during critical flight phases) date back to the 1990s.
- More recently, however, some Air Navigation Service Providers (ANSP) have also reported that ATC towers have been illuminated by lasers.
- Lasers can easily be obtained via the internet, even those that are recommended for professional use only. The devices are not inherently dangerous; however, when misused they may cause optical discomfort/injury and thus could compromise aviation safety.
- The physiological (visual) effects/hazards to pilots/ATC staff associated with laser illumination are:
  - distraction;
  - glare;
  - temporary flash blindness;
  - afterimage; and
  - eye injuries.
- The State of Qatar considers the hazards to aviation caused by the use and misuse of lasers. The QCAA monitors the trends of laser interference related occurrences and takes required actions when needed.

- **EME 06**: ***Cyber Attacks***
    - The civil aviation sector is increasingly reliant on the availability of information and communications technology systems, as well as on the integrity and confidentiality of data.
    - The threat posed by possible cyber incidents to civil aviation is continuously evolving, with threat actors focusing on malicious intents, disruptions of business continuity, and the theft of information for political, financial, or other motivations.
    - The management of cyber security risks, or more precisely the management of operative information security risks, will become increasingly central in-flight safety activities. To this end, the management of information security must become a more integral part of the operational activities (management of flight safety and security issues) carried out by the authorities and organizations in the aviation system.
    - The State of Qatar considers the hazards to aviation caused by cybersecurity related occurrences. The QCAA is vigilant for cybersecurity and monitors the trends of cybersecurity related occurrences to take required actions when needed.

- **EME 07**: ***Bird Strikes (BIRD)***
    - A bird strike is strictly defined as a collision between a bird and an aircraft that is in flight or on a take-off or landing roll.
    - Bird Strike is common and can be a significant threat to aircraft safety. For smaller aircraft, significant damage may be caused to the aircraft structure, and all aircraft, especially jet-engine aircrafts, are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes. This has resulted in a number of fatal accidents.
    - Bird strikes may occur during any phase of flight but are most likely during the take-off, initial climb, approach, and landing phases due to the greater numbers of birds in flight at lower levels. Since most birds fly mainly during the day, most bird strikes occur in daylight hours as well.
    - The State of Qatar considers the hazards to aviation caused by the bird strike events. The QCAA monitors the trends of the bird strike related occurrences and takes required actions when needed.

"5G Interference" is another emerging topic that is not included in the above list but is being closely monitored. With the introduction of the new 5G mobile communications technology, new frequency ranges have been released which are close to the frequency range used by the radio altimeters in aeroplanes and helicopters. There are various reports worldwide that have investigated the potential negative influence of 5G on radio altimeters. Such a negative influence could take the form of an incorrect altitude display or even a total failure of the radio altimeter. The QCAA has issued a Safety Information Leaflet (SIL No. OPS 01/2022) titled *"Risk of Potential Adverse Effects on Radio Altimeters when Operating in the Presence of 5G C Band Interference"* to inform the national aviation community about this special threat and to encourage the reporting of any incidents which can potentially be attributed to 5G interference.

Another important emerging issue underway is the implementation of the Doha Flight Information Region (FIR) and Doha Search and Rescue Region (SRR). The establishment of Doha FIR/SRR was agreed during the 10th meeting of the International Civil Aviation Organization (ICAO) Council 225th Session that

was held on 11th of March 2022. The implementation is being done in a phased approach manner. All concerned are encouraged to monitor the progress of the implementation via Qatar aeronautical publications. The QCAA Air Navigation Services Inspectorate (ANSI) Section continuously monitors the process in close coordination with the QCAA Air Navigation Department (AND).

The safety reports and periodic trends regarding emerging safety risks are being closely monitored. The State Safety Performance Indicators (SPIs) under the “Emerging and Other Safety Issues” category of the Qatar ALoSP scheme are being used for this process.

NOTE: In order to address the safety risks raised from emerging safety issues, the State of Qatar will implement a series of safety enhancement initiatives (SEIs) which are detailed in the appendix to the Qatar NASP.

SECTION 7

"MONITORING AND OVERSIGHT OF THE IMPLEMENTATION"

SECTION 7. MONITORING AND OVERSIGHT OF THE IMPLEMENTATION

The State of Qatar will continuously monitor the implementation of the Safety Enhancement Initiatives (SEIs) listed in the Qatar NASP using the mechanisms presented in the Appendix to this plan and also will measure the safety performance of the national civil aviation system in line with the State Safety Performance Management (SPM) framework and Acceptable Level of Safety Performance (ALoSP) scheme included in the Qatar SSP. The overview of the State safety performance management framework and its relationship with the ALoSP is depicted in the diagram below.

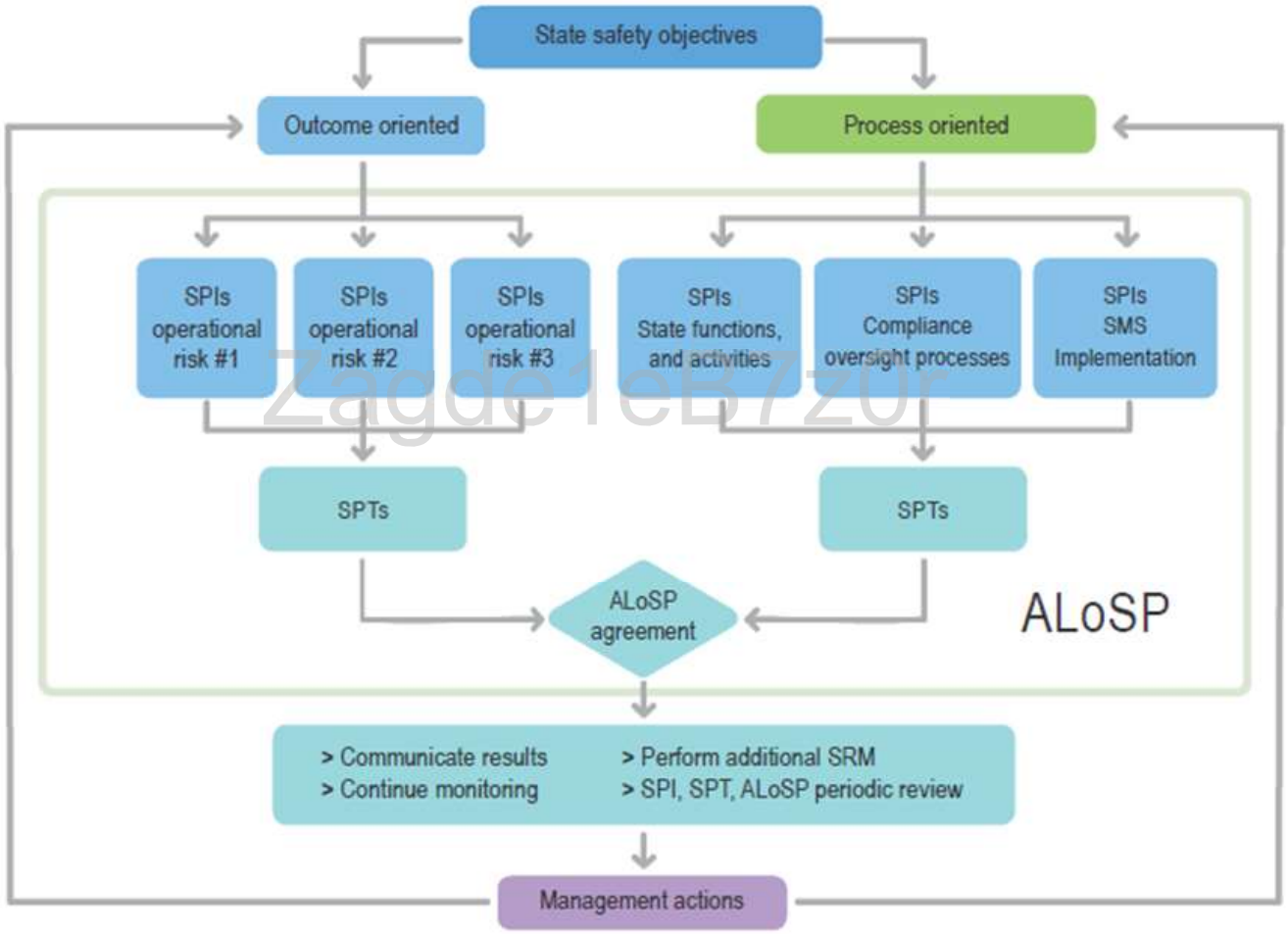

Figure 9. State Safety Performance Management (SPM) and ALoSP (Ref: ICAO)

In addition to the above, the State of Qatar will review the Qatar NASP annually or earlier, if required, to keep the identified safety risks, safety issues, and selected SEIs updated and relevant. The Qatar Civil Aviation Authority (QCAA) will periodically review the safety performance of the initiatives listed in the Qatar NASP to ensure the achievement of national safety goals and targets. If required, the State of Qatar will seek the support of the ICAO RASG-MID.

Through close monitoring of the SEIs, the State of Qatar will adjust the Qatar NASP and its initiatives, if needed, and update the Qatar NASP accordingly to ensure the timely implementation of SEIs to address safety deficiencies and mitigate risks.

Each aviation stakeholder is responsible for the safety of its operations. Stakeholders must address in their Safety Management Systems (SMS) the threats identified by themselves and those identified in the State of Qatar's aviation safety risk management process in respect of their operations, assess the associated risks and, if necessary, implement actions aiming to reduce risks to an acceptable level.

The QCAA and aviation stakeholders must process, document, and implement the actions of the Qatar National Aviation Safety Plan where applicable. As part of its oversight activities, the QCAA assesses how stakeholders have addressed the actions described in the Qatar NASP and the threats relevant to them in their safety management.

The effectiveness of the Qatar NASP actions is monitored as part of the State of Qatar's aviation safety risk management and safety assurance framework. In this regard, the State of Qatar will use the indicators listed in this plan to measure the safety performance of the civil aviation system and monitor each national safety target.

The figure below depicts the relationship between the State of Qatar's ALoSP, State safety goals, State safety performance indicators (SPIs), State safety performance targets (SPTs), safety enhancement initiatives (SEIs), and associated actions.

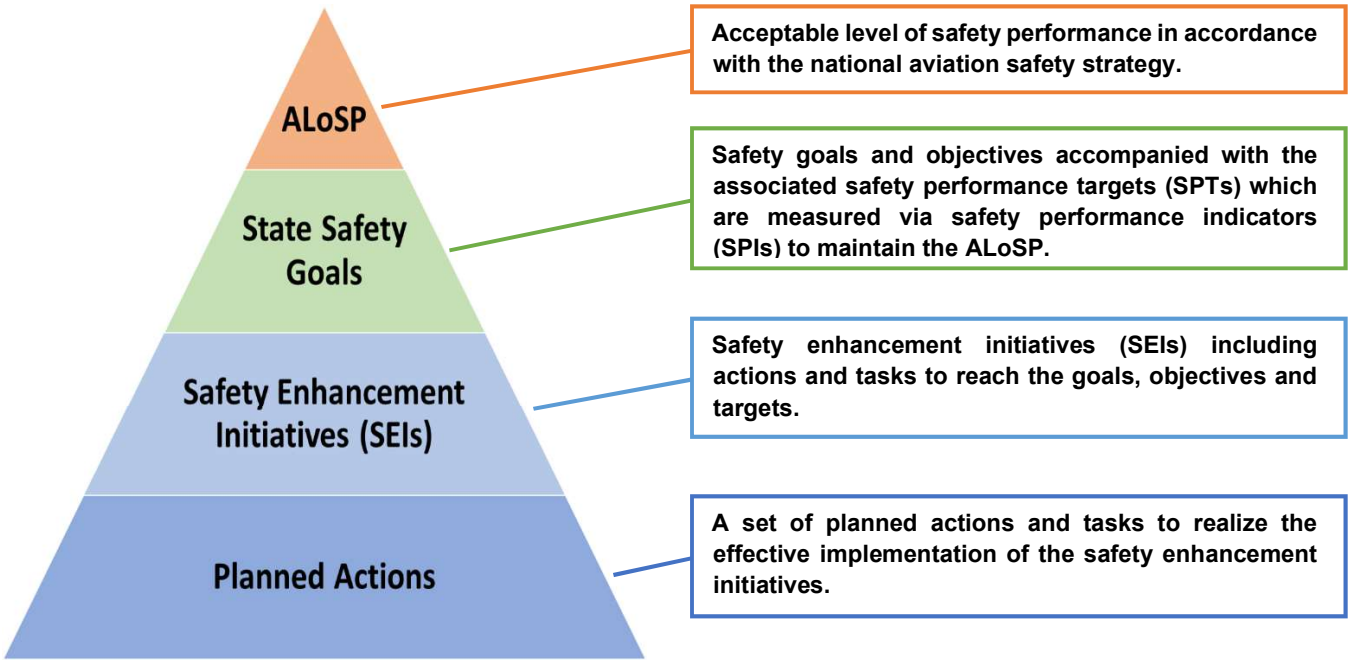

Figure 10. Relationship between the ALoSP, State safety goals, State SPIs, SPTs, SEIs and associated actions

A periodic safety report will be published to provide aviation stakeholders with relevant up-to-date information on the progress made in achieving the national safety goals and targets, as well as the implementation status of the SEIs. As part of the State safety promotion, the safety report or some parts of its contents will be shared via appropriate means with the concerned entities in line with their role in the aviation safety management of the State of Qatar.

In order to ensure its continuous monitoring, the Qatar NASP is supported by the QCAA's Annual Safety Report (ASR), which includes dedicated safety risk portfolios that focus on the various operational domains in the State of Qatar. The ASR also monitors the implementation of the associated mitigation actions including, where appropriate, related safety performance indicators (SPIs).

In the event that the national safety goals and targets are not met, the root causes will be presented. If the State of Qatar identifies critical operational safety risks, reasonable measures will be taken to mitigate them as soon as practicable, possibly leading to an unscheduled revision of the Qatar NASP. The State of Qatar will adopt a standardized approach to provide information at the regional level, for reporting to the RASG-MID once the global/regional mechanisms have matured. This allows the region to receive information and assess operational safety risks using common methodologies.

Any questions regarding the Qatar NASP and its initiatives, and further requests for information, may be addressed to the following:

Qatar Civil Aviation Authority (QCAA) / Air Safety Department	
Address:	QCAA Building, 7/F Al Sharq Tower, Al Aaliya St., Old Salata, Doha, State of Qatar
Telephone:	00974 44557333
Fax:	00974 44557103
E-mail:	asd@caa.gov.qa
Website:	https://www.caa.gov.qa

APPENDIX: Details of the Safety Enhancement Issues (SEIs)

In this Appendix to the Qatar NASP, the Safety Enhancement Initiatives (SEIs) are being provided under three categories as already indicated. These are:

1. Organizational / Systemic Safety Issues (ORG);
2. Operational Safety Issues (OPS); and
3. Emerging Safety Issues (EME).

The first category includes actions at the organizational and system level of civil aviation, the issues in the second category typically originated from operational problems, while the third category includes those relating to new or innovative issues that may pose a risk for the State of Qatar's civil aviation.

A generic table format has been used for the explanation of each SEI. For each category, the generic table has been customized as per the specific needs of that category, and a color code is used. "Green" is used for ORG, "blue" for OPS, and "orange" for EME. The below table for the OPS is given as an example.

SEI designator.

Type of the safety issue.

Sequence of the safety issue in the respective type.

ORG 01:	***Description of the safety issue.***		
State Objective:	***Respective State safety objective regarding the issue.***		
ORG SEI 01:	***Description of the safety enhancement initiative (SEI) regarding the issue.***		
GASP and RASP References:	***Related ICAO GASP and MID-RASP references regarding the SEI.***		
Action(s)	***Description of the required actions regarding the SEI.***		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Timeline for reaching the set targets	***The entity having the main responsibility in the implementation and monitoring of the SE.***	***The entities involved in the process.***	***The parameters used for the measurement of the safety performance.***
Monitoring Activity:	***Brief description of the activity for the monitoring of the implementation process.***		

Table 6. Generic table format used for the explanation of the SEIs

In line with the aforementioned information, detailed information on the SEIs for each respective category is given in the following pages.

1 – ORGANIZATIONAL / SYSTEMIC SAFETY ISSUES (ORG)

ORG 01:	**Strengthening the Aircraft Accident and Incident Investigation (AIG) Capability at the National Level**
State Objective:	Further strengthen the State of Qatar's safety oversight capabilities / Progressively Increase the USOAP-CMA EI Scores/Results. *(Ref: NASP Goal 2)*
ORG SEI 01:	Continually improve Qatar's effective implementation of the CEs of the State safety oversight system in the area of AIG as per the guidance contained in the ICAO Global Aviation Safety Roadmap.
GASP and RASP References:	• *GASR ORG SEI-3: Establishment of an independent accident and incident investigation authority, consistent with Annex 13 — Aircraft Accident and Incident Investigation* • *MID-RASP G2-SEI-01: Strengthening of States' Safety Oversight Capabilities*
Action(s)	• Addressing the ICAO USOAP AIG findings via implementation of the corrective action plans • Increasing the competencies (safety management, accident investigation, etc.) of the personnel through training activities • Publication of the materials for technical guidance and safety promotion

Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
2028	QAAI	• QAAI • QCAA	• ICAO USOAP EI Scores (AIG) • Number of activities/materials
Monitoring Activity:	ICAO USOAP-CMA Effective Implementation (EI) Results		

ORG 02:	**Enhancing the State Safety Oversight Capability on Dangerous Goods**
State Objective:	Further strengthen the State of Qatar's safety oversight capabilities / Progressively Increase the USOAP-CMA EI Scores/Results. *(Ref: NASP Goal 2)*
ORG SEI 02:	Continuously improve the system for effective safety oversight of the various entities involved in the transport of dangerous goods. In addition, the State of Qatar to Strengthen its State Safety Oversight Capabilities and increase progressively the USOAP-CMA EI results in the area of OPS and enhance the state safety oversight on Dangerous Goods.
GASP and RASP References:	• *GASR ORG SEI-1: Consistent implementation of ICAO SARPs at the national level* • *MID-RASP G2-SEI-04: Enhance State Oversight on Dangerous Goods*
Action(s)	• Developing technical guidance for supporting the QCAA inspectors in the conduct of the oversight of Dangerous Goods (DG) • Increasing the competencies (safety management, DGR, etc.) of the personnel through training activities • Publication of the materials for technical guidance and safety promotion

Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
2028	QCAA (OPS)	• QCAA • Service Providers	• ICAO USOAP EI Scores (OPS) • Number of activities/materials
Monitoring Activity:	ICAO USOAP-CMA Effective Implementation (EI) Results		

ORG 03:	**The New Competencies Required for Effective Safety Management at the State Level**		
State Objective:	• Further strengthen the State of Qatar's safety oversight capabilities / Progressively Increase the USOAP-CMA EI Scores/Results. *(Ref: NASP Goal 2)* • Continue to implement effective SSP. *(Ref: NASP Goal 3)*		
ORG SEI 03:	Develop/organize customized training to address the gaps regarding the required competencies to support the QCAA staff in performing their safety management duties effectively.		
GASP and RASP References:	• *GASR ORG SEI-5: Qualified technical personnel to support effective safety oversight* • *MID-RASP G2-SEI-05: Human Factors and Competence of Personnel* • *MID-RASP G3-SEI-01: Implement an effective Safety Management*		
Action(s)	• Developing guidance material on safety management competencies • Increasing the safety management (SSP/SMS) competencies through safety management training and promotion activities • Enhancing the SSP and SMS oversight capacity through training activities		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SRM)	• QCAA • SSP Stakeholders • Service Providers	No specific State SPI is defined for this SEI. However, to monitor the level of implementation of the actions, the below metrics will be tracked: • Number of materials/activities • Number or percentage of people/stakeholders attending the activities
Monitoring Activity:	Monitoring year-to-year trends of the metrics		

ORG 04:	**Promotion of a Positive Safety Culture throughout the Aviation Community**		
State Objective:	• Further strengthen the State of Qatar's safety oversight capabilities / Progressively Increase the USOAP-CMA EI Scores/Results. *(Ref: NASP Goal 2)* • Continue to implement effective SSP. *(Ref: NASP Goal 3)*		
ORG SEI 04:	Promote a positive safety culture throughout the aviation community in the State of Qatar.		
GASP and RASP References:	• *GASR ORG SEI-5: Qualified technical personnel to support effective safety oversight* • *MID-RASP G2-SEI-05: Human Factors and Competence of Personnel*		
Action(s)	• Developing new safety training, education, and promotion materials (e.g. presentations, flyers, pamphlets, etc.) • Organizing a blend of safety promotion activities		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SRM)	• QCAA • SSP Stakeholders • Service Providers	No specific State SPI is defined for this SEI. However, to monitor the level of implementation of the actions, the below metrics will be tracked: • Number of materials/activities • Number or percentage of people/stakeholders attending the activities
Monitoring Activity:	Monitoring year-to-year trends of the metrics		

ORG 05:	**Impact of Security on Safety**		
State Objective:	• Further strengthen the State of Qatar's safety oversight capabilities / Progressively Increase the USOAP-CMA EI Scores/Results. *(Ref: NASP Goal 2)* • Continue to implement effective SSP and SMSs. *(Ref: NASP Goal 3)*		
ORG SEI 05:	Develop an integrated risk management approach within the state safety management processes of the State of Qatar.		
GASP and RASP References:	• *GASR ORG SEI-1: Consistent implementation of ICAO SARPs at the national level* • *MID-RASP G2-SEI-06: Impact of security on safety*		
Action(s)	• Enhancing the coordination mechanisms between the QCAA Safety and Security departments • Identifying hazards and managing the associated safety risks relating to the impact of security on safety • Enhancing the safety management (SSP/SMS) capacity through workshops/trainings		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SRM-SEC)	• QCAA • SSP Stakeholders • Service Providers	No specific State SPI is defined for this SEI. However, to monitor the level of implementation of the actions, the below metrics will be tracked: • Number of materials/activities • Number or percentage of people/stakeholders attending the activities
Monitoring Activity:	Monitoring year-to-year trends of the metrics		

ORG 06:	**Establishing Runway Safety Teams (RST) at the International Aerodromes**		
State Objective:	Ensure the Appropriate Infrastructure is available to Support Safe Operations. *(Ref: NASP Goal 6)*		
ORG SEI 06:	Develop an integrated risk management approach within the State safety management processes of the State of Qatar.		
GASP and RASP References:	• *GASR ORG SEI-1: Consistent implementation of ICAO SARPs at the national level* • *GASR ORG SEI-6: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner* • *MID-RASP G6-SEI-02: Establish Runway Safety Team (RST) at International Aerodromes*		
Action(s)	Establishing effective RSTs at the aerodromes to manage the runway safety related risks.		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (ASAS)	• QCAA • SSP Stakeholders • Service Providers	• RSTs established at all international aerodromes • Number of the RST missions conducted
Monitoring Activity:	Monitor the metrics via the outcomes of the periodic surveillance of the aerodromes by the QCAA		

ORG 07:	**Ensuring the Safe Operations of UAS/RPAS (Drones)**		
State Objective:	Ensure the Appropriate Infrastructure is available to Support Safe Operations. *(Ref: NASP Goal 6)*		
ORG SEI 07:	Ensure the safe operations of UAS (drones) in the State of Qatar with the help of effective safety management mechanisms in place.		
GASP and RASP References:	• *GASR ORG SEI-1: Consistent implementation of ICAO SARPs at the national level* • *GASR ORG SEI-6: Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner* • *MID-RASP G1-SEI-05A3: Ensure the Safe Operations of UAS (drones)*		
Action(s)	• Developing national regulations and guidance to ensure safe operations of UAS and to create growth while maintaining a high and uniform level of safety. • Ensuring the safe operations of UAS to mitigate the risk of Mid-Air Collision (MAC).		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ANSI)	• QCAA • SSP Stakeholders • Service Providers	• Actual number of Civil Drones (UAS/RPAS) related occurrences per year. • Progress of the publication and implementation of the UAS regulations • Number of safety promotion activities to increase awareness within the aviation community
Monitoring Activity:	• QCAA internal audit mechanisms • Continuous monitoring of the UAS/RPAS related occurrence trends within the State of Qatar's ALoSP scheme.		

ORG 08:	**Implementing an Effective Safety Management**		
State Objective:	Continue to implement an effective State Safety Programme (SSP). *(Ref: NASP Goal 3)*		
ORG SEI 08:	Implement safety management effectively both at the State and service provider levels in the State of Qatar.		
GASP and RASP References:	• *GASP ORG SEI-13 to 21: State safety management related initiatives* • *MID-RASP G3-SEI-01: Implement an effective Safety Management*		
Action(s)	• Implementation of the SSP within the State • Implementation of the SMS by all service providers specified in *QCAR 91 – Safety Management*. • Harmony between all SSP stakeholder State authorities and organizations to implement safety management effectively		
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SRM)	• QCAA • SSP Stakeholders • Service Providers	• Demonstrating compliance with the national/international safety management requirements (State and Service Provider levels). • Maintaining an acceptable level of safety performance in line with the State of Qatar's ALoSP scheme.
Monitoring Activity:	• ICAO SSPIA results • QCAA internal audit mechanisms • The outcomes of the periodic surveillance of service providers by QCAA		

2 – OPERATIONAL SAFETY ISSUES (OPS)

OPS 01:	**Aircraft upset in flight (LOC-I)**		
Rationale:	Loss of control usually occurs because the aircraft enters a flight regime which is outside its normal envelope, usually, but not always, at a high rate, thereby introducing an element of surprise for the flight crew involved. Prevention of loss of control is a strategic priority.		
State Objective:	Reduce LOC-I risks by means of data gathering from clear occurrence reporting, efficient organizational FDM analysis, and effective mitigation measures. *(Ref: NASP Goal 1)*		
OPS SEI 01:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risk of LOC-I as per the guidance contained in the ICAO GASR OPS Roadmap.		
GASP and RASP References:	• *GASR OPS SEI-02: Loss of Control In-Flight (LOC-I)* • *MID-RASP G1-SEI-01: Aircraft upset in flight (LOC-I)*		
Action(s)	***QCAA***		***Service Providers***
	• Identify events of LOC-I and monitor for threats. • Include LOC-I as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process LOC-I threats as part of their safety management system (SMS), including but not limited to: • assessing risks in their own operations; • defining the acceptable level of safety performance including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS)	• QCAA • Service providers	**Major**: Number of Loss of Control In-flight (LOC-I) related occurrences per 100.000 departures **Precursors**: • Low airspeed/approach to stall • Severe turbulence (TURB) • Upset recovery • Icing in flight (ICE)
Monitoring Activity:	Continuous monitoring of the LOC-I related occurrence trends (including the precursors) within the State of Qatar's ALoSP scheme.		

OPS 02:	**Runway Safety (RS): Runway Excursion (RE) & Runway Incursion (RI)**		
Rationale:	• Runway Excursions (RE) covers materialized runway excursions, both at high and low speed, and occurrences where the flight crew had difficulties in maintaining the directional control of the aircraft or of the braking action during landing, where the landing occurred long, fast, off-centered or hard, or where the aircraft had technical problems with the landing gear (not locked, not extended or collapsed) during landing. • Runway Incursions (RI) refers to the incorrect presence of an aircraft, vehicle or person on an active runway or in its areas of protection, which can potentially lead to runway collision as the most credible accident outcome.		
State Objective:	Reduce Runway Safety (RS) risks by continuously assessing and improving risk control measures. *(Ref: NASP Goal 1)*		
OPS SEI 02:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risk of Runway Safety (RS) as per the guidance contained in the ICAO GASR OPS Roadmap.		
GASP and RASP References:	• *GASR OPS SEI-04 & 05: Runway Excursion (RE) & Runway Incursion (RI)* • *MID-RASP G1-SEI-02 & 03: Runway Safety- Runway Excursion & Runway Incursion*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor RS events to identify threats and trends. • Include RS as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must identify and address RE threats based on operations and as part of their safety management system (SMS), including but not limited to: • assessing risks in their own operations; • defining the acceptable level of safety performance including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders. They should also process and implement Runway Safety recommendations/solutions published by national, regional or international stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ASAS)	• QCAA • Service providers	**Major:** Number of Runway Safety (RS) related occurrences per 100.000 departures **Precursors:** • Collision with obstacles during Take-Off and Landing (CTOL) • Runway Incursion (RI) • Runway Excursion (RE) • Wildlife (WILD) • Abnormal runway contact (ARC) • Undershoot overshoot (USOS)
Monitoring Activity:	Continuous monitoring of the RS related occurrence trends (including the precursors) within the State of Qatar's ALoSP scheme.		

OPS 03:	**Controlled Flight Into Terrain (CFIT)**		
Rationale:	CFIT comprises those situations where the aircraft collides or nearly collides with terrain while the flight crew has control of the aircraft. It also includes occurrences, which are the direct precursors of a fatal outcome, such as descending below weather minima, undue clearance below radar minima, etc.		
State Objective:	Assess and improve risk controls to mitigate the risk from CFIT. *(Ref: NASP Goal 1)*		
OPS SEI 03:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risk of CFIT as per the guidance contained in the ICAO GASR OPS Roadmap.		
GASP and RASP References:	• *GASR OPS SEI-01: Controlled Flight into Terrain (CFIT)* • *MID-RASP G1-SEI-04: Controlled Flight into Terrain (CFIT)*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor CFIT events for threats and trends. • Include CFIT as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must address threats to CFIT in their operations as part of their safety management system (SMS) by: • assessing risks relevant to their own operations; • defining the acceptable level of safety performance and the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS)	• QCAA • Service providers	Number of Controlled Flight Into/Toward Terrain (CFIT) occurrences per 100.000 departures
Monitoring Activity:	Continuous monitoring of the CFIT related occurrence trends within the State of Qatar's ALoSP scheme.		

OPS 04:	**Mid-Air Collision (MAC) / Airborne Conflict - Loss of Separation Between Civil And Military Aircraft**		
Rationale:	MAC refers to the potential collision of two aircraft in the air. It includes direct precursors such as separation minima infringements, genuine TCAS resolution advisories, or airspace infringements. Although there has been no airplane mid-air collision accident in recent years within the State of Qatar, this key risk area has been raised by some MID States specifically in the context of the collision risk posed by military aircraft operating in the Gulf area over the high seas which are not subject to any coordination with related FIRs for airborne operation. This is one specific safety issue that is a main priority in this key risk area.		
State Objective:	Assess and improve risk controls to mitigate the risk of mid-air collisions. *(Ref: NASP Goal 1)*		
OPS SEI 04:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risk of MAC as per the guidance contained in the ICAO GASR OPS Roadmap.		
GASP and RASP References:	• *GASR OPS SEI-03: Mid-Air Collision (MAC)* • *MID-RASP G1-SEI-05: Airborne Conflict (Mid-Air Collisions) - Loss of separation between civil and military aircraft*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Airprox/Mid-air Collision to identify threats and trends. • Include Airprox/MAC as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Airprox/Mid-air Collision threats as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety performance including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders. They should also assess and implement effective procedures based on evidence and technology-driven assisting tools which help avoid/inform about potential conflicts.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ANSI)	• QCAA • Service providers	Number of AIRPROX / TCAS / Loss of separation / Near Mid-Air Collision (MAC) related occurrences per 100.000 departures
Monitoring Activity:	Continuous monitoring of the MAC related occurrence trends within the State of Qatar's ALoSP scheme.		

OPS 05:	**Ground Safety (GS)**		
Rationale:	Ground operations involves all aspects of aircraft handling at airports as well as aircraft movement around the aerodrome, except on active runways. The safety challenges of ground operations arise, in part, directly from those operations; for example, ensuring that aircraft are not involved in collisions and that the jet efflux from large aircraft does not endanger small ones. Even more important, ground operations involve the preparation of aircraft for departure and must be done in such a way that the subsequent flight will be safe; for example, correct loading of cargo and baggage, sufficient and verified fuel of adequate quantity and quality and the correct use of Aircraft Ground De/Anti-Icing facilities, where appropriate.		
State Objective:	Assess and improve risk controls to mitigate the risk of Ground Safety (GS) related events. *(Ref: NASP Goal 1)*		
OPS SEI 05:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to Ground Safety (GS).		
GASP and RASP References:	• *ICAO GASP Goal 1* • *ICAO MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Ground Safety (GS) to identify hazards and trends. • Include Ground Safety (GS) as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process ground operations related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ASAS)	• QCAA • Service providers	Number of Ground Safety (GS) related occurrences per 100000 departures
Monitoring Activity:	Continuous monitoring of the Ground Safety (GS) related occurrence trends within the State of Qatar's ALoSP scheme.		

OPS 06:	**Operational Damage (OD)**		
Rationale:	Operational Damage (OD) is briefly the failure or malfunction of an aircraft system or component. The aircraft systems are mainly divided into four system groups: • engine or fuel system; • flight control or structure; • landing gear or hydraulic; and • instrumentation/communication/navigation/electrical.		
State Objective:	Assess and improve risk controls to mitigate the risk of Operational Damage (OD) related events. *(Ref: NASP Goal 1)*		
OPS SEI 06:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related with Operational Damage (OD).		
GASP and RASP References:	• *ICAO GASP Goal 1* • *ICAO MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Operational Damage (OD) to identify hazards and trends. • Include Operational Damage (OD) as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Operational Damage (OD) related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-AIR)	• QCAA • Service providers	Number of Operational Damage (OD) related occurrences per 100.000 departures
Monitoring Activity:	Continuous monitoring of the Operational Damage (OD) related occurrence trends within the State of Qatar's ALoSP scheme.		

OPS 07:	**Air Navigation Services (ANS)**		
Rationale:	Air Navigation Services (ANS) means air traffic services; communication, navigation and surveillance services; meteorological services for air navigation; and aeronautical information services. ANS related occurrences are mainly: • ATM/CNS Events (ATM); • Navigation Errors (NAV); and • Airprox/TCAS Alert/Loss of Separation/Near Midair Collisions/Midair Collisions (MAC).		
State Objective:	Assess and improve risk controls to mitigate the risk of Air Navigation Services (ANS) related events. *(Ref: NASP Goal 1)*		
OPS SEI 07:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related with Air Navigation Services (ANS).		
GASP and RASP References:	• *ICAO GASP Goal 1* • *ICAO MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Air Navigation Services (ANS) to identify hazards and trends. • Include Air Navigation Services (ANS) as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Air Navigation Services (ANS) related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (ANSI)	• QCAA • Service providers	Number of ANS related occurrences per 100.000 departures
Monitoring Activity:	Continuous monitoring of the Air Navigation Services (ANS) related occurrence trends within the State of Qatar's ALoSP scheme.		

3 – EMERGING AND OTHER SAFETY ISSUES (EME)

EME 01:	**Communicable Diseases (e.g., COVID-19 Pandemic)**		
Rationale:	The COVID-19 pandemic has caused significant and unprecedented challenges to the aviation sector, however, commercial international passenger operations never shut down in the State of Qatar. The State of Qatar has implemented the ICAO CART Recommendations and published associated guidance in line with the ICAO CART guidance documents (TOGD etc.). The national aviation stakeholders have been fully involved in the process. The State of Qatar knows an effective safety management both at the State and service provider levels with a positive safety culture and strong safety commitment are critical not only in addressing COVID-related safety risks but also in addressing other existing and emerging aviation safety risks.		
State Objective:	Assess and improve risk controls to mitigate the risk of Communicable Disease related events.		
EME SEI 01:	Developing a resilient State safety management framework in the State of Qatar for continuously assessing and improving the risk controls to mitigate the risks related with Communicable Diseases.		
GASP and RASP References:	• *ICAO MID-RASP G2-SEI-08* • *ICAO CART, TOGD, and other related guidance.*		
Action(s)	***QCAA***		***Service Providers***
	Review and update the existing risk portfolios to properly consider the newly identified risks related with Communicable Diseases, such as: • the management of health- and hygiene-related risks, • new operational procedures, • currency of crews, • validity of existing risk assessments, and • readiness for return to normal operations after lengthy periods of inactivity etc.		Service providers must process Communicable Diseases related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State authorities; • working to achieve State safety objectives; and • coordination with the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (MED-SEC-FAL-AIR TRANSPORT-ANSI-SRM)	• QCAA • Service providers	No specific SPI is defined for this SEI.
Monitoring Activity:	The issue will be monitored within the State safety risk management framework using the most recent national, regional, and international safety data and information.		

EME 02:	**GNSS Outages / Vulnerability**		
Rationale:	Global Navigation Satellite System (GNSS) outages/vulnerabilities may lead to navigation/surveillance degradation. Global Navigation Satellite Systems (GNSS) jamming and/or possible spoofing has intensified in geographical areas surrounding the conflict zone and other areas. The effects of GNSS jamming and/or possible spoofing may be observed by aircraft in various phases of their flights, in certain cases leading to re-routing or even to change the destination due to the inability to perform a safe landing procedure. Under the present conditions, it is not possible to predict GNSS outages and their effects. The magnitude of the issues generated by such an outage would depend upon the extent of the area concerned, duration, and phase of flight of the affected aircraft.		
State Objective:	Assess and improve risk controls to mitigate the risk of GNSS Outages / Vulnerability related events. *(Ref: NASP Goal 1)*		
EME SEI 02:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to GNSS Outages / Vulnerability.		
GASP and RASP References:	• *ICAO GASP Goal 1* • *ICAO MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• The QCAA considers the hazards to aviation caused by the GNSS outages/vulnerability. • The QCAA will monitor the GNSS outages / vulnerability related occurrences and take required actions when needed.		Service providers must process GNSS Outages / Vulnerability related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (ANSI-OPS)	• QCAA • Service providers	No specific SPI is defined for this SEI. Related safety data and information will be tracked through the Qatar SDCPS and other safety data and information sources.
Monitoring Activity:	The issue will be monitored within the State safety risk management framework using the most recent national, regional, and international safety data and information.		

EME 03:	**Civil Drones (UAS/RPAS)**		
Rationale:	Unmanned aviation or remotely piloted aircraft systems is a growing domain of aviation that is emerging rapidly. There is currently an ongoing activity for developing and enhancing the national regulations for drones in the State of Qatar. The coordination of the growing volume of UAS/RPAS activities with the traditional aviation system requires a new proactive approach to the assessment of the associated risks and actions for mitigating those risks. The State of Qatar manages the risks associated with UAS/RPAS activities as part of the State safety risk management framework. The QCAA monitors the trends of the UAS/RPAS related occurrences and takes required actions when needed.		
State Objective:	Assess and improve risk controls to mitigate the risk of Civil Drones (UAS/RPAS) related events. *(Ref: NASP Goal 1)*		
EME SEI 03:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to Civil Drones (UAS/RPAS).		
GASP and RASP References:	• *GASP Goal 1* • *MID-RASP G1-SEI-05A3*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Civil Drones (UAS/RPAS) to identify hazards and trends. • Include Civil Drones (UAS/RPAS) as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Civil Drones (UAS/RPAS) related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ANSI)	• QCAA • Service providers	Actual number of Civil Drones (UAS/RPAS) related occurrences per year.
Monitoring Activity:	Continuous monitoring of the Civil Drones (UAS/RPAS) related occurrence trends within the State of Qatar's ALoSP scheme.		

EME 04:	**Impact of Security on Safety**		
Rationale:	Security is concerned with malicious, intentional acts to disrupt the performance of a system. Safety focuses on the negative impact on the concerned systems' performance caused by unintended consequences of a combination of factors. The crash of flight MH17 immediately raised the question of why the airplane was flying over an area where there was an ongoing armed conflict. Similar events had occurred in the MID region. Thus, military or terrorist conflicts may occur in any State at any time and pose risks to civil aviation. This is why it's important for governments, aircraft operators, and other airspace users such as air navigation service providers (ANSPs), to work together to share the most up-to-date conflict zone risk-based information possible to assure the safety of civilian flights. The crash of flight MH17 has shown that safety and security are intertwined. To manage the risks related to flying over conflict zones and other risks at the interface of safety and security as well as possible, closer cooperation between both domains is necessary.		
State Objective:	Assess and improve risk controls to mitigate the risk of events where security issues have an impact on safety. *(Ref: NASP Goal 1)*		
EME SEI 04:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to the impact of security on safety.		
GASP and RASP References:	• *GASP Goal 2* • *MID-RASP G2-SEI-06*		
Action(s)	***QCAA***		***Service Providers***
	An integrated risk management process and continuous risk assessment cycle including: • the collection of information and intelligence; • the subsequent threat analysis; • the security risk assessment; • the hazard identification; • the safety risk assessment; • the determination of the acceptable risk level; and • information sharing.		Service providers must consider the impact of security on safety as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SRM-SEC)	• QCAA • Service providers	No specific SPI is defined for this SEI.
Monitoring Activity:	The issue will be monitored within the State safety risk management framework using the most recent national, regional, and international safety data and information.		

EME 05:	**Laser Attacks**		
Rationale:	Concerns about the hazards to aviation caused by the use and misuse of lasers in navigable airspace (in particular for pilots during critical flight phases) date back to the 1990s. More recently, however, some Air Navigation Service Providers (ANSP) have also reported that ATC Towers (TWR)) have been illuminated by lasers. Lasers can easily be obtained via the Internet, even those that are recommended for professional use only. The devices are not inherently dangerous; however, when misused they may cause optical discomfort/injury and thus could compromise aviation safety. The physiological (visual) effects/hazards to pilots/ATC staff associated with laser illumination are: • distraction; • glare; • temporary flash blindness; • afterimage; and • eye injuries.		
State Objective:	Assess and improve risk controls to mitigate the risk of Laser Attack related events. *(Ref: NASP Goal 1)*		
EME SEI 05:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to Laser Attacks.		
GASP and RASP References:	• *GASP Goal 1* • *MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Laser Attacks to identify hazards and trends. • Include Laser Attacks as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Laser Attack related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (OPS-ANSI)	• QCAA • Service providers	Actual number of Laser Attack related occurrences per year.
Monitoring Activity:	Continuous monitoring of the Laser Attacks related occurrence trends within the State of Qatar's ALoSP scheme.		

EME 06:	**Cyber Attacks**		
Rationale:	The civil aviation sector is increasingly reliant on the availability of information and communications technology systems, as well as on the integrity and confidentiality of data. The threat posed by possible cyber security incidents to civil aviation is continuously evolving, with threat actors focusing on malicious intents, disruptions of business continuity, and the theft of information for political, financial, or other motivations. The management of cyber security risks, or more precisely the management of operative information security risks, will become increasingly central in-flight safety activities. To this end, the management of information security must become a more integral part of the operational activities (management of flight safety and security issues) carried out by the authorities and organizations in the aviation system.		
State Objective:	Assess and improve risk controls to mitigate the risk of Cyber Attack related events. *(Ref: NASP Goal 1)*		
EME SEI 06:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to Cyber Attacks.		
GASP and RASP References:	• *GASP Goal 1* • *MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Cyber Attacks to identify hazards and trends. • Include Cyber Attacks as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Cyber Attack related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (SEC)	• QCAA • Service providers	Actual number of Cyber Attack related occurrences per year.
Monitoring Activity:	Continuous monitoring of the Cyber Attacks related occurrence trends within the State of Qatar's ALoSP scheme.		

EME 07:	**Bird Strikes (BIRD)**		
Rationale:	A bird strike is strictly defined as a collision between a bird and an aircraft that is in flight or on a take-off or landing roll. Bird Strike is common and can be a significant threat to aircraft safety. For smaller aircraft, significant damage may be caused to the aircraft structure, and all aircraft, especially jet-engine aircraft, are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes. This has resulted in a number of fatal accidents. Bird strikes may occur during any phase of flight but are most likely during the take-off, initial climb, approach, and landing phases due to the greater numbers of birds in flight at lower levels. Since most birds fly mainly during the day, most bird strikes occur in daylight hours as well.		
State Objective:	Assess and improve risk controls to mitigate the risk of Bird Strikes (BIRD) related events. *(Ref: NASP Goal 1)*		
EME SEI 07:	Increasing safety performance level in the State of Qatar by continuously assessing and improving the risk controls to mitigate the risks related to Bird Strikes (BIRD).		
GASP and RASP References:	• *GASP Goal 1* • *MID-RASP Goal 1*		
Action(s)	***QCAA***		***Service Providers***
	• Monitor events of Bird Strikes (BIRD) to identify hazards and trends. • Include Bird Strikes (BIRD) as one of the State SPIs in the ALoSP of the State of Qatar.		Service providers must process Bird Strikes (BIRD) related hazards as part of their safety management system (SMS) by: • assessing risks in their own operations; • defining the acceptable level of safety including the necessary management and response levels; • defining and implementing the required actions; • monitoring the effectiveness of their actions; • implementation of the actions defined by State; • working to achieve State safety objectives; and • coordination with all the SSP stakeholders.
Completion	***Main Responsible***	***Stakeholders***	***Metrics/Indicators***
Ongoing	QCAA (ASAS-OPS)	• QCAA • Service providers	Actual number of Bird Strikes (BIRD) related occurrences per year.
Monitoring Activity:	Continuous monitoring of the Bird Strikes (BIRD) related occurrence trends within the State of Qatar's ALoSP scheme.		

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الهيئة العامة للطيران المدني

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