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SAFETY

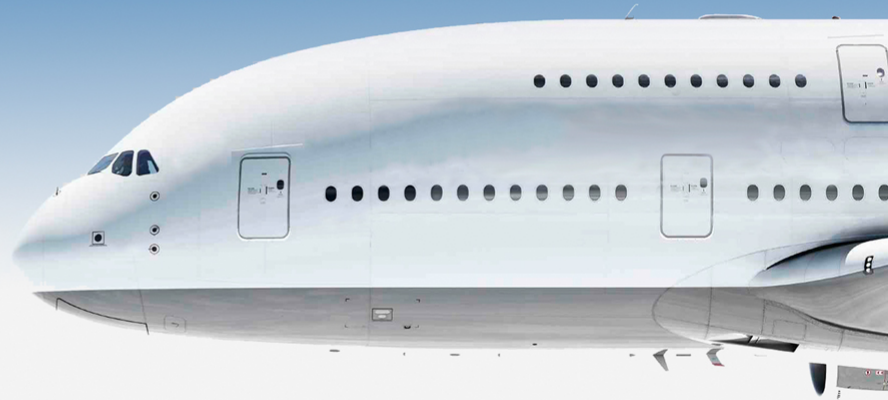
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# ICAO Global Aviation Safety Update

**Michiel Vreedenburgh**

Chief, Implementation – Safety, ANB








**ZERO  
FATALITIES**

Our  
Aspirational  
**Safety** Goal





Air traffic is predicted to  
**double** by 2030

How can we ensure the  
**safe** realization of this growth?





# Risks/Barriers to Achieve our Goal

- Effective Implementation of CEs
- ICAO's global safety priorities
  - Operational safety risks
- Current and emerging issues







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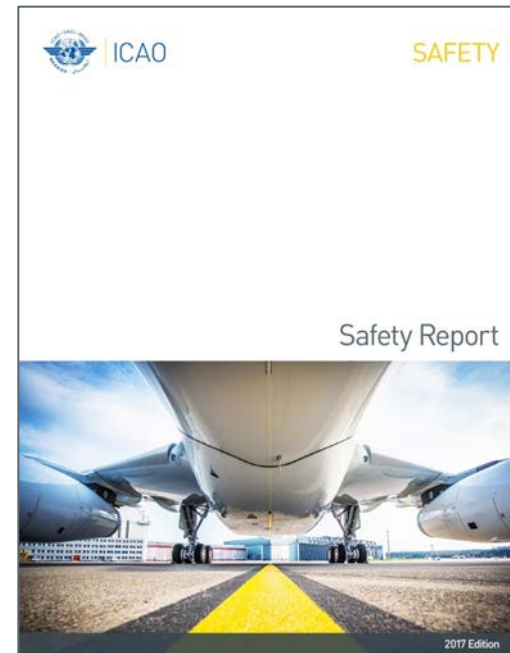
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## Global Aviation Safety Update

# GLOBAL STATUS

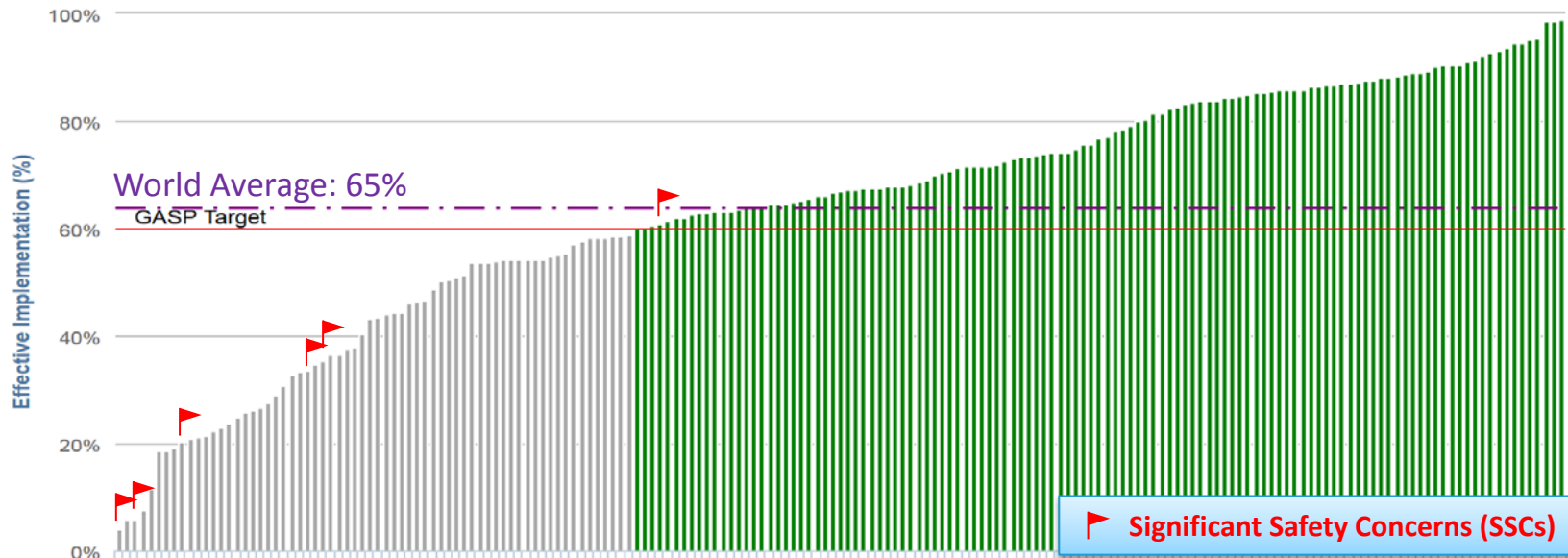


Source: **2017 Safety Report** (<https://www.icao.int/safety/Pages/Safety-Report.aspx>)



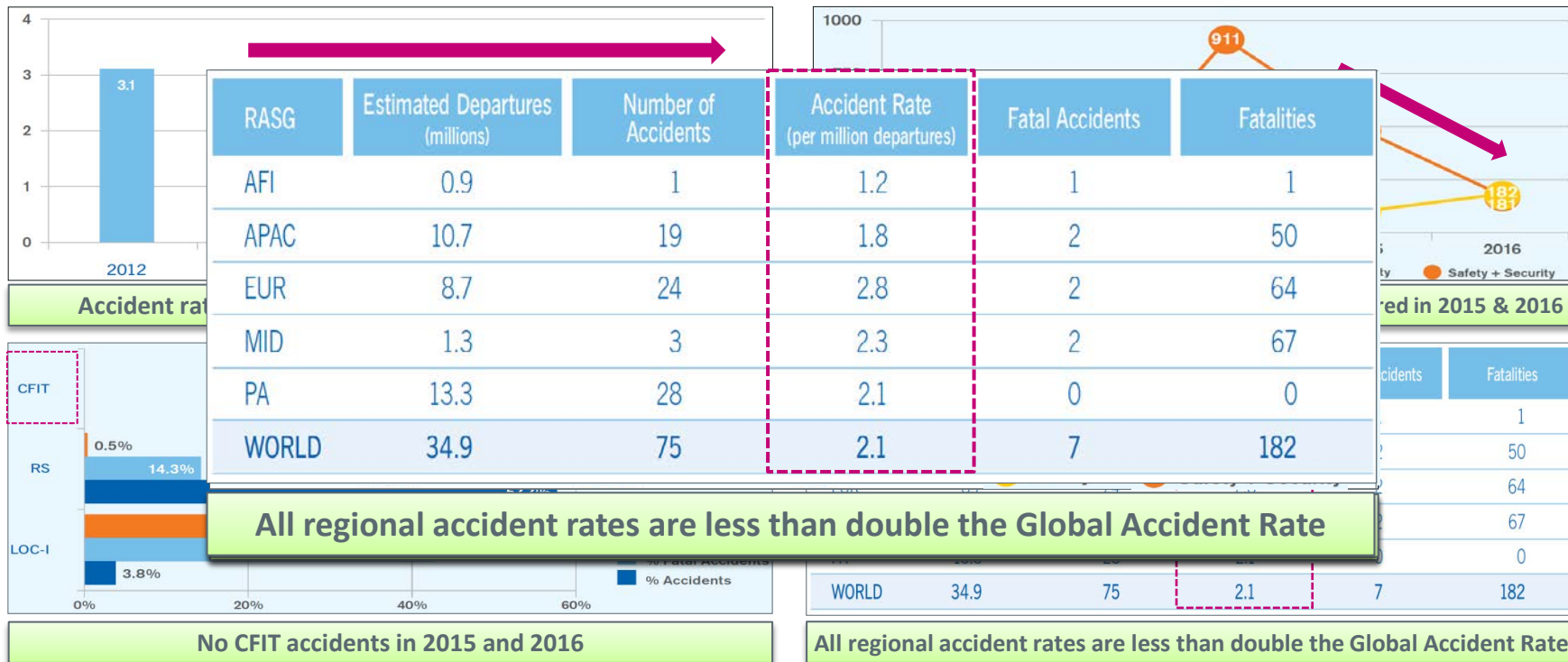


# Effective Implementation of State Safety Oversight



Effective implementation (%) results through USOAP CMA









# We are not that far...

Regional Accident Statistics: 2013

RASG	Estimated Departures (in millions)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	0.7	9	12.9	1	33
APAC	8.6	19	2.2	1	49
EUR	7.9	21			
MID	1.1	2			
PA	13.8	39			
WORLD	32.1	90			

Regional Accident Statistics: 2015

RASG	Estimated Departures (in millions)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	0.8	6	7.3	0	0
APAC	9.8	24	2.5	3	98
			3.0	1	150
			2.5	1	224
			2.6	1	2
			2.8	6	474

For 2016  
PA (NACC/SAM)  
**ZERO fatalities**

Regional Accident Statistics: 2016

RASG	Estimated Departures (in millions)	Number of accidents	Accident rate (per million departures)	Fatal accidents	Fatalities
AFI	0.7	6			
APAC	10.2	18	1.8	3	449
EUR	8.9	26	2.9	1	298
MID	3.0	7	2.3	2	39
PA	9.9	41	4.1	0	0
WORLD	33	98	3.0	7	904

Regional Accident Statistics: 2016

RASG	Estimated Departures (in millions)	Number of accidents	Accident Rate (per million departures)	Fatal Accidents	Fatalities
			1.2	1	1
APAC	10.7	19	1.8	2	50
EUR	8.7	24	2.8	2	64
MID	1.3	3	2.3	2	67
PA	13.3	28	2.1	0	0
WORLD	34.9	75	2.1	7	182

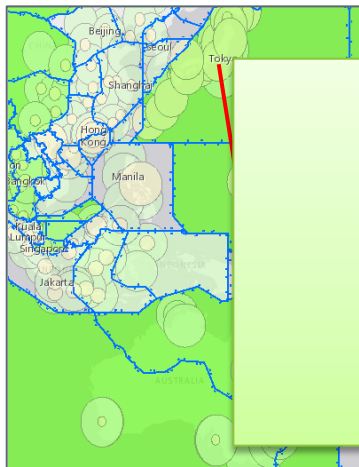




# Current & Emerging Issues



Conflict Zones

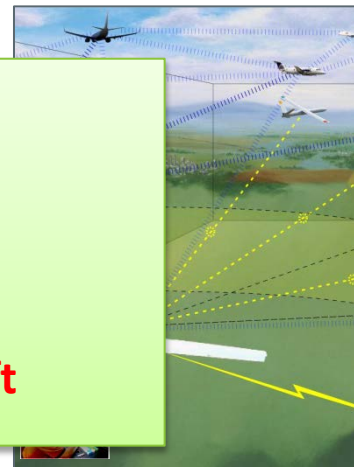


Global Tracking



**What next?**  
**Mental Health**  
**GPS interruption**  
**Cargo Safety**  
**Supersonic aircraft**

Cyber Safety



RPAS



Space Transportation





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Safe Travels: ICAO's agenda for Safety

# What We Have Today







# 2017-2019 Edition of GASP

- **Global safety strategy**
  - ICAO strategic objective on safety
  - GASP objectives
  - Roles of stakeholders
  - Roadmap
- **Focus areas to improve safety**
  - Global safety priorities
  - Emerging priorities
- **GASP framework**
  - Safety performance enablers



[www.icao.int/gasp](http://www.icao.int/gasp)





# GASP Objectives

Effective safety oversight	SSP Implementation	Predictive risk management
RASGs and other fora: mechanisms for sharing of safety information	RASGs: mature regional monitoring and safety management programmes	All States: Implement advanced safety oversight systems, including predictive risk management
States with EI > 60%: SSP implementation		
All States: achieve 60 % EI of CEs	All States: SSP implementation	
2017 (Near Term)	2022 (Mid Term)	2028 (Long Term)





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# WP/3.1

## DRAFT CONCLUSION – GLOBAL AVIATION SAFETY PLAN (GASP)

That States are:

- a) requested to establish a national safety plan, including goals and targets consistent with the regional safety plan, and in line with the GASP objectives, including the global aviation safety roadmap, and based on their operational safety needs; and
- b) invited to provide ICAO feedback on the new global aviation safety roadmap and suggestions for the future 2020 -2022 edition of the GASP via email to: [GASP@icao.int](mailto:GASP@icao.int).





# Amendment 1 to Annex 19

- Integration of CEs with SSP provisions
- Enhancement of SMS provisions to support uniform implementation
  - organizations responsible for type design
  - and/or manufacture of engines and propellers
- Protection of safety data, safety information and related sources
  - Higher level of protection for voluntary reporting systems
  - Protection of mandatory reporting systems

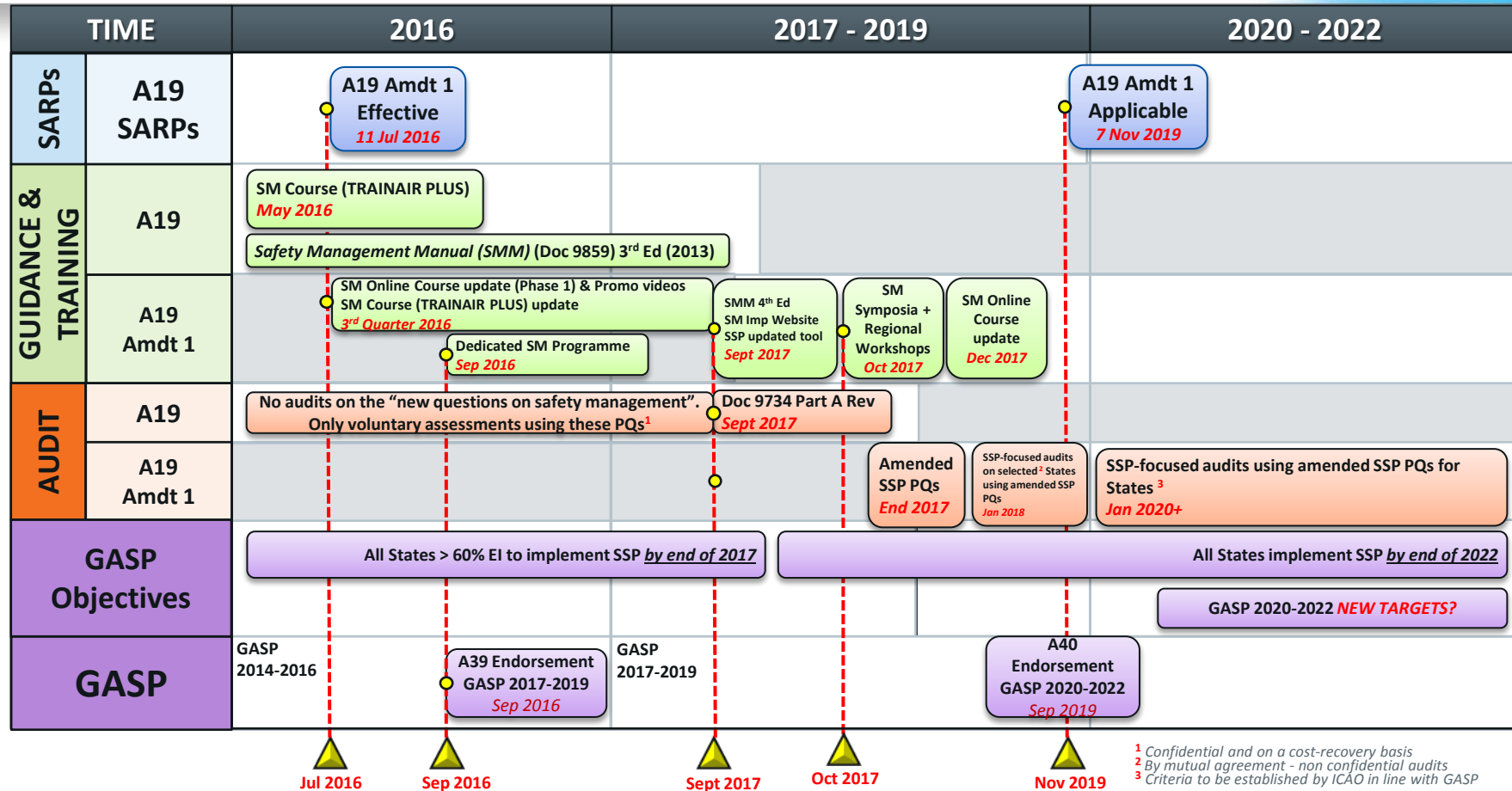




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## WP/3.2

### **Draft Conclusion – Safety Management Implementation**

States, regional and international organizations are invited to share tools and examples which support effective safety management implementation to be considered for posting on the safety management implementation website.

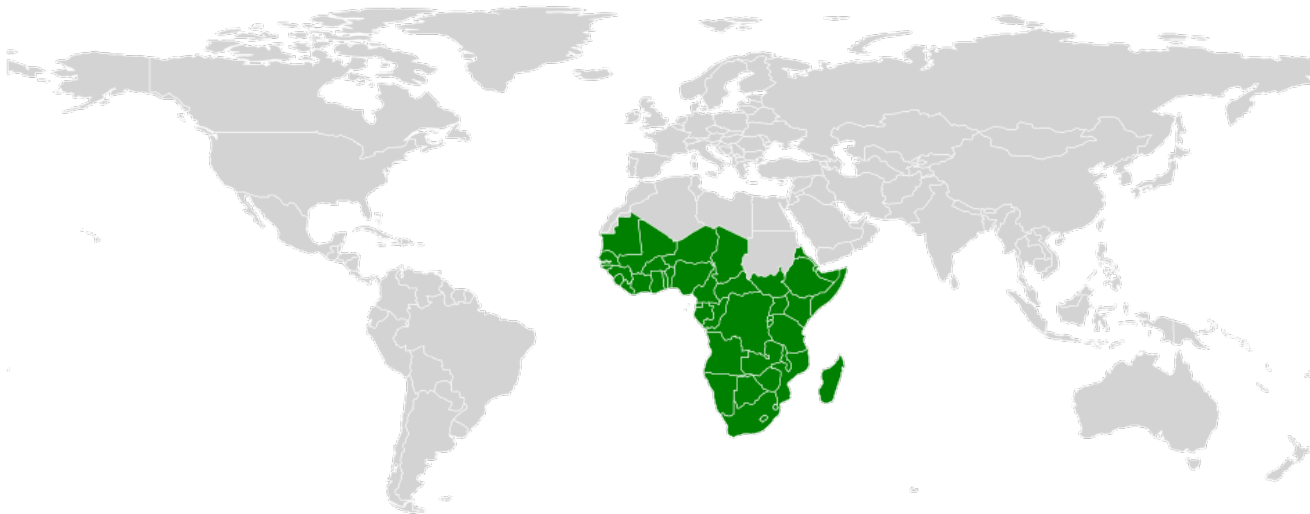




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Safety Update

## REGIONAL STATUS - AFI




Source: **iSTARS 3.0** – MAP Builder (<https://portal.icao.int/space>)






# Regional Safety Briefing



ICAO STATE SAFETY BRIEFING

Page 1/5



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Regional Safety Briefing

RASG-AFI

Automatically Generated by CSO/RSB (2017-10-10)

**Dashboard**

Indicator	Value
State Safety Oversight - Group Average	48.61%
State Safety Oversight - State Levels	50%
Significant Safety Concerns (SSCs)	3
Accident Rate	7.29
IOSA - Airlines	31
IOSA - State Levels	41.67%
EU Safety List	13
FAA IASA	1
PBN Implementation - Runways	77.37%
PBN Implementation - State Levels	60.42%

Dashboard	
Indicator	Value
State Safety Oversight - Group Average <small>Average USOAP Overall E1(%)</small>	48.61%
State Safety Oversight - State Levels <small>Percentage of States with USOAP Overall E1 above 50%</small>	50%
Significant Safety Concerns (SSCs) <small>Number of SSCs</small>	3
Accident Rate <small>Number of accidents per mil. departures over preceding 5 years</small>	7.29
IOSA - Airlines <small>Number of IOSA certified airlines in the region</small>	31
IOSA - State Levels <small>Percentage of States with IOSA certified airlines</small>	41.67%
EU Safety List <small>Number of States with restrictions</small>	13
FAA IASA <small>Number of States rated as Category 2</small>	1
PBN Implementation - Runways <small>Percentage of instrument runways with PBN approaches</small>	77.37%
PBN Implementation - State Levels <small>Percentage of States having PBN approaches on all instrument runways</small>	60.42%





## Regional Accident Rates (2016)

RASG	Accidents	Accident Rate	Fatal Accidents	Fatalities
AFI	1	1.16	1	1
APAC	19	1.78	2	50
EUR	24	2.76	2	64
MID	3	2.3	2	67
PA	32	2.41	0	0
WORLD	79	2.26	7	182

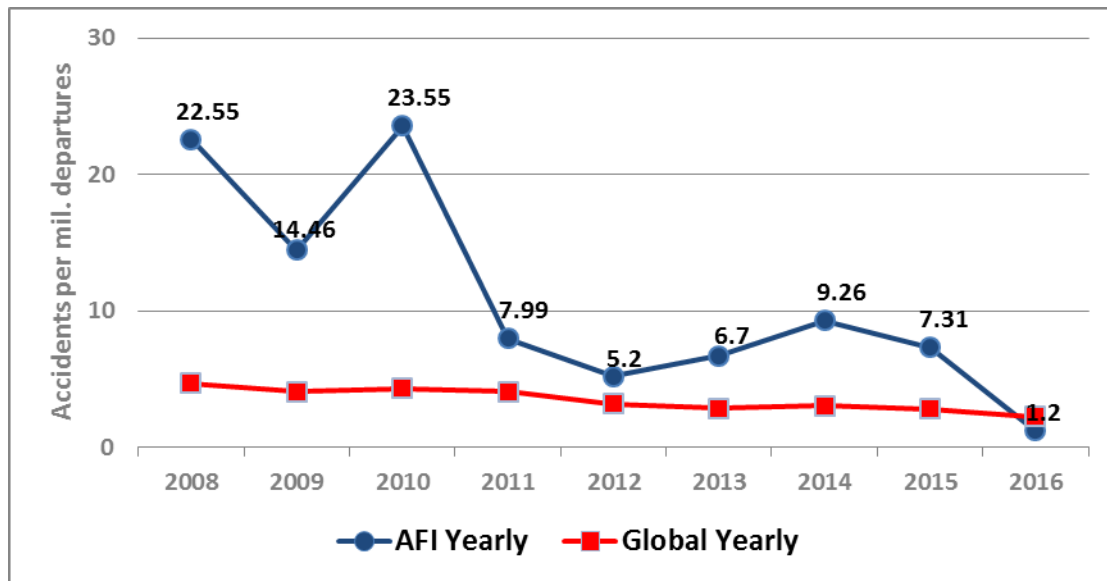
***1 fatal accident in the AFI region***





# Global and AFI Accident Rates

*Scheduled commercial above 5,700kg for 2008 - 2016*



Accident rate for RASF-AFI is **lower** than the global in 2016 but **higher** in 2008-2015



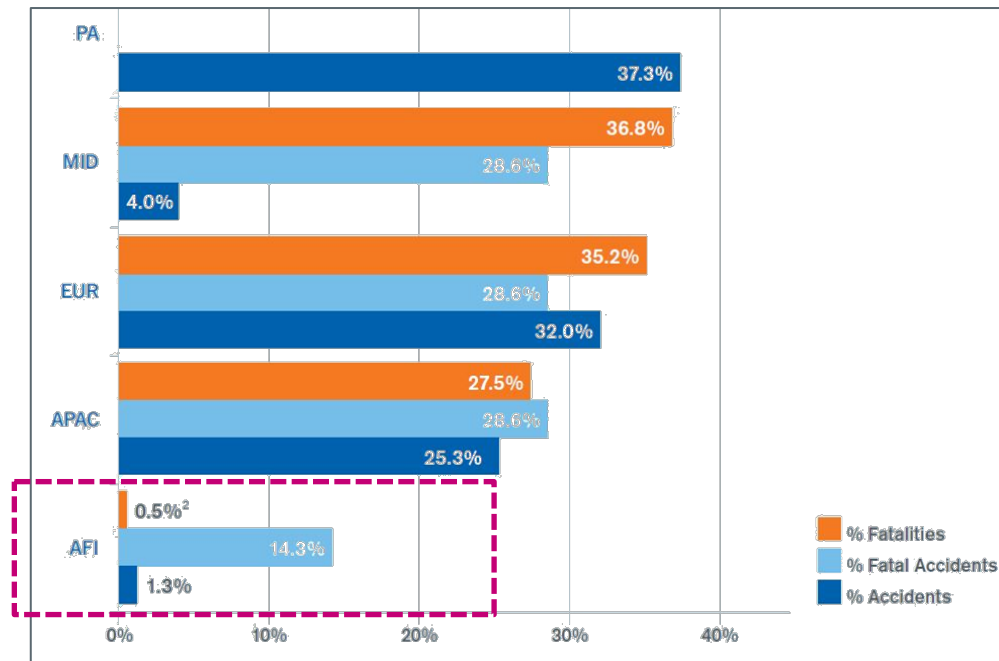
Source: iSTARS 3.0 – Regional Safety Briefing (<https://portal.icao.int/space>)





## Regional Accidents Overview (2016)

**AFI** region accounted for  
1.3% of total accidents and  
0.5% of fatalities



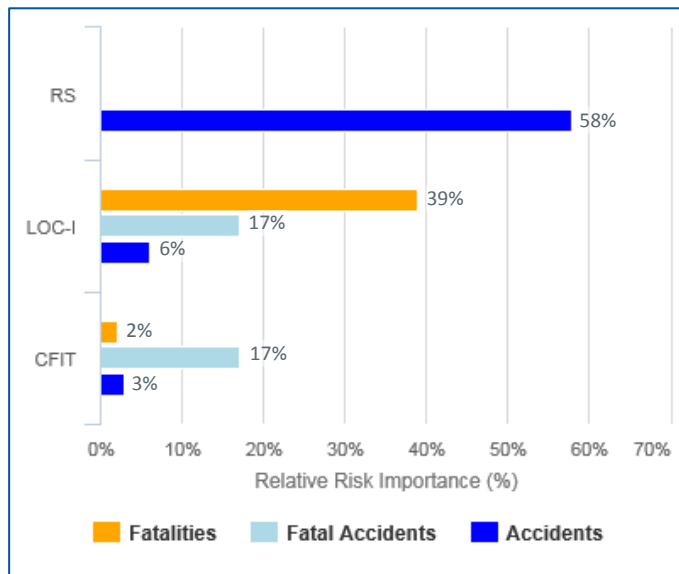




# Risk Distribution for the Top 3 Safety Priorities

*Scheduled commercial above 5,700kg for 2012 - 2016*

AFI



Continue focus  
on the  
**Top 3 Safety Priorities**  
(RS, CFIT, LOC-I)



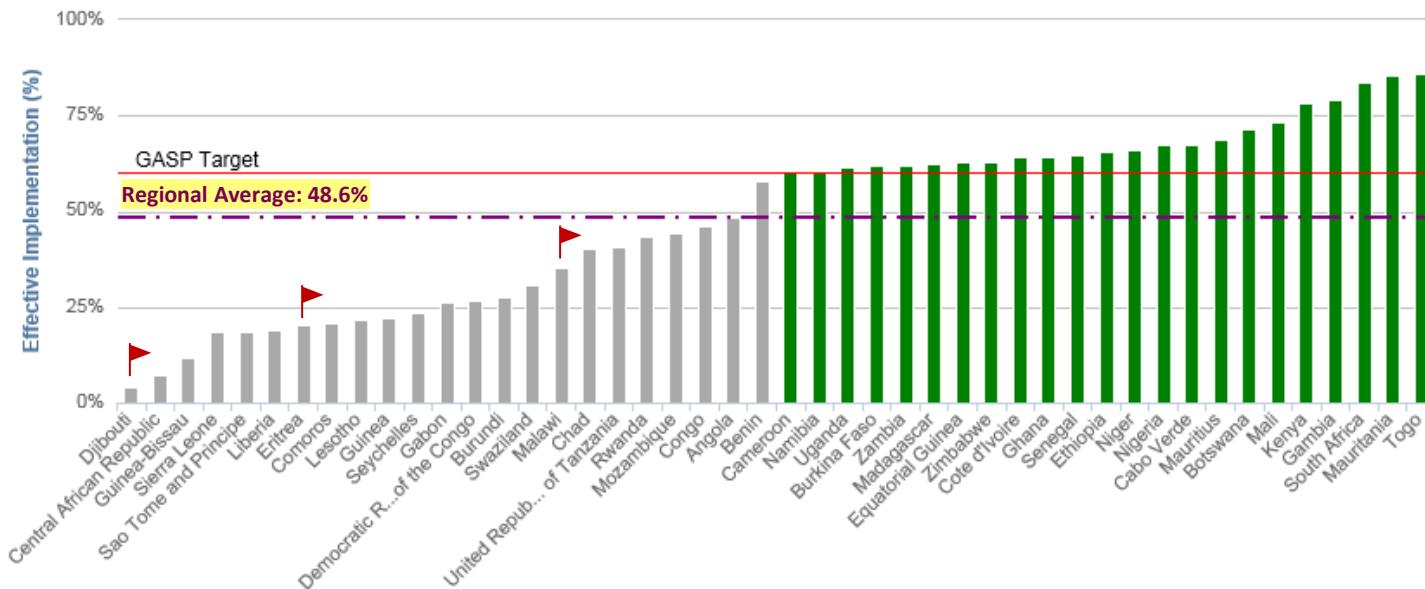
Source: **iSTARS 3.0** – ADREP et al. (<https://portal.icao.int/space>)





# ICAO Safety Audit Results for AFI

Effective implementation of safety oversight systems by State (global average 65%)



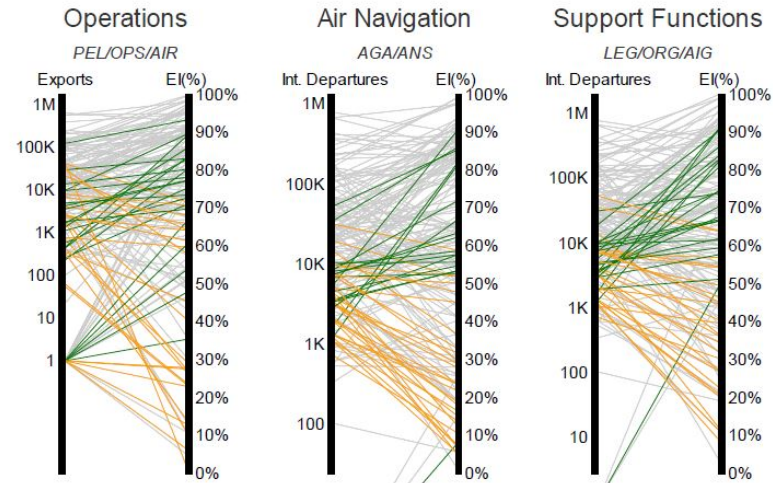
Source: **iSTARS 3.0** – Regional Safety Briefing (<https://portal.icao.int/space>)





# Safety Margins

- The States are prioritized by considering the level of EI as well as the related activity at risk in operations, air navigation and support functions
- The profile of each State is benchmarked against all other ICAO member States
- Priority is given to the least performing areas in ascending order



Top-5 States in each Priority area

<b>Djibouti</b> Safety margin: -73.87%	<b>Seychelles</b> Safety margin: -37.8%	<b>Djibouti</b> Safety margin: -37.22%
<b>Guinea-Bissau</b> Safety margin: -51.37%	<b>Djibouti</b> Safety margin: -34.96%	<b>Central African Republic</b> Safety margin: -34.96%
<b>Seychelles</b> Safety margin: -45.52%	<b>Gabon</b> Safety margin: -33.96%	<b>Lesotho</b> Safety margin: -34.49%
<b>Democratic Republic of the Congo</b> Safety margin: -45.3%	<b>United Republic of Tanzania</b> Safety margin: -29.89%	<b>Seychelles</b> Safety margin: -34.14%
<b>Eritrea</b> Safety margin: -39.12%	<b>Guinea</b> Safety margin: -29.8%	<b>Eritrea</b> Safety margin: -25.25%



Source: **iSTARS 3.0** – Regional Safety Briefing (<https://portal.icao.int/space>)





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Safe Travels: ICAO's agenda for Safety

**What's Next?**







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## Safety Management Assessment Tools



# SSP Foundation Tool now available on iSTARS

- The SSP Foundation Tool **complements the SSP Gap Analysis** and supports the establishment of a **solid safety oversight foundation** for SSP implementation
- A sub-set of 311 PQs (out of 1,099 total USOAP CMA PQs) have been linked to the foundation of an SSP. These PQs are grouped into **17 subject areas**. One of the subject areas is ***“Delegation”***.
- The tool can help States identify weaknesses in their safety oversight system even if they have an EI > 60%.
- States should prioritize and ensure these PQs are addressed when developing their SSP implementation plan.





# Global RSOO Forum Outcomes



- **Global Strategy and Action Plan for the Improvement of Regional Safety Oversight Organizations (RSOs) and the Establishment of a Global System for the Provision of Safety Oversight**
  - Improvement and strengthening of RSOs (evaluation & manual revision)
  - Develop and implement an RSO cooperative platform
  - **Develop and implement a global aviation safety oversight system (GASOS) – study group & feasibility study**





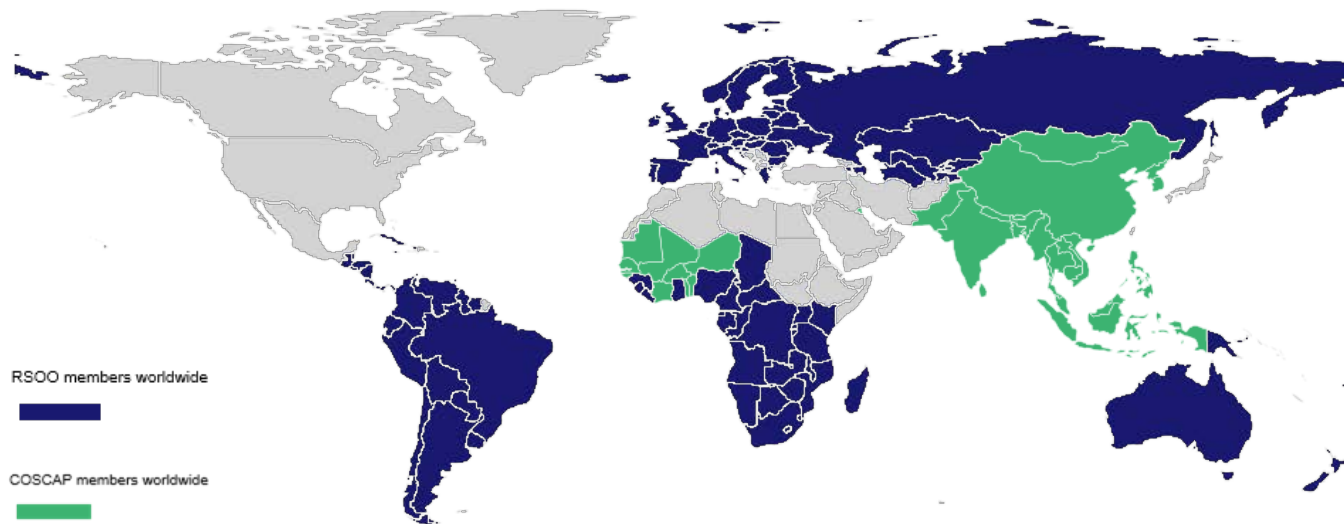
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## RSOOs (including COSCAPs)







## GASOS Objectives

- **Strengthen regional safety oversight support mechanism** to form a global aviation safety oversight system
- ICAO responsible for **establishing and maintaining an inventory of competent safety oversight providers** and the functions that they provide
- Regional mechanisms and safety oversight providers to demonstrate competence in the functions that they offer to provide States, in order to qualify as an **ICAO evaluated and registered safety oversight provider**
- **Linked to next edition of the GASP and future evolution of the USOAP**; also considering CAA inspector requirements





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## WP/3.3

### **DRAFT Conclusion - Regional Safety Oversight Organizations (RSOOs)**

That States,

- a) accordingly implement the relevant provisions of the Ezulwini Ministerial Declaration on Regional Safety Oversight Organizations in Africa;
- b) are urged to support the proposed global strategy and action plan to improve and strengthen existing RSOOs and the establishment of a global system for the provision of safety oversight (Appendix A);
- c) endorse the objectives for a global system for the provision of safety oversight; and
- d) RASG-AFI organs are encouraged to participate in and contribute to the AFI Plan study for the strengthening and improvement of RSOOs in the AFI region as well as the study of a proposed Global Aviation Safety Oversight System (GASOS).





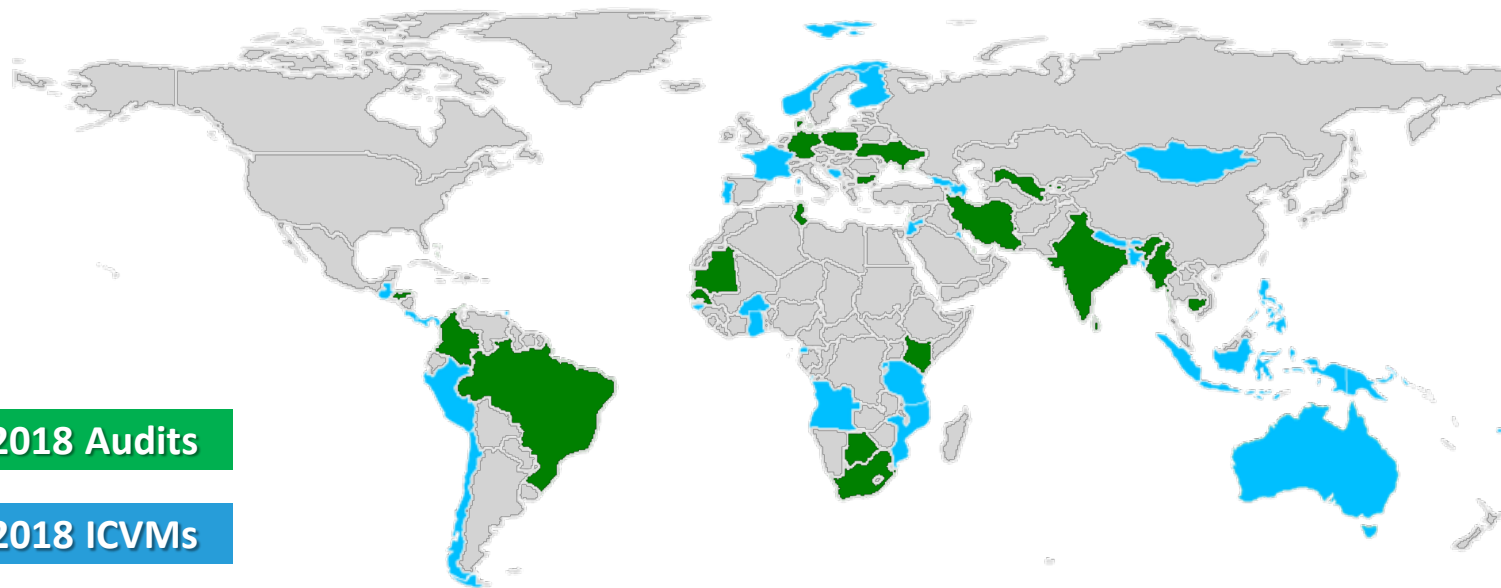
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# USOAP Activity Plan (EB 2017/35)



2017-2018 Audits

2017-2018 ICVMs





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## WP/3.4

### **DRAFT Conclusion – ICAO USOAP CMA Implementation**

That States are urged to fulfil their obligations under the USOAP CMA Memorandum of Understanding (MOU) and to take actions as needed to provide up-to-date information on their safety oversight systems, with particular attention to:

- a) States with an SSC, focus on implementing sustainable corrective and immediate mitigation actions to resolve the SSC with a high priority;
- b) finalise draft and submit the Corrective Action Plans (CAPs) on the On-line Framework (OLF), informing the ICAO Regional Office when complete and ready for review;
- c) complete the compliance checklist/EFOD and update the SAAQ;
- d) implement the CAPs and complete the self-assessment of the PQs on the OLF, including uploading the evidence documents, to report the progress on the OLF, informing the ICAO Regional Office when complete and ready for validation; and
- e) request assistance from the ICAO Regional Office and/or COSCAP/RSOO, if required.





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ICAO's agenda for Safety

# 2020-2022 Edition of the GASP





# 2020-2022 Edition of GASP

Aspirational Goal:  
*Zero Fatalities*

GASP Goals:  
*Organizational*

Targets:  
*Oversight*

Indicators

Targets:  
*SM*

Indicators

GASP Goals:  
*Operational*

Targets:  
*Accidents*

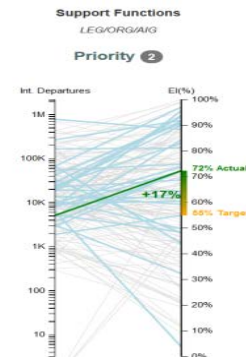
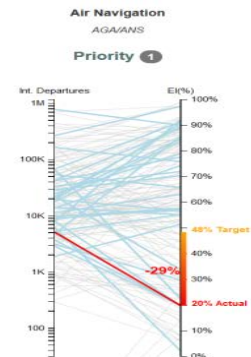
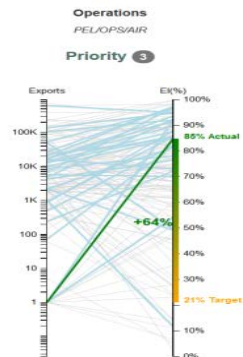
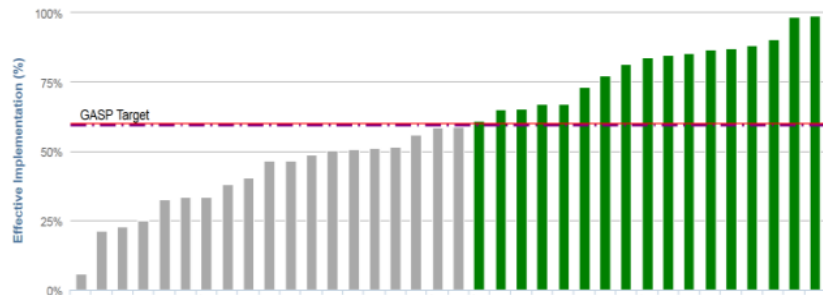
Indicators

Targets:  
*Safety Risks*

Indicators



# 2020-2022 Edition of GASP





## 6 Proposed GASP Goals

1. Achieve a continuous reduction of operational safety risks
2. Strengthen States' safety oversight capabilities
3. Implement SSPs
4. Increase collaboration at the regional level
5. Increase the use of industry programmes
6. Ensure the appropriate infrastructure is available to support safe operations





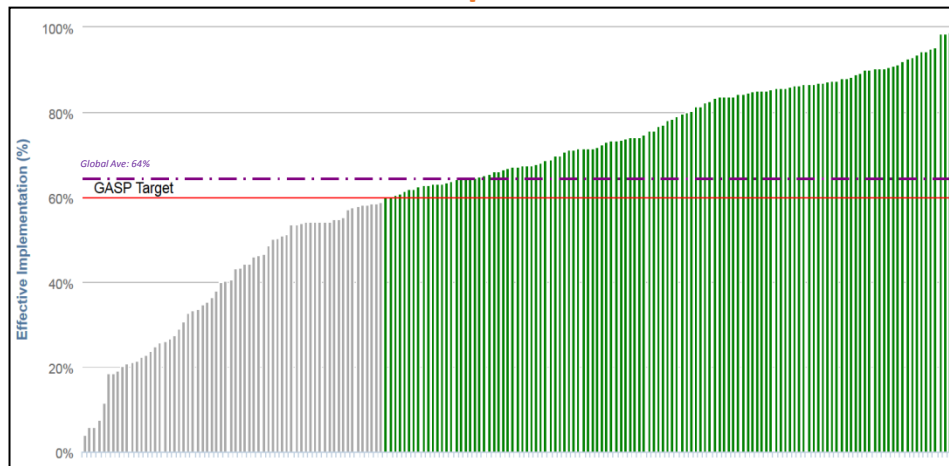
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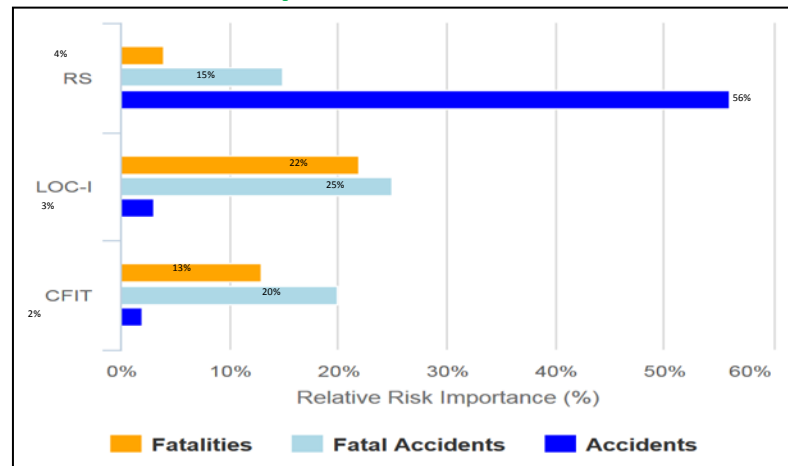


## Effective Implementation



USOAP Audit Results

## Operational Risks



Scheduled Commercial flights on airplanes above 5.7t 2012-2016

TARGET 4.1	TARGET 2.1	TARGET 2.2	TARGET 6.1	TARGET 3.1	TARGET 3.2	TARGET 1.1	TARGET 5.2	TARGET 4.2	TARGET 4.3	TARGET 5.1
ICAO Recognized functions	Implement Safety Oversight	Positive Safety Margin	Appropriate Infra- structure	Foundation of SSP	Effective SSP	Decreasing Accident rate	Harmonized SPIs in SMS	Safety risk information to RASG	RASG Risk mgmt. activities	INDUSTRY assessment programmes
2020	2022	2022	2022	2023	2025	Yearly	2020	2022	2022	2022





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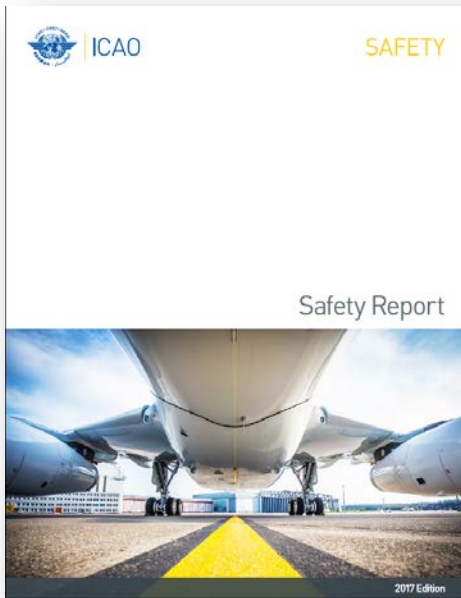
## Effective Implementation

## Operational Risks

TARGET 4.1	TARGET 2.1	TARGET 2.2	TARGET 6.1	TARGET 3.1	TARGET 3.2	TARGET 1.1	TARGET 5.2	TARGET 4.2	TARGET 4.3	TARGET 5.1
ICAO <b>Recognized functions</b>	Implement <b>Safety Oversight</b>	Positive <b>Safety Margin</b>	Appropriate <b>Infra- structure</b>	Foundation of <b>SSP</b>	Effective <b>SSP</b>	Decreasing <b>Accident rate</b>	Harmonized SPIs in <b>SMS</b>	Safety risk information to <b>RASG</b>	<b>RASG</b> Risk mgmt. activities	<b>INDUSTRY</b> assessment programmes
States that need support in areas with safety margins below zero, to use a RSOO's or another State's ICAO- recognized functions	All States to fully implement the core elements of a safety oversight system	All States to reach a positive safety margin, in all categories	All States to implement the air navigation and airport core infrastructure	All States to implement the foundation of a State safety programme (SSP)	All States to implement an Effective SSP, as appropriate to their aviation system complexity	Maintain a decreasing trend of global accident rate	All service providers to use globally harmonized SPIs, as part of their safety management systems (SMS)	All States to contribute information on safety risks, including SSP performance indicators (SPIs), to their respective Regional Aviation Safety Groups (RASGs)	All States with a positive safety margin, and an Effective SSP, to actively engage in RASGs' safety risk management activities	Increase the number of service providers participating in the corresponding, ICAO- recognized industry assessment programmes
2020	2022	2022	2022	2023	2025	Yearly	2020	2022	2022	2022



# National, Regional and Global HRC





# SECOND GLOBAL RUNWAY SAFETY SYMPOSIUM

**GRSS2017**

Lima, Peru, 20 - 22 November 2017

Free registration for aviation professionals, **REGISTER TODAY!**

- Co-organised with the Runway Safety Programme Partners



- Hosted by the Perú Ministerio de Transportes y Comunicaciones

- Event in English/Spanish, with 300 participants expected

- **Objectives:**

- provide a global forum to **exchange information on best practices** in improving runway safety through the use of effective and innovative strategies, tools, technology and practices
- promote improved runway safety worldwide through **global collaboration** and sharing strategies and best practices;
- promote the ICAO-led collaborative new **Runway Safety Programme Action Plan** for supporting and strengthening runway safety initiatives;
- promote the **participation of stakeholders in regional initiatives** related to runway safety; and
- increase the number and improve the effectiveness of **airport Runway Safety Teams (RSTs)** under a risk-based approach in relation to airport safety management systems (SMS).





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# NEXT GENERATION OF AVIATION PROFESSIONALS GLOBAL SUMMIT

ICAO HQ MONTRÉAL, 27-28 NOV 2017

- Gather aviation and education sectors
- Promote NGAP including STEM and gender equality
- Supported by **UNESCO** and **UNWOMEN**
- Events:
  - Summit with panels
  - Model ICAO Forum for students
  - Speed mentoring for students
  - Exhibition and careers fair for students
- <https://www.icao.int/Meetings/NGAPGS-Montreal/Pages/default.aspx>





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GANIS  
SANIS  
2017

- > Second Global Air Navigation Industry Symposium (GANIS/2)
- > Safety and Air Navigation Implementation Symposium (SANIS)

ICAO Headquarters, Montréal, Canada, 11 to 15 December 2017

Global Aviation Safety & Air Navigation Updates

## GANIS/SANIS – GLOBAL PLANNING FOR THE 40<sup>TH</sup> ASSEMBLY





# GLOBAL FORUM ON PIRGs/RASGs

- **13 December 2017, Montréal, Canada**

*(to be held during the GANIS/SANIS Symposium)*

- Support implementation of meaningful operational improvements by exchanging information for the improvement of safety, capacity and efficiency through a Global PIRG/RASG Forum
- Chairperson/Vice-chairperson participation



# Safety Management Regional Symposia and Workshops



- **EUR/NAT** – Hosted by EC & Estonian Presidency in Tallinn / 16-18 October 2017
- **NACC and SAM** – Hosted by Peru in Lima / 12 – 16 March 2018
- **APAC and MID** – Hosted by Singapore / 23 - 26 April 2018
- **ESAF and WACAF** – 2018 (exact dates and location to be confirmed)

**Note: 4 Workshops to be delivered with Symposia plus additional planned**





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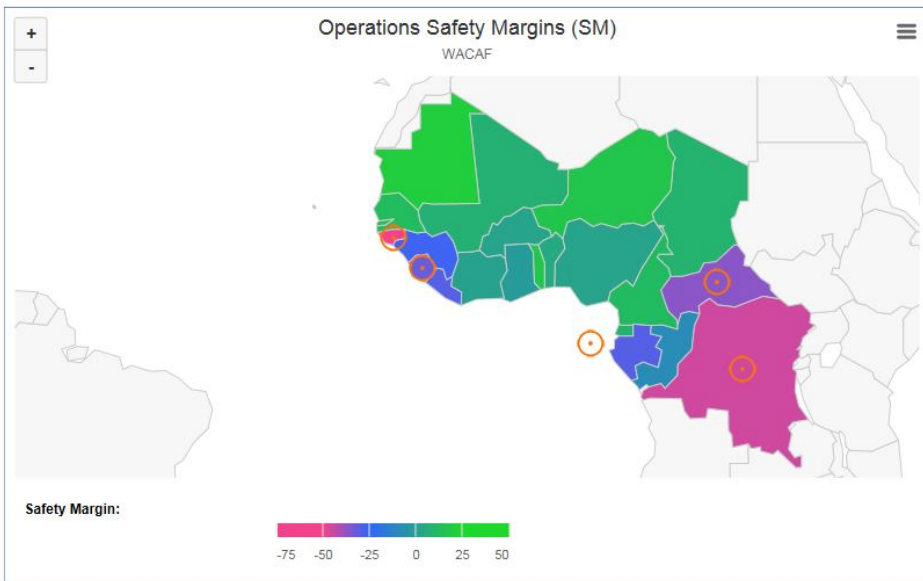
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# ASIAP Prioritization WACAF

## Operations (OPS/AIR/PEL)



## List of Priority States

Guinea-Bissau	⚠ Negative Safety Margin	⚠ High Corruption Concerns
Democratic Republic of the Congo	⚠ Negative Safety Margin	⚠ Politically Unstable ⚠ High Corruption Concerns
Central African Republic	⚠ Negative Safety Margin	⚠ Politically Unstable ⚠ High Corruption Concerns
Sao Tome and Principe	⚠ Negative Safety Margin	
Sierra Leone	⚠ Negative Safety Margin	⚠ High Corruption Concerns

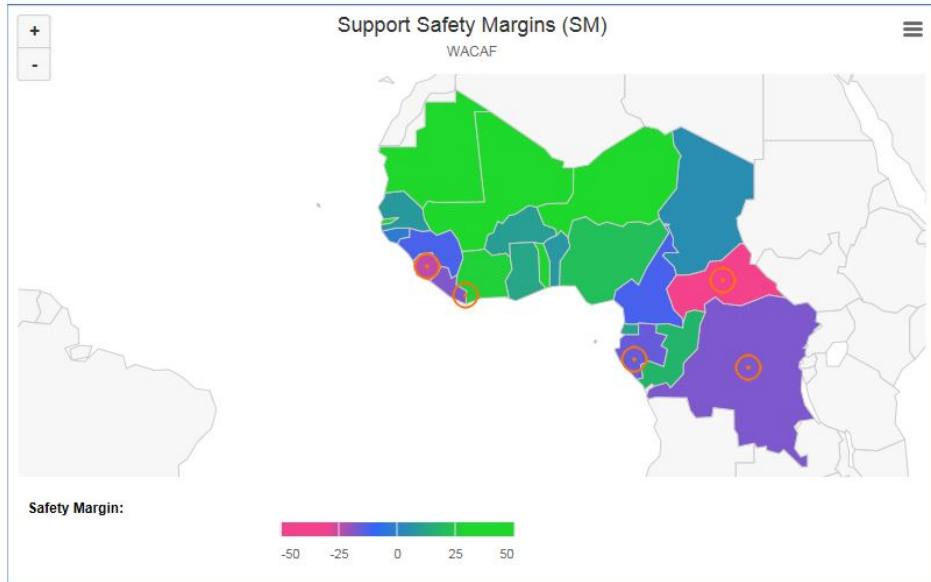


Source: *iSTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)



# ASIAP Prioritization WACAF

Support (LEG/ORG/AIG)



## List of Priority States

Central African Republic	⚠ Negative Safety Margin	⚖ Politically Unstable ⚡ High Corruption Concerns
Sierra Leone	⚠ Negative Safety Margin	⚡ High Corruption Concerns
Liberia	⚠ Negative Safety Margin	
Democratic Republic of the Congo	⚠ Negative Safety Margin	⚖ Politically Unstable ⚡ High Corruption Concerns
Gabon	⚠ Negative Safety Margin	

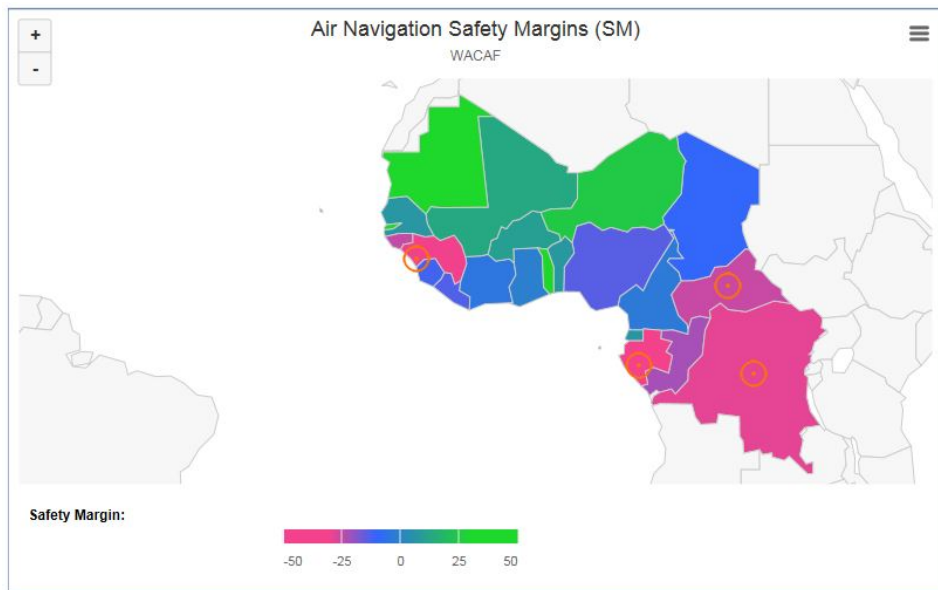


Source: *ISTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)



# ASIAP Prioritization WACAF

## Air Navigation (ANS/AGA)



## List of Priority States

Gabon	 Negative Safety Margin	
Guinea	 Negative Safety Margin	 High Corruption Concerns
Democratic Republic of the Congo	 Negative Safety Margin	 Politically Unstable  High Corruption Concerns
Central African Republic	 Negative Safety Margin	 Politically Unstable  High Corruption Concerns
Guinea-Bissau	 Negative Safety Margin	 High Corruption Concerns



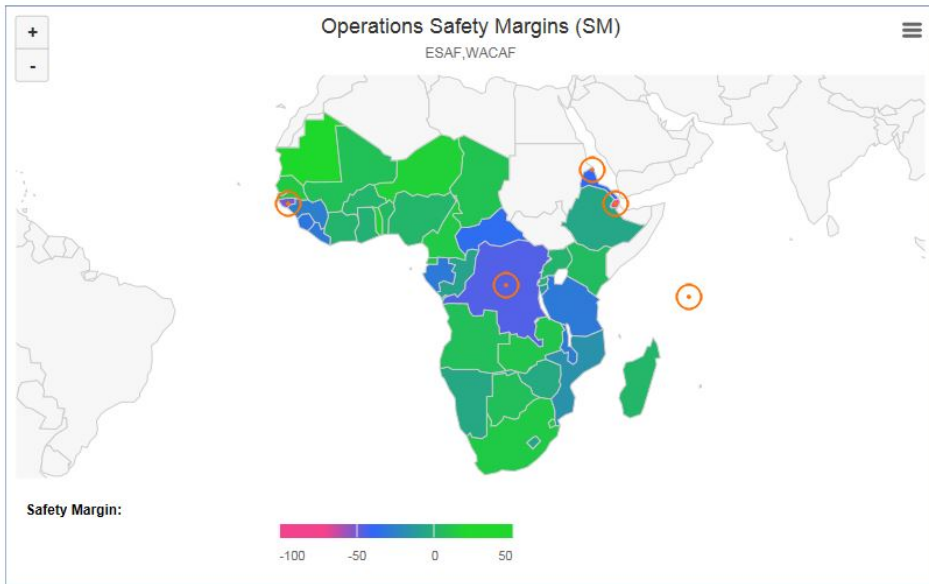
Source: *ISTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)



# ASIAP Prioritization ESAF

## Operations (OPS/AIR/PEL)

### List of Priority States



Malawi	<div> <div></div> <div>Significant Safety Concern</div> </div> <div> <div></div> <div>Negative Safety Margin</div> </div>	<div> <div></div> <div>High Corruption Concerns</div> </div>
Djibouti	<div> <div></div> <div>Significant Safety Concern</div> </div> <div> <div></div> <div>Negative Safety Margin</div> </div>	
Guinea-Bissau	<div> <div></div> <div>Negative Safety Margin</div> </div>	<div> <div></div> <div>High Corruption Concerns</div> </div>
Seychelles	<div> <div></div> <div>Negative Safety Margin</div> </div>	<div> <div></div> <div>Above Average GDP per Capita</div> </div>
Democratic Republic of the Congo	<div> <div></div> <div>Negative Safety Margin</div> </div>	<div> <div></div> <div>Politically Unstable</div> </div> <div> <div></div> <div>High Corruption Concerns</div> </div>
Eritrea	<div> <div></div> <div>Significant Safety Concern</div> </div> <div> <div></div> <div>Negative Safety Margin</div> </div>	<div> <div></div> <div>Politically Unstable</div> </div> <div> <div></div> <div>High Corruption Concerns</div> </div>

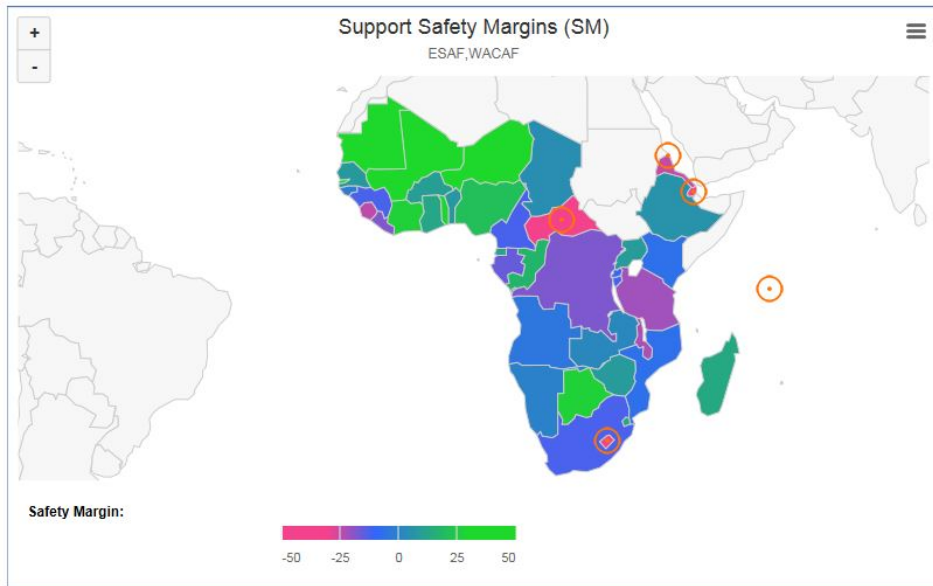


Source: *iSTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)



# ASIAP Prioritization ESAF

Support (LEG/ORG/AIG)



## List of Priority States

Djibouti	█ Negative Safety Margin	
Central African Republic	█ Negative Safety Margin	<div>⚖ Politically Unstable</div> <div>⚡ High Corruption Concerns</div>
Lesotho	█ Negative Safety Margin	
Seychelles	█ Negative Safety Margin	<div>💰 Above Average GDP per Capita</div>
Eritrea	█ Negative Safety Margin	<div>⚖ Politically Unstable</div> <div>⚡ High Corruption Concerns</div>

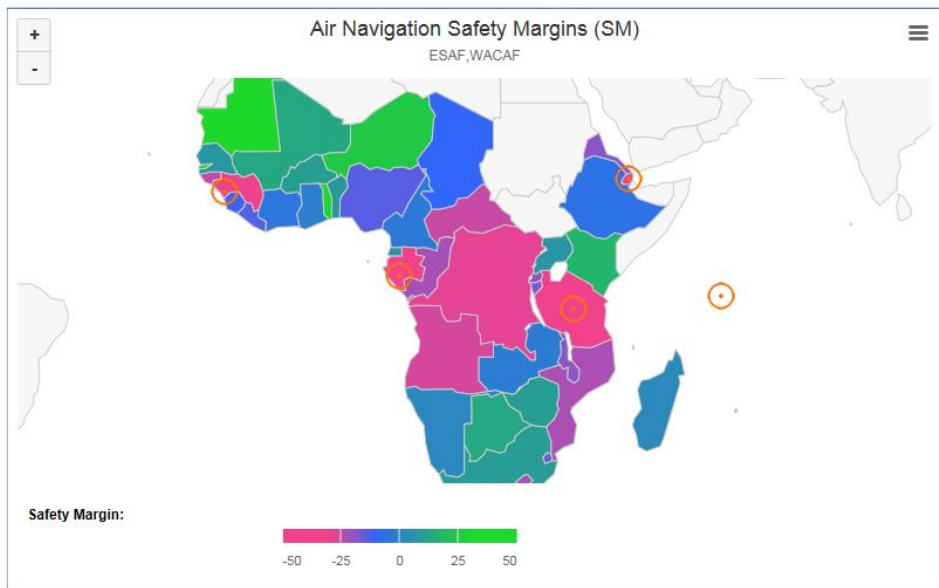


Source: *ISTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)



# ASIAP Prioritization ESAF

## Air Navigation (ANS/AGA)



## List of Priority States

Seychelles	⚠ Negative Safety Margin	📊 Above Average GDP per Capita
Djibouti	⚠ Negative Safety Margin	
Gabon	⚠ Negative Safety Margin	
United Republic of Tanzania	⚠ Negative Safety Margin	
Guinea	⚠ Negative Safety Margin	⚠ High Corruption Concerns



Source: *ISTARS 3.0 – ASIAP Prioritisation* (<https://portal.icao.int/space>)