



ICAO

**Safety**

# RASG-AFI

## Annual Safety Report 2018



### **Fifth Edition**

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## Foreword

The Steering Committee of the Regional Aviation Safety Group for Africa-Indian Ocean (RASC) constituted the Annual Safety Report Team (ASRT) tasked with the production of an annual report on aviation safety in the RASG-AFI Region. The report provides safety information from different available sources to determine the main safety risks in the Region and making recommendations to the RASG-AFI for safety enhancement initiatives. Stakeholders are therefore encouraged to continually collaborate and cooperate with the ASRT in sharing and exchanging safety information for the good of aviation safety within the RASG-AFI.

The progress and effectiveness of States in achieving the objectives and priorities of the Abuja Safety Targets as revised in 2017 are measured on an on-going basis. Monitoring and reporting progress enables States and the ICAO regional offices to modify their activities based on their performance and to address emerging safety issues. To support States in this endeavour, an annual safety report, which provides an indication of the progress being made, is published by the RASG-AFI on a yearly basis.

While the RASG-AFI Annual Safety Report (ASR) is an annual publication, it is intended to be released and distributed during the AFI Aviation Safety Symposium, which is an annual event organized by ICAO and hosted by an AFI Member State. Comments and contributions from the general readership geared towards improving the quality of the document are highly welcome.

The ASR is organized in Section headings. A Table of Contents is provided which serves as a subject index.

Conclusions drawn and recommendations made in the Report are for the attention and appropriate action by relevant parties for timely implementation. Subsequent editions of the Report will provide information on the outcome of the assessment and the status of implementation of such recommendations; and any alternative course(s) of action that could be undertaken in addressing the outstanding issues.

An electronic copy of the RASG-AFI Annual Safety Report will also be available in PDF format, on the ICAO Western and Central African Regional Office website: <http://www.icao.int/wacaf/Pages/default.aspx> and on the ICAO Eastern and Southern African Regional Office website: <http://www.icao.int/esaf/Pages/default.aspx>.



**Mr. Levers Mabaso**

**Chairperson, RASG-AFI**

**ICAO Council Representative**

**Republic of South Africa**

## Background

This Fifth Edition of the RASG-AFI Annual Safety Report provides safety information related to accidents and occurrences in the RASG-AFI region. It also provides background on the establishment of the Regional Aviation Safety Group for Africa - Indian Ocean (RASG-AFI). This edition of the Report was released during the Safety Symposium in May 2019 in Kampala, Uganda. The RASG-AFI was endorsed by the fourth Meeting of the Directors-General of Civil Aviation Authorities of the ICAO Western and Central African (WACAF) and Eastern and Southern African (ESAF) States held in Matsapha, The Kingdom of Swaziland, from 8 to 9 November 2010. However, the structure and terms of reference for RASG-AFI were approved by the first meeting of RASG-AFI which was held at the Imperial Royal Hotel in Kampala, Uganda, from 26 to 27 March 2012.

RASG-AFI is the main driver behind the planning and implementation of Safety Enhancement Initiatives (SEIs) at the regional level. It is composed of States, regional entities and industry, among others. RASG-AFI builds on work already done by States, existing regional organizations such as the COSCAPs and RSOOs. It serves as regional cooperative forum integrating global, regional, national and industry efforts in continuing to enhance aviation safety within the RASG-AFI Region and worldwide. It endeavours to eliminate duplication of efforts through the establishment of cooperative regional safety programmes. This coordinated approach significantly reduces both financial and human resource burdens on States while delivering measurable safety improvements.

The role of RASG-AFI is to monitor the implementation of the Abuja Safety Targets; within the Global Aviation Safety Plan (GASP), which presents the strategy which supports the prioritization and continuous improvement of aviation safety, includes the following:

- a) supporting and monitoring progress towards the achievement of the GASP goals at the regional level;
- b) developing and implementing a regional aviation safety plan consistent with the GASP, and coordinating its implementation at the regional level;
- c) structuring its work in line with the GASP to address organizational challenges, operational safety risks, emerging safety issues, and safety performance management;
- d) identifying safety risks and issues of priority, and encouraging States to initiate action using the roadmap;
- e) coordinating and tracking regional Safety Enhancement Initiatives (SEIs) and GASP indicators;
- f) coordinate with APIRG on safety issues and provide feedback to ICAO to continually improve and ensure an up-to-date global safety framework;
- g) monitoring safety performance indicators (SPIs) from States and identifying where action is needed;
- h) providing technical assistance to States, for example by identifying subject matter experts, and conducting workshops and facilitating training; and

- i) serving as the focal point to coordinate regional efforts and programmes related to the GASP aimed at mitigating operational safety risks.

The RASG-AFI structure consists of a Chairperson, two (2) RASG-AFI Vice-Chairpersons from States and one (1) RASG-AFI Vice-Chairperson from the Aviation Industry, one (1) Steering Committee, Secretariat and four (4) Safety Support Teams.

In accordance with the RASG-AFI Procedural Handbook, the Contracting States entitled to participate as members in the RASG-AFI meetings are:

- those whose territories or dependencies are located partially or wholly within the AFI Region (ESAF and WACAF accredited States; see **Appendix 1** for the list of Members of RASG-AFI); and
- those located outside the area which have notified ICAO that aircraft on their registry or aircraft operated by an operator whose principal place of business or permanent residence is located in such States, operate or expect to operate into the area; or which provide facilities and services affecting the area.

Contracting States not meeting the above criteria and non-Contracting States are entitled to participate in RASG-AFI meetings as observers. The aircraft operators, international organizations, maintenance and repair organizations, regional and sub-regional organizations, training organizations, aircraft original equipment manufacturers, airport and air navigation service providers and any other allied organizations/representatives will be invited to attend the RASG-AFI meetings in the capacity of Partners (see **Appendix 2** for Permanent Partners).

A RASG-AFI-Steering Committee (RASC) composed of representatives from States and international/regional organizations and industry is established to guide the work of the Group. It acts as an advisory body to the RASG-AFI membership and undertakes any actions required to ensure that the RASG-AFI achieves its objective to reduce aviation risks in the AFI Region. It is headed by three co-chairpersons (two from States and one from Industry). Its membership has been expanded to include the AFI Plan Steering Committee Chairperson, the Coordinator for the AFI Group at ICAO Council, and the various Safety Support Teams (SSTs) Champions. These SSTs which are headed by Champions who are members of the RASC, were established for the following priority areas namely: Significant Safety Concerns (SSCs), Fundamentals of Safety Oversight (FSO), Aircraft Accident Investigation (AIG) and Emerging Safety Issues (ESI). The term for the Chairperson, Vice-Chairpersons and Champions is two (2) years.

The following Safety Champions have been designated: SSC – Ghana, South Africa and AFCAC; FSO - Senegal and Uganda; AIG –Ethiopia, Cape Verde and IFALPA; and ESI – Kenya, ASECNA, and ACI.

The two ICAO Regional Directors for Eastern and Southern Africa (ESAF) and Western and Central Africa (WACAF) will alternate in serving as Secretary to the RASG-AFI and APIRG to balance the Secretariat responsibilities between these two regional Groups.

At its Fourth Meeting held in Nairobi, Kenya, in October, 2017, RASG-AFI elected the following officials to the Bureau, who are entrusted with steering the affairs of the Group for the next two years ending RASG-AFI/5 in 2019:

Chairperson – South Africa; 1st Vice-Chairperson – Togo; 2nd Vice-Chairperson – Kenya; 3rd Vice-Chairperson – IATA. The RASG-AFI Steering Committee is co-chaired by the 1st Vice-Chairperson and the 2nd Vice-

Chairperson of the RASG-AFI and Boeing representing the Industry (see **Figure 1**).

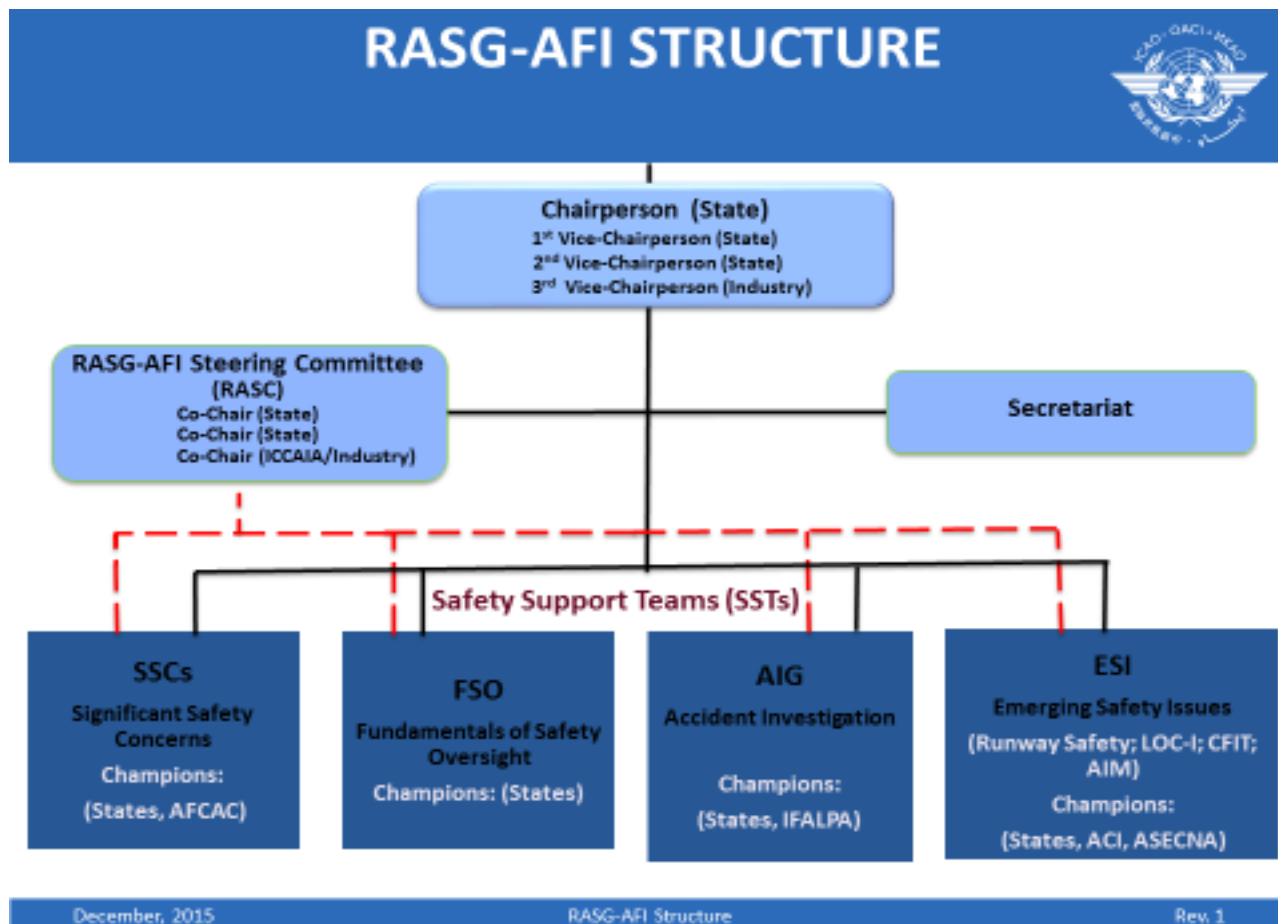
A Joint APIRG-RASG/AFI Coordination Task Force, which was established by the RASG-AFI/3 Meeting. is a subsidiary body to APIRG and RASG-AFI intended to strengthen existing arrangements and responsible for coordinating the activities of the two Groups.

Membership of the APIRG/RASG-AFI Joint Coordination Task Force comprises designated Representatives from APIRG and RASG-AFI. RASG-AFI Representatives include: two (2) Representatives (one (1) from Secretariat and one from an AFI State); 1 Representative from AFCAC; and Airbus representing the Industry.

RASG-AFI has established an Annual Safety Report Team (ASRT) comprising RASG-AFI Partners, for the purpose of: gathering safety information from different available sources to determine the main safety risks in the AFI Region; generating an Annual Safety Report; making recommendations to the RASG- AFI for safety enhancement initiatives.

This Annual Safety Report has a consolidated vision of aviation safety using sources of information from regional stakeholders, and serves as a key component of RASG-AFI. To this end, RASG-AFI members are encouraged to share their safety data with the ASRT.

**Figure 1: RASG-AFI Organisational Structure**





## 1 Executive Summary

This Fifth Edition of the RASG-AFI Annual Safety Report presents safety information collected from ICAO, Boeing, ACI Africa, IATA, and other aviation partners, particularly information related to aviation occurrences in the RASG-AFI Region, generally within the period 2014 to 2018, and the analyses performed by the Annual Safety Report Team (ASRT). This edition of the ASR maintains some key elements from its previous edition, such as goals for States to improve their effective safety oversight capabilities and to progress in the implementation of State Safety Programmes (SSPs). The vision of the RASG-AFI is to achieve and maintain the aspirational safety goal of zero fatalities in commercial operations by 2030 and beyond, which is consistent with the United Nations' *2030 Agenda for Sustainable Development*.

The Annual Safety Report includes the following three main sections:

1. Reactive safety information
2. Proactive safety information
3. Predictive safety information

The reactive safety information section represents the largest portion of the report. It contains analysis of accident data provided from the different sources in order to draw conclusions on areas that require much attention and make recommendations for resolving the safety deficiencies by means of mitigating and corrective measures.

The proactive safety information is based on the results of the ICAO USOAP-CMA Activities, IOSA, ISAGO and AIAG reports as well as other occurrences (Incidents) reported by States or airlines in order to identify emerging risks in the Region.

The results of the ICAO Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) Activities in 2018, showed that twenty-six (26) States in the RASG-AFI Region had attained at least 60% of Effective Implementation (EI) of the eight critical elements of a State's safety oversight system and the ICAO SARPs. At the end of 2018, on a global level (worldwide), there were four (4) unresolved SSCs in four (4) States, three (3) in the area of aircraft operation (OPS) and one (1) in Air Navigation Services (ANS); out of these four (4) States, one (1) State (Eritrea) is in the RASG-AFI region. The same results indicated that lack of adequate and effective technical staff qualification and training represented the most significantly affected USOAP Critical Element (CE-4) in the Region. Furthermore, the technical areas showing lowest levels of EI were Air Navigation Services (ANS), Aerodromes and Ground Aids (AGA), and Accident and Incident Investigation (AIG). Therefore, improvements in these areas continue to be amongst the priorities of the RASG-AFI Region.

The aim of the predictive safety information is to collect and analyse safety data to proactively identify safety concerns before accidents or incidents occur, to develop timely mitigation and prevention measures. This section provides analysis of the status of safety data management in the region, as well as the

implementation status of State Safety Programme (SSP) and Safety Management System (SMS) in the RASG-AFI Region, by the States and industry respectively.

State Safety Programme (SSP) is a framework that allows the State safety oversight authority and aviation related service providers to interact more effectively in the resolution of safety concerns. The Abuja Safety Targets require States with 60% EI and greater to implement SSP (i.e. 26 RASG-AFI States at the end of 2018). By end of 2018, considerable progress had been registered in the implementation of SSP within the RASG-AFI Region: Eleven (11) States had attained Level 3 and at various stages of attaining Level 4; Nineteen (19) attained Level 2 and at various stages of attaining Level 3; and twenty-four (24) attained Level 1 and at various stages of attaining Level 2. No State has yet attained Level 4 (see Figure 15 and Table 3).

Analysis of available safety information on the RASG-AFI Region showed that the top high-risk category (HRC) of occurrence to focus safety enhancements is related to Runway Safety (RS) – Runway Excursion (RE) and Runway Incursion (RI). Out of the five (5) accidents recorded in the RASG-AFI Region in 2018 for scheduled commercial operations involving aircraft with maximum take-off mass above 5700kg, three (3) were Runway safety related; One (1) was related to other factors (OTHR); and One (1) related to an unknown factor (UNK). There were zero (0) accident related to Controlled Flight Into Terrain (CFIT) and Loss of Control In-flight (LOC-I). Although no accidents related to CFIT and LOC-I were recorded in both 2017 and 2018, there is still an urgent need for concerted efforts by all aviation stakeholders to maintain this trend and address runway safety related accidents, thereby drastically reducing the RASG-AFI accident rate to world average of 1.75. The selection of types of occurrences which are deemed the regional high-risk categories of occurrences, previously referred to as “regional safety priorities” is based on actual fatalities from past accidents, high fatality risk per accident or the number of accidents and serious incidents. The following HRCs in no particular order, have been identified in this 5<sup>TH</sup> Edition of the ASR:

Runway Safety (RS)

Loss of Control In-flight (LOC-I);

Controlled Flight Into Terrain (CFIT).

Mid-Air Collision (MAC)/Aircraft Proximity (AIRPROX) Occurrences

Aircraft accidents are categorized using the definition provided in Annex 13 to the Chicago Convention— Aircraft Accident and Incident Investigation.

RASG-AFI is committed to improving aviation safety and fostering cooperation and communication - sharing of safety critical information among the principal aviation safety stakeholders.

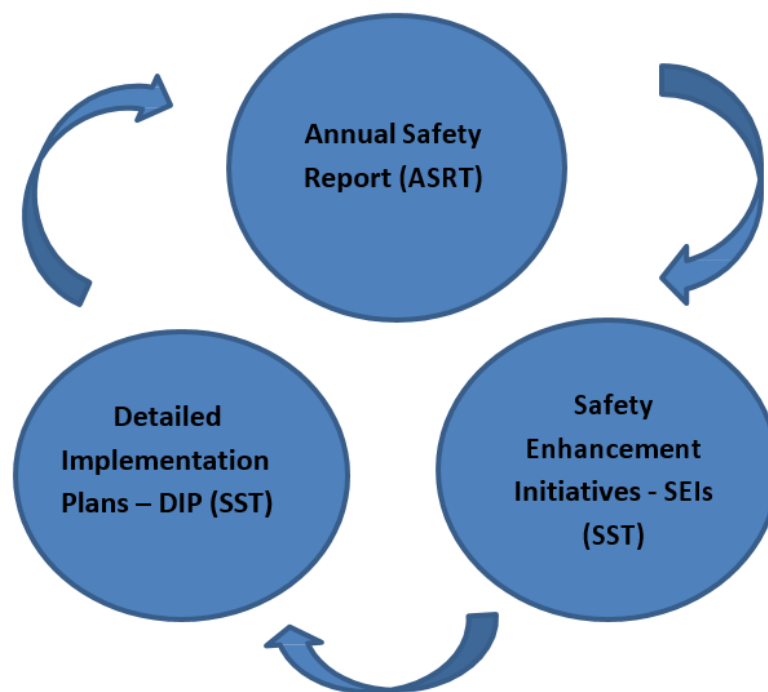
PLEASE NOTE:

All accident statistics sourced from ICAO (ICAO iSTARS) are based on the Country /State of occurrence in RASG-AFI.

All accident statistics sourced from IATA (IATA GADM) are based on the operator's Country/State of Registry in RASG-AFI;

The diagram below illustrates the framework to be used by RASG-AFI to identify and address safety risks in the Region.

**Figure 2: Framework for Identifying and Addressing Safety Risks**



## 2 Safety Information and Analysis

The following sections show the results of safety information analysis in terms of reactive, proactive and predictive safety information.

### 2.1 Reactive Safety Information

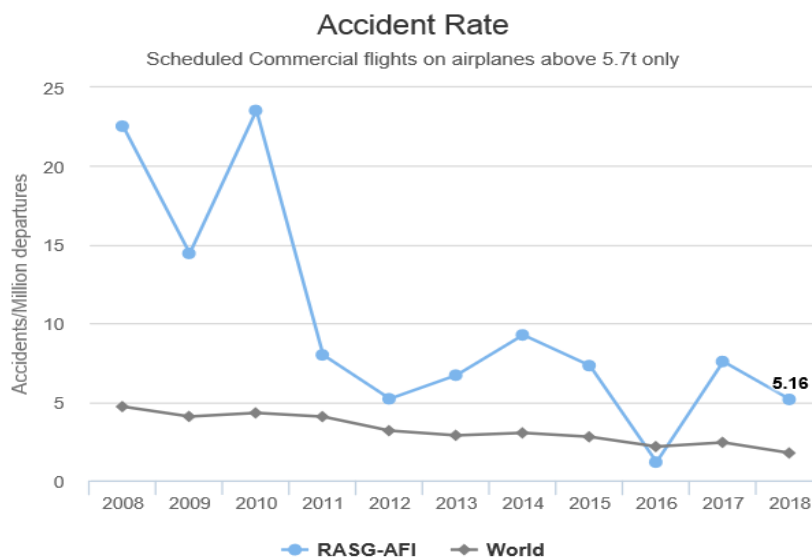
As a benchmark, in accordance with the revised Abuja safety targets, the African accident rate should be progressively reduced from 8.6 to 2.5 per million departures by the end of 2022, with focus on:

- Runway related accidents and serious incidents (Runway Excursion, RE and Runway Incursion, RI).
- Controlled flight into terrain (CFIT) related accidents and serious incidents.
- Loss of Control In-flight (LOC-I) related accidents and serious incidents.
- Mid-Air Collision Aircraft Proximity (AIRPROX) Occurrences

The accident rate at the end of 2018 was 5.16 compared to the world rate of 1.75; runway related accidents & serious incidents had a rate of 6.8 accidents per million sectors in 2012 and 5.0 by end of 2017 and now 1.10 in 2018 ( Source: IATA); CFIT related Accidents & serious Incidents had a rate of 1.2 per million sectors in 2012 and went down to 0 in 2017 and this was maintained at 0 in 2018 ( Source: IATA); and LOC-I related accidents & serious incidents had a rate of 2.25 per million sectors in 2012 and went down to 0.80 by end of 2017 and continued further down to 0 in 2018 ( Source: IATA).

The Annual Safety Report Team (ASRT) retrieves safety data mainly from ICAO, AFCAC, BOEING, AIRBUS, ACI Africa, CANSO and IATA in order to analyze the available reactive safety information.

**Figure 3: RASG AFI Accident Rate (2008 – 2018).**

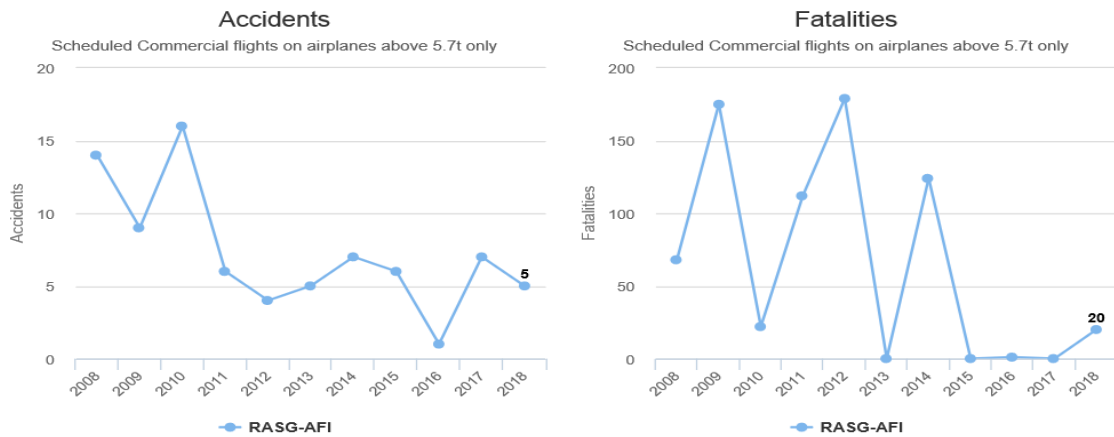


Source: ICAO iSTARS

### 2.1.1 Regional Accident Rates

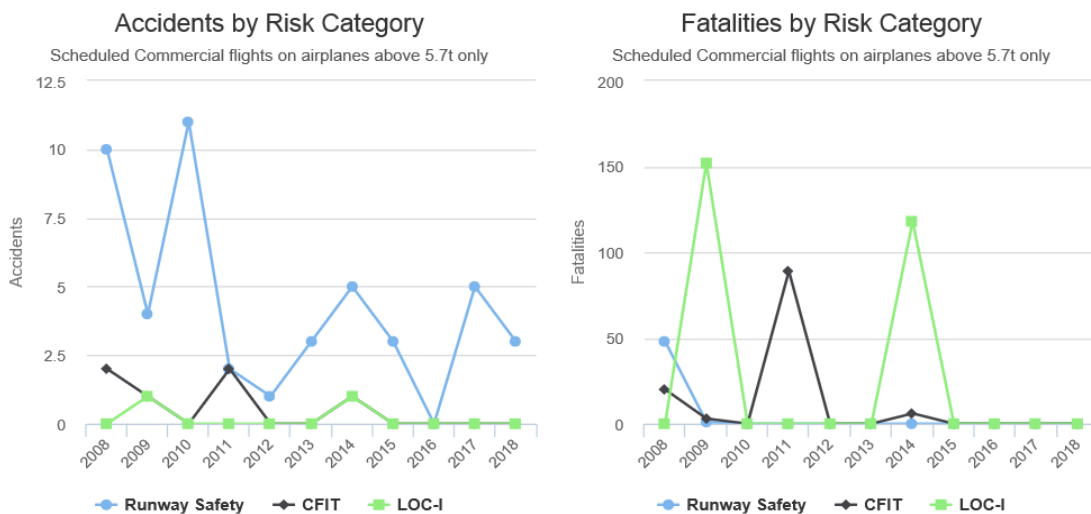
The revised Abuja Safety Targets include target on fatal accidents to reflect NCLB aspirational goal of zero fatal accidents in commercial scheduled flights by 2025. Although by end of 2018, records showed twenty (20) fatalities in accidents that occurred in RASG-AFI region.

**Figure 4a: Comparison of Number of Accidents and Fatalities in RASG-AFI for 2018**



Source: ICAO iSTARS

**Figure 5b: Accidents and Fatalities by Risk Category**



Source: ICAO iSTARS

**Figure 6: List of Occurrences in 2018**

RS: 3; CFIT: 0; LOC-I: 0; Other: 1; Unknown: 1

<p>2018-09-09 near Yiroi Airport, South Sudan</p> <p><b>Unknown Accident (UNK) with 20 Fatalities on a Let L-410 (reg. UR-TWO) operated by Slaver company, South Sudan</b></p> <p>A Let L-410 aircraft crashed into Lake Yiroi, Sout...</p>
<p>2018-03-05 Democratic Republic of the Congo</p> <p><b>Accident (RS) on a A350-900 /B727-2S2F (reg. ET-AUC/9S-AVN) operated by ETHIOPIAN AIRWAYS /SERVE AIR, Democratic Republic of the Congo</b></p>
<p>2018-03-04 Lubumbashi International Airport (FBM), Democratic Republic of the Congo</p> <p><b>Landing Accident (RS) on a Boeing 737-300 F (reg. 9S-ASG) operated by SERVE AIR, Democratic Republic of the Congo</b></p> <p>A Boeing 737-300 cargo plane, operated by Serve Ai...</p>
<p>2018-02-20 Port Harcourt Airport (PHC), Nigeria</p> <p><b>Landing Accident (RS) on a Boeing MD 83 (reg. 5N-SRI) operated by DANA Airlines, Nigeria</b></p> <p>Dana Air flight 363 departed Abuja for Port Harcou...</p>
<p>2018-02-13 Lagos, Nigeria</p> <p><b>Accident (OTHR) on a Airbus 330-200 (reg. N858NW) operated by Delta Air Lines, United States of America</b></p> <p>A Delta Airlines Airbus A330-200, registration N85...</p>

### 2.1.2 Regional Traffic Volume

The air transport sector flown in RASG-AFI Region has shown gradual growth from 2014 to 2018 (for both Jet & Turboprop aircraft). The Table 1 below further breaks down the volume into IATA, Non – IATA, IOSA and Non-IOSA registered airlines in line with graphs on accident analysis.

The total traffic volume in RASG-AFI is about three million (3.1M) movements a year, with 42% jets and 58% turboprop.

It is worth noting that while there is a growing trend in traffic volume, the RASG-AFI Region remains the lowest when compared with the other regions.

**Table 1: Regional Traffic Growth – Jet and Turboprop Aircraft in Commercial Operations**

#### Sector Count (Millions)

	2014	2015	2016	2017	2018	<i>Total</i>
<b>Jet</b>	<b>0.55</b>	<b>0.56</b>	<b>0.54</b>	<b>0.60</b>	<b>0.77</b>	<b>3.02</b>
Jet (IATA)	0.38	0.39	0.37	0.42	0.49	<b>2.05</b>
Jet (IOSA)	0.41	0.41	0.40	0.42	0.49	<b>2.12</b>
Jet (Non-IATA)	0.17	0.17	0.16	0.18	0.29	<b>0.97</b>
Jet (Non-IOSA)	0.15	0.15	0.14	0.18	0.29	<b>0.89</b>
<b>Turboprop</b>	<b>0.63</b>	<b>0.62</b>	<b>0.66</b>	<b>0.71</b>	<b>1.05</b>	<b>3.67</b>
Turboprop (IATA)	0.11	0.12	0.11	0.17	0.18	<b>0.68</b>
Turboprop (IOSA)	0.14	0.15	0.15	0.17	0.18	<b>0.79</b>
Turboprop (Non-IATA)	0.52	0.50	0.55	0.54	0.87	<b>2.99</b>
Turboprop (Non-IOSA)	0.49	0.47	0.51	0.54	0.87	<b>2.88</b>
<b>Total AFI</b>	<b>1.18</b>	<b>1.18</b>	<b>1.20</b>	<b>1.31</b>	<b>1.82</b>	<b>6.69</b>
Total AFI (IATA)	0.49	0.50	0.48	0.59	0.66	<b>2.73</b>
	0.55	0.55	0.55	0.59	0.66	<b>2.91</b>
	0.69	0.67	0.72	0.72	1.16	<b>3.96</b>
	0.63	0.62	0.65	0.72	1.15	<b>3.78</b>

Source: IATA GADM

### 2.1.3 The World and Regional Air Traffic Volume and Accident Data for 2018

**Table 2** below compares the air traffic volume, number of accidents, accident rates, and fatalities by the world and sub-regions for 2018. The accident rate in the RASG-AFI Region has dropped from 7.56 in 2017 to 5.16 in 2018, and the number of accidents from 7 in 2017 to 5 in 2018. Despite the drop in these figures, the accident rate in the RASG-AFI Region was still the highest as compared to the other sub-regions; one factor to this comparably high rate was due to the low number of air traffic departures/volume as compared to the other regions (which has increased from 925 Thousand in 2017 to 969.9 Thousand in 2018).

**Table 2: Regional Air Traffic Volume and Accident Data for 2018**

Sub Region	Departures	Number of Accidents	Accident Rate (per million departures)	Number of Fatalities
RASG-AFI	969.9 K	5	5.16	20
RASG-APAC	11.6 M	14	1.21	241
RASG-EUR	9.5 M	22	2.32	137
RASG-MID	1.4 M	2	1.7	114
RASG-PA	378 M	66	1.75	513

Source: ICAO iSTARS

#### 2.1.4 Analysis of RASG-AFI Region Accidents between 2008 & 2018

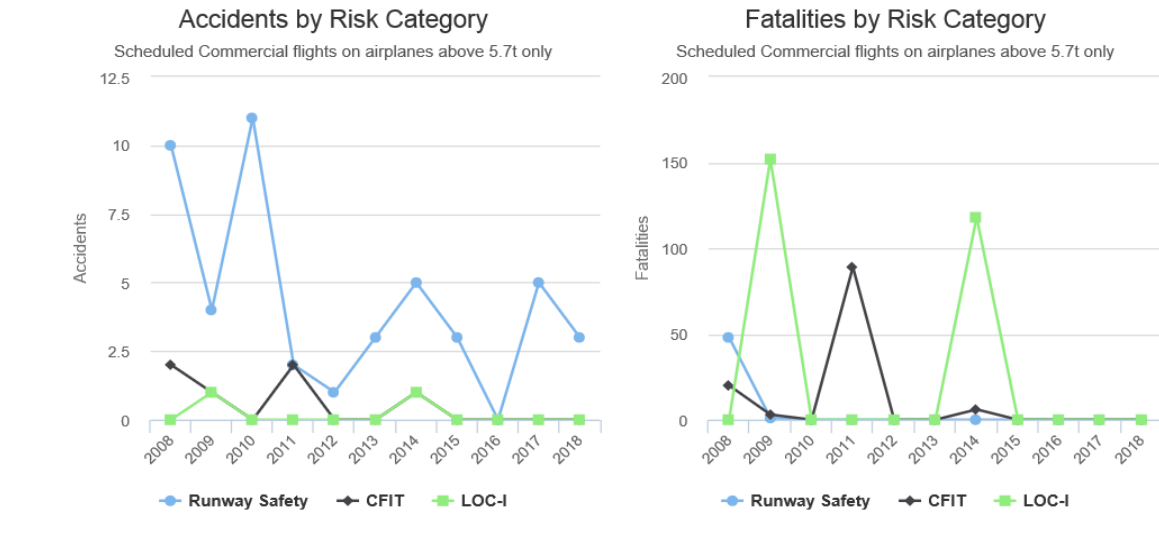
Based on an analysis of accident data covering the period 2008–2018, ICAO identified four high- risk accident occurrence categories:

- Runway Safety-related events
- Loss of Control In-flight (LOC-I)
- Controlled Flight into Terrain (CFIT)
- Mid-Air Collision/Aircraft Proximity (AIRPROX) Occurrences

As indicated in Figure 5, these three categories represented about 69% of the total number of accidents, 66% of fatal accidents and 98% of all fatalities between 2013 and 2017 for aircraft with maximum take-off weight (MTOW) above 5700kg engaged in scheduled commercial flights.

The Figure shows that in these high-risk categories, 62% of those accidents were Runway Safety related, and the highest number of fatalities were related to Loss of Control In-flight accidents (LOC-I), which constituted 93% of fatalities. This is due to the high energy involved in such accidents.



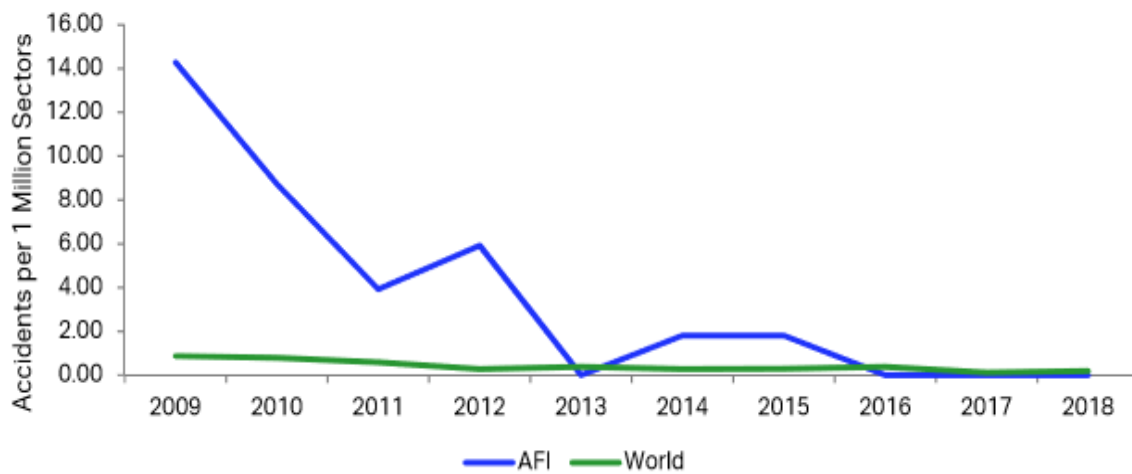
**Figure 7: Accidents and Fatalities by Risk Category for the period 2008 – 2018**


Source: ICAO iSTARS

**Figure 8a: Jet Damage Type (Hull Loss) RASG AFI vs World (2009- 2018)**

The graph below shows the accident rate according to the Jet damage type (hull loss) for RASG-AFI versus the world for the period 2009 - 2018.

**Jet**

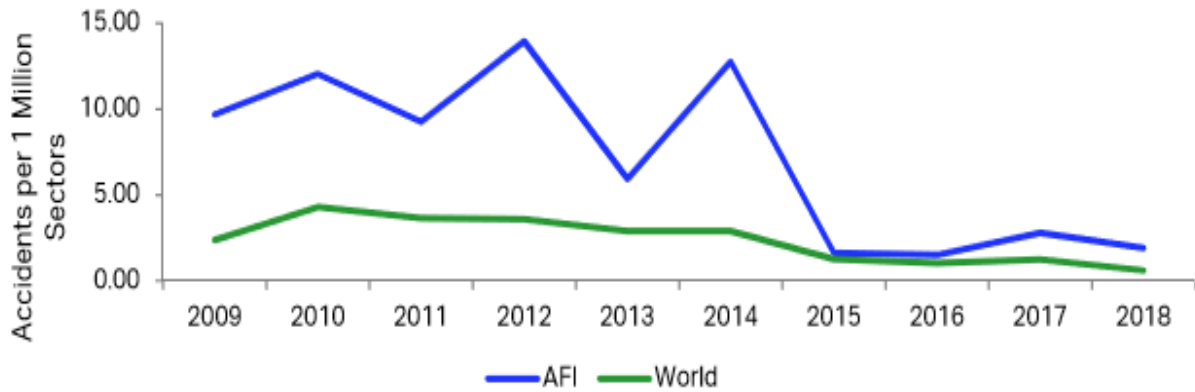


Source: IATA GADM

**Figure 9b: Turboprop Damage Type (Hull Loss) RASG-AFI vs World (2009-2018)**

The graph below shows the accident rate according to the Turboprop damage type (hull loss) for RASG-AFI versus the world for the period 2009 - 2018.

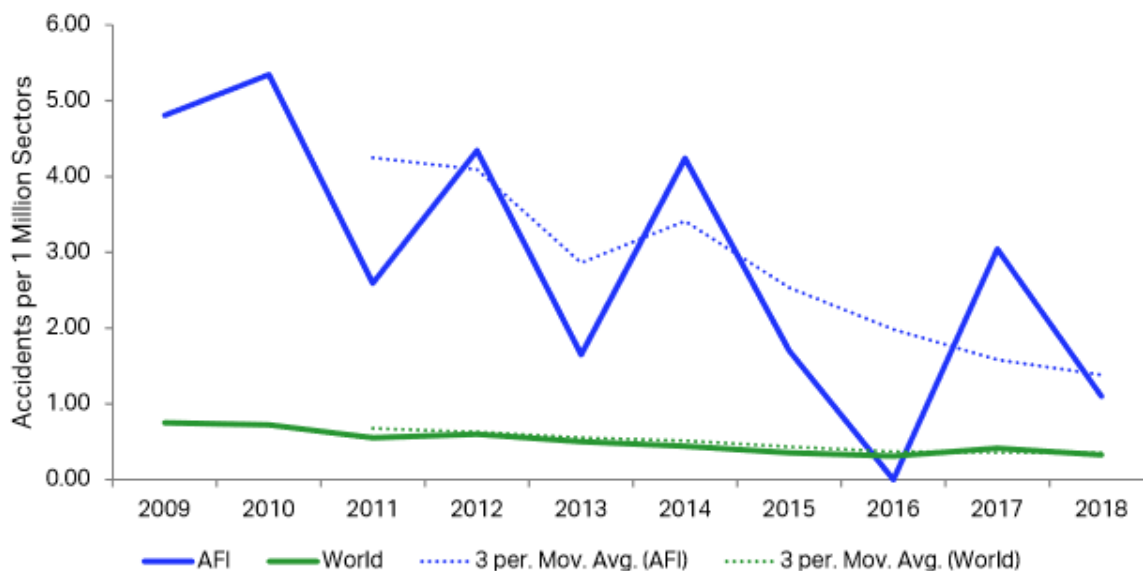
### Turboprop



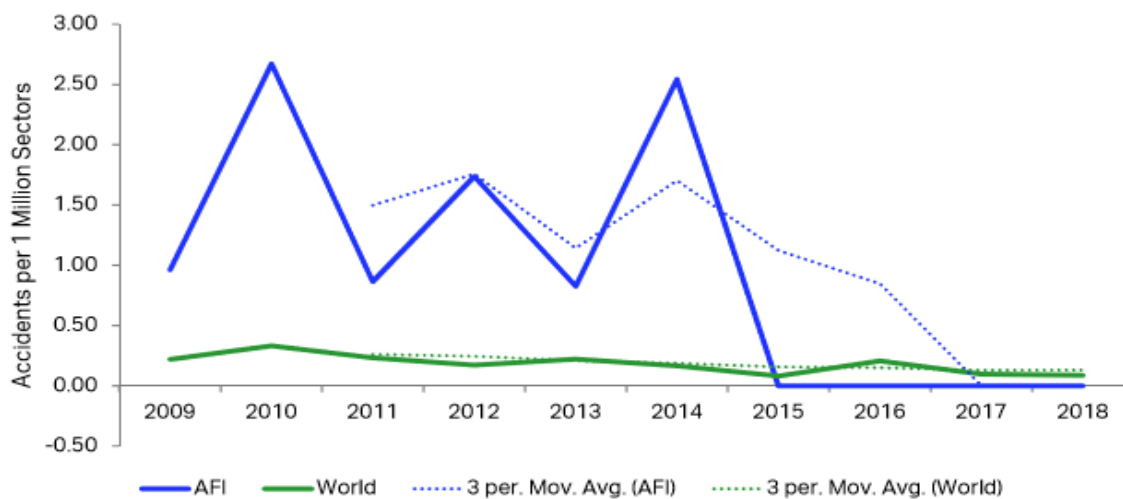
Source: IATA GADM

**Figure 10: RASG-AFI Region High-Risk Accident Trend (2009– 2018)**

8a. Runway Safety Related Accidents (Jet &amp; Turboprop, 2009 – 2018)

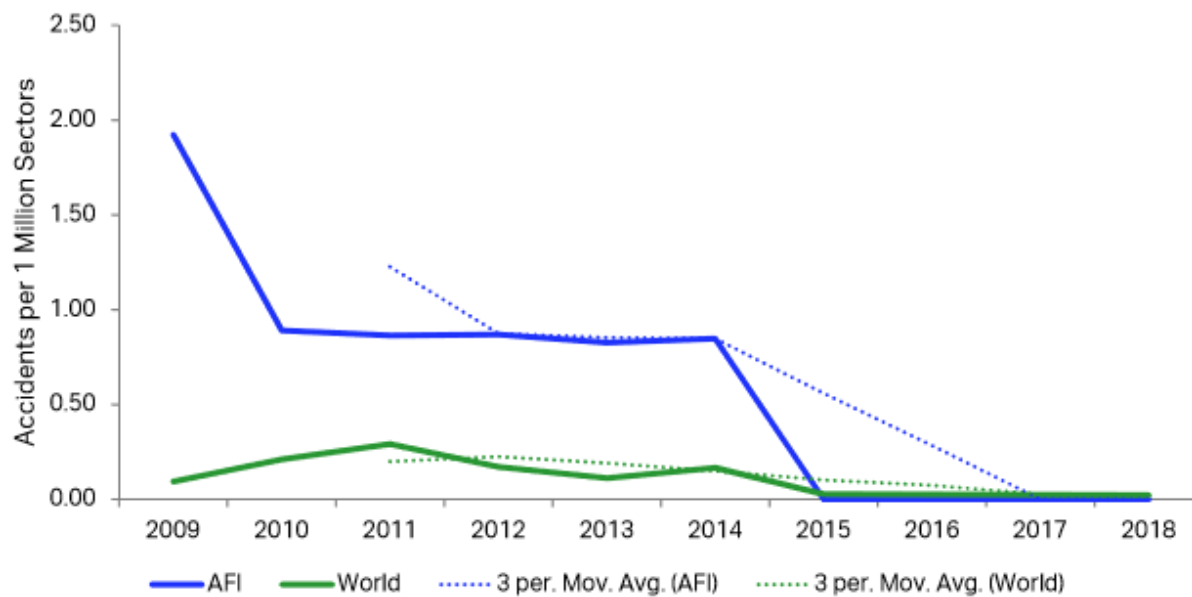
**Runway / Taxiway Excursion Yearly Rate**

*Source: IATA GADM*

8b. LOC-I Accidents (Jet &amp; Turboprop, 2009 – 2018)

**Loss of Control In-flight Yearly Rate**

*Source: IATA GADM*

8c. CFIT Accidents (Jet & Turboprop, 2009 – 2018)

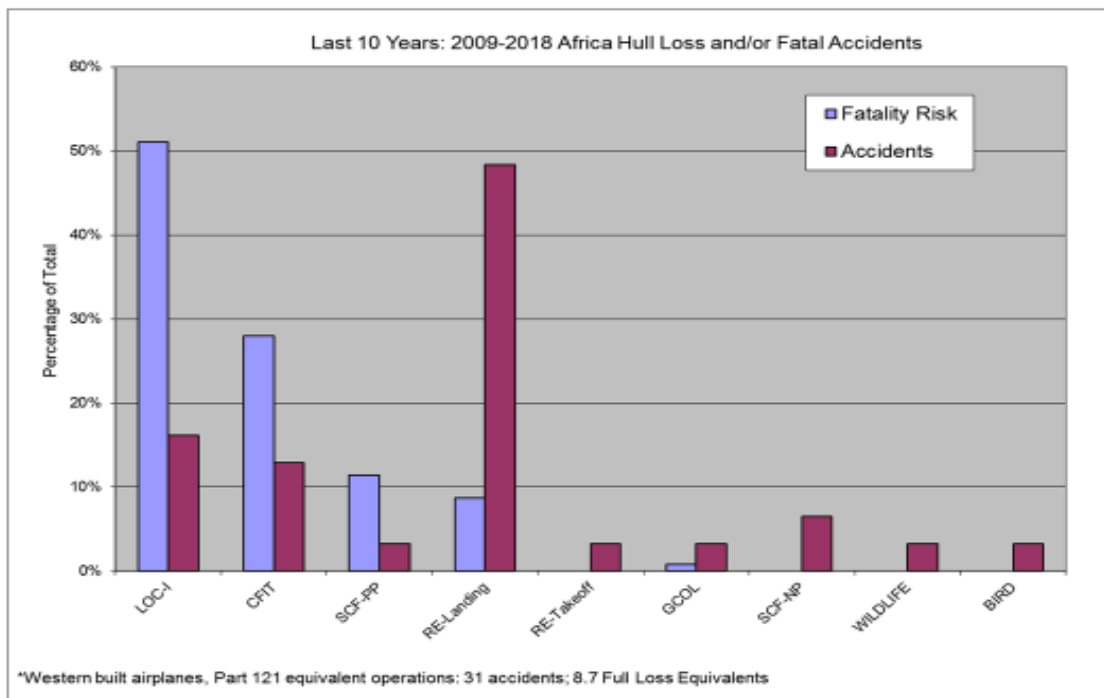
**Controlled Flight Into Terrain (CFIT) Yearly Rate**



Source: IATA GADM

**Figure 11: RASG AFI Hull Loss & Fatality Risk for 2009 - 2018**

The graph below shows the Fatality Risk in comparison with the Hull Loss for Western-Built commercial airplanes with maximum take-off weight of 27000kg and above. The most frequent accidents in the RASG-AFI Region for the period were: LOC-I, CFIT and RE-Landing with LOC-I showing the highest fatality risk. The ten (10) year period gives good visibility on trend as to where efforts should be directed.



Source: Boeing

### 2.1.5 Revised Abuja Safety Targets; Incorporating AFI Air Navigation Services Performance Indicators (ANS PIs)

The Abuja Safety Targets were initially adopted by the African Ministers responsible for civil aviation at a Ministerial Conference on Aviation Safety in Africa, from 16 to 20 July, 2012 at Abuja, Nigeria, through a Declaration.

Although a number of African States made considerable progress over the years in the realization of these targets, there were clear indications that the implementation timeframe became irrelevant, as the set deadlines lapsed and some of the targets were not met. Furthermore, new challenges in aviation safety were emerging, including the provision of Air Navigation Services. In this regard, the African Union Commission Specialised Technical Committee (STC) at its meeting on Infrastructure, Transport, Tourism and Energy, held at Lome, Togo, from 13 to 17 March 2017 agreed on the necessity to revise the targets. AFCAC and ICAO thereafter, undertook necessary coordination meetings with the stakeholders and proposed some revisions to the existing targets as well as new ones, in line with the Global Aviation Safety Plan (GASP), the Global Air Navigation Plan (GANP) and relevant regional safety initiatives. Consequently, Sixteen (16) targets were adopted by the RASG-AFI/4 and APIRG/21 Plenaries at Nairobi, Kenya, in October 2017. The table below shows these targets and the status of their implementation.

AFI States are urged to provide AFCAC with information on the implementation status of the revised Abuja Safety targets through the questionnaires already distributed to all States by AFCAC and are encouraged to work closely with ICAO and AFCAC to ensure that all AFI States attain the target 60% baseline implementation of the revised Abuja Safety Targets by end of 2019. AFCAC is to develop a dashboard for monitoring and providing visibility on the implementation of the targets by States.

**Table 3: Revised Abuja Safety Targets incorporating AFI Air Navigation Services Performance Indicators (ANS PIs); and their status of their implementation.**

Revised Abuja Safety Target	Status of Implementation	Recommendations
<p>1. Progressively reduce the African accident rate from 8.6 to 2.5 per million departures by the end of 2022, with focus on:</p> <ul style="list-style-type: none"> <li>▪ Runway related accidents and serious incidents (Runway Excursion, RE).</li> <li>▪ Controlled flight into terrain (CFIT) related</li> </ul>	<p>There have been neither CFIT nor LOC-I accidents but there have been several RWY related accidents over the last three (3) years.</p> <p>The accident rate further improved from 7.56 in 2017 to 5.16 in 2018</p> <ul style="list-style-type: none"> <li>• Three (3) RWY related accidents</li> <li>• Zero (0) CFIT related accidents</li> <li>• Zero (0) LOC-I related accidents</li> <li>• Twenty (20) fatalities</li> </ul>	

Revised Abuja Safety Target	Status of Implementation	Recommendations
<p>accidents and serious incidents.</p> <ul style="list-style-type: none"> <li>▪ Loss of Control In-flight (LOC-I) related accidents and serious incidents.</li> <li>▪ Achieve and maintain zero fatalities in aircraft accidents.</li> </ul>	<p>(Source: ICAO iSTAR)</p>	
<p>2. All States establish and strengthen autonomous Civil Aviation Authorities with independent regulatory oversight, sustainable sources of funding and resources to carry out effective safety oversight and regulation of the aviation industry by 2022.</p> <ul style="list-style-type: none"> <li>▪ States that need support in areas with safety margins below zero, to use a regional safety oversight organization's or another State's ICAO-recognized functions by 2020.</li> <li>▪ States effectively exercise the safety oversight functions with a positive safety margin in all areas by 2022.</li> </ul> <p>States to delegate certain safety oversight functions to RSOOs or other States, by the end of 2022 in areas with safety margins below zero, and as appropriate.</p>	<p>At least the twenty-six (26) CAAs that have attained the 60% EI Target, amongst the forty-six (46) audited RASG-AFI States have some level of autonomy.</p> <p>[Source:-ICAO iSTARs and AFCAC questionnaires]</p>	
<p>3. States resolve:</p> <ul style="list-style-type: none"> <li>▪ Existing SSCs by June 2018;</li> <li>▪ Newly identified SSCs</li> </ul>	<ul style="list-style-type: none"> <li>▪ One (1) resolved in Malawi</li> <li>▪ One (1) remains in Eritrea</li> </ul>	<p>Sustain achievement.</p>

Revised Abuja Safety Target	Status of Implementation	Recommendations
<p>within 6 months from the date of its official publication by ICAO.</p>		
<p>4. States abide by the timelines and provide resources for implementation of ICAO/State Plans of Action</p> <ul style="list-style-type: none"> <li>▪ All States to have accepted ICAO Plans of Action by 2019 and</li> <li>▪ abide by the timelines and provide resources for their implementation.</li> </ul>	<p>Thirty-eight (38) RASG-AFI States (24 WACAF &amp; 14 ESAF) have accepted ICAO Plans of Action and are at different stages of implementation. (Source: AFI Plan)</p>	<p>Require that all States have tailored ICAO Plans of Action and implement them accordingly, in order to reflect the NCLB initiative.</p>
<p>5. States progressively increase the Effective Implementation (EI) percentage under the ICAO USOAP such that States with:</p> <ul style="list-style-type: none"> <li>▪ EI &lt; 60% attain 60% by 2020;</li> <li>▪ 60% ≤ EI ≤ 70% attain 80% by 2022;</li> </ul> <p>70% &lt; EI attain 95% by 2028.</p>	<p>December 2018-: Twenty-six (26) out of forty-six (46) audited States attained 60% EI and greater (i.e. 56% average score as compared to 52.4% in 2017)</p>	
<p>6. For the purposes of SSP/SMS Implementation, all States:</p> <ul style="list-style-type: none"> <li>▪ to have a Foundation SSP established, addressing all pre-requisites;</li> <li>▪ to have an Effective SSP with appropriate maturity level established;</li> <li>▪ to contribute information on safety risks, including SSP SPIs,</li> </ul>	<p>At least twenty-four (24) States initiated SSP implementation out of which eleven (11) have attained level 3.</p>	<p>For SSP implementation, all States above 60% EI to use the iSTARS Gap Analysis tool to perform the following:</p> <ul style="list-style-type: none"> <li>• Gap Analysis;</li> <li>• Developing implementation plan; and</li> <li>• Benchmark progress.</li> </ul>



Revised Abuja Safety Target	Status of Implementation	Recommendations
<p>to the RASG-AFI;</p> <ul style="list-style-type: none"> <li>▪ with a positive safety margin, and an Effective SSP, to actively engage in RASG-AFI safety risk management activities (analysis of safety risks, design and implementation of risk mitigation actions).</li> </ul> <p>All Service Providers to use globally harmonized SPIs as part of their SMS.</p>		
<p>7. All International Aerodromes to be certified by 2022,</p> <ul style="list-style-type: none"> <li>• At least one international aerodrome in every State to be certified by end of 2020;</li> <li>• All airport operators to participate in the ICAO-recognized industry assessment programme for airports (APEX) by end of 2022;</li> <li>• At least one international aerodrome in every State to establish a Runway Safety Team (RST) by end of 2020.</li> </ul>	<p>As of 31 December 2018, 12 international airports had been certified under AFI Plan Aerodrome Certification which is 27.69 of all International Aerodromes</p>	

Revised Abuja Safety Target	Status of Implementation	Recommendations
<p>8. Require all African airlines to obtain an IATA Operational Safety Audit (IOSA) certification:</p> <ul style="list-style-type: none"> <li>▪ All States to establish an appropriate framework for recognition of IATA operational safety audit (IOSA) and IATA Standard Safety Assessment (ISSA) as effective safety mechanisms; All African airlines to obtain IOSA or ISSA certification, as appropriate, by the end of 2022.</li> </ul>	<p>From a total of 20 airlines on the IOSA Registry in 2012 there were 32 airlines on the Registry by end of December 2018.</p> <p>By end of 2018 only four (4) RASG-AFI States: Mozambique, Rwanda, Togo and Zimbabwe had established some form of legal instrument that recognizes IOSA.</p> <p>(Source: IATA)</p>	<p>More States need to recognize IOSA</p>

Air Navigation (ANS) Target	Status of Implementation	Recommendations
<p>9. All States to establish an effective and operational SAR organization:</p> <ul style="list-style-type: none"> <li>• Development of a National SAR Plan by end of 2018;</li> <li>• Conclusion of SAR Agreements/ MoUs with all neighboring States by end of 2018;</li> <li>• Organisation of multi-agency, multi-State and combined Regional SAR exercises to test SAR systems in place</li> </ul>	<ul style="list-style-type: none"> <li>• Based on data collected as part of AFI Plan project, 25 SAR agreements have been signed between States and 35 new Draft agreements have been developed to either supersede old agreements or formalised cooperation where this has been lacking.</li> <li>• 8 States have developed National SAR Plans and 2 States have draft National SAR Plans in place.</li> </ul>	

<p>involving as many SAR units as practicable by end of 2019.</p>		
<p>10. All States to implement the transition from AIS to AIM:</p> <ul style="list-style-type: none"> <li>• Development of a National Action Plan By end of 2018;</li> <li>• Implementation of the National Action Plan in accordance with the ASBU Block 0 D-ATM by end of 2020.</li> </ul>	<p>84% of States have fully completed Phase 1 Consolidation; and 44% have partially accomplished Phase 2 Going Digital</p> <p><i>(Source: ICAO)</i></p>	
<p><b>Air Navigation (ANS) Target</b></p>	<p><b>Status of Implementation</b></p>	<p><b>Recommendations</b></p>
<p>11. All States to implement PBN procedures for all instrument runways.</p> <ul style="list-style-type: none"> <li>• 75% of Instrument Runways to have PBN procedures by end of 2020;</li> <li>• 100% of Instrument Runways to have PBN Procedures by end of 2025.</li> </ul>	<p>Available information indicates the overall average of over 76.09% in RASG-AFI (WACAF: 82.76; ESAF: 69.42%).</p>	
<p>12. All States to progressively reduce the rate of aircraft proximity (AIRPROX) occurrences in their managed airspaces by at least 50% annually from December 2017 baseline, in order to attain and maintain a level of zero (0) Airprox by end of 2023. Correspondingly reducing errors in the following contributive factors:</p> <ul style="list-style-type: none"> <li>• Co-ordination between ATS Units (50%);</li> </ul>	<p>Based on AFI Incident Analysis Group (AIAG), the AIRPROX contributing factors had the following trends:</p> <ul style="list-style-type: none"> <li>• Lack of Coordination between ATS units contributed eight (8) incidents in 2018</li> <li>• Airspace organization &amp; ATC Procedures contributed forty-three (43) incidents in 2018</li> <li>• Poor Crew Discipline on Board contributed 0 incidents in 2018.</li> </ul>	

<ul style="list-style-type: none"> <li>• Airspace Organization and ATC Procedures (50%);</li> <li>• Mobile Communications (50%)</li> <li>• Poor Crew Discipline on board aircraft (50%)</li> </ul>		
<b>Air Navigation (ANS) Target</b>	<b>Status of Implementation</b>	<b>Recommendations</b>
<p>13. Establishment of seamless Air Navigation Services in the AFI Region by end of 2024:</p> <p>a) All States to ensure provision of harmonized Air Navigation Services in terms of flight separation, interoperability of CNS/ATM systems to reduce airspace complexity and achieve seamless operations along major air traffic flows.</p> <p>b) Various initiatives formulated by the Regional Economic Communities (RECs) and ANSPs within the AFI Region to be harmonized.</p>	<ul style="list-style-type: none"> <li>• Various initiatives ongoing in AFI Region under RECs and or ANSPs.</li> <li>• Activities towards integration of the arrangements programs is anticipated in near future through RECs</li> </ul>	
<p>14. All States to implement ASBU B0 Modules:</p> <ul style="list-style-type: none"> <li>• All States to develop National ASBU Plan by end of 2018.</li> </ul>	<p>Accurate information on current Status of ASBU implementation in AFI Region is not available.</p> <p>IATA ASBU Tracker indicate that:</p> <ul style="list-style-type: none"> <li>• Total % RNAV GNSS APRRCH as 59% for ESAF and 75% for WACAF;</li> <li>• Total % RNAV SID as 40% for ESAF and 20% for WACAF;</li> <li>• Total % RNAV STAR as 40% ESAF and WACAF 46%.</li> </ul>	<p>By end of 2020</p>

Air Navigation (ANS) Target	Status of Implementation	Recommendations
<p>15. All States to develop and implement a National Plan for the reduction of CO<sub>2</sub> emissions due to international civil aviation:</p> <ul style="list-style-type: none"> <li>• develop a National Plan for CO<sub>2</sub> reduction by end of 2020;</li> <li>• full implementation of the National Plan by 2022.</li> </ul>	<p>18 States in AFI Region have developed and submitted to ICAO National Plan for the reduction of CO<sub>2</sub> emissions due to international civil aviation</p>	<p>By end of 2022</p>
<p>16. All States ensure that their ANSPs effectively participate in the African ANSP Peer Review Programme by end of 2019:</p> <ul style="list-style-type: none"> <li>• Joining the programme and having in place, an annual Peer Review plan of activities.</li> <li>• Develop and implement appropriate corrective action plans to satisfactorily address Peer Review recommendations.</li> </ul>	<p>Membership has continued to grow with current participation including: CANSO members (all 18 ASECNA States, South Africa, 3 Robert FIR States, Uganda, Mozambique, Zambia, Algeria etc.)</p>	<p>By end of 2019</p>

## 2.2 Proactive Safety Information

### 2.2.1 ICAO USOAP CMA Audits

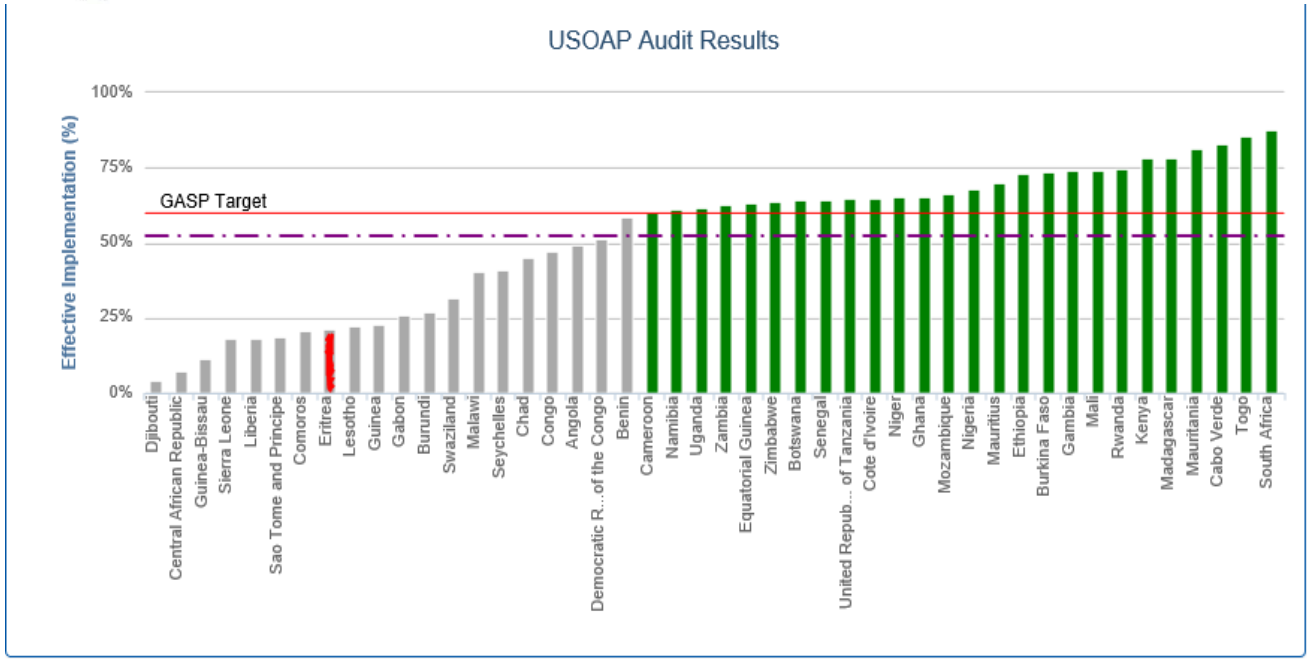
In an effort to establish and implement an effective safety oversight system that reflects the shared responsibility of the State and the broader aviation community, each ICAO Member State should address all of the eight Critical Elements (CE-1: Primary Aviation Legislation; CE-2: Specific Operating Regulations; CE-3: State Civil Aviation System and Safety Oversight Functions; CE-4: Technical Personnel Qualification and Training; CE-5: Technical Guidance, Tools and Provision of Safety-Critical Information; CE-6: Licensing, Certification, Authorization and Approval Obligations; CE-7: Surveillance Obligations; CE-8: Resolution of Safety Issues). These eight categories address the entire spectrum of a State's civil aviation oversight activities.

#### 2.2.1.1 Regional Audit Results

By end of year 2018, the audit results of the RASG-AFI States (to which the ICAO ESAF and WACAF Regional Offices are accredited) have indicated that only one Significant Safety Concern (SSC) in the area of aircraft operations (OPS) in one State (Eritrea) remained unresolved and efforts are being made to address it as soon as possible. The number of States with EI  $\geq$  60% in the RASG-AFI Region improved from twenty-four (24) in 2017 to twenty-six (26) at the end of 2018.

#### Figure 12: Status of RASG-AFI States' Safety Oversight – %EI at the end of 2018.

This Figure depicts the status of the 46 audited (out of the 48) RASG-AFI States. Two States (Somalia) States in RASG-AFI has improved from 50.06% in 2017 to 52.4% at the end of 2018 which is still below the world average of 67.4%. The number of the States that have achieved the Abuja safety Target of 60% EI has increased from 52.17% in 2017 to 56.52% at the end of 2018.

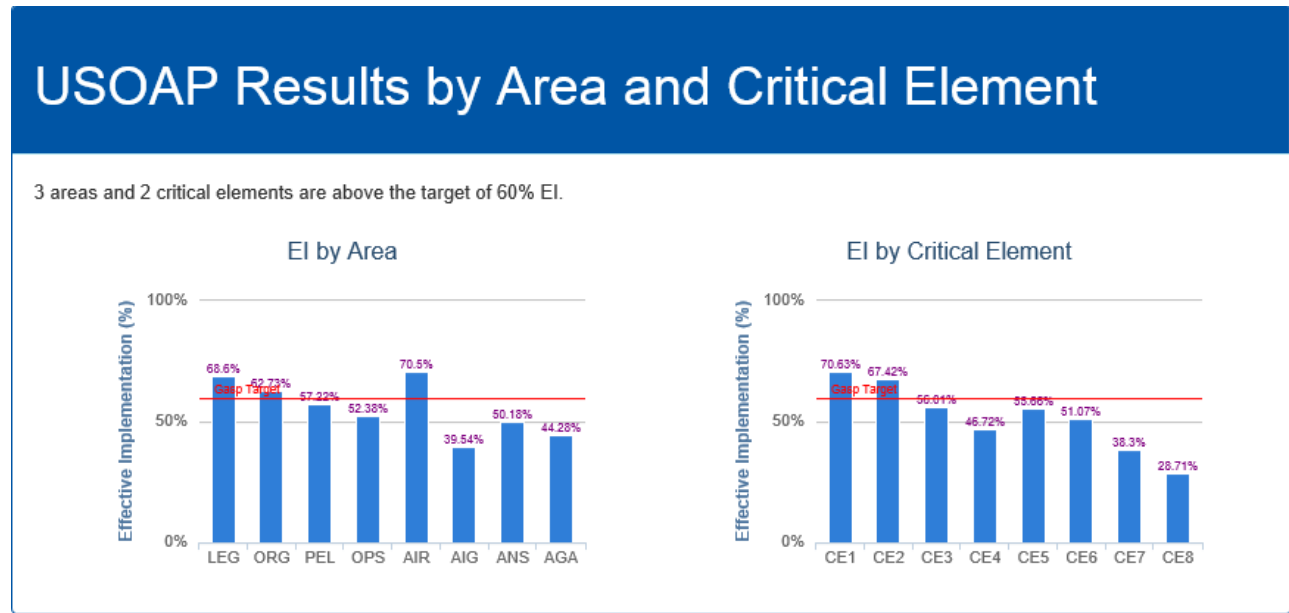


26 RASG-AFI States attained EI ≥ 60%

1 RASG-AFI State (Eritrea)

Source: ICAO iSTARS

**Figure 13: Effective Implementation of Safety Oversight Systems within RASG-AFI States by Audit Area and Critical Elements**



In the RASG-AFI region, the average Effective Implementation in the area of AIR remain the highest at 70.5% at the end of 2018, which has increased from 68.27% at the end of 2017; and lowest in the area of AIG at 39.54%. (see Figure 11 above). Effective Implementation by Critical Element (CE) indicates lowest score in CE-8 (Resolution of Safety Issues) at 28.71% followed by CE-7 (Continued Surveillance) at 38.3%. There was a slight improvement in CE-4 (Technical Personnel Qualification and Training) from 43.07% to 46.72%. See Figure 11 above.

*(Source: ICAO ISTARs).*



## 2.2.2 Regional Safety Initiatives

From the results of the ICAO USOAP CMA Activities, low %EI scores have been registered in the areas of fundamental safety oversight as well as aircraft accident and incident investigation systems. The Safety Support Teams of the RASG-AFI have identified these deficiencies and have developed project documents intended to improve capacities in these areas. Funding for most of these projects comes from the comprehensive implementation plan for aviation safety in Africa (AFI Plan). Notwithstanding there is a need for RASG-AFI and its partners to devise means of funding for the identified projects, in a quest to meeting the desired safety targets.

### 2.2.2.1 Upset Prevention and recovery Training (UPRT)

One of the safety initiatives being undertaken by the RASG-AFI in mitigating LOC-I related accidents and incidents is by conducting UPRT workshops in the Region and indications are that they are impacting positively on mitigating this High-Risk Category of occurrence. At a workshop conducted in December 2018, in Nairobi, Kenya, draft guidance material on UPRT was produced and shared with States for possible adoption and adaptation, in addition to the establishment of relevant regulatory framework by States and its implementation by the industry.

### 2.2.2.2 Performance Based Navigation (PBN) Operations Approval

Under the African Flight Procedures Programme (AFPP), African States are being assisted in implementing PBN flight procedures at their international airports and the Civil Aviation Authorities are empowered with PBN concept and products, PBN oversight, quality assurance, PANS-OPS approval (regulatory approval and operational approval). This safety initiative is intended to mitigate CFIT related accidents and serious incidents, as well as flight efficiency, access, CO<sub>2</sub> emissions and its related environmental impact.

The African Flight Procedure Programme (AFPP) was launched by ICAO in 2013 for an initial duration of three (3) years; the programme has been renewed for another three (3) years from 8 February 2019. Its operations started in June 2014 in Dakar, Senegal, with the initial support of ASECNA, French DGAC and AIRBUS. From 31 December 2017 to date AFPP has a membership of thirty-two (32) AFI States.

Activities conducted under AFPP registered the following results:

- National PBN Implementation Plan: Four (4) AFI States (ESAF and WACAF Regions) finalized and submitted their National Plans to the concerned ICAO Regional Offices. So far in total, thirty-eight (38) AFI States have finalized the required actions;
- Use of PBN in airspace design: Thirty-two (32) representatives from Fourteen (14) States attended a workshop held in Entebbe, Uganda, in order to review their national airspace organization;
- Quality Assurance process and Safety Assessment: Assistance related to Quality Assurance process and Safety Assessment for instrument flight procedures implementation were conducted for two (2) AFI States, this activity is being reviewed in order to provide more knowledge on PANS-OPS procedures approval;
- Reduction of CO<sub>2</sub> Emissions: The AFPP was involved in an ICAO/EU/ASECNA Project to implement CCO/CDO at Libreville and Ouagadougou International Airports in order to reduce CO<sub>2</sub> emissions; the procedures are to be published by August 2019;
- Conventional and PBN instrument flight procedures: Projects were launched to implement PBN flight procedures at twenty-two (22) different airports in ten (10) AFI States;

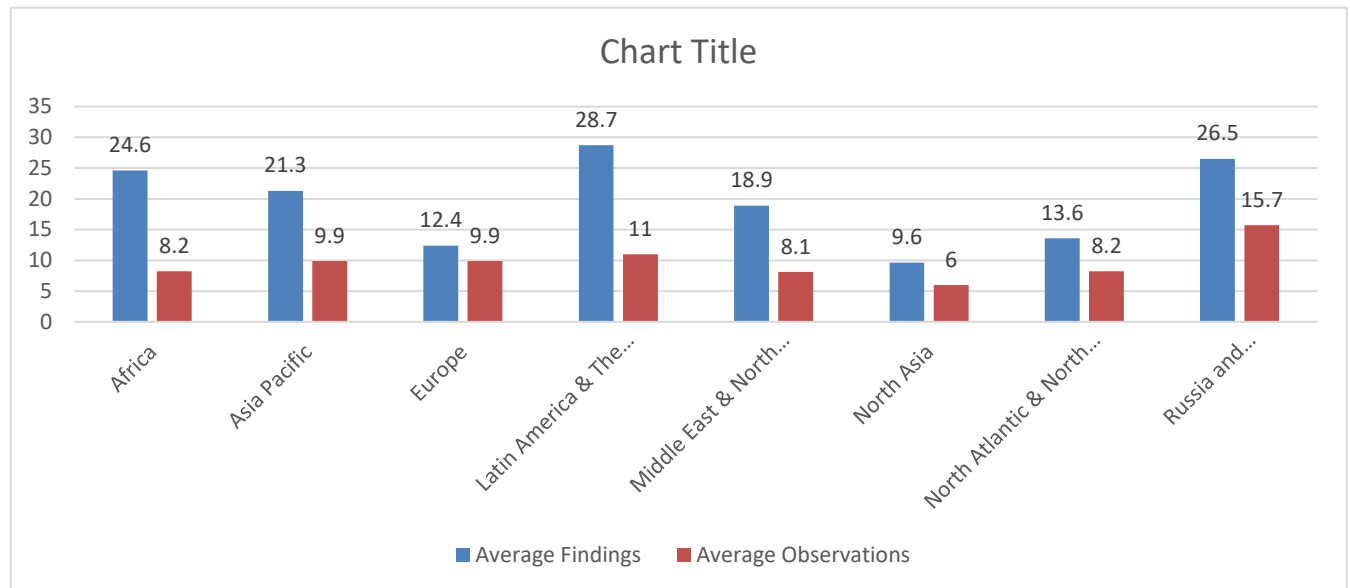
- Capacity building for instrument flight procedures design:
  - Fifty-seven (57) flight procedures designers from twenty-four (24) States/Organizations trained;
  - On-the-job-training (OJT) on request: Nine (9) designers from five (5) States trained

### 2.2.3 IATA Operational Safety Audit (IOSA) Audits

The IATA Operational Safety Audit (IOSA) is the benchmark for global safety management in airlines and is an internationally recognized and accepted evaluation system designed to assess the operational management and control systems of an airline.

IOSA scope covers eight (8) areas which include: Organization and Management (ORG), Maintenance (MNT), Cargo (CGO), Security (SEC), Flight Operations (FLT), Dispatch (DSP), Cabin Safety (CAB) and Ground Handling Operations (GRH). The analysis of IOSA audit results in the graph below shows the trend in audit findings as well as observations for AFI versus other regions and the world average.

**Figure 14: Trend in IOSA Findings & Observations per Region**

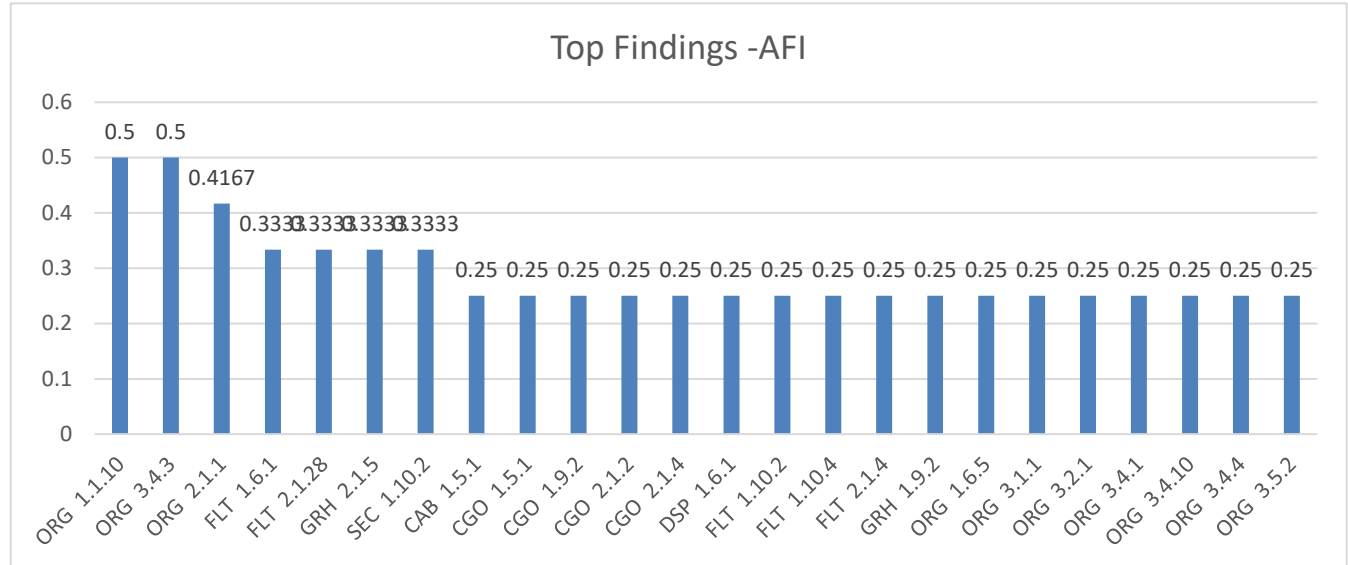


Source: IATA

The above pattern in findings and observations relates to IOSA audits conducted during the year 2018.

**Figure 15: RASG-AFI Region Trend in IOSA Top Findings per Audit Area**

The following graph shows the AFI trend in 2018 IOSA top findings per audit area where issues in Organisation featured the most followed by Flight Operations and Maintenance. The pattern remains unique for each region.



Source: IATA

**Key:** **ORG 1.1.10.** =SMS Implementation; **FLT 3.4.3**= Fatigue Risk Management System; **ORG 2.1.1**=Documentation management & control; **FLT 1.6.1**= Flight Operations Documentation System; **FLT 2.1.28**=Continual Improvement -light Crew Training & Evaluation; **GRH 2.1.5** =Program for training ground personnel; **SEC 1.10.2**=Organization’s qualification of internal auditors; **CAB 1.5.1**= Documentation System- Cabin Operations **CGO 1.5.1** =Cargo Documentation System Control; **CGO 1.9.2**=Process for Auditing in Cargo; **CGO 2.1.2**= Program for Training Cargo Ops Personnel; **CGO 2.1.4**=Process for Training Cargo Personnel; **DSP 1.6.1**=Dispatch Documentation System; **FLT 1.10.2**= Flight Ops Quality Assurance Program **FLT 1.10.4**=Addressing Flight Ops findings **FLT 2.1.4**=Monitoring of Distance learning/evaluation for Flight Crew **GRH 1.9.2** =Addressing Findings in Ground Handling **ORG 1.6.5** =SMS Training **ORG 3.1.1**=Corporate Safety Risk Management **ORG 3.2.1** =Operational Safety Performance/Safety Assurance **ORG 3.4.1**= Quality Assurance Program **ORG 3.4.10**=Auditing Process **ORG 3.4.4**=Management Review Process **ORG 3.5.2**=Monitoring External Service providers

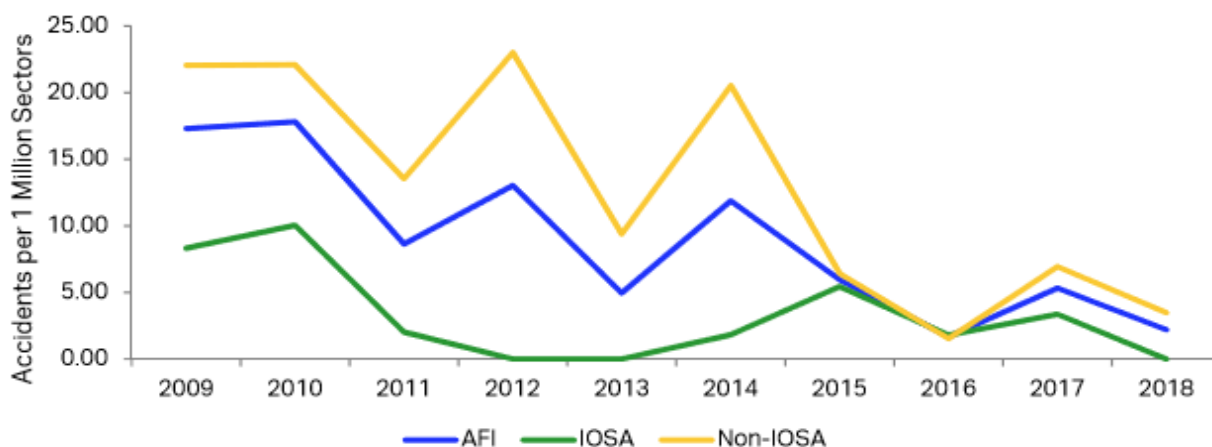
Following the revision of the Abuja Safety Targets in December 2017, all AFI States are required to establish an appropriate framework for recognition of the IATA Operational Safety Audit (IOSA) and IATA Standard Safety Assessment (ISSA) as effective safety mechanisms; all African Airlines to obtain IOSA/ISSA certification, as appropriate, by the end of 2022.

By end of 2018 only four (4) RASG-AFI States: Mozambique, Rwanda, Togo and Zimbabwe had established some form of legal instrument that recognizes IOSA.

**Figure 16: Accident Rate for IOSA versus Non-IOSA Operators in RASG-AFI Region**

The graph below represents the rate of occurrence of all accidents over the period 2009-2018, per million flight sectors for RASG-AFI registered operators (blue) versus RASG-AFI IOSA- registered operators (green) and RASG-AFI non-IOSA-registered operators (yellow). From the trend, the IOSA certified operators have outperformed non-IOSA certified carriers in the Region.

**Jet & Turboprop**



Source: IATA GADM

**Note:** The above graph represents statistics for both Jet and Turboprop operations.

**2.2.4 IATA Safety Audit for Ground Operations (ISAGO)**

IATA has completed the first year of ISAGO audits under the new operational audit model that was introduced in September 2017. The impact of the changes made are clear to see, particularly in the effectiveness of the auditing using a new methodology by members of the IATA Charter of Professional Auditors” (CoPA). Overall, 245 audits were performed in 2018. Globally, the average number of findings per audit increased from 3 in previous years to 20, from a total of 774 in 2017 to 4776 in 2018. For RASG AFI this meant an average of about 31 findings.

Region	Total Audits	Total Findings
Africa	40	1265

This picture painted here is in fact a very positive one of the program moving towards better management and standardization of ground operations. The GSP has to rectify all findings to receive ISAGO registration, and it has to do so within six months or before its current registration expires. ISAGO now requires all GSPs to have in place a fully functional ICAO compliant SMS, which is a first in this sector of the industry. The GSPs come out of an ISAGO audit with much stronger management and oversight of its ground operations.

Another significant development is the launch of the new ISAGO Registry available to airlines that subscribe to an ISAGO membership. The improved interactive and graphical interface shows at a glance the ISAGO status of the GSPs contracted to the airline throughout its network, the ISAGO status of other GSPs at the airline’s destinations and gives access to the ISAGO audit reports.

### 2.3 Predictive Safety Information

This section contains predictive safety information, which includes the analysis of Flight Operations Quality Analysis/Flight Data Analysis (FOQA/FDA), States' Safety Programme (SSP) and Safety Management Systems (SMS) implemented by the industry, aviation products and service providers.

The FOQA/FDA information and the Flight Data eXchange (FDX) systems established by IATA and other aviation partners need to be fully utilized by the airlines and other stakeholders in the RASG-AFI, by way of concluding Memoranda of Understanding (MOU) and providing relevant information/data on a regular basis. With the establishment of such systems, precursors could be identified, particularly for the high risk safety categories (RS, LOC-I, CFIT, Mid-Air Collision (MAC)/ Aircraft Proximity (AIRPROX) Occurrences, etc.) and trends appropriately monitored and analyzed. The need for a mature data sharing culture is key to any successful implementation of predictive safety information analysis in RASG-AFI.

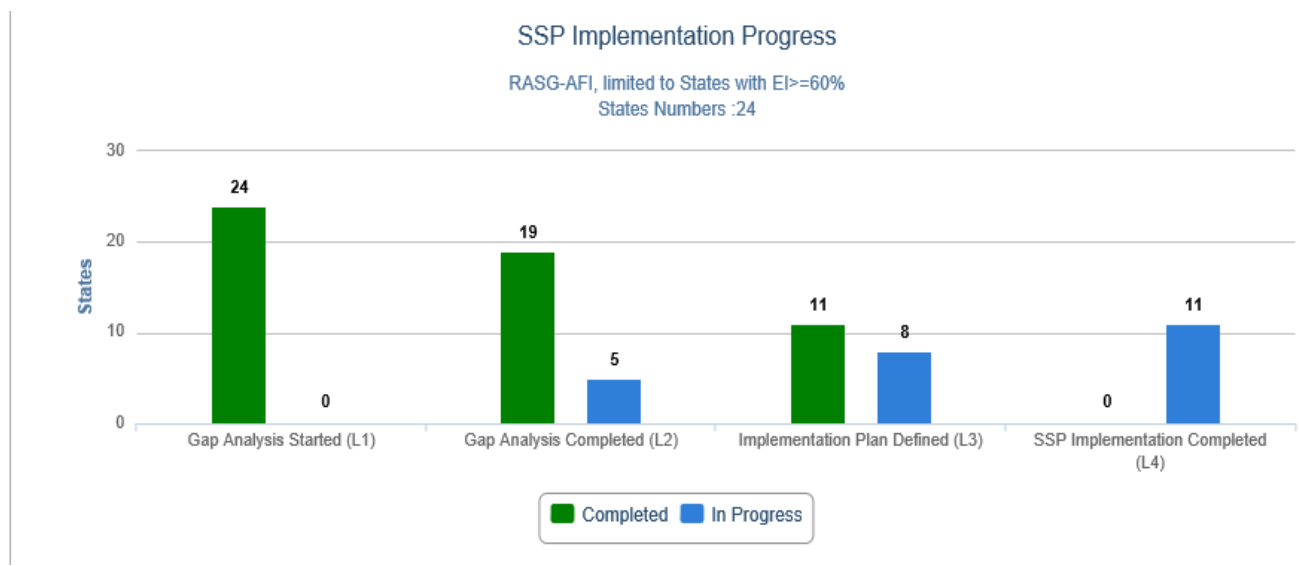
One of the revised Abuja Safety Targets requires all States to have a Foundation SSP established, addressing all pre-requisites by end of 2022:

- to have an Effective SSP with appropriate maturity level established;
- to contribute information on safety risks, including SSP SPIs, to the RASG-AFI;
- with a positive safety margin, and an Effective SSP, to actively engage in RASG-AFI safety risk management activities (analysis of safety risks, design and implementation of risk mitigation actions); and
- ensure that all Service Providers implement a Safety Management System (SMS) by end of 2022, and that they use globally harmonized SPIs as part of their SMS.

Although some degree of progress have been registered in this respect, availability of a reliable predictive safety information within the RASG-AFI region continues to pose challenges.

The Regional Offices Safety Teams (ROST) missions have incorporated the implementation of SSP States with EI  $\geq$  60% as part of the AFI Plan Programme, as well as sharing experiences and best practices.

SSP is a framework that allows the State safety oversight authority and service providers to interact more effectively in the resolution of safety concerns. The SSP statistics release high level information about each Gap Analysis project. SSP implementation project has been measured for each State using a simple milestone as per the entered data.

**Figure 17: RASG-AFI States' Safety Programme Implementation (SSP) Progress.**


ICAO measures SSP implementation in levels as follows:

- Level 0: States not having started a GAP analysis
- Level 1: States having started a GAP analysis
- Level 2: States having reviewed all the GAP analysis questions
- Level 3: States having defined an action plan for all non implemented questions
- Level 4: States having closed all actions and fully implemented their SSPs

Source: ICAO iSTARS

**Table 4: RASG-AFI States that have initiated the implementation of SSP.**

Out of the 48 RASG-AFI States, none had so far attained Level 4 of SSP implementation. However, at the end of 2018, considerable progress had been registered in the implementation of SSP within the RASG-AFI Region: Eleven (11) States had attained Level 3 and at various stages of attaining Level 4; Eight(8) attained Level 2 and at various stages of attaining Level 3; and Five (5) attained Level 1 and at various stages of attaining Level 2.

Code	State Name	Progress	Level (Up %)	
BWA	Botswana	Gap Analysis Completed	L2 / 95.5% L3	●●●○
BFA	Burkina Faso	Gap Analysis Completed	L2 / 81.8% L3	●●●○
CPV	Cabo Verde	Gap Analysis Completed	L2 / 97.7% L3	●●●○
CIV	Cote d'Ivoire	Gap Analysis Completed	L2 / 95.5% L3	●●●○
GNQ	Equatorial Guinea	Gap Analysis Started	L1 / 02.3% L2	●○○○
ETH	Ethiopia	Gap Analysis Completed	L2 / 93.2% L3	●●●○
GMB	Gambia	Gap Analysis Completed	L2 / 97.7% L3	●●●○
GHA	Ghana	Implementation Plan Defined	L3 / 47.7% L4	●●●○
KEN	Kenya	Implementation Plan Defined	L3 / 50% L4	●●●○
MDG	Madagascar	Implementation Plan Defined	L3 / 52.3% L4	●●●○
MLI	Mali	Implementation Plan Defined	L3 / 22.7% L4	●●●○
MRT	Mauritania	Implementation Plan Defined	L3 / 22.7% L4	●●●○
MUS	Mauritius	Implementation Plan Defined	L3 / 50% L4	●●●○
MOZ	Mozambique	-		○○○○
NAM	Namibia	Gap Analysis Started	L1 / 02.3% L2	●○○○
NER	Niger	Gap Analysis Started	L1 / 95.5% L2	●○○○
NGA	Nigeria	Implementation Plan Defined	L3 / 43.2% L4	●●●○
RWA	Rwanda	Gap Analysis Completed	L2 / 88.6% L3	●●●○
SEN	Senegal	Gap Analysis Started	L1 / 56.8% L2	●○○○
ZAF	South Africa	Implementation Plan Defined	L3 / 68.2% L4	●●●○
TGO	Togo	Implementation Plan Defined	L3 / 34.1% L4	●●●○
UGA	Uganda	Gap Analysis Started	L1 / 47.7% L2	●○○○
TZA	United Republic of Tanzania	Implementation Plan Defined	L3 / 36.4% L4	●●●○
ZMB	Zambia	Implementation Plan Defined	L3 / 38.6% L4	●●●○
ZWE	Zimbabwe	Gap Analysis Completed	L2 / 97.7% L3	●●●○

Source: ICAO iSTARS

### 2.3.1 Progress on Predictive Information Approach

IOSA registered operators have implemented Flight Data Analysis/Monitoring system as a program requirement. Some Non-IOSA operators are yet to implement Flight Data Analysis (FDA)/Flight Data Monitoring (FDM)/Flight Operation Quality Analysis (FOQA). Even in some cases where it has been implemented, its effectiveness needs to be improved further.



## 2.4 RASG-AFI ATS Incidents Analysis Group (AIAG)/Air Nav. Infrastructure Safety

The RASG-AFI ATS Incident Analysis Group (AIAG) Meeting which has been convened and hosted by IATA every year since 2003 works on the following terms of reference:

The ATS Incident Analysis Group provides a forum to various States/ANSPs and international organizations including ICAO, IATA, IFALPA, AFRAA, IFATCA and OEMs to review reported incidents in the region and formulate recommendations to prevent similar incidents in the RASG-AFI region.

**Mandate:** the mandate of AIAG is to review on an annual basis all the ATS Incident reports available to the Group from any source, with a view to identifying causes, trends, and remedial actions that may prevent re-occurrence.

**Composition:** At the Core of the AIAG are IATA, ICAO, IFALPA and IFATCA. Attendance to the Group is open to all Air Navigation Service Providers in the RASG-AFI Region. Other Stakeholders can be invited to attend.

**Secretariat:** IATA Safety and Flight Operations for Africa provides the secretariat support to the Group. This will include the updating and maintaining of the database, compilation of ATS incident reports, preparation of annual meetings, preparation and distribution of meeting reports.

**Reporting:** Reports of AIAG are disseminated to all participants, and any other relevant stakeholder for appropriate actions and information.

**Tasks:**

- a. Assess incidents by type, i.e., AIRPROX, procedure, facility as per ICAO definition, and establish degree of risk to the extent practicable.
- b. Identify primary and contributory causes and recommend appropriate corrective actions thereto.
- c. In the context of (b) above, develop submissions to be made to ICAO regional planning Groups, member airlines and other airspace users, States or other ATS Providers concerned with a view to addressing underlying causes or major trends.
- d. Determine the extent to which IFBP was instrumental in identifying and/or solving conflicts and make appropriate recommendations that may enhance the effectiveness of the procedure.
- e. Determine the extent to which TCAS (ACAS) was instrumental in identifying and/or solving conflicts and make appropriate recommendations that may enhance the effectiveness of the procedure.
- f. Develop statistical analyses highlighting trends, inter alia by time period, by cause and by FIR/ATS Unit.

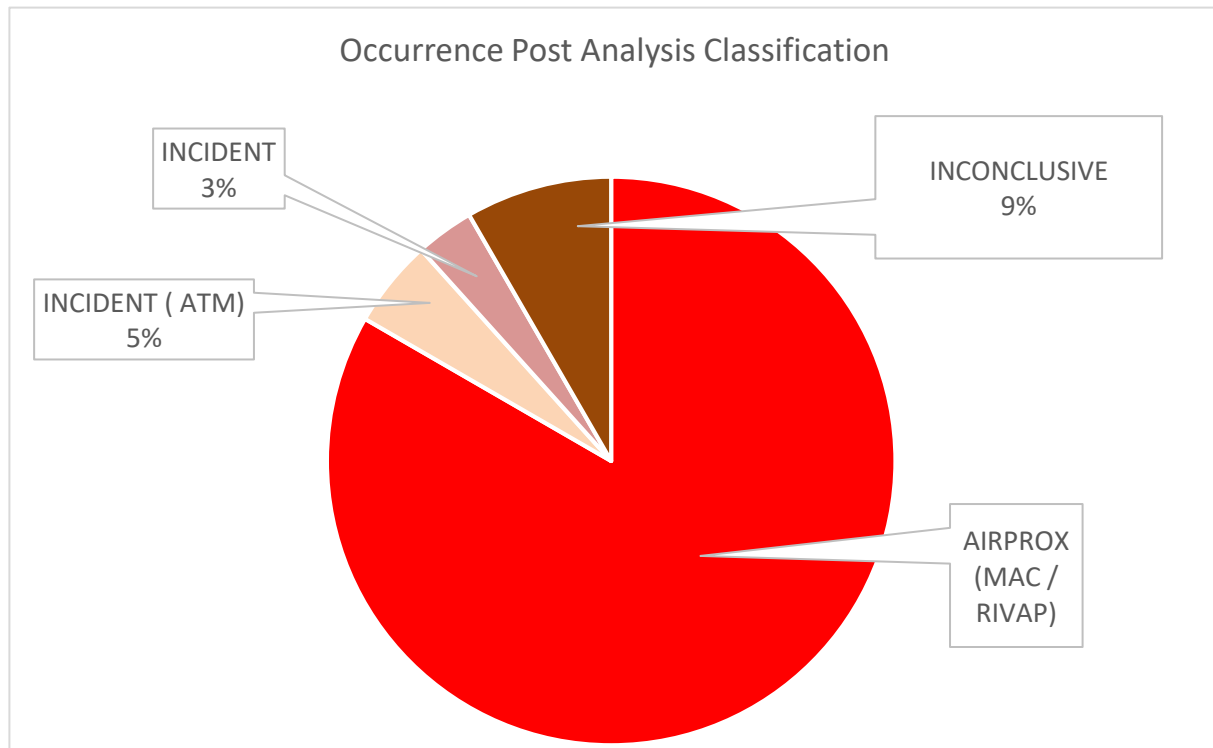
### 2.4.1 Sixteenth Meeting of AIAG (AIAG/16 - March 6 to 7, 2019)

The meeting which was convened by IATA was held at Holiday Inn in Sandton, Johannesburg and in attendance were: seventy-five (75) participants from Airlines, Air Navigation Service Providers (ANSPs), AFI Regional Monitoring Agency (ARMA), International Civil Aviation Organization (ICAO), International Federation of Airline Pilots Association (IFALPA), International Federation of Air Traffic Controllers Association (IFATCA), Federal Aviation Administration (FAA) and International Air Transport Association (IATA). The 16th AIAG meeting analyzed a total of sixty-six (66) reports that were submitted either by operators or ANSPs for the year 2018.

Breakdown of the Analyzed 2018 Incidents was as follows:

**Figure 18: Distribution of UCRs by Category after Analysis**

The graph below shows the distribution by category after analysis of the sixty-six (66) UCRs by AIAG.

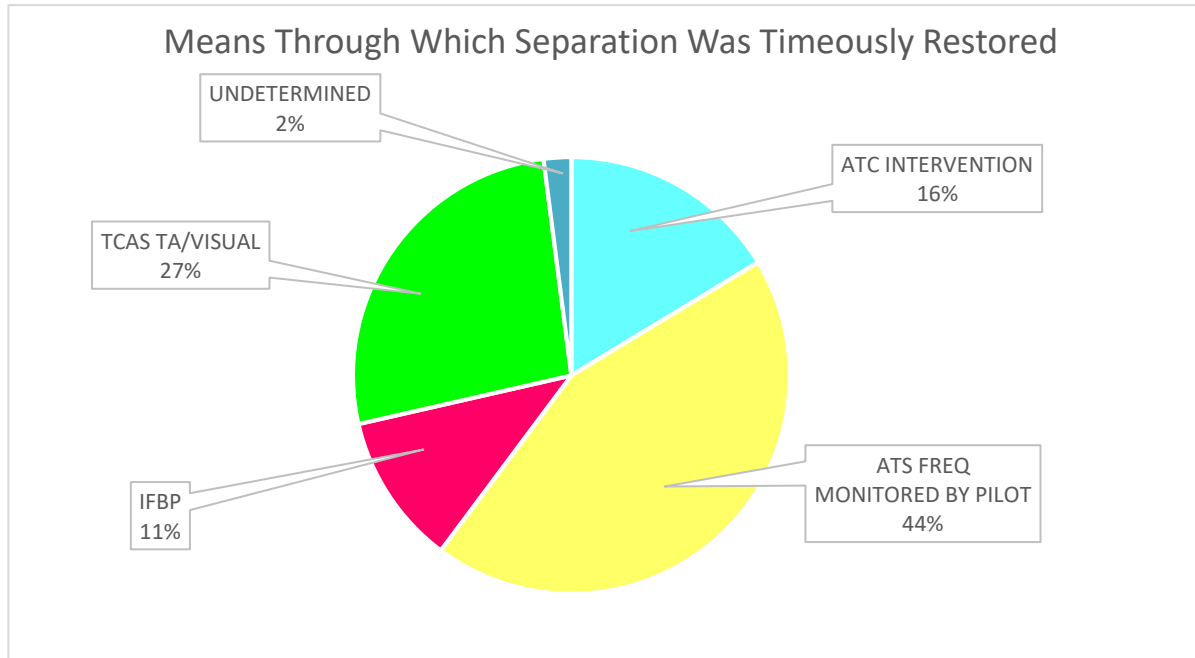


Source: IATA

In order to enhance the analysis process, it is vital that timely feedback is received from the ANSPs.

**Figure 19: Means through which Separation Minima was timely restored**

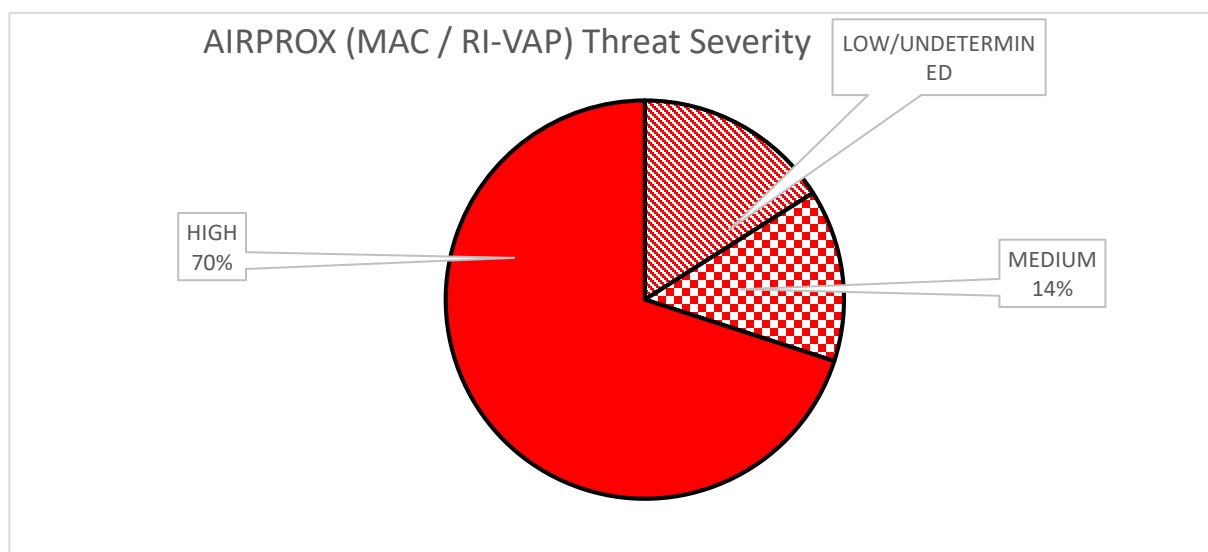
This graph below shows that 44% of separation among conflicting traffic was restored by monitoring of ATS frequency by pilot; 27% by use of TCAS; 16% through ATC intervention; 11% through use of In-Flight Broadcast Procedure (IFBP); and for 2% of the incidents it was undetermined .



Source: IATA

**Figure 20: Threat Severity Levels**

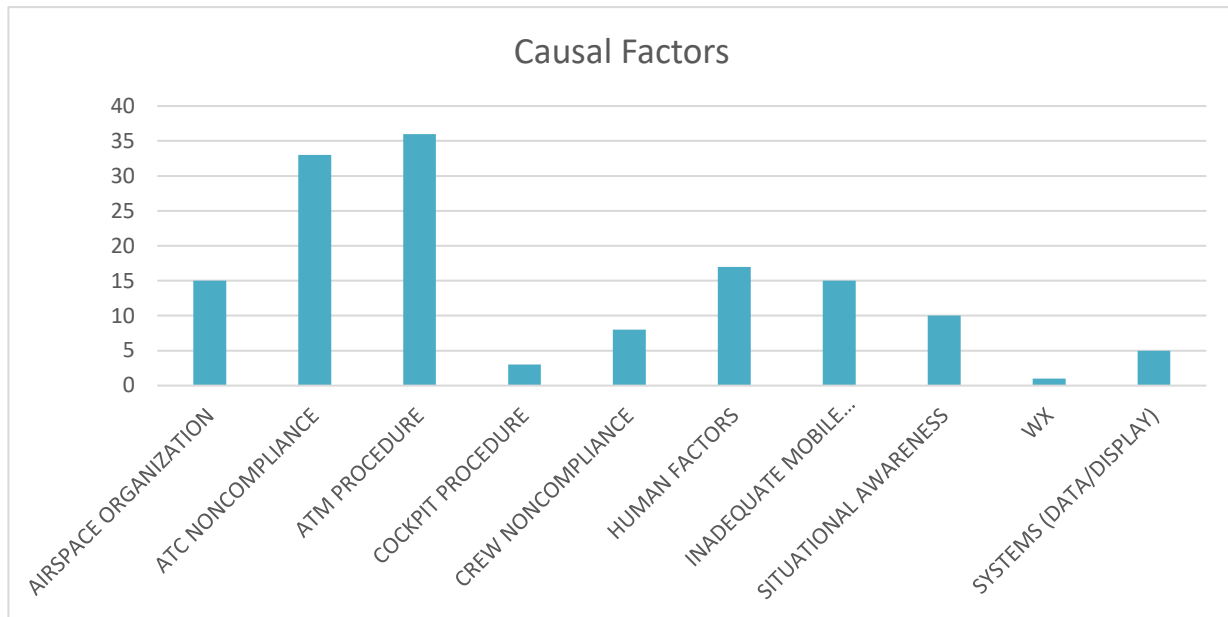
For those UCRs classified as AIRPROX, the threat levels of severity were as indicated in the graph below.



Source: IATA

**Figure 21: UCRs within RASG AFI - Contributing Factors**

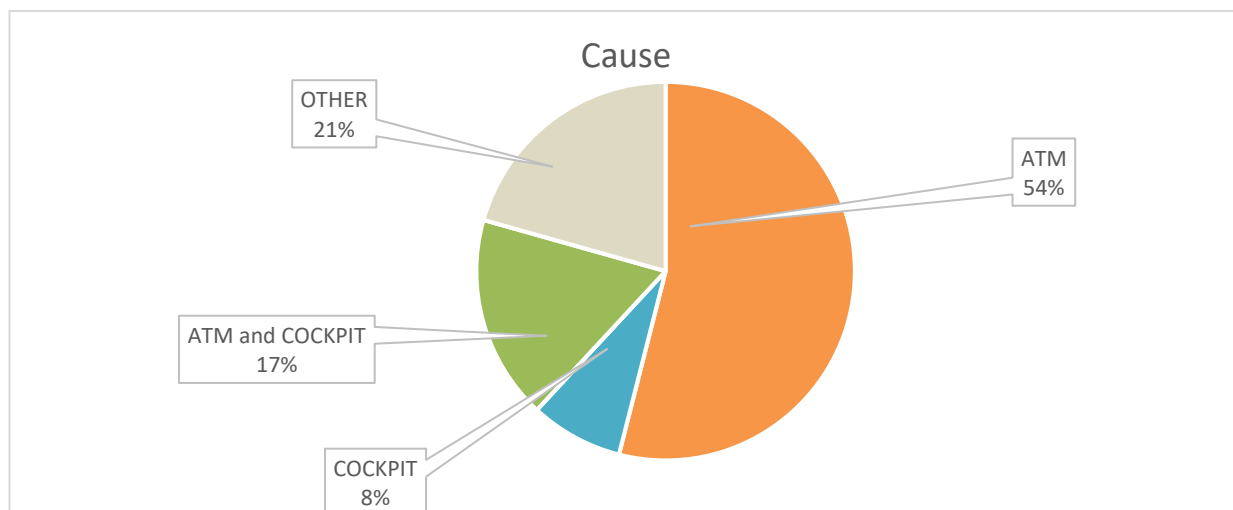
According to AIAG analysis the following graph shows the factors that contributed to the UCRs and the highest three (3) factors at thirty-six (36), thirty-three (33) and seventeen (17) count were ATM Procedure, ATC Noncompliance and Human Factors.



Source: IATA

**Figure 22: Causes of Incidents**

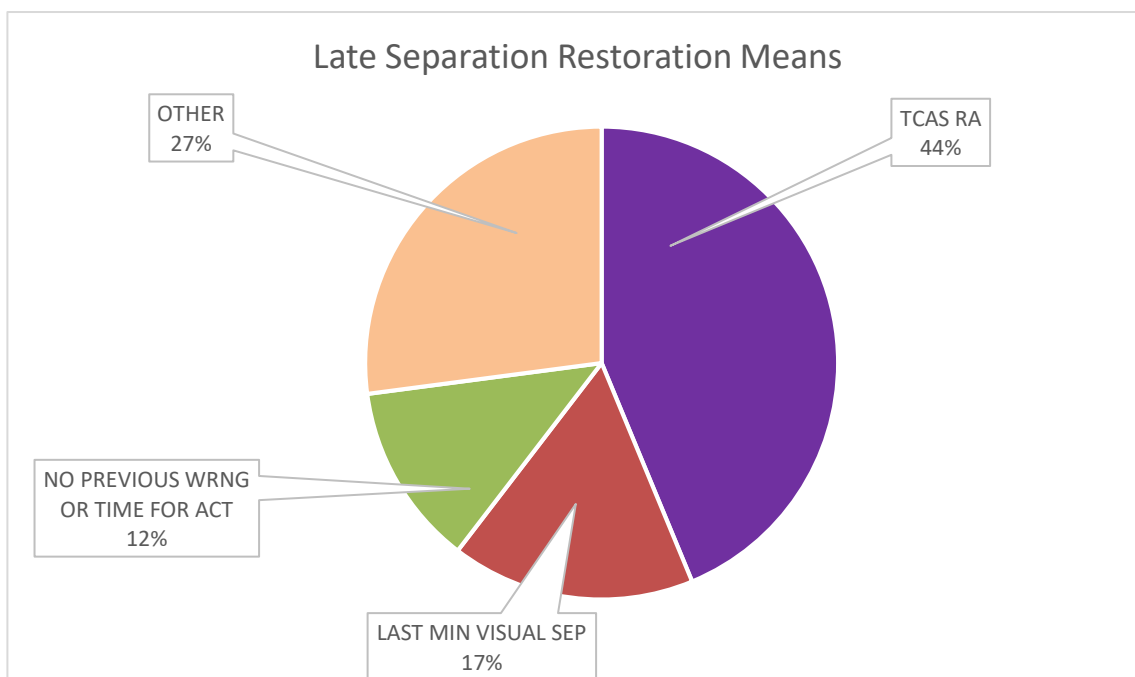
The graph below shows the percentage (%) of the party responsible for causing the occurrence with ATM responsible for 54%; Other 21%, combination of ATM and Cockpit Crew at 17% and Cockpit Crew alone 8%.



Source: IATA

**Figure 23: Late Separation Restoration Means**

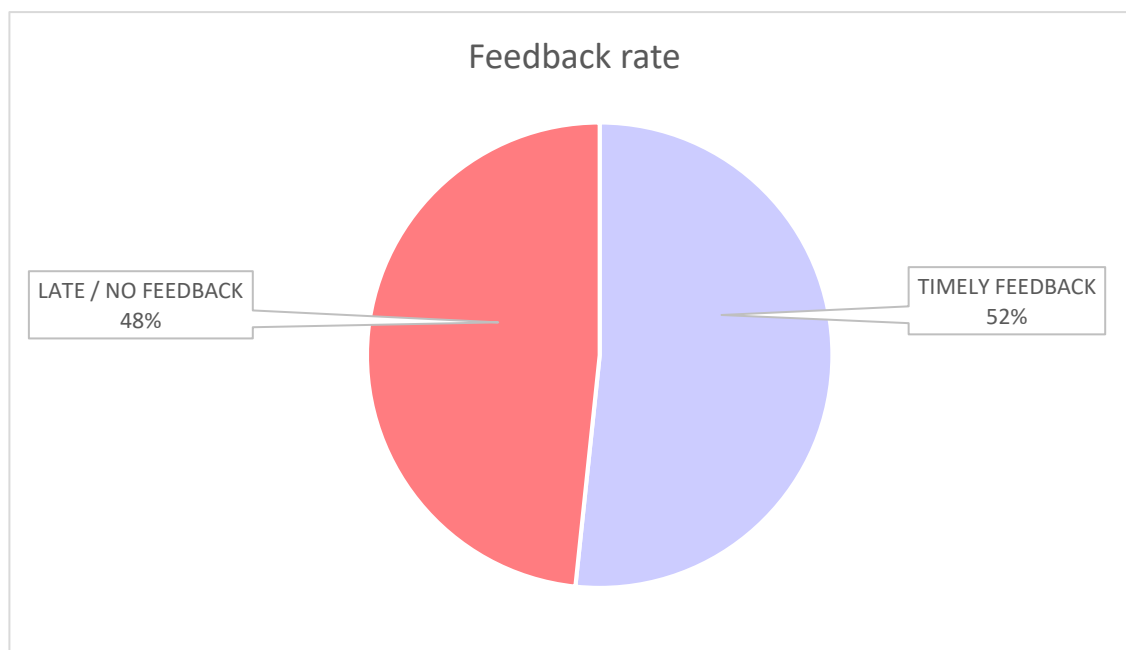
The graph shows the means used for late restoration of separation in cases where minima was compromised.



Source: IATA

**Figure 24: UCR Feedback Rate**

This graph shows percentage of timely feedback (52%) and late or no feedback (48%)



Source: IATA

## 3 Conclusions and Recommendations

### 3.1 Conclusions

Based on the analyses of the available data for the year under review, the following conclusions are drawn:

- Achievements registered:
  - “Zero SSC” status in the WACAF Region maintained; and one (1) of the two (2) in the ESAF Region resolved;
  - The status of zero CFIT and LOC-I related accidents maintained.
  - Regional Offices Safety Teams (ROST) conducted assistance missions to States identified under the AFI Plan programme for 2018, during which the teams provided guidance and assistance in averting potential SSCs.
  - The audit results of the forty-six (46) audited States within the RASG-AFI region (to which the ICAO ESAF and WACAF Regional Offices are accredited) showed an improvement in the number of States with EI  $\geq$  60% from twenty-four (24) in 2017 to twenty-six (26) at the end of 2018.
  - The average USOAP Overall EI% for States in the RASG-AFI region has improved from 50.06% in 2017 to 52.4% at the end of 2018, which is still below the world average of 67.4 %.
  - Twelve (12) International Airports in Eleven (11) beneficiaries States (Abidjan, Bamako, Lagos, Abuja, Niamey, Libreville, Dakar, Maputo, Lusaka, Kigali, Manzini and Windhoek) have been certified so far through the AFI Plan Project. This achievement raised the percentage of certified aerodrome in Africa from 22,05% in 2016 to 27,69% at end of 2018. as of today increase in number of international airports certified
  -
- Challenges encountered:
  - Runway Excursion (RE) related accidents remained the most predominant High-Risk occurrence and should continue to be a main priority for Safety Enhancement Indicators (SEI) in the RASG-AFI Region;
  - Although zero CFIT and |LOC-I related accidents were reported they continue to be under the high risk category;
  - Resolution of the remaining SSC in Eritrea impeded by weak political commitment and non-collaboration;
  - A quarter (25%) of audited States are below 30% EI, half of the States that are above 60% EI are in fact less than 65% and have a very small margin from 60%EI.
  - Constraints in conducting USOAP CMA on-site Activities and assistance missions (ROST, RS Go-Team) to some deserving States due to unsafe political situations (e.g. Somalia, South Sudan);
  - Establishment of an appropriate framework by States for recognition of IOSA and ISSA as effective safety mechanisms and airlines to obtain certification as appropriate;
  - Although this report has captured predictive safety information to some extent, the low level of aviation activities (few contributors of safety data) and SSP/SMS implementation within the RASG-AFI region were yet to evolve to desired maturity.

### 3.2 Recommendations

- On-going efforts to resolve the remaining significant safety concerns (SSCs) in Eritrea should be rigorously pursued by all stakeholders using every practical means possible, as a matter of priority;
- The APIRG/RASG-AFI coordination should be improved for greater alignment and harmonisation and a strategy developed and implemented as envisaged under Council Decision C-DEC 210/4 and Global PIRG-RASG Forum outcomes.
- RASG-AFI States should be encouraged to embrace and actively participate in the Global Aviation Safety Oversight System (GASOS) initiative;
- RASC should urge all States to establish effective RSTs, pursue certification of their international aerodromes and provide feedback on progress made to the RASC;
- AFCAC to review the effectiveness of the AFI-CIS Programme and vigorously pursue its implementation, particularly with the resolution of the remaining SSC;
- RASC should establish an effective mechanism on monitoring the implementation of the ASRT recommendations and providing feedback on the status to the RASG-AFI on regular basis;
- Organisations identified by the RASC to serve in the ASRT (i.e. IATA, ICAO, AFCAC, BOEING, AIRBUS, etc.) should maintain a high level of commitment to the efficient execution of the functions of the team, in order to meet its expectations

## Appendix 1 –List of Member States of the RASG-AFI

Angola	Madagascar
Benin	Malawi
Botswana	Mali
Burkina Faso	Mauritania
Burundi	Mauritius
Cameroon	Mozambique
Cape Verde	Namibia
Central African Republic	Niger
Chad	Nigeria
Comoros	Rwanda
Congo	Sao Tome and Principe
Côte d'Ivoire	Senegal
Democratic Rep. of the Congo	Seychelles
Djibouti	Sierra Leone
Equatorial Guinea	Somalia
Eritrea	South Africa
Ethiopia	South Sudan
Gabon	Swaziland
Gambia	Togo
Ghana	Uganda
Guinea-Conakry	United Republic of Tanzania
Guinea-Bissau	Zambia
Kenya	Zimbabwe
Lesotho	
Liberia	



## Appendix 2– List of Permanent Partners of RASG - AFI

Airports Council International (ACI)

African Civil Aviation Commission (AFCAC)

African Airlines Association (AFRAA)

Airbus Aircraft Manufacturer (AIRBUS)

Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar (ASECNA)

Boeing Commercial Airplane Company (BOEING)

Civil Air Navigation Services Organization (CANSO)

Cooperative Development of Operational Safety and Continuing Airworthiness Programmes (COSCAPs)

European Aviation Safety Agency (EASA)

Federal Aviation Administration – United States of America (FAA-USA)

Flight Safety Foundation (FSF)

International Air Transport Association (IATA)

International Federation of Airline Pilots Association (IFALPA)

International Federation of Air Traffic Controllers Association (IFATCA)

Regional Safety Oversight Organizations (RSOOs)

World Food Programme - United Nations (WFP-UN)

## Appendix 3 –List of States Having USOAP Safety Oversight Effective Implementation (EI) of 60% and greater as at December 2018

Botswana	
Burkina Faso	Mozambique
Cameroon	Namibia
Cape Verde	Niger
Cote d'Ivoire	Nigeria
Eq. Guinea	Rwanda
Ethiopia	Senegal
Gambia	South Africa
Ghana	Tanzania
Kenya	Togo
Madagascar	Uganda
Mali	Zambia
Mauritania	Zimbabwe
Mauritius	

## Appendix 4 –Certified International Aerodromes within the RASG-AFI Region

In the spirit of “No Country Left Behind” initiative, the AFI Plan has implemented a project for aerodromes certification. The set target is that at least 45% of States should develop capacity to certify their international aerodromes by the end of 2016. In this regard and based on objective established criteria, sixteen priority States of the AFI region were identified for assistance in the certification of one international aerodrome. The following States/aerodromes constitute the scope of this project:

- WACAF Region: Burkina Faso/Ouagadougou, Cameroon/Yaoundé, Côte d’Ivoire/Abidjan, The Gambia/Banjul, Mali/Bamako, Niger/Niamey, Nigeria/Abuja and Senegal/Dakar.
- ESAF Region: Angola/Luanda, Botswana/Gaborone, Mozambique/Maputo, Namibia/Windhoek, Seychelles/Victoria, Swaziland/Mbabane, Uganda/Kampala, Zambia/Lusaka for the
- Four other airports were added to the Project at the States’ request (Gabon/Libreville under the ongoing SAFE Project, Nigeria/Lagos, Rwanda/Kigali and Senegal/Diass), knowing that they will support the related costs.

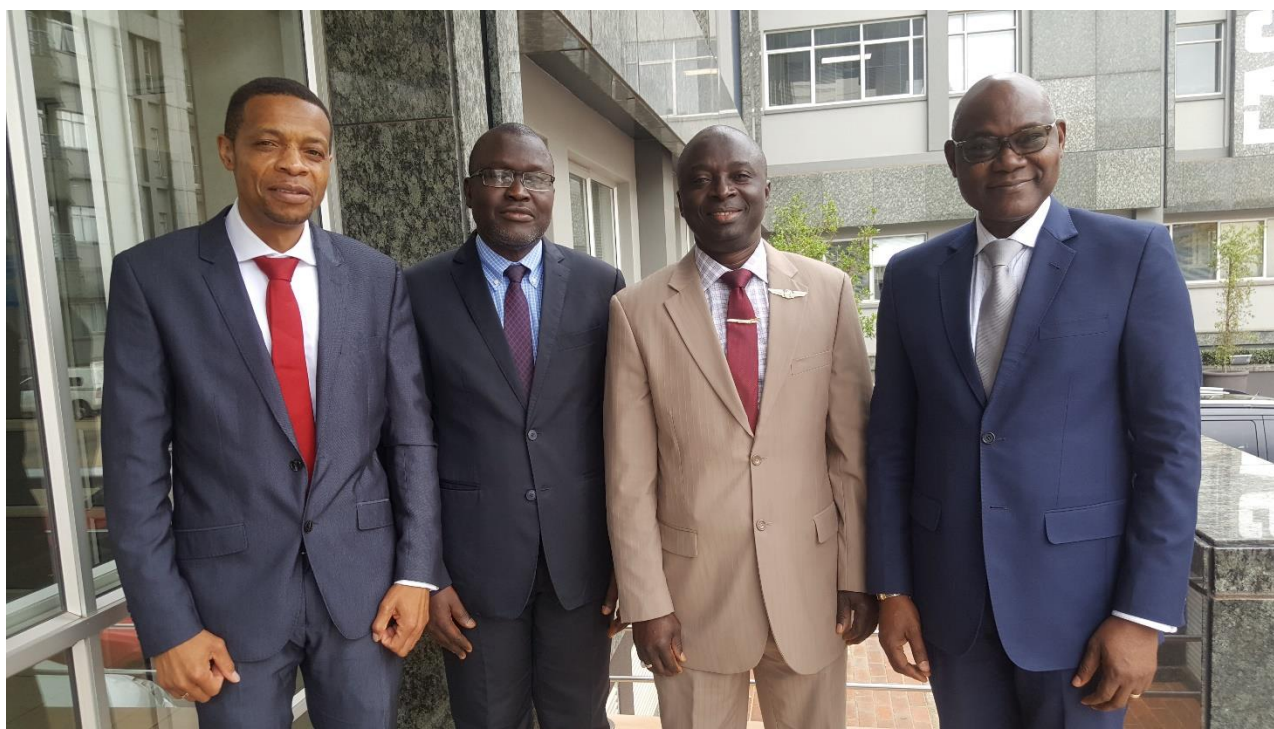
The Project uses experience and expertise from States that have already certified at least one international aerodrome; and Regional Organizations (RSOOs).

Launching meetings were followed by familiarization workshops from which States submitted their action plan for the implementation including the resolution of deficiencies found by the APEX reviews of these airports.

## Appendix 5: Acknowledgement

RASG-AFI acknowledges the valuable contributions of:

- BOEING and AIRBUS (for sponsoring the printing of the ASR);
- The RASG-AFI Annual Safety Report Team (ASRT) Members who contributed to the productions of the RASG-AFI Annual Safety Reports:



From left to right:

Blessing KAVAI .....IATA (Chairman)  
 Maury SECK.....AIRBUS  
 Kebba Lamin JAMMEH .....ICAO (Secretariat)  
 Chamsou D. ANDJORIN.....BOEING  
*(Not in the picture: Papa Atoumane Fall & James Danga.....AFCAC)*

## ABBREVIATIONS

ACC – Area Control Centre  
ACI – Airports Council International  
AFI – Africa and Indian Ocean  
AI – Accident Investigation  
AIAG – AFI ATS Incident Analysis Group  
ANC – Air Navigation Commission  
ANSP – Air Navigation Service Providers  
AOC – Air Operator Certificate  
APAC – Asia Pacific  
ARC – Abnormal Runway Contact  
ASR – Annual Safety Report  
ASRT – Annual Safety Report Team  
ATC – Air Traffic Control  
ATM – Air Traffic Management  
ATS – Air Traffic Services  
CAA – Civil Aviation Authority  
CIS – Commonwealth of Independent States  
CMA – Continuous Monitoring Approach  
ESAF – Eastern and Southern Africa  
ESI – Emerging Safety Issues  
EUR – Europe  
FIR – Flight Information Region  
FLT – Flight  
FSO – Fundamentals of Safety Oversight  
GCOL – Ground Collision  
GOA – Ground Operation Agent (ISAGO)  
IATA – International Air Transport Association  
ICAO – International Civil Aviation Organization  
ICVM – ICAO Coordinated Validation Mission  
IFALPA – International Federation of Airline Pilots' Association

IFATCA – International Federation of Air Traffic Controllers’ Association

IFBP – In-Flight Broadcasting Procedures

IOSA – IATA Operational Safety Audit

ISAGO – IATA Safety Audit of Ground Operations

LATAM – Latin America

MENA – Middle East and North Africa

MID – Middle East

MNT – Maintenance

NAM – North America

NAT – North Atlantic

NASA – North Asia

ORG – Organization and Management

PA – Pan American

RASC – RASG AFI Steering Committee

RASG – Regional Aviation Safety Group

RE – Runway Excursion

RI – Runway Incursion

RWY – Runway

SAM – South America

SARPs – Standard and Recommended Practices

SCF – PP Systems Component Failure PowerPlant

SCF – NP Systems Component Failure Non-PowerPlant

SMS – Safety Management Systems

SSC – Significant Safety Concerns

SSP – State Safety Programme

SST – Safety Support Team

TWY – Taxiway

UCR-Unsatisfactory Condition Report

UNK – Unknown; 3 per. Mov. Avg. (AFI) – 3 Year Moving Average (takes average rate over 3 years)

USOAP – Universal Safety Oversight Audit Programme

WACAF – Western and Central Africa;

RASG – AFI Aviation Safety Partners

**AIRBUS**