

# National Aviation Safety Plan, Nepal 2018 to 2022

First Amendment, March 2021



**Civil Aviation Authority of Nepal  
Babarmahal, Kathmandu**



## ABBREVIATIONS and ACRONYMS

ACAS- Airborne Collision Avoidance System	MAC- Mid Air Collision
AGA- Aerodrome and Ground Aid	MoCTCA- Ministry of Culture, Tourism and Civil Aviation
AIIA- Accident and Incident Investigation Authority	MORs- Mandatory Occurrence Reports
AIP- Aeronautical Information Publication	MOU- Memorandum of Understanding
ANS- Air Navigation Services	MSAW- Minimum Safety Altitude Warning
ANSP- ANS Provider	NASP- National Aviation Safety Plan
ANSSSD- Air Navigation Services Safety Standards Department	OLF- On Line Framework
AOC- Air Operators Certificate	OPS- Operations
AP RASP- Asia Pacific Regional Aviation Safety Plan	ORG- Organization
ARC- Abnormal Runway Contact	PDCA- Plan Do Check Act
ASSD- Aerodrome Safety Standards Department	PQs- Protocol Questions
ATC- Air Traffic Control	QMS- Quality Management System
ATO- Approved Training Organizations	RAIO- Regional Accident and Incident Investigation Organization
ASSRD- Aviation Safety and Security Regulation Directorate	RASG- Regional Aviation Safety Group
CAAN- Civil Aviation Authority of Nepal	RE- Runway Excursion
CAP- Corrective Action Plan	RI- Runway Incursion
CEs- Critical Elements	RSOO- Regional Safety Oversight Organization
CFIT- Controlled Flight Into Terrain	RSP- Runway Safety Programme
CICTT- CAST/ ICAO Common Taxonomy Team	RST- Runway Safety Team
CMA- Continuous Monitoring Approach	SEIs- Safety Enhancement Initiatives
CRM- Crew Resource Management	SMD- Safety Management Division
EI- Effective Implementation	SMS- Safety Management System
FH- Flying Hours	SOI- Safety Oversight Index
FM- Flight Movement	SOP- Standard Operating Procedure
FSSD- Flight Safety Standards Department	SPI- Safety performance Indicator
GASP- Global Aviation Safety Plan	SPT- Safety Performance Target
GPWS- Ground Proximity Warning System	SRM- Safety Risk Management
HRCs- High Risks Categories	SSCs- Significant Safety Concerns
IOSA- IATA Operational Safety Audit	SSP- State Safety Programme
ISAGO- IATA- Safety Audit for Ground Operations	TAWS- Terrain Awareness Warning System
LOC-I- Loss of Control In flight	USOAP- Universal Safety Oversight Audit Programme
	VORs- Voluntary Occurrence Reports
	WS- Wildlife Strike

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## **1. INTRODUCTION**

### **1.1 Overview of the NASP**

Nepal is committed to enhancing aviation safety and to the resourcing of supporting activities. The purpose of this national aviation safety plan (NASP), Nepal 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 Nepal and its industries. The NASP promotes the effective implementation of Nepal's safety oversight system, a risk-based approach to managing safety, as well as a coordinated approach to collaboration between Nepal and other States, regions and industry. All stakeholders are encouraged to support and implement the NASP as the strategy for the continuous improvement of aviation safety.

The NASP of Nepal is in alignment with the ICAO Global Aviation Safety Plan (GASP, Doc 10004) and the Asia Pacific Regional Aviation Safety Plan (AP RASP) 2020 to 2022.

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Rajan Pokhrel

Director General of Civil Aviation Authority of Nepal

## 1.2 Structure of the NASP

This NASP presents the strategy for enhancing aviation safety for a period of 5 years. It is comprised of six sections. NASP includes six sections namely, introduction, the purpose of the NASP, Nepal's strategic approach to managing aviation safety, the national operational safety risks identified for the 2018 to 2022, other safety issues addressed in the NASP, and a description of how the implementation of the safety enhancement initiatives (SEIs) listed in the NASP are going to be monitored.

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

NASP addresses operational safety risks identified in the ICAO GASP and the AP -RASP in the absence of Nepal's SSP. Nepal is committed to fully implement SSP by 2025 as State's responsibility for the management of safety comprise both safety oversight and safety management, collectively implemented through an SSP. Initiatives listed in this NASP address organizational challenges and aim to enhance organizational capabilities related to effective safety oversight.

## 1.4 Responsibility for the NASP Development, Implementation and Monitoring

The Civil Aviation Authority of Nepal (CAAN) is responsible for the development, implementation and monitoring of the NASP, in collaboration with Ministry of Culture, Tourism and Civil Aviation (MoCTCA) and with the national aviation industry. The NASP has been developed in consultation with national operators and other stakeholders, and in alignment with the fourth edition of the GASP 2020 to 2022 and the AP- RASP 2020 to 2022.

## 1.5 National Safety Issues, Goals and Targets

The NASP addresses the following national safety issues:

### A. Operational Safety Risks

1. Controlled Flight into Terrain (CFIT)
2. Loss of Control - In Flight (LOC-I)
3. Mid Air Collision (MAC)
4. Runway Excursion (RE)
5. Runway Incursion (RI)
6. Abnormal Runway Contact (ARC) including hard landing and tail strike landing
7. Wildlife Strike (WS) on and in the vicinity of Aerodrome

### B. Deficient critical elements and areas

#### Critical Elements (CEs)

- a. CE-4: Qualified Technical Personnel
- b. CE-7: Surveillance obligations (*Regional deficient element*)
- c. CE-8: Resoultion of Safety Issues

Areas

AGA Aerodrome and Ground Aids (*Regional deficient Area*)

AIG: Accident and Incident Investigation

ANS: Air Navigation Services

ORG: Organization

In order to address the issues listed above and enhance safety at the national level, the 2018 to 2022 NASP contains the following goals and targets:

- 1) **Goal 1:** Achieve a continuous reduction of operational safety risks  
**Target 1.1:** Nepal to maintain a decreasing trend of the national accident rate
  
- 2) **Goal 2:** Strengthen safety oversight capabilities of Nepal  
**Target 2.1:** Improve its score for the effective implementation (EI) of the critical elements (CEs) of the State's safety oversight system (with focus on priority PQs) as follows:  
 by 2022 – 75 per cent  
 by 2026 – 85 per cent  
 by 2030 – 95 per cent.  
**Target 2.2:** Conduct workshops and seminars relating to ANS, AIG, AGA at least yearly from 2018 to 2022.  
**Target 2.3:** Endeavour to have no Significant Safety Concerns (SSCs) under the USOAP Continuous Monitoring Approach (CMA), and to resolve any SSCs promptly within the time frame specified in the Corrective Action Plan and agreed to by ICAO from 2018 to 2022]  
**Target 2.4:** Encourage to increase the number of IOSA registered Nepali airlines and ISAGO registrations.  
**Target 2.5:** Nepal to reach a safety oversight index greater than 1 in all categories by 2022
  
- 3) **Goal 3:** Implement effective SMS and SSP.  
**Target 3.1:** Nepal to implement the foundation of its SSP by 2022.  
**Target 3.2:** Nepal to attain L3 SSP implementation (defined actions implemented) by 2022.  
**Target 3.3:** Nepal to implement an effective SSP (Level 4), as appropriate to its aviation system complexity by 2025.
  
- 4) **Goal 4:** Increase collaboration at the regional level  
**Target 4.1:** Nepal to use a regional safety oversight mechanism, another State or other safety oversight organization's ICAO recognized functions in seeking assistance to strengthen their safety oversight capabilities by 2020.  
**Target 4.2:** Nepal to contribute information on safety risks, including SSP Safety Performance Indicators (SPIs), to Asia Pacific aviation safety group (AP- RASG) by 2022.  
**Target 4.3:** Nepal to actively lead RASGs' safety risk management activities with effective safety oversight capabilities and an effective SSP by 2022.  
**Target 4.4:** Nepal to actively participate in the regional mechanism for data collection, analysis and sharing by 2020.

**Target 4.5:** Encourage to increase the participation in flight data sharing initiatives by Nepal air operators, with aircraft of mass 27,000kg or above.

5) **Goal 5:** Expand the use of industry programmes

**Target 5.1**

All service providers in Nepal to use globally harmonized SPIs as part of their safety management system (SMS) by 2020.

**Target 5.2**

Encourage to increase the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes.

6) **Goal 6:** Ensure the appropriate infrastructure is available to support safe operations

**Target 6.1:** Nepal to implement air navigation and airport core infrastructure by 2022.

**Target 6.2:** Nepal to achieve at least 75% EI in AGA of USOAP CMA by 2022.

**Target 6.3:** Nepal to achieve at least 75% EI in AIG of USOAP CMA by 2022.

**Target 6.4:** Nepal to certify all aerodromes that are used for international operations by 2022.

**Target 6.5:** Nepal to establish an independent accident and incident investigation authority (AIIA) as required by Annex 13, as well as related investigation system and procedures by 2022.

## 1.6 Operational Context

There are 3 certified aerodromes in Nepal, including one international aerodrome. The airspace of Nepal is classified into Class C and G. There were 1,100, 648 of movements in Nepal over the period of 5 years (2016 to 2020). There are currently 18 air operator certificates (AOCs) issued by Nepal, and of those there are 4 issued to operators conducting international commercial air transport operations. Nepal also has common challenges that include:

- Topography;
- Meteorology;
- Infrastructure;
- Heterogeneous fleet....

## 2. PURPOSE OF NEPAL AVIATION SAFETY PLAN (NASP)

NASP is the master planning document containing the strategic direction of Nepal for the management of aviation safety for a period of 5 years (2018 - 2022). 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 NASP has been developed using international safety goals and targets and HRCs from both the GASP and the AP-RASP. These are highlighted in the text, where applicable. The SEIs listed in the NASP support the improvement of safety at the wider regional and international levels and include several actions to address specific safety risks and recommended SEIs for individual States set out in the AP- RASP. Nepal has adopted these SEIs and has included them in this plan.



### 3. NEPAL'S STRATEGIC APPROACH TO MANAGING AVIATION SAFETY

The NASP presents the SEIs that were developed based on the ICAO GASP's organizational challenges (ORG) roadmap and operational safety risks (OPS) roadmap as well as State-specific issues identified by historical data. This plan is developed and maintained by Civil Aviation Authority of Nepal, in coordination with all stakeholders and is updated at least every 3 years.

The 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 GASP and the AP-RASP and include additional national safety goals, targets and indicators.

Goal	Targets	Indicators	Link to GASP and AP-RASP
1 Achieve a continuous reduction of operational safety risks	1.1 Maintain a decreasing trend of the national accident rate.	<ul style="list-style-type: none"> <li>• Number of accidents</li> <li>• Rate of accident per 10,000 departures.</li> <li>○ Number of fatal accidents</li> <li>○ Rate of fatal accident per 10,000 departures.</li> <li>○ Number of fatalities per passengers carried (fatality rate)</li> <li>○ Percentage of occurrences related to high risk categories (HRCs)</li> </ul>	This goal is directly linked to Goal 1 and Target 1.1 of the GASP and linked to Goal 1 and Target 1.1 of the AP-RASP
Goal 2: Strengthen States' safety oversight and compliance	2.1 Nepal to improve its score for the effective implementation (EI) of the critical elements (CEs) of the State's safety oversight system (with focus on priority PQs) as follows: by 2022 – 75 per cent by 2026 – 85 per cent by 2030 – 95 per cent	<ul style="list-style-type: none"> <li>• Overall EI score</li> <li>• % of priority PQs related to a safety oversight system implemented by Nepal.</li> <li>• % of required CAPs submitted by Nepal (using OLF)</li> <li>• % of CAP submitted by Nepal (using OLF).</li> </ul>	This goal is directly linked to Goal 2 and Target 2.1 of the GASP and linked to Goal 2 and Target 2.1 of the AP – RASP

	2.2: Conduct workshops and seminars relating to ANS, AIG, AGA at least yearly [from 2020 to 2022].	<ul style="list-style-type: none"> <li>Number of workshops and seminars conducted annually.</li> </ul>	This goal is directly linked to GASP Goal 2 and AP-RASP Target T7
	2.3: Endeavour to have no Significant Safety Concerns (SSCs) under the USOAP Continuous Monitoring Approach (CMA), and to resolve any SSCs promptly within the time frame specified in the Corrective Action Plan and agreed to by ICAO [from 2020 to 2022]	<ul style="list-style-type: none"> <li>SSC and time taken to resolve it.</li> <li>Time taken to resolve the findings of QMS of civil aviation safety regulation functions.</li> </ul>	This goal is directly linked to GASP Goal 2 and AP-RASP Target T8
	2.4: Encourage to increase the number of IOSA registered Nepali airlines and ISAGO registrations.	<ul style="list-style-type: none"> <li>Number of IOSA and ISAGO registration.</li> <li>Number of interactions with air operators related to IOSA and ISAGO registration.</li> </ul>	This goal is directly linked to GASP's Goal 2 and AP-RASP Target T9
	2.5: Nepal to reach a safety oversight index greater than 1 in all categories by 2022	<ul style="list-style-type: none"> <li>Safety oversight index in Support, ANS and Operation categories.</li> </ul>	This goal is directly linked to GASP's Goal 2 and GASP target 2.2 and AP-RASP Target T11
Goal 3: Implement effective State safety programmes (SSPs) and Safety Management System (SMS)	3.1: Nepal to implement the foundation of its SSP by 2022. 3.2: Nepal to attain L3 SSP implementation by 2022.	<ul style="list-style-type: none"> <li>having implemented the foundation of SSP</li> <li>Percentage of each subject area implemented</li> <li>Percentage of satisfactory SSP foundational PQs</li> <li>Percentage of required CAPs related to the SSP foundational PQs submitted by Nepal (using OLF)</li> <li>Percentage of required CAPs related to the SSP foundational PQs completed per State (using OLF)</li> </ul>	This goal is directly linked to Goal 3 and Target 3.1 of the GASP and Target T12 of AP-RASP.

		<ul style="list-style-type: none"> <li>Number/percentage of completed actions as mentioned in SSP implementation plan.</li> </ul>	
	<p>3.3: Nepal to implement an effective SSP, as appropriate to its aviation system complexity by 2025.</p>	<ul style="list-style-type: none"> <li>Nepal having implemented an effective SSP</li> <li>Level of maturity achieved in Annex 19 PQs.</li> <li>All applicable service providers under CAAN's authority to implement an effective SMS.</li> <li>Nepal to implement a national aviation safety plan</li> </ul>	<p>This goal is directly linked to Goal 3 and Target 3.3 of the GASP.</p>
<p>Goal 4: Increase collaboration at the regional level</p>	<p>4.1: Nepal to use a regional safety oversight mechanism, another State or other safety oversight organization's ICAO recognized functions in seeking assistance to strengthen their safety oversight capabilities by 2020.</p>	<ul style="list-style-type: none"> <li>Number of times Nepal actively seeking assistance.</li> <li>Number to times Nepal received assistance</li> <li>Number of times Nepal offering assistance to other states.</li> </ul>	<p>This goal is directly linked to Goal 4 and Target 4.1 of the GASP.</p>
	<p>4.2: Nepal to contribute information on safety risks, including SSP Safety Performance Indicators (SPIs), to Asia pacific aviation safety group (AP-RASG) by 2022.</p>	<ul style="list-style-type: none"> <li>Nepal contributing information on safety risks to RASGs</li> <li>Nepal sharing its SSP SPIs with RASGs</li> <li>Nepal forwarding information on safety matters to States, RASGs or other stakeholders</li> </ul>	<p>This goal is directly linked to Goal 4 and Target 4.2 of the GASP.</p>
	<p>4.3: Nepal to lead RASGs' safety risk management activities actively with effective safety oversight</p>	<ul style="list-style-type: none"> <li>Nepal's condition on effective safety oversight capabilities and effective SSP implementation to lead AP-RASG.</li> </ul>	<p>This goal is directly linked to Goal 4 and Target 4.3 of GASP.</p>

	capabilities and an effective SSP by 2022.		
	4.4. Nepal to actively participate in the regional mechanism for data collection, analysis and sharing by 2020.	Nepal's participation in Regional Mechanism for data collection, analysis and sharing.	This goal is directly linked to GASP's Goal 4 and AP-RASP's Target T14.
	4.5: Nepal to encourage the increased participation in flight data sharing initiatives by air operators, with aircraft of mass 27,000kg above by 2020.	Level of participation in flight data sharing initiatives of Nepal air operators, with aircraft of mass 27,000kg or above.	This goal is directly linked to GASP's Goal 4 and AP-RASP's Target T15.
Goal 5: Expand the use of industry programmes	5.1: All service providers of Nepal to use globally harmonized SPIs as part of their safety management system (SMS) by 2020.	<ul style="list-style-type: none"> <li>Number of service providers using globally harmonized metrics for their SPIs.</li> </ul>	This goal is directly linked to Goal 5 and Target 5.1 of the GASP.
	5.2: Encourage to increase the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes by 2022.	<ul style="list-style-type: none"> <li>Number of service providers participating in the corresponding ICAO-recognized industry assessment programmes</li> </ul>	This goal is directly linked to Goal 5 and Target 5.2 of the GASP.
Goal 6: Ensure the appropriate infrastructure (physical and institutional) is available to support safe operations.	6.1: Nepal to implement the air navigation and airport core infrastructure..... by 2022.	Implementation status of ANS and Airport core infrastructure elements.	This goal is directly linked to Goal 6 and Target 6.1 of GASP
	6.2 Nepal to achieve at least 75% EI in AGA of USOAP CMA by 2022.	Nepal's EI score in AGA	This goal is directly linked to GASP's Goal 6 and AP-RASP's target T16.

	6.3: Nepal to achieve at least 75% EI in AIG of USOAP CMA by 2022.	Nepal’s EI score in AIG	This goal is directly linked to GASP’s Goal 6 and AP-RASP’s target T17.
	6.4: Nepal to certify all aerodromes that are used for international operations by 2022.	Number/percentage of certified aerodrome that are used for international operations.	This goal is directly linked to GASP Goal 6 and AP-RASP target T18.
	6.5: Nepal to establish an independent accident and incident investigation authority (AIIA) as required by Annex 13, as well as related investigation system and procedures by 2022.	Establishment of an independent accident and incident investigation authority (AIIA) as required by Annex 13, as well as related investigation system and procedures.	This goal is directly linked to GASP Goal 6 and AP-RASP target T19.

The SEIs in this plan are implemented through Nepal’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 safety globally. The full list of the SEIs is presented in the appendix A to the NASP.

The NASP also addresses emerging 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. It is important that Nepal remain vigilant on emerging issues to identify potential safety risks, collect relevant data and proactively develop mitigations to address them. The NASP addresses the following emerging issues, which were identified by analysis of historical data.

1. Drones operating in the vicinity of aerodromes

#### 4. NATIONAL OPERATIONAL SAFETY RISKS

The NASP includes SEIs that address national operational safety risks, derived from lessons learned from operational occurrences and from a data-driven approach. These SEI may include actions such as: rule-making, policy development, targeted safety oversight activities, safety data analysis, and safety promotion. Separate sections are provided to address commercial air transport, in order to make the information more accessible to stakeholders.

Civil Aviation Authority of Nepal (CAAN) publishes an Annual Safety Report, available in the CAAN website (<http://www.caanepal.gov.np/publication/aviation-safety-report>). The summary of accidents and serious incidents that occurred in Nepal and those for aircraft registered in Nepal involved in commercial air transport and aircraft involved in general aviation is shown in the table below.

<b>Commercial air transport occurrences in Nepal</b>			
<b>Year</b>	<b>Fatal accidents</b>	<b>Non-fatal accidents</b>	<b>Serious incidents</b>
2016 to 2020	9	9	53

<b>Occurrences involving commercial air transport aircraft registered in States other than Nepal</b>			
<b>Year</b>	<b>Fatal accidents</b>	<b>Non-fatal accidents</b>	<b>Serious incidents</b>
2016 to 2020	1	-	1

The following 7 national High Risk Categories (HRCs) of occurrences in the context of Nepal were considered of the utmost priority because of the number of fatalities and risk of fatalities associated with such events. They were identified based on analysis of mandatory and voluntary reports over the past 3 years, accident and incident investigation reports over the past 10 years (2018 to 2020) and on the operational safety risks described in the GASP and AP-RASP. These HRCs are in line with those listed in the 2020 to 2022 edition of the GASP, as well as the 2020 to 2022 edition of AP-RASP:

- 1) Controlled Flight Into Terrain (CFIT)
- 2) Loss of Control – In flight (LOC-I)
- 3) Mid Air Collision (MAC)
- 4) Runway Excursion (RE)
- 5) Runway Incursion (RI)
- 6) Abnormal Runway Contact (ARC) including Hard Landing and Tail Strike Landing (*Regional HRC*)

In addition to the national operational safety risks listed above, the following additional categories of operational safety risks have been identified:

- 1) Wildlife Strike (WS) on and in the vicinity of Aerodrome

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 risks. The CICTT Taxonomy is found on the ICAO website at <https://www.icao.int/safety/airnavigation/AIG/Pages/Taxonomy.aspx>

In order to address the national operational safety risks listed above, CAAN identified the following contributing factors leading to HRCs and will implement a series of SEIs, some of which are derived from the ICAO OPS roadmap, contained in the GASP and AP-RASP:

#### **HRC 1: CFIT**

- 1) Critical terrain and rapidly deteriorating weather condition.
- 2) Violation of SOP
- 3) Improper pilot response to stall warning.
- 4) Excess load on the front bench seat in the helicopters.
- 5) Loss of situational awareness of pilots.
- 6) Insufficient operational oversight from the organization.
- 7) Inadequate pre-flight planning and lack of consideration on individual load while preparing load and trim sheet.

#### **HRC 2: LOC-I**

- 1) Violation of SOP by pilots
- 2) Inadequate pre-flight planning and lack of consideration on individual hand and load checked
- 3) baggage while preparing load and trim sheet.
- 4) Inadequate training requirements relating to engine malfunction and proper loading of aircraft.
- 5) Insufficient oversight by regulatory especially in the field of periodic check of load sheet.
- 6) Insufficient wildlife control programme.

#### **HRC 3: MAC** (*list contributing factors*)

- 1) Traffic Volume and pattern
- 2) Adequate trainings to ATCOs and Pilots
- 3) Lack of SOPs/MOUs for effective coordination
- 4) Violations of existing MOUs/SOPs and agreements

#### **HRC 4: RE**

- 1) Loss of Situational awareness
- 2) Violation of SOP by pilots
- 3) lack of training (before landing in contaminated runway, and CRM)
- 4) lack of procedure (to operate in contaminated runway and experience of pilot for night flying)



**HRC 5: RI**

- 1) Loss of Situational awareness of ATCs and pilots
- 2) Violation of SOP by ATCs and pilots
- 3) lack of training (communication and CRM)
- 4) Insufficient wildlife control programme.

**HRC 6: ARC**

It is a Regional HRC

**HRC 7: WS**

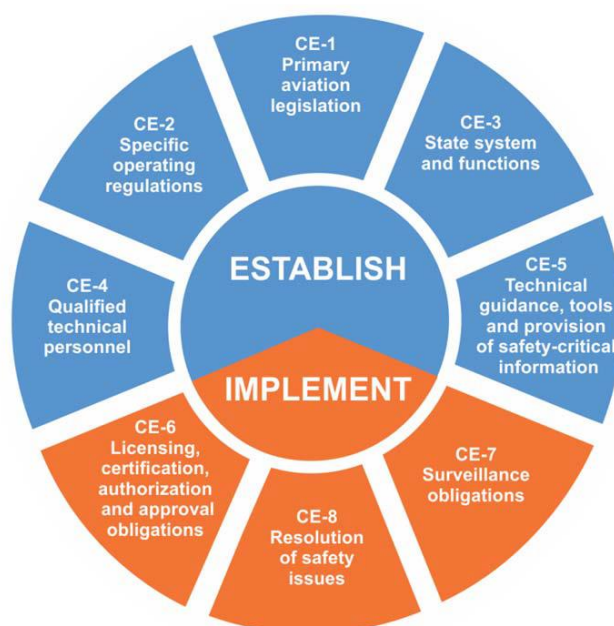
- 1) Insufficient wildlife control programme in Aerodrome.
- 2) Violation of regulations (/butcher/slaughter houses near of airports/within 3 km of airport)
- 3) Lack of study on wildlife habitat management near aerodromes.

The full list of the SEIs is presented in the appendix A and B to the NASP.

**5. OTHER SAFETY ISSUES**

In addition to the national operational safety risks listed in the NASP, CAAN has identified other safety issues and initiatives selected for the NASP. These are given priority in the NASP since they are aimed at enhancing and strengthening CAAN’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. CAAN is committed to the effective implementation of these eight CEs, as part of its overall safety oversight responsibilities, which emphasize Nepal’s commitment to safety in respect of its aviation activities. The eight CEs are presented in the figure below.



**Figure 1. Critical elements of a State’s safety oversight system**



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

<b>Overall EI score</b>							
66.76 %							
<b>EI score by CE</b>							
<b>CE-1</b>	<b>CE-2</b>	<b>CE-3</b>	<b>CE-4</b>	<b>CE-5</b>	<b>CE-6</b>	<b>CE-7</b>	<b>CE-8</b>
83.33%	82.11%	64.86%	29.85%	61.6%	80.19%	64.47%	34.88%

<b>EI score by audit area<sup>1</sup></b>							
<b>LEG</b>	<b>ORG</b>	<b>PEL</b>	<b>OPS</b>	<b>AIR</b>	<b>AIG</b>	<b>ANS</b>	<b>AGA</b>
90.48%	50%	68.67%	85.84%	94.39%	18.68%	56.29%	70.77%

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

<b>Overall SOI score</b>	<b>Score in the area of Operations</b>	<b>Score in the area of Air Navigation</b>	<b>Score in the area of Support Functions</b>
1.04	1.18	1.07	.88

Regarding other safety issues in the context of Nepal, the following 3 weaker CEs and 4 areas have been considered of the utmost priority because they are systemic issues which impact the effectiveness of safety risk controls. They were identified based on analysis from USOAP data. These issues are typically organizational in nature and relate to challenges associated with the conduct of States' safety oversight functions, implementation of 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 CAAN and MoCTCA and those of service providers. These safety issues are in line with those listed in the 2020 to 2022 edition of the GASP, as well as 2020 to 2022 edition of the AP-RASP:

<sup>1</sup> Eight audit areas pertaining to USOAP, i.e. primary aviation legislation and civil aviation regulations (LEG), civil aviation organization (ORG); personnel licensing and training (PEL); aircraft operations (OPS); airworthiness of aircraft (AIR); aircraft accident and incident investigation (AIG); air navigation services (ANS); and aerodromes and ground aids (AGA).

Critical Elements

- 2) Qualified Technical Personnel (CE -4): This was the CE where Nepal received the lowest EI score during the most recent ICAO USOAP audit. Therefore this CE was placed as a high priority issue to resolve.
- 3) Surveillance Obligations (CE -7): The APAC region had lower EI scores for CE-8 on Resolution of safety concerns, CE-4 on Technical personnel qualifications and training, and CE-7: Surveillance Obligations had the lowest EI scores within RASG-APAC. Therefore, those CEs were placed as high priority issues to resolve in the regional level.
- 4) Resolution of Safety Issues (CE -8): This was one of the weaker CE of Nepal identified during the most recent ICAO USOAP audit and was therefore placed as a high priority issue to resolve.

Areas

- 1) AIG: This was the Area where Nepal received the lowest EI score during the most recent ICAO USOAP audit and was therefore placed as a high priority issue to resolve.
- 2) ORG: This was one of the weaker areas of Nepal identified during the most recent ICAO USOAP audit and was therefore placed as a high priority issue to resolve.
- 3) AGA: By Audit Area, Accident and Incident Investigation (AIG), Aerodrome and Ground Aids (AGA) and air navigation services (ANS) had the lowest EI scores in APAC region. Therefore those areas were placed as high priority issue to resolve in the regional level.
- 4) ANS: This was one of the weaker areas of Nepal identified during the most recent ICAO USOAP audit. Therefore this area was placed as a high priority issue to resolve.

In order to address the issues listed above, Nepal will implement a series of SEIs, some of which are derived from the ICAO ORG roadmap, contained in the GASP. The full list of the SEIs is presented in the appendix A to the NASP.

## 6. MONITORING IMPLEMENTATION

CAAN will continuously monitor the implementation of the SEIs listed in the NASP and measure safety performance of the national civil aviation system, to ensure the intended results are achieved, using the mechanisms presented in the appendix to this plan.

In addition to the above, CAAN will review the NASP every 3 years or earlier, if required, to keep the identified operational safety risks, safety issues and selected SEIs updated and relevant. The CAAN will periodically review the safety performance of the initiatives listed in the NASP to ensure the achievement of national safety goals and targets. If required, CAAN will seek the support of *RASG, RSOO and industry* to ensure the timely implementation of SEIs to address safety deficiencies and mitigate risks. Through close monitoring of the SEIs, CAAN will make adjustments to the NASP and its initiatives, if needed, and update the NASP accordingly.

CAAN will use the indicators listed in Section 3 of this plan to measure safety performance of the civil aviation system and monitor each national safety target. A periodic annual safety report will be published to provide 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.

In the event that the national safety goals and targets are not met, the root causes will be presented. If Nepal identifies critical safety risks, reasonable measures will be taken to mitigate them as soon as practicable, possibly leading to an unscheduled revision of the NASP.

Nepal adopted a standardized approach to provide information at the regional level, for reporting to the AP-RASG (Nepal's safety information is shared with RASG through the designated focal point, ASSRD). This allows the region to receive information and assess safety risks using common methodologies.

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

Civil Aviation Authority of Nepal (CAAN)

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**APPENDIX A  
DETAILED SEIs: NATIONAL OPERATIONAL SAFETY RISKS**

**Issue No. 1:** Operational Safety Risks

**HRC 1:** Controlled Flight Into Terrain (CFIT)

**Goal 1:** Achieve a continuous reduction of operational safety risks

**Target 1.1:** Maintain a decreasing trend of the national accident rate

Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity	
<i>GASP OPS SEI on CFIT (State)</i> — Mitigate contributing factors to the risk of CFIT	1. Implement the following CFIT safety actions:							
	a. Ensure aircraft are equipped with terrain awareness and warning system (TAWS) in accordance with Annex 6.	FSSD	Implemented				High	<i>Surveillance of operator , ANSP activities</i>  Safety reporting (MOR/VO R)
	b. Promote the wider use of TAWS beyond the requirements of Annex 6.	FSSD	Implemented	ANSSSD ANSP FSSD Air Operators	Number of CFIT Accident/ incident per 10,000 flight movements.			
	c. Issue a Safety Advisory to increase adherence to TAWS warning procedures	FSSD	Implemented					
d. Promote the use of GPS-derived position data to feed TAWS	FSSD	2022						

	e. Model Regulation on Ground Proximity Warning System (GPWS)	FSSD	Implemented				
	f. Guidance for Operators to Ensure Effectiveness of GPWS Equipment	FSSD	Implemented				
	g. Guidance for Operators on Training Programme on the use of GPWS	FSSD	Implemented				
	h. Promote greater awareness of approach risks.	ANSSSD/FS SD	2022				
	i. Instrument Approach Procedures Using Continuous Descent Final Approach Techniques (CDFA)	ANSSSD/FS SD	Implemented				
	j. Implement minimum safe altitude warning (MSAW) systems	ANSSSD	2022				
	k. Issuance of Terrain or Obstacle Alert Warning	FSSD	implemen ted				
	l. Ensure the timeliness of updates and accuracy of Electronic Terrain and Obstacle Data (eTOD)	ANSSSD	2024				
	m. Guidance on the Establishment of a Flight Data Analysis Programme (FDAP)	FSSD	Implemented				

<p>n. Advisory Circular — Crew Resource Management Training Programme (CRM)</p> <p>o. Advisory Circular — Controlled Flight into Terrain (CFIT) and Approach and Landing Accident Reduction (ALAR) Training Programme.</p> <p>p. Guidance for Air Operators in Establishing a Flight Safety Documents System</p>	FSSD	Implemented				
<p>2. Validate the effectiveness of the safety enhancement initiatives (SEIs) presented in this roadmap through the analysis of mandatory occurrence reporting (MORs) and voluntary occurrence reporting systems (VORs) and accident/incident investigations (apply safety management methodologies).</p>	FSSD/ANSSSD	Continuous process	ANSSSD ANSP FSSD Air Operators	Number of CFIT occurrences reports via MOR and VOR systems per 10,000 FMs.	High	<i>Surveillance of operator , ANSP activities</i>  Safety reporting (MOR/VOR)

	<p>3. Identify additional contributing factors:</p> <p>a. Flight in adverse environmental conditions</p> <p>b. Approach design and documentation (e.g. approaches with vertical guidance (APV) or localizer performance with vertical guidance (LPV) approaches)</p> <p>c. Phraseology used (standard vs. non-standard)</p> <p>d. Pilot fatigue and disorientation</p>	<p>ANSSSD/FS SD</p> <p>ANSSSD</p> <p>FSSD/ANSS SD</p> <p>FSSD</p>	<p>2022</p> <p>implemented</p> <p>implemented</p> <p>2022</p>	<p>ANSSSD</p> <p>ANSP</p> <p>FSSD</p> <p>Air Operators</p>	<p>Number of CFIT occurrence per 10,000 FMs</p>	<p>High</p>	
	<p>4. Conduct continuous evaluations of the performance of the SEIs.</p>	<p>ANSSSD/FS SD</p>	<p>Cont. process</p>	<p>ANSSSD</p> <p>ANSP</p> <p>FSSD</p> <p>Air Operators</p>	<p>Number of CFIT occurrence per 10,000 FMs</p>	<p>High</p>	<p><i>Surveillance of operator , ANSP activities</i></p> <p>Safety reporting (MOR/VO R)</p>
<p><b>HRC 2: Loss of Control – In flight (LOC-I)</b></p>							
<p><b>Goal 1: Achieve a continuous reduction of operational safety risks</b>  <b>Target 1.1: Maintain a decreasing trend of the national accident rate</b></p>							
<p><b>Safety enhancement initiative</b></p>	<p><b>Action</b></p>	<p><b>Responsible entity</b></p>	<p><b>Timeline</b></p>	<p><b>Stakeholders</b></p>	<p><b>Metrics</b></p>	<p><b>Priority</b></p>	<p><b>Monitoring Activity</b></p>

<p>GASP OPS SEI on LOC-I (State) — Mitigate contributing factors to the risk of LOC-I accidents and incidents</p>	<p>1. Implement the following LOC-I safety actions:</p> <p>a. Develop guidance materials on upset prevention and recovery training in all full flight simulator type conversion and recurrent training programmes and ensure implementation.</p>	FSSD	Implemented	<ul style="list-style-type: none"> <li>Air Operators</li> <li>Flight simulator product and service providers</li> <li>CAA inspectors</li> </ul>	<p>Number of LOC-I Accident/incident per 10,000 flying hours.</p>	<p>High</p>	<p>Surveillance of operator and ATO training activities</p>
	<p>b. Require more time devoted to training for the pilot monitoring role.</p>	FSSD	2021				
	<p>c. Model Advisory Circular — Air Operators Standard Operating Procedures for Flight Deck Crewmembers</p>	FSSD	Implemented				
	<p>d. Guidance Material on Flight Crew Proficiency</p>	FSSD	2022				
	<p>Advisory Circular — Mode Awareness and Energy State Management Aspects of Flight Deck Automation</p>	FSSD	Implemented				
	<p>2. Validate the effectiveness of the SEIs in the industry through MORs and VORs systems and accident/incident investigations (apply safety management methodologies- PDCA)</p>	FSSD	2022				



	<p>3. Identify additional contributing factors:</p> <ul style="list-style-type: none"> <li>a. Distraction</li> <li>b. Adverse weather</li> <li>c. Complacency</li> <li>d. Inadequate standard operating procedures (SOPs) for effective flight management</li> <li>e. Insufficient height above terrain for recovery</li> <li>f. Lack of awareness of or competence in procedures for recovery from unusual aircraft attitudes</li> <li>g. Inappropriate flight control inputs in response to a sudden awareness of an abnormal bank angle.</li> </ul>	FSSD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• Flight simulator product and service providers</li> </ul>	Stick-shaker activation events in FDA data	High	Surveillance of operator and ATO training activities
	<p>4. Conduct continuous evaluations of the performance of the SEIs.</p>	FSSD	2022	<ul style="list-style-type: none"> <li>• CAA inspectors</li> </ul>	LOC-I occurrence rates	High	
<b>HRC 3: Mid Air Collision (MAC)</b>							
<p><b>Goal 1:</b> Achieve a continuous reduction of operational safety risks  <b>Target 1.1:</b> Maintain a decreasing trend of the national accident rate</p>							
Safety enhancement initiative	Actions	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity

<p>GASP OPS SEI on MAC (State) — Mitigate contributing factors to risk of MAC accidents and incidents</p>	<p>1. Implement the following MAC safety actions:</p>						
	<p>a. Establish guidance and regulations to ensure aircraft are equipped with airborne collision avoidance system (ACAS), in accordance with Annex 6</p>	FSSD	2022				
	<p>b. Ensure adherence to ACAS warning procedures</p>	FSSD	2022	<ul style="list-style-type: none"> <li>Air Operators</li> </ul>	<p>Number of MAC Accident/incident per 10,000 flying hours.</p>	<p>High</p>	<p>Surveillance of operator ANSP activities</p> <p>Safety reporting (MOR/VOR)</p>
	<p>c. Promote the improvement of air traffic control (ATC) systems, procedures and tools to enhance conflict management</p>	ANSSSD	Implemented	<ul style="list-style-type: none"> <li>ANS service provider</li> </ul>			
	<p>d. Promote the improvement of communications systems and procedures, such as controller-pilot datalink.</p>	ANSSSD	2022	<ul style="list-style-type: none"> <li>CAA inspectors</li> </ul>			
	<p>2. Validate the effectiveness of the SEIs through the analysis of MORs and VORs and accident/incident investigations (apply safety management methodologies)</p>	ANSSSD/FS SD	Cont. Process				
<p>3. Identify additional contributing factors:</p>							
<p>a. Traffic conditions - traffic density, complexity, mixture of aircraft types and capabilities, etc.</p>	ANSSSD/FS SD	2022	<ul style="list-style-type: none"> <li>Air Operators</li> </ul>	<p>Number of MAC Accident/incident per 10,000 flying hours.</p>	<p>High</p>	<p>Surveillance of ANSP, air operator and ATO training activities</p>	
<p>b. ATC performance related to workload, competence, teamwork, procedures, commitment, etc., as well as the influence of air navigation services providers' (ANSP) safety management</p>	ANSSSD	2022	<ul style="list-style-type: none"> <li>ANS service provider</li> <li>CAA inspectors</li> </ul>				

	<p>c. Flight crew training and corporate culture with workload, competence, teamwork, procedures, commitment etc., and the influence of aircraft operator’s safety management</p> <p>d. ATC systems - flight data processing, communication, short term conflict alert (STCA), etc., as well as the interaction with the human operators and the aircraft systems, and the procurement policy of the ANSP</p> <p>e. Aircraft equipment - autopilots, transponders and ACAS, but also aircraft performance (e.g. rate-of-climb) and their physical size</p> <p>f. Navigation infrastructure - both coverage and quality</p> <p>g. Surveillance - both coverage and quality</p> <p>h. Flight plan processing - efficiency and reliability of flight plan submission, approval and distribution</p> <p>i. Airspace - complexity of airspace design, route layout, extent of controlled or uncontrolled airspace, proximity of military operational or training areas, etc.</p> <p>j. Flight in adverse environmental conditions that may influence conflict management and collision avoidance</p>	<p>FSSD</p> <p>ANSSSD</p> <p>FSSD</p> <p>ANSSSD</p> <p>ANSSSD/FS SD</p> <p>ANSSSD/FS SD</p> <p>ANSSSD/FS SD</p>	<p>2022</p> <p>Implemen ted</p> <p>2022</p> <p>2022</p> <p>Implemen ted</p> <p>Implemen ted</p> <p>Implemen ted</p>			
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	2) Conduct continuous evaluations of the performance of the SEI	ANSSSD/FS SD	Cont. Process		Number of MAC occurrence per 10,000 flying hours.	High	Surveillance of ANSP, air operator and ATO training activities
<b>HRC 4: Runway Excursion (RE)</b>							
<p align="center"><b>Goal 1:</b> Achieve a continuous reduction of operational safety risks  <b>Target 1.1:</b> Maintain a decreasing trend of the national accident rate</p>							
Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
GASP OPS SEI on RE (State) — Mitigate contributing factors to risk	<p>1. Implement the following RE safety actions:</p> <p>a. Ensure the establishment and implementation of a State runway safety Programme (RSP) and runway safety teams (RST) in all certified aerodromes.</p>	ASSD	2022	<ul style="list-style-type: none"> <li>Air Operators</li> </ul>	Number of RE Accident/incident per 10,000 flying	High	Surveillance of Aerodromes, ANSP, air operator and ATO training activities

of RE accidents and incidents	b. Promote the establishment of policy and training on rejected landings, go-arounds, crosswind and tailwind landings (up to the maximum manufacturer-demonstrated winds)	FSSD	2022	<ul style="list-style-type: none"> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• CAA inspectors</li> </ul>	hours.		Safety reporting (MOR/VO R)
	c. Promote equipage of runway overrun awareness and alerting systems on aircraft	FSSD	2022				
	d. Ensure effective and timely reporting of meteorological and aerodrome conditions (e.g. runway surface condition in accordance to the ICAO global reporting format in Annex 14, Volume I, braking action and revised declared distances)	ASSD	2022.				
	e. Certify aerodrome in accordance with ICAO Annex 14, Volume I as well as Doc 9981, PANS-Aerodrome	ASSD	2022				
	f. Promote the installation of arresting systems if runway end safety area (RESA) requirements cannot be met.	ASSD	2022				
	g. Ensure that procedures to systematically reduce the rate of unstabilized approaches to runways are developed and used	FSSD/ANSS SD	2022				
	h. Runway Safety Maturity Checklist	ASSD	2022				
	i. Guidance material and training program for runway pavement, maintenance and operations from aerodrome operator’s perspective	ASSD	2022				

	2. Validate the effectiveness of the SEI through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies).	ASSD/ ANSSSD/ FSSD	2022			
	3. Identify additional contributing factors:  a. Ineffective SOPs  b. Failure to adhere to the appropriate SOPs  c. Long/floated/bounced/firm/off-centre/crabbed landing d. Inadequate approach procedures design  e. Inadequate regulatory oversight	ASSD/FSSD /ANSSSD	2022			
		ASSD/FSSD /ANSSSD	2022			
		FSSD	2022			
		ANSSSD	Impltd.			
		ASSD/FSSD /ANSSSD	2022			
	4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RE	FSSD/ANSSSD/ASSD	2022			
	5. Conduct continuous evaluations of the performance of the SEI.	ASSD/FSSD /ANSSSD	Continue process			
<b>HRC 5: Runway Incursion (RI)</b>						
<p style="text-align: center;"><b>Goal 1:</b> Achieve a continuous reduction of operational safety risks  <b>Target 1.1:</b> Maintain a decreasing trend of the national accident rate</p>						

Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
<p>GASP OPS SEI on RI (State) — Mitigate contributing factors to the risk of RI accidents and incidents</p>	<p>1. Implement the following RI safety actions:</p> <ul style="list-style-type: none"> <li>a. Ensure the establishment and implementation of a State runway safety programme (RSP) and runway safety teams (RST)</li> <li>b. Promote the establishment of policy, procedures and training that supports situational awareness for controllers, pilots and airside vehicle drivers</li> <li>c. Ensure effective use of suitable technologies to assist the improvement of situational awareness, such as improved resolution airport moving maps (AMM), electronic flight bags (EFBs), enhanced vision systems (EVS) and head-up displays (HUD), advanced-surface movement guidance and control systems (A-SMGCS), stop bars, and runway incursion warning systems (ARIWS).</li> <li>d. Certify aerodrome in accordance with ICAO Annex 14, Volume I as well as Doc 9981, PANS-Aerodrome</li> <li>e. Ensure the use of standard phraseologies in accordance with applicable State regulations and ICAO provisions (e.g. Doc 9432, Manual of Radiotelephony)</li> </ul>	<p>ASSD</p> <p>ASSD/ANSS SD/FSSD</p> <p>ASSD/ANSS SD/FSSD</p> <p>ASSD</p> <p>ASSD/ANSS SD/FSSD</p>	<p>2022</p> <p>Implemented</p> <p>2022</p> <p>2022</p> <p>2022</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>CAA inspectors</li> </ul>	<p>Number of RI Accident/incident per 10,000 flying hours.</p>	<p>High</p>	<p>Surveillance of Aerodromes, ANSP, air operator and ATO training activities</p> <p>Safety reporting (MOR/VO R)</p>

<ul style="list-style-type: none"> <li>f. Ensure the identification and publication in the aeronautical information publication (AIP) of hot spots at aerodromes</li> <li>g. Ensure that suitable strategies to remove hazards or mitigate risks associated with identified hot spots are developed and executed</li> <li>h. Runway Safety Maturity Checklist</li> <li>i. Model Advisory Circular — Runway Incursion (RI) Prevention and Pilot Training</li> </ul>	<p>ASSD</p> <p>ASSD</p> <p>ASSD</p> <p>ASSD</p>	<p>2022</p> <p>2022</p> <p>2022</p> <p>2022</p>				
<p>2. Validate the effectiveness of the SEIs through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies)</p>	<p>ASSD/ANSSD/FSSD</p>	<p>2022</p>				
<p>3. Identify additional contributing factors:</p> <ul style="list-style-type: none"> <li>a. Operations in low visibility conditions</li> <li>b. Complex or inadequate aerodrome design</li> <li>c. Complexity of traffic (multiple simultaneous line-ups)</li> <li>d. Conditional clearances</li> <li>e. Simultaneous use of intersecting runways</li> </ul>	<p>FSSD</p> <p>ASSD</p> <p>ANSSSD</p> <p>ANSSSD/FS SD</p> <p>FSSD/ASSD</p>	<p>Implemen ted</p> <p>2022</p> <p>2022</p> <p>Implemen ted</p> <p>NA</p>				



	f. Late issue of or late changes to departure clearances	ANSSSD	Implemented				
	g. Phraseology use (e.g. non-standard vs. standard, call-sign confusion)	ANSSSD/FS SD	Implemented				
	h. Concurrent use of more than one language for ATC communications	ANSSSD	NA				
	i. English language competence despite the introduction by ICAO of a system of validating competence in aviation English	ANSSSD/FS SD	Implemented				
	j. Inadequate manoeuvring area driver training and assessment programme.	ASSD	2021				
	4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any, for RI	ASSSD/FSS D/ASSD	2022				
	5. Conduct continuous evaluations of the performance of the SEIs	ASSD/ANSS SD/FSSD	Cont. process				
<b>HRC 6: Abnormal Runway Contact (ARC)</b>							
<b>Goal 1:</b> Achieve a continuous reduction of operational safety risks <b>Target 1.1:</b> Maintain a decreasing trend of the national accident rate							
Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
Mitigate	1. Implement the following ARC safety actions:						

contributing factors to the risk of ARC accidents and incidents	a. Promote the establishment of policy and training on rejected landings, go-arounds, crosswind and tailwind landings (up to the maximum manufacturer-demonstrated winds).	FSSD	2022					
	b. Ensure effective and timely reporting of meteorological and aerodrome conditions (e.g. runway surface condition in accordance to the ICAO global reporting format in Annex 14, Volume I, braking action and revised declared distances)	ASSD/ANSS SD	2021					
	c. Runway Safety Maturity Checklist	ASSD	2022					
	d. Tool Guidance material on Unstabilised Approach	FSSD/ANSS SD	2022					
	e. Guidance material and training program for runway pavement, maintenance and operations from aerodrome operator’s perspective.	ASSD	2022					
2. Validate the effectiveness of the SEIs through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies)	FSSD/ANSS SD ASSD	Cont. process						
3. Identify additional contributing factors:								
a. Ineffective SOPs	ASSD/FSSD /ANSSSD	2022						
b. Failure to adhere to the appropriate SOPs	ASSD/FSSD	2022						

	c. Long/floated/bounced/firm/off-centre/crabbed landing d. Inadequate approach procedures design e. Inadequate regulatory oversight	/ANSSSD FSSD ANSSSD ASSD/FSSD /ANSSSD	2022 Impltd. 2022					
	4. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any.	ASSD/FSSD /ANSSSD	2022					
	5. Conduct continuous evaluations of the performance of the SEIs	ASSD/FSSD /ANSSSD	2022					
<b>HRC 7: Wildlife Strike (WS) on and in the vicinity of Aerodrome</b>								
<b>Goal 1:</b> Achieve a continuous reduction of operational safety risks <b>Target 1.1:</b> Maintain a decreasing trend of the national accident rate								
Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity	
Mitigate contributing factors to the risk of WS accidents and incidents	1. Implement the following WS safety actions: a. Observe bird activities and bird strikes at the airports and promote collecting, reporting, recording and analysis of data through various means. b. Ensure the better management of vegetation and land use at the airports.	ASSD/ANSSSD/FSSD  ASSD	Impltd.  2021	<ul style="list-style-type: none"> <li>Air Operators</li> <li>ANS service provider</li> </ul>	Number of WS Accident/incident per 10,000 flying hours.		Surveillance of Aerodromes, ANSP, air operator activities  Safety reporting (MOR/VO R)	

	<p>c. Ensure the implementation of effective bird distracting mechanisms at the airports.</p> <p>d. Ensure the implementation of Off-airport bird management activities in collaboration with local communities and other government agencies through National Airport Bird Control and Reduction Committee</p> <p>e. Encourage to use environment friendly chemical bird repellent technique at airports apart from the existing audio and visual repellent techniques.</p> <p>f. Introduce Runway sweep-in vehicles to control the activity of birds and other wildlife due to presence of attractants on the surface of runway.</p>	<p>ASSD</p> <p>ASSD</p> <p>ASSD</p> <p>ASSD</p>	<p>2022</p> <p>2021</p> <p>2022</p> <p>2022</p>	<ul style="list-style-type: none"> <li>• Aerodrome service providers</li> <li>• CAA inspectors</li> </ul>			
	2. Validate the effectiveness of the SEI through the analysis of MORs, VORs and accident/incident investigations (apply safety management methodologies)	ASSD/ANSSD/FSSD	2022				
	3. Identify additional contributing factors:	ASSD/FSSD/ANSSD	2022				
	3. Develop and implement further SEIs to mitigate the risk of the identified contributing factors, if any.	ASSD	2022				
	4. Conduct continuous evaluations of the performance of the SEIs	ASSD/ANSSD/FSSD	2022				

**APPENDIX - B**  
**DETAILED SEIs: STATE SAFETY OVERSIGHT CAPABILITIES**

- Issue no. 2: Establishment of a safety oversight framework  
Focus on lower EI scores for categories namely
- CE-8: Resolution of safety Issues,
  - CE-4: Technical personnel qualifications and training,
  - CE-7: Surveillance Obligations
  - Organization (ORG)
  - Aircraft and incident investigation (AIG),
  - Aerodrome and ground aids (AGA), and
  - Air navigation services (ANS)

**Goal 2: Strengthen State safety oversight capabilities**

- Target 2.1: Endeavour to have no Significant Safety Concerns (SSCs) under the USOAP Continuous Monitoring Approach (CMA), and to resolve any SSC promptly within the time frame specified in the Corrective Action Plan and agreed to by ICAO [from 2020 to 2022]
- Target 2.2: Encourage to increase the number of IOSA registered APAC airlines and ISAGO registrations.
- Target 2.3: Nepal to progressively enhance safety oversight capability to achieve at least 75% EI by 2022, 85% by 2026 and 95% by 2030 in USOAP CMA
- Target 2.4: Nepal to reach a safety oversight index greater than 1 in all categories by 2022
- Target 2.5: Conduct workshops and seminars relating to ANS, AIG, AGA at least yearly [from 2020 to 2022].

Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
GASP ORG SEI 1 (State) — Consistent implementation of ICAO SARPs at the national level	<ol style="list-style-type: none"> <li>1. Work at the national level to address significant safety concerns as a priority</li> <li>2. Address all priority protocol questions (PQs) of the USOAP CMA</li> <li>3. Establish primary aviation law and regulations, to empower the competent authority to conduct regulatory oversight, this includes separation of</li> </ol>	<p>ASSRD</p> <p>ASSRD</p> <p>CAAN</p>	<p>Continuous process</p> <p>Continuous process</p> <p>2022</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome</li> </ul>	<p>EI percentage</p> <p>State Safety index</p> <p>Rate of improvement in compliance</p>	<p>High</p>	<p>Quality assurance of oversight functions</p> <p>Surveillance of Aerodromes, ANSP, air operator activities</p>

	oversight functions and service provision functions (CE-1 and CE-2)			service providers	Percentage of priority PQs addressed.		
	4. Increase the level of compliance with ICAO SARPs and the EI of CEs at the national level (CE-1 to CE-5)	ASSRD	Continuous process	• ASSRD			
	5. Establish a process for the identification of differences with ICAO SARPs (CE-2)	ASSRD	Implemented				
GASP ORG SEI 2 (State) — Development of a comprehensive regulatory oversight framework	1. Establish and maintain an independent regulatory oversight authority, which includes separation of oversight functions from service provision functions where these exist within the authority (CE-3)	CAAN	2022	• Air Operators	Independent regulatory oversight authority	High	Quality assurance of oversight functions  Surveillance of Aerodromes, ANSP, air operator activities
	2. Develop an effective system to promulgate technical guidance and tools, and provide safety-critical information needed for technical personnel to effectively perform their safety oversight functions (CE-5).	ANSSSD/AS SD/FSSD/S M	2022	• ANS service provider	Safety oversight functions		
	3. Establish an effective system to attract, recruit, train and retain qualified and sufficient technical personnel to support regulatory oversight (see SEI-5) (CE-3 and CE-4).	ASSRD	2022	• Aerodrome service providers  • ASSRD			

<p>GASP ORG SEI-3 (State) — Establishment of an independent accident and incident investigation authority, consistent with Annex 13</p>	<p>1. Establish an independent accident and incident investigation authority, as per Annex 13 requirements (CE-1 and CE-3)</p>	MoCTCA	2022		<p>Independent accident and incident investigation authority</p> <p>The required technical guidance and tools.</p>		<p>AIG reports</p> <p>Quality assurance regarding the AIG functions</p>	
	<p>2. Develop an effective system to promulgate technical guidance and tools, and provide safety-critical information needed for technical personnel to effectively conduct accident and incident investigations (CE-5)</p>	MoCTCA	2022					
	<p>3. Establish an effective system to attract, recruit, train and retain qualified and sufficient technical personnel to support accident and incident investigations (see SEI-5) (CE-3 and CE-4)</p>	MoCTCA	2022					
<p>GASP ORG SEI-4 (State) — Strategic allocation of resources to enable effective safety oversight</p>	<p>1. Confirm executive or legislative mandate to receive financial resources from government or other external sources and expend them (CE-1)</p>	CAAN	Implemented	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	<p>CAAN acts and regulations</p>		<p>Provisions and implementation of CAAN acts and regulations</p>	
	<p>2. Establish a process for the resource planning and allocation in alignment with a competent authority’s organizational structure, which is required to conduct effective safety oversight (CE-2 and CE-3). SEI-1 and SEI-5 could be used to identify resource requirements (CE-1 to CE-5)</p>	ASSRD	2022					
	<p>3. Obtain a sustainable and stable source of financing through commitments from the national and agency leadership and other stakeholders (CE-1 to CE-3). For small scope short-term improvements:</p>	ASSRD	Continuously being implemented					

	<ul style="list-style-type: none"> <li>a. Utilize the ICAO Safety Fund (SAFE), Technical Co-operation Bureau, or other means to acquire technical and financial assistance in coordination with RASG/RSOO/ICAO Regional Office</li> <li>b. Seek assistance from more experienced States and other stakeholders in coordination with RASG/RSOO/ICAO Regional Office</li> <li>c. Seek assistance from sources of financing (World Bank, Asian Development Bank etc.) in coordination with RASG/RSOO/ICAO Regional Office</li> </ul> <p>4. Develop a process for assessing changing resource requirements and sustain necessary coordination with resource stakeholders for safety oversight improvements, as outlined in Component 1 of this roadmap (CE-1 to CE-3)</p>	<p>ASSRD</p>	<p>2022</p>			
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<p>GASP ORG SEI-5 (State) — Qualified technical personnel to support effective safety oversight</p>	<p>1. Establish an effective system to identify and track qualifications and training of existing technical personnel (CE-4)</p>	ASSRD	2022		<p>Qualified technical manpower</p>		
	<p>2. Identify the gaps in qualified technical personnel and training requirements necessary to implement the oversight mandate (CE-4)</p>	ASSRD	2022				
	<p>3. Establish a compensation scheme for the attraction and retention of qualified technical personnel (CE-4)</p>	CAAN	Implemented				
	<p>4. Make use of RSOOs, RAIOS, or equivalent means, to secure qualified technical personnel to perform those functions which cannot be performed by the State acting on its own (CE-4)</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> </ul>			
	<p>5. Establish human resource plans to support hiring and retention of the appropriate number of qualified technical personnel required (CE-4)</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• ANS service provider</li> </ul>			
	<p>6. Implement training policies and programmes for technical personnel and verify that the type and frequency of training successfully completed (i.e. initial, recurrent, specialized and on-the-job training) are sufficient to acquire/maintain the required qualifications and level of competence corresponding to the assigned duties and responsibilities of technical personnel (CE-4)</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• Aerodrome service providers</li> </ul>			
	<p>7. Develop a process for assessing changing needs for qualified technical personnel requirements and develop procedures to update hiring, retention and training of personnel needs, in coordination with SEI-4B (CE-4)</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• CAAN inspectors</li> </ul>			
						Quality assurance of oversight functions	

Issue No. 3: Slow pace of SSP implementation, as well as understanding of newer safety management and performance-based concepts

**Goal 3: Implement effective SSP**

Target 3.1: Nepal to implement the foundation of its SSP by 2022.

Target 3.2: Nepal to attain Level 3 SSP implementation by 2022

Target 3.3: Nepal to implement an effective SSP (Level 4), as appropriate to its aviation system complexity, by 2025.

Safety enhancement initiative	Action	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
GASP ORG SEI-13 (State) — Start of SSP implementation at the national level	<ol style="list-style-type: none"> <li>Secure State-level commitment to improve safety</li> <li>Conduct initial SSP gap analysis (checklist) then the detailed SSP self -assessment</li> <li>Establish an SSP implementation team</li> <li>Develop an implementation plan for the SSP</li> <li>Issue SMS regulations for service providers and verify SMS implementation.</li> <li>Identify and share safety management best practices</li> </ol>	<p>DGCA</p> <p>SMD</p> <p>ASSRD</p> <p>SMD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Implemented</p> <p>Continuously being implemented</p>	<ul style="list-style-type: none"> <li>Air Operators</li> <li>ANS service provider</li> <li>Aerodrome service providers</li> <li>ASSRD</li> </ul>	<p>Level of SSP implementation</p> <p>Level of SMS implementation in service providers</p>	High	<p>ICAO ISTARs</p> <p>Quality assurance of oversight functions and SSP implementation</p>

<p>GASP ORG SEI-14 (State) — Strategic allocation of resources to start SSP implementation</p>	<ol style="list-style-type: none"> <li>1. Establish a process for planning and allocation of resources to enable SSP implementation and identify areas where resources are needed.</li> <li>2. Obtain resources from national and appropriate authorities’ leadership and stakeholders within the State to support SSP implementation</li> <li>3. Work with the ICAO Regional Office to make use of available means (e.g. Technical Cooperation Bureau) to acquire assistance needed for SSP implementation</li> <li>4. Work with RSOO, other States and other organizations, as appropriate to train qualified technical personnel to fulfil their duties and responsibilities regarding SSP implementation</li> </ol>	<p>SMD</p> <p>ASSRD</p> <p>DGCA</p> <p>ASSRD</p>	<p>2021</p> <p>Implemented</p> <p>Continuously being implemented</p> <p>Continuously being implemented</p>		<p>CAAN acts and regulations</p>		<p>Provisions and implementation of CAAN acts and regulations</p>
<p>GASP ORG SEI-15 (State) — Strategic collaboration with key aviation stakeholders to start SSP implementation</p>	<ol style="list-style-type: none"> <li>1. Identify areas where collaboration/support is needed as part of the SSP implementation plan (see SEI-14)</li> <li>2. Identify relevant collaborators from key aviation stakeholders, including other States that are implementing or have implemented an SSP</li> <li>3. Develop an action plan to address the elements identified as missing or deficient during the SSP gap analysis (see SEI-13B)</li> <li>4. Establish a process via RASG and/or RSOO for a mentoring system, including providing</li> </ol>	<p>SMD</p> <p>ASSRD</p> <p>SMD</p>	<p>2021</p> <p>2021</p> <p>2021</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	<p>Number of collaborator identified</p> <p>Number of activities collaborated with identified collaborators</p>		<p>Monitoring and evaluating collaborative activities through Steering committees and regional forums</p> <p>ICAO ISTARs</p>

	<p>assistance to States/industry, as well as sharing of best practices to support SSP implementation</p> <p>5. Develop a process to provide training on SSP to relevant staff, in collaboration with RSOO and/or other States (e.g. initial, recurrent and advanced).</p> <p>6. Establish and implement a process for sharing technical guidance, tools and safety-critical information related to SSP (e.g. advisory circulars, staff instructions, safety performance indicators), in collaboration with other States, RASG, RSOO, ICAO and/or other stakeholders.</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• Global and Regional bodies</li> <li>• Other states</li> </ul>			
GASP ORG SEI-16 (State) — Strategic collaboration with key aviation stakeholders to complete SSP implementation	<p>1. Work with collaborators (identified in SEI-15) to execute the action plan for implementation</p> <p>2. Work with collaborators to ensure all elements of the SSP are present, suitable, operational and effective</p> <p>3. Establish a system for the continuous improvement of the SSP, in collaboration with all relevant stakeholders</p> <p>4. Serve as a champion State to promote best practices among other States</p> <p>5. Improve the sharing of best practices in safety management, safety data and analyses among</p>	ASSRD	Jun 2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> <li>• Regional bodies</li> </ul>	<p>Number of activities collaborated with identified collaborators</p> <p>Level of SSP implementation</p> <p>Number of best practices shared with other states</p>		<p>Monitoring and evaluating collaborative activities through Steering committees and regional forums</p> <p>ICAO ISTARs</p>

	regional platforms including APANPIRG Subgroups via RASG-APAC			Other states			
<p>GASP ORG SEI-17 (State)</p> <p>— Establishment of safety risk management at the national level (step 1)</p>	1. Establish a legal framework related to the protection of safety data, safety information and other related sources	SMD	Implemented	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	Number of mandatory and voluntary reports		quality assurance of SRMs conducted
	2. Establish a State mandatory occurrence reporting system	ASSRD	Implemented		Legal framework regarding to hazard id and SRM		Effectiveness of reporting systems
	3. Develop a safety database for monitoring system safety issues and hazards, in line with the principles of Doc 9859 — Safety Management Manual	ASSRD	2021		Number of SRM conducted.		
	4. Establish and maintain a process to identify hazards from collected safety data	ASSRD	2022				
	5. Establish and utilize a process to ensure the assessment of safety risks associated with identified hazards	ASSRD	2022				
	6. Establish a State confidential voluntary safety reporting system providing data to the safety database (see SEI-17C)	ASSRD	Implemented				
<p>GASP ORG SEI-18 (State)</p> <p>— Establishment of safety risk</p>	1. Develop safety performance indicators using the established safety risk management process	ASSRD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> </ul>	Number of mandatory and voluntary reports		quality assurance of SRMs conducted
	2. Develop safety performance measurement methodologies, aligned with the regional safety	SMD	2022				

<p>management at the national level (step 2)</p>	<p>metrics, using the established safety risk management process (see SEI-17E)</p> <ol style="list-style-type: none"> <li>3. Establish the acceptable level of safety performance to be achieved through the SSP</li> <li>4. Ensure the establishment of mandatory safety reporting systems by service providers.</li> <li>5. Encourage establishment of voluntary safety reporting systems as part of service providers' SMS.</li> <li>6. Promote safety awareness and the two-way communication, sharing and exchange of safety-relevant information within the State's aviation organizations and encourage sharing of safety information with industry within the State</li> <li>7. Contribute information on safety risks and SSP safety performance indicators to the RASP.</li> </ol>	<p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>2022</p> <p>Implemented</p> <p>Implemented</p> <p>Continuously being implemented</p> <p>2022</p>	<ul style="list-style-type: none"> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• CAAN inspectors</li> </ul>	<p>Legal framework regarding to hazard id and SRM</p> <p>Number of SRM conducted.</p> <p>Number of SPIs and SPTs defined</p>		<p>Effectiveness of reporting systems</p> <p>Quality of SPIs and SPTs defined</p> <p>Contribution of SPIs to AP RASP</p>
<p>GASP ORG SEI-19 (State) — Acquisition of resources to increase the proactive use of risk modelling capabilities</p>	<ol style="list-style-type: none"> <li>1. Identify resources needed to support safety intelligence collection and processing, advanced data analysis, risk modelling and information-sharing capabilities</li> <li>2. Attract, recruit, train, and retain qualified technical personnel to specialize in risk modelling</li> <li>3. Ensure that the Civil Aviation Safety Inspector workforce is trained to perform safety oversight</li> </ol>	<p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>2022</p> <p>2022</p> <p>2021</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> </ul>	<p>Number of qualified technical personnel for SMS and SSP implementation</p> <p>Resource allocated to SSP</p>		<p>Quality assurance of SSP implementation related activities</p>

	of service providers that have implemented SMS			• ASSRD	implementation			
<p>GASP ORG SEI-20 (State) — Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities</p>	<p>1. Identify areas where collaboration/support is needed to ensure that stakeholders understand and implement safety culture concepts to fully embrace an open, just culture and non-punitive safety reporting</p>	ASSRD	2022		Number of areas identified for collaboration		Surveillance of state risk modelling capabilities	
	<p>2. Establish a process via RASG and/or RSOO (or other regional bodies) for a mentoring system, including providing assistance to States/industry, as well as the sharing of best practices, to support safety culture development and the proactive use of risk modelling</p>	ASSRD	2022		Number of assistance received and best practices shared			
	<p>3. Foster and participate in public-private partnerships similar to the commercial/general aviation safety teams' concept to identify and implement system safety enhancements.</p>	ASSRD	Implemented					
	<p>4. Collaborate with national and industry stakeholders to establish a mechanism for the regular sharing and exchange of safety information, analyses, safety risk discoveries/lessons learned and best practices within a confidential and non-punitive environment</p>	ASSRD	Implemented					
<p>GASP ORG SEI-21 (State) — Advancement of safety risk</p>	<p>1. Establish data sharing connectivity and integration among the State's aviation safety databases, including the mandatory occurrences reporting system, voluntary safety reporting systems, safety audit reports and aviation system</p>	ASSRD	2022		Number of information shared among ANSSSD,		Surveillance of state safety risk management	

management at the national level	<p>statistics (traffic counts, weather information, EI scores, etc.)</p> <p>2. Develop risk modelling capabilities to support monitoring system safety issues and accident/incident prevention</p> <p>3. Encourage information-sharing with industry</p>	ASSRD	2022		ASSD, FSSD, SMD and industry.		
<p><b>Issue no. 4:</b> Lack of resources and expertise to manage and collect data on a State level, and no formal mechanisms in place that allow for the sharing and benchmarking of information at the regional level.</p>							
<p style="text-align: center;"><b>Goal 4: Increase collaboration at the regional level</b></p> <p><b>Target 4.1:</b> Nepal to use a regional safety oversight mechanism, another State or other safety oversight organization’s ICAO recognized functions in seeking assistance to strengthen their safety oversight capabilities by 2020.</p> <p><b>Target 4.2:</b> Nepal to contribute information on safety risks, including SSP Safety Performance Indicators (SPIs), to Asia Pacific Aviation Safety Group (AP-RASG) by 2022.</p> <p><b>Target 4.3:</b> Nepal to lead RASGs’ safety risk management activities actively with effective safety oversight capabilities and an effective SSP by 2022.</p> <p><b>Target 4.4:</b> Nepal to actively participate in the regional mechanism for data collection, analysis and sharing by 2020.</p> <p><b>Target 4.5:</b> Nepal to encourage the increased participation in flight data sharing initiatives by air operators, with aircraft of mass 27,000kg above by 2020.</p>							
Safety enhancement initiative	Action	Responsible Entity	Timeline	Stakeholders	Metrics	Priority	Monitoring Activity
GASP ORG SEI-6 (State) — Strategic collaboration with key aviation stakeholders to enhance safety	<p>1. Based on the identified safety deficiencies (Implement), establish a mechanism to identify collaborators and develop an action plan for the resolution of those deficiencies (CE-6 to CE-8).</p> <p>2. Based on the identified safety deficiencies (Establish), establish a mechanism to identify</p>	ASSRD	2022	<ul style="list-style-type: none"> <li>• CASRD</li> <li>• Other states</li> <li>• RSOOs</li> </ul>	<p>Number of collaborators identified for assistance.</p> <p>Number of assistance</p>		State safety oversight capability and effectiveness by State Quality assurance.



<p>in a coordinated manner</p>	<p>collaborators and develop an action plan for the resolution of those deficiencies (CE-1 to CE-5).</p> <p>3. Use a regional safety oversight mechanism, or the services of another competent State or organization.</p> <p>4. Establish a process via RASG and/or RSOO for a mentoring/collaboration system, including providing State/industry assistance as well as sharing of best practices and internal follow-up actions (CE-1 to CE-5, emphasis on CE-3)</p> <p>5. Collaborate with RASG and/or RSOO, other States, ICAO, industry joint programmes and/or technical school partnerships to attract, recruit and train qualified and sufficient technical personnel and develop a strategy for their retention (CE-4)</p> <p>6. Establish and implement a process for the development and promulgation of technical guidance, tools and the provision of safety-critical information, in collaboration with other States, RSOO, ICAO and/or other stakeholders, with the understanding that these materials need to be tailored to each State’s national regulations and operational environments (CE-5)</p> <p>7. While working to improve safety oversight, work with RASG and/or RSOO to address high-</p>	<p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>2022</p> <p>2022</p> <p>2022</p> <p>2022</p> <p>2022</p>		<p>received to strengthen oversight of state from regional bodies or/and States.</p>		
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	<p>risk categories of occurrences (see OPS roadmap)</p> <p>8. Leverage regional groups such as the RASG to identify additional resources</p> <p>9. Use technical guidance, tools and safety-critical information, developed in collaboration with other States, RSOO, ICAO and/or other stakeholders, to enable technical personnel to perform their safety oversight functions effectively (CE-6 to CE-8)</p> <p>10. While working to improve safety oversight, continue to work with RASG and/or RSOO to address high-risk categories of occurrences (see OPS roadmap)</p> <p>11. Work with the ICAO Regional Office to make use of available means (e.g. Technical Co-operation Bureau) to acquire assistance needed for SSP implementation.</p> <p>12. Work with RSOO, other States and other organizations, as appropriate to train qualified technical personnel to fulfil their duties and responsibilities regarding SSP implementation</p>	<p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>2022</p> <p>2022</p> <p>2022</p> <p>2022</p> <p>2022</p>				
<p>GASP ORG SEI-15 (State) — Strategic collaboration with key</p>	<p>1. Identify areas where collaboration/support is needed as part of the SSP implementation plan (see SEI-14)</p>	<p>SMD</p>	<p>June 2022</p>	<ul style="list-style-type: none"> <li>Air Operators</li> </ul>	<p>Number of collaborators identified.</p>		<p>Monitoring SSP implementation</p>

aviation stakeholders to implement SSP.	2. Identify relevant collaborators from key aviation stakeholders, including other States that are implementing or have implemented an SSP	ASSRD	2022	<ul style="list-style-type: none"> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul> Regional bodies (identified collaborators)	Number of assistance received to implement the SSP from regional bodies or/and other States.		
	3. Develop an action plan to address the elements identified as missing or deficient during the SSP gap analysis (see SEI-13B)	SMD	2021				
	4. Establish a process via RASG and/or RSOO for a mentoring system, including providing assistance to States/industry, as well as sharing of best practices to support SSP implementation	ASSRD	2022				
	5. Develop a process to provide training on SSP to relevant staff, in collaboration with RSOO and/or other States (e.g. initial, recurrent and advanced) (see SEI-14D)	ASSRD	2022				
	6. Establish and implement a process for sharing technical guidance, tools and safety-critical information related to SSP (e.g. advisory circulars, staff instructions, safety performance indicators), in collaboration with other States, RASG, RSOO, ICAO and/or other stakeholders	ASSRD	2022				
	7. Work with collaborators (identified in SEI-15) to execute the action plan for implementation	ASSRD	2022				
	8. Work with collaborators to ensure all elements of the SSP are present, suitable, operational and effective	ASSRD	2022				

	<p>9. Establish a system for the continuous improvement of the SSP, in collaboration with all relevant stakeholders</p> <p>10. Contribute information on safety risks and SSP safety performance indicators to the RASG</p> <p>11. Establish a process via RASG and/or RSOO (or other regional bodies) for a mentoring system, including providing assistance to States/industry, as well as the sharing of best practices, to support safety culture development and the proactive use of risk modelling</p> <p>12. Support the robust implementation and continuous improvement of SMS and SSP</p>	<p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p> <p>ASSRD</p>	<p>Implemented</p> <p>2022</p> <p>2022</p> <p>2022</p>				
<p><b>Issue No. 5:</b> Slow pace of SMS implementation, as well as low number of participation of Service providers in the ICAO-recognized industry assessment programmes.</p>							
<p style="text-align: center;"><b>Goal 5: Expand the use of industry programmes</b></p> <p><b>Target 5.1:</b> All service providers of Nepal to use globally harmonized SPIs as part of their safety management system (SMS) by 2020.</p> <p><b>Target 5.2:</b> Encourage to increase the number of service providers participating in the corresponding ICAO-recognized industry assessment programmes.</p>							

SEI	Actions	Responsible entity	Timeline	Stakeholders	Metrics	Priority	Monitoring activities
GASP SMS SEI-5 Improvement of industry compliance with applicable SMS requirements.	1. Ensure implementation of a safety management system (SMS) commensurate to the size and complexity of the service provider, as required by national regulations and Annex 19.	FSSD/ASSD/A NSSSD/SMD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	-Level of SMS Implementation -No of guidance materials available -No. of discrepancies reported to authority	High	Surveillance of service providers' SMS implementation.
	2. Ensure utilization of available guidance material to assist with SMS implementation.	FSSD/ASSD/A NSSSD/SMD	2022				
GASP SMS SEI-6 — Resources for service providers to effectively implement SMS	1. Ensure working in collaboration with the State and industry associations to advance SMS implementation and identify expectations that cannot be efficiently resourced.	FSSD/ASSD/A NSSSD/SMD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	No of areas identified for support  Level of Commitment from accountable manager	High	Surveillance of service providers' SMS implementation.
	2. Ensure identification of areas where resources are needed as part of the SMS implementation plan developed following the SMS gap analysis.	FSSD/ASSD/A NSSSD/SMD	2022				
	3. Ensure establishing a process for resource planning and allocation to enable SMS implementation, including resources which may be obtained from industry organizations	FSSD/ASSD/A NSSSD/SMD	2022				
	4. Ensure obtaining commitment from the accountable executive within the service	FSSD/ASSD/A NSSSD/SMD	2022				

	provider for the necessary resources to enable SMS implementation						
GASP SMS SEI-7 — Strategic collaboration with key aviation stakeholders to complete SSP implementation.	1. Ensure working with the action plan of SSP implementation through sharing and supporting harmonization of SMS within industry	FSSD/ASSD/A NSSSD/SMD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	-No of collaborator identified -Level of information shared with state -Number and quality of defining HRCs	High	Surveillance of service providers’ SMS implementation.
	2. Ensure support for continuous improvement of SSP..	FSSD/ASSD/A NSSSD/SMD	2022				
GASP SMS SEI-8 — Establishment of safety risk management at the service provider level	1. Ensure establishment of mandatory safety reporting systems	FSSD/ASSD/A NSSSD/SMD	Implemented	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	No of MOR and VOR received.  Definition of SPIs and SPTs  No Techniques used for measuring performance measurement.	High	Surveillance of service providers’ SMS implementation.
	2. Ensure providing information from the service provider to the State mandatory safety reporting system, as required	FSSD/ASSD/A NSSSD/SMD	Implemented				
	3. Ensure establishment of internal mechanisms related to the protection of safety data, safety information and related sources for the purpose of safety improvement	FSSD/ASSD/A NSSSD/SMD	2021				
	4. Ensure establishment of voluntary and confidential hazard/occurrence reporting systems as part of the SMS	FSSD/ASSD/A NSSSD/SMD	Implemented				
	5. Ensure establishment and maintenance of a safety database for technical personnel to monitor system safety issues within the service provider	FSSD/ASSD/A NSSSD/SMD	2021				

	<ol style="list-style-type: none"> <li>6. Ensure establishment and utilization of a safety risk management process</li> <li>7. Ensure development of safety performance measurement methodologies, aligned with harmonized safety metrics within industry, via the established safety risk management process</li> <li>8. Ensure development of safety performance indicators and associated targets/alert settings, via the established safety risk management process</li> <li>9. Encourage the use of globally harmonized metrics for the development and monitoring of safety performance indicators, as part of the service providers' SMS</li> <li>10. Encourage sharing and use of information from within industry to identify hazards and mitigate safety risks</li> </ol>	<p>FSSD/ASSD/A NSSSD/SMD</p> <p>FSSD/ASSD/A NSSSD/SMD</p> <p>FSSD/ASSD/A NSSSD/SMD</p> <p>FSSD/ASSD/A NSSSD/SMD</p> <p>FSSD/ASSD/A NSSSD/SMD</p>	<p>2021</p> <p>2022</p> <p>2022</p> <p>2022</p> <p>2021</p>				
<p>GASP SMS SEI-10 — Allocation of industry resources to support continuous improvement of SSP and SMS</p>	<ol style="list-style-type: none"> <li>1. Ensure competent technical personnel are allocated, at the service provider level, to support the requirements of the SSP infrastructure</li> <li>2. Ensure providing safety analysis results from service providers to support the SSP</li> </ol>	<p>FSSD/ASSD/A NSSSD/SMD</p> <p>FSSD/ASSD/A NSSSD/SMD</p>	<p>2022</p> <p>2022</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	<p>Level of competence of staff allocated for SMS implementation</p>	<p>High</p>	<p>Surveillance of service providers' SMS implementation.</p>
<p>GASP SMS SEI-11 — Strategic</p>	<ol style="list-style-type: none"> <li>1. Ensure working with industry stakeholders to leverage best practices with safety information analysis.</li> </ol>	<p>FSSD/ASSD/A NSSSD/SMD</p>	<p>2022</p>	<ul style="list-style-type: none"> <li>• Air Operators</li> </ul>	<p>No of stakeholders identified and</p>	<p>High</p>	<p>Surveillance of service providers' SMS</p>

collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities	2. Ensure sharing of safety risk identification with stakeholders for mitigation and monitoring strategies	FSSD/ASSD/A NSSSD/SMD	2022	<ul style="list-style-type: none"> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	mechanism established to deal with them.		implementati on.
	3. Ensure active participation with State and organizations engaged in risk modelling	FSSD/ASSD/A NSSSD/SMD	2022				
GASP SMS SEI-12 — Advancement of safety risk management at the service provider level	1. Ensure safety information and other related sources is implemented and effective	FSSD/ASSD/A NSSSD/SMD	2022	<ul style="list-style-type: none"> <li>• Air Operators</li> <li>• ANS service provider</li> <li>• Aerodrome service providers</li> <li>• ASSRD</li> </ul>	No of Processes established and activities carried out for continuous improvement of SMS.	High	Surveillance of service providers' SMS implementati on.
	2. Ensure developing risk modelling capabilities to support the monitoring of system safety issues and accident/incident prevention	FSSD/ASSD/A NSSSD/SMD	2022				
	3. Ensure monitoring safety information exchange networks for continuous improvements	FSSD/ASSD/A NSSSD/SMD	2022				

**Issue no. 6:** Increasing risks associated with airspace congestion, and the lack of appropriate infrastructure to support safe operations; lack of capacity of regulatory authority.

**Goal 6: Ensure the appropriate infrastructure (physical and institutional) is available to support safe operation**

**Target 6.1:** Nepal to implement the air navigation and airport core infrastructure (GASP) by 2022.

**Target 6.2:** Nepal to achieve at least 75% EI in AGA by 2022.

**Target 6.3:** Nepal to achieve at least 75% EI in AIG of USOAP CMA by 2022.

**Target 6.4:** Nepal to certify all aerodromes that are used for international operations by 2022.



<b>Target 6.5:</b> Nepal to establish an independent Accident and Incident Investigation Authority (AIIA) as required by Annex 13, as well as related investigation system and procedures by 2022.							
SEI	Actions	Responsible entity	timeline	Stakeholders	Metrics	Priority	Monitoring activities
Implement the air navigation and airport core infrastructure and improve the EI percentage.	1. Establish a means for to informally share information and coordinate on operational issues in the USOAP Audit Areas of OPS, ANS and AGA	FSSD/AS SD/ANSS SD	Implemen ted	MoCTCA	Number of operational safety issues shared and coordinated.	High	Surveillance to ensuring the quality of operational information sharing and coordination mechanism, implementation of APAC Seamless ANS Plan 3 and AIG conduction.
	2. Implement safety-related initiatives from the APAC Seamless ANS Plan3 in a timely manner, as applicable	ANSSSD	2022	Air Operators  ANS service provider  Aerodrome service providers	Level of Implementation of Safety related initiatives from the APAC Seamless ANS Plan 3.		
	3. Establish an independent accident and incident investigation authority (AIIA) as required by Annex 13, as well as related investigation system and procedures	MoCTCA	2022	CAAN inspectors  Regional bodies	Number of AIG conducted in accordance with Annex 13.		