

# RASG-AFI

## Annual Safety Report 2015



## Second Edition

Issued in May 2016

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## Foreword

The establishment of a Regional Aviation Safety Group for Africa and the Indian Ocean (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 monitors progress, coordinates actions among its Member States and makes recommendations to ICAO on means to facilitate the implementation of the Global Aviation Safety Plan (GASP) and the associated Global Aviation Safety Roadmap (GASR) within its assigned region. It serves as a regional cooperative forum that would help to increase awareness of regional safety issues and at the same time provide a mechanism for addressing them. It is responsible for coordinating and monitoring the successful implementation of all safety initiatives in the RASG - AFI Region.

The RASG-AFI structure consists of a Chairperson, two (2) RASG-AFI Vice-Chairpersons from States and one (1) RASG-AFI Vice-Chairperson from Industry.

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 (see **Appendix 2** for the list of Members of RASG-AFI); and
- those located outside the area which have notified ICAO that aircraft on their register 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 3 for Permanent Partners)

RASG-AFI undertakes the following functions: analyze safety information and hazards to civil aviation at the regional level and review the action plans developed within the region to address identified hazards; facilitate the sharing of safety information and experiences among all stakeholders; ensure that all safety activities at the regional and sub-regional level are properly coordinated to avoid duplication of efforts; reduce duplication of efforts by encouraging collaboration, cooperation and resource sharing; conduct follow-up to GASP/GASR activities as required; coordinate with APIRG on safety issues; and provide feedback to ICAO to continually improve and ensure an up-to-date global safety framework.

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 projects namely: Significant Safety

Concerns (SSCs), Fundamentals of Safety Oversight (FSO), Accident Investigation (AI) and Emerging Safety Issues (ESI). The term for the Chairperson, Vice-Chairpersons and Champions is 2 years.

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

The two ICAO Regional Directors for East and Southern Africa (ESAF) and Western and Central Africa (WACAF) serve as Secretary to the RASG-AFI.

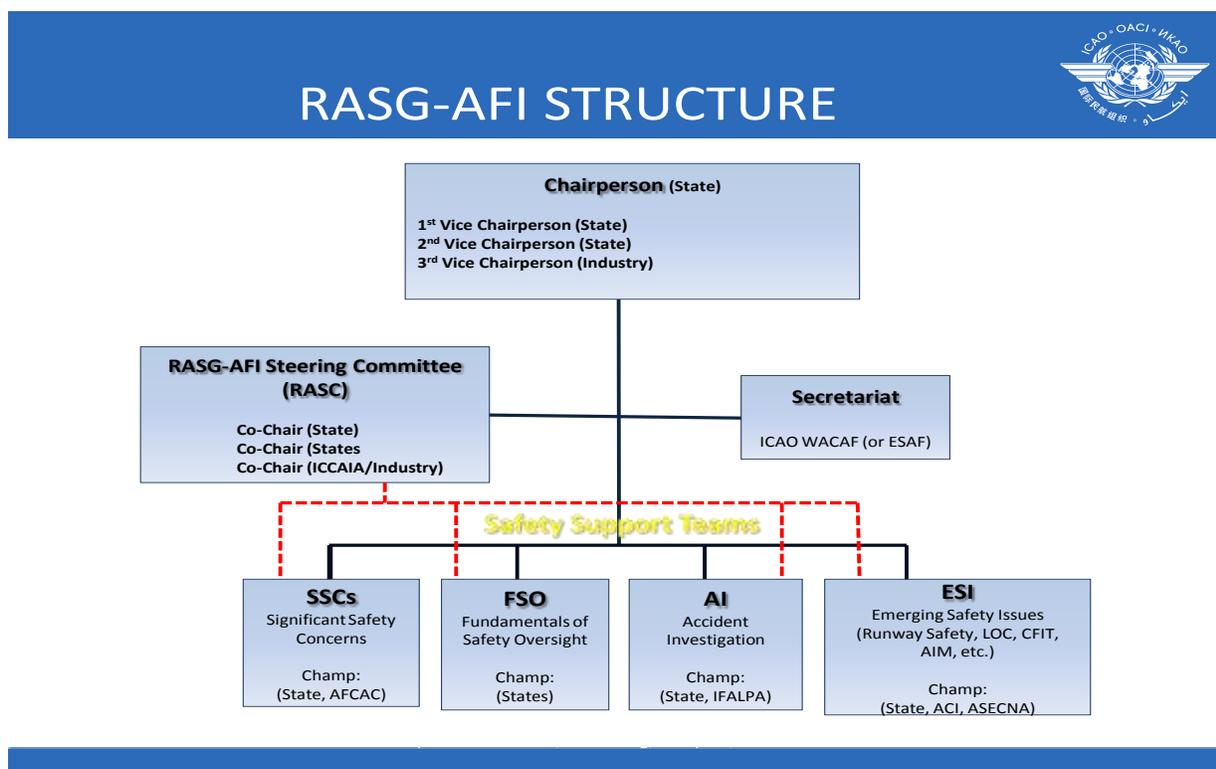
At its Third Meeting held in Yamoussoukro, Cote d'Ivoire in December 2015, RASG-AFI elected the following officials to the Bureau, who are entrusted with steering the affairs of the Group for the next two years ending 2017: Chairperson – Ghana; 1<sup>st</sup> Vice-Chairperson – South Africa; 2<sup>nd</sup> Vice-Chairperson – Cote d'Ivoire; 3<sup>rd</sup> Vice-Chairperson – IATA. The Meeting also revised the RASG-AFI structure for optimization of the reporting lines of the Group. The RASG-AFI Steering committee is co-chaired by the Chairperson and the 1st Vice-chair of the RASG AFI and Boeing representing the Industry. (see Figure 1).

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

Membership of the Task Force will comprise: 2 Representatives from APIRG; 2 Representatives from RASG-AFI; and 1 Representative from AFCAC. Airbus was nominated to represent Industry in the APIRG/RASG-AFI Joint Coordination Task Force.

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; and preparing a draft progress report to the ANC.

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. Therefore, RASG-AFI members are encouraged to share their safety data with the ASRT.

**Figure 1:**


## 1. Executive Summary

This Second Edition of the RASG-AFI Annual Safety Report presents safety information collected from ICAO, IATA, AFCAC, ACI Africa, Boeing and other aviation partners, particularly information related to aviation occurrences in the RASG - AFI Region, generally within the period 2011 to 2015, and the analysis performed by the Annual Safety Report Team (ASRT).

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 and IATA IOSA and ISAGO, as well as, other occurrences (Incidents) reported by States or airlines in order to identify emerging risks in the Region.

The aim of the predictive safety information is to collect and analyze 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.

Analysis of available safety information on the AFI Region showed that the top category to focus safety enhancements is related to Runway Safety (Excursions - REs). Out of the six (6) accidents recorded in the RASG-AFI Region in 2015 for scheduled commercial operations involving aircraft with maximum take-off mass of 5700kg and above, five (5) were Runway safety related. There is therefore, an urgent need for concerted efforts by all aviation stakeholders to address this phenomenon, thereby drastically reducing the RASG-AFI accident rate to world average.

Notwithstanding, the following categories also need consideration:

Loss of Control In-flight (LOC-I);  
Controlled Flight Into Terrain (CFIT).

LOC-I and CFIT occurrences showed decreasing trends, especially at the end of 2015. Aircraft accidents are categorized using the definition provided in Annex 13 to the Chicago Convention—Aircraft Accident and Incident Investigation.

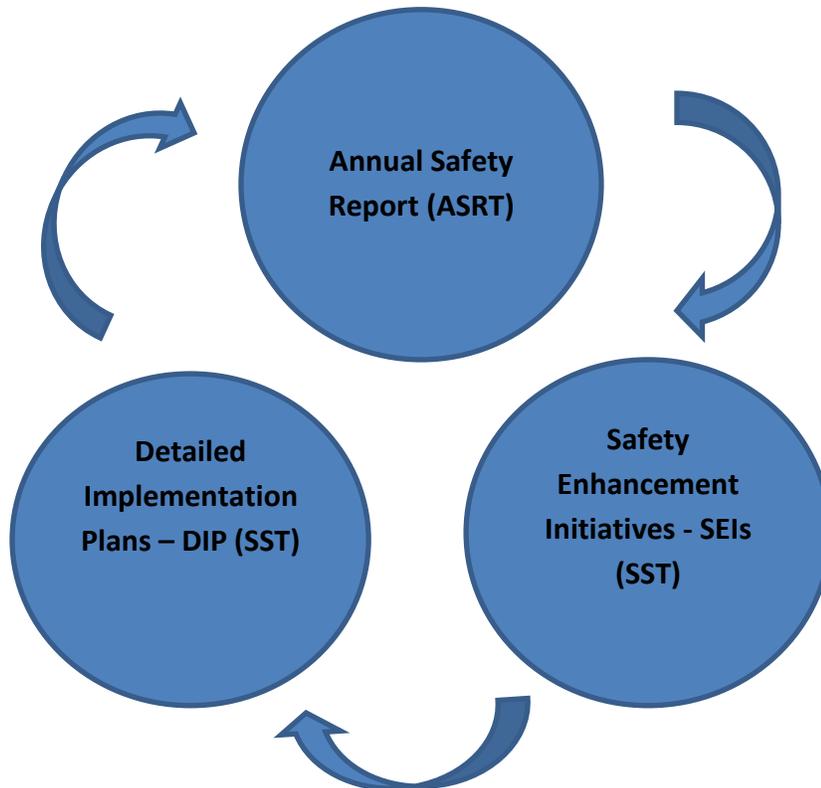
Results of the ICAO Universal Safety Oversight Audit Programme (USOAP) at the end of 2015, showed an increase from 15 to 22 States in the AFI Region that had high levels of Effective Implementation (EI) of ICAO SARPs (i.e. above 60% EI of the Abuja Safety Target) and a decrease from 6 to 4 States with SSCs. Current performance indications are that it is highly unlikely that the Abuja safety targets will be met on time; therefore, there is a need to revise strategies in order to improve the rate of implementation to a more acceptable level. The same results indicated that lack of adequate and effective technical staff qualification and training represents the most significantly affected USOAP Critical Element (CE) 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 should be amongst the priorities of the AFI Region.

State Safety Programme (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 Abuja Safety Targets require States with 60% EI and above to implement SSP (i.e. from 15 in 2014 to 22 RASG-AFI States at 2015 end). However, the rate of implementation of SSP within the AFI Region has been considerably slow. Out of the 48 AFI States, none has so far attained Level 4 of SSP implementation. Only 11 States have initiated the implementation of SSP and the highest level attained is Level 2 (see Figure 14 and Table 1).

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

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

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



## 1.1 Regional Traffic Volume

While the air transport sectors flown in RASG-AFI Region came down from 2011 to 2012, there was a significant growth in all types (Jet & Turboprop) from 2014 to 2015. 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 AFI is slightly above one million movements a year, with 57% on jets and 43% on turboprop. This calls for caution when comparing AFI accident rates with the rest of the world, as any single jet or turboprop accident represents a rate of 2!

Please refer to the table below:

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

<b>RASG - AFI Region Traffic Volume</b>						
<b>General Info</b>						
<b>Regional Sector Count (Millions)</b>						
	2011	2012	2013	2014	2015	<b>Total</b>
<b>Jet</b>	<b>0.49</b>	<b>0.47</b>	<b>0.50</b>	<b>0.52</b>	<b>0.57</b>	<b>2.55</b>
Jet (IATA)	0.31	0.30	0.33	0.34	0.38	<b>1.65</b>
Jet (IOSA)	0.32	0.32	0.34	0.36	0.40	<b>1.74</b>
Jet (Non-IATA)	0.18	0.17	0.17	0.18	0.20	<b>0.89</b>
Jet (Non-IOSA)	0.17	0.15	0.16	0.16	0.18	<b>0.81</b>
<b>Turboprop</b>	<b>0.42</b>	<b>0.41</b>	<b>0.40</b>	<b>0.41</b>	<b>0.44</b>	<b>2.09</b>
Turboprop (IATA)	0.12	0.13	0.12	0.12	0.14	<b>0.62</b>
Turboprop (IOSA)	0.14	0.14	0.14	0.14	0.16	<b>0.72</b>
Turboprop (Non-IATA)	0.30	0.28	0.29	0.30	0.30	<b>1.47</b>
Turboprop (Non-IOSA)	0.28	0.27	0.26	0.28	0.28	<b>1.37</b>
<b>Total AFI</b>	<b>0.91</b>	<b>0.88</b>	<b>0.90</b>	<b>0.93</b>	<b>1.01</b>	<b>4.64</b>
Total AFI (IATA)	0.43	0.43	0.45	0.46	0.52	<b>2.28</b>
Total AFI (IOSA)	0.46	0.46	0.48	0.50	0.55	<b>2.46</b>
Total AFI (Non-IATA)	0.47	0.46	0.46	0.48	0.50	<b>2.36</b>
Total AFI (Non-IOSA)	0.45	0.42	0.42	0.43	0.46	<b>2.18</b>

Source: IATA

## 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

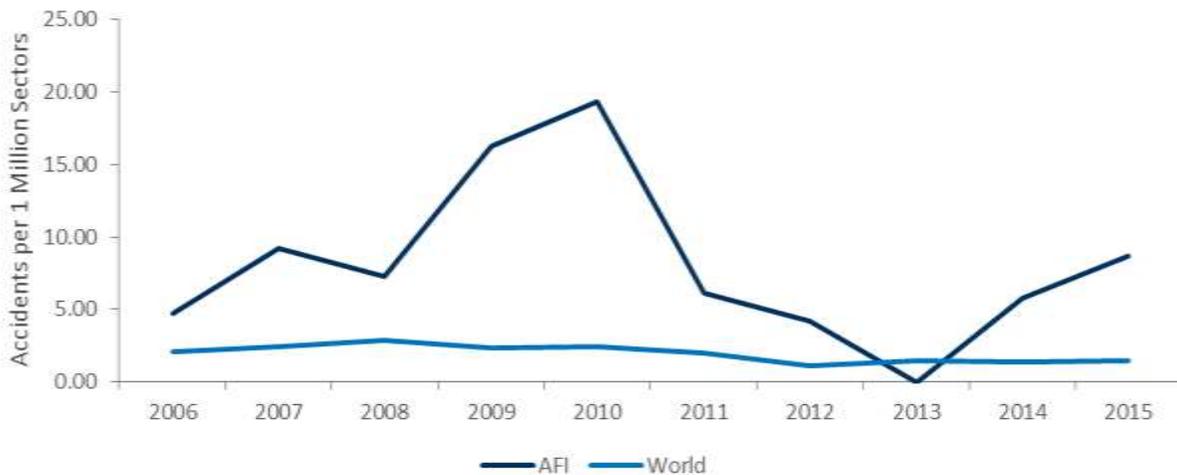
In accordance with the Abuja safety targets, accident rate should be progressively reduced to be in line with global average by end of 2015.

The process followed by the Annual Safety Report Team (ASRT) to analyze reactive safety information consisted of retrieving safety data from ICAO, AFCAC, BOEING, AIRBUS, ACI Africa, CANSO and IATA.

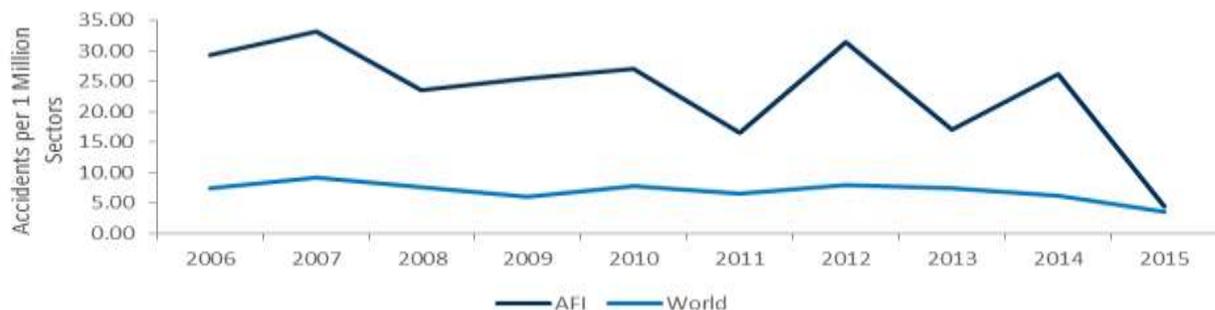
#### 2.1.1 Regional Accident Rates

The graphs below represent the rate of occurrence of Jet and Turboprop accidents over the time period 2006-2015, per million flight sectors for operators from the AFI Region (dark blue) versus the World (light blue). This data is based on sectors of operators registered (AOC) in AFI.

**Figure 3a: Jet Annual Accident Rate - RASG AFI versus World (2006 – 2015).**



**Figure 3b: Turboprop Annual Accident Rate - RASG AFI versus World (2006 – 2015).**

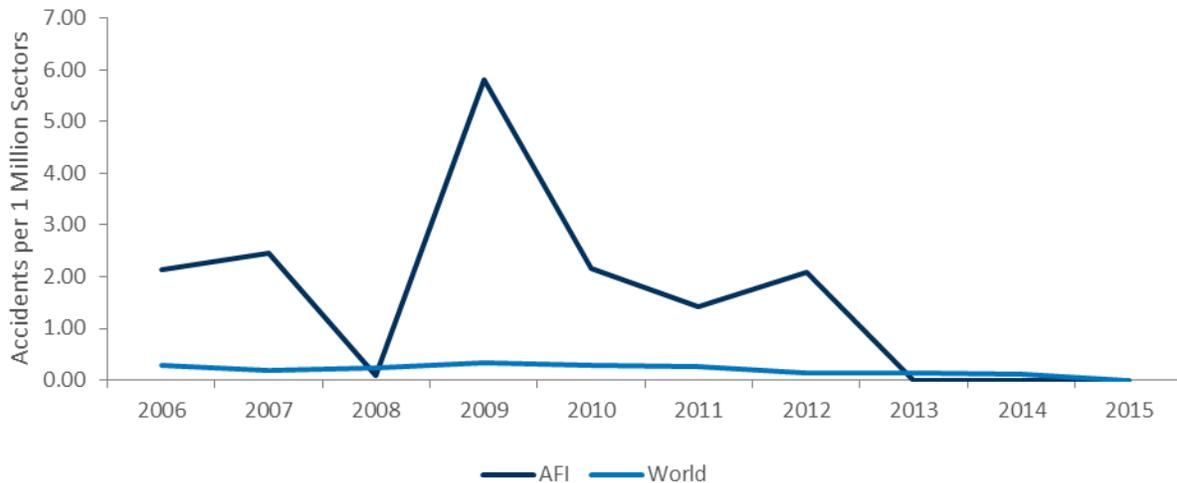


Source: IATA GADM

### 2.1.2 Regional Fatal Accident Rate

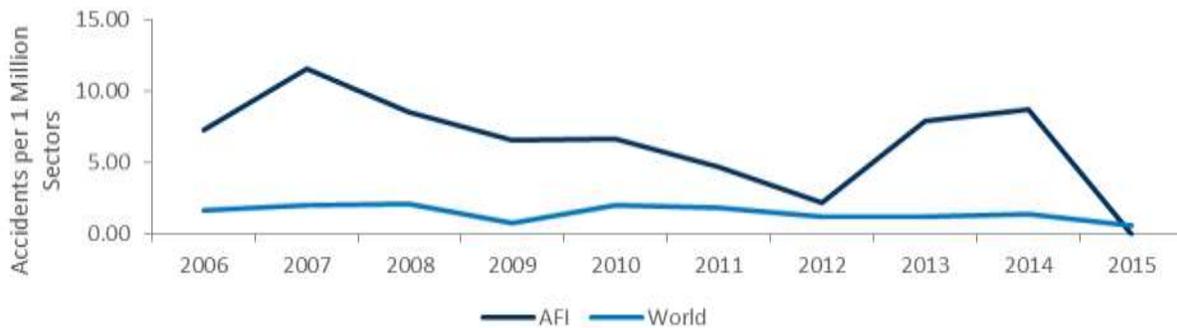
The fatal accident rate involving aircraft with maximum take-off mass of 5700kg and above, engaged in commercial scheduled flights, as indicated Figure 5, increased from 2011 to 2012 and but has been decreasing till December 2014.

**Figure 4a: Jet Accident and Fatality Risk – RASG AFI vs World**



Source: IATA GADM

**Figure 4b: Turboprop Accident and Fatality Risk – RASG AFI vs World**



Source: IATA GADM

### 2.1.3 Analysis of RASG - AFI Accidents between 2012 & 2014

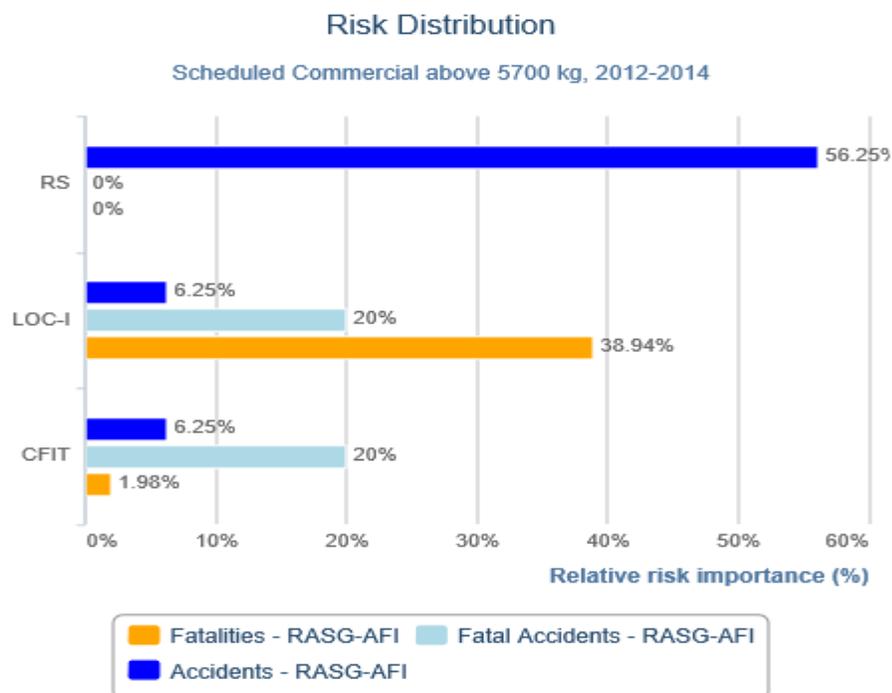
Based on an analysis of accident data covering the 2012–2014 time period, ICAO identified three high-risk accident occurrence categories:

- Runway Safety-related events
- Loss of Control In-flight (LOC-I)
- Controlled Flight into Terrain (CFIT)

As indicated in Figure 5, these three categories represented 68.75% of the total number of accidents, 40% of fatal accidents and 40.92% of all fatalities between 2012 and 2014 for aircraft with maximum take-off weight (MTOW) above 5700kg.

The Figure shows that in these High-risk categories, 56% 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 38.94% of fatalities. The number of fatal accidents in the Controlled flight into terrain (CFIT) and Loss of Control In-flight accidents (LOC-I) categories were equal (20%) for the period under review.

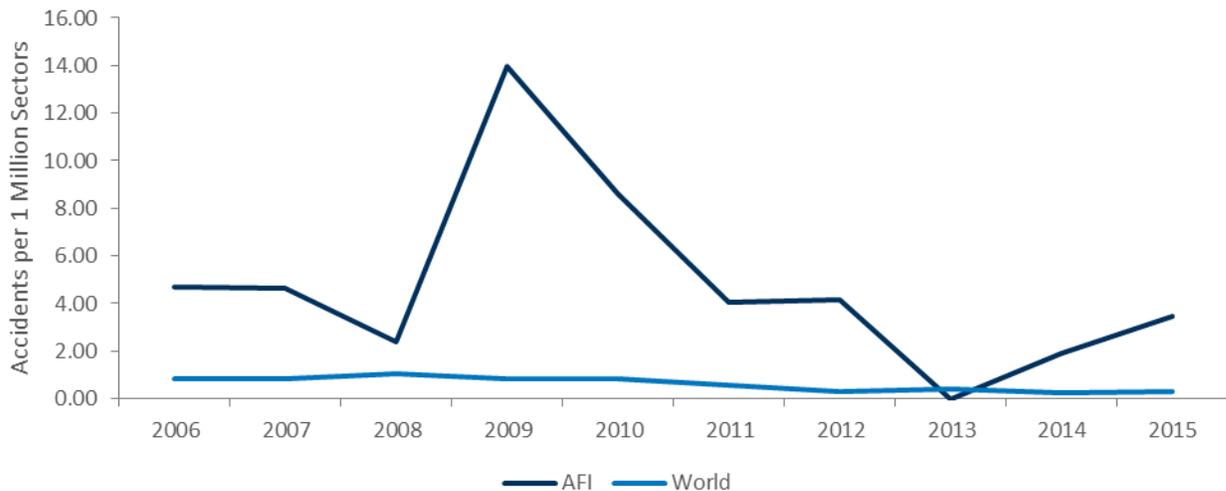
**Figure 5: Distribution of High-risk Accidents for the period 2012 – 2014**



Source: ICAO iSTAR

**Figure 6a: Jet Damage Type (Hull Loss) RASG AFI vs World 2006- 2015**

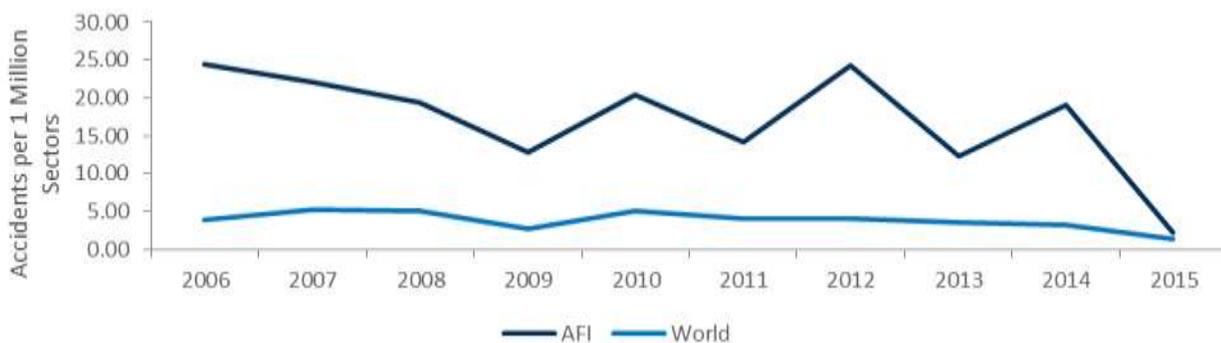
The graph below shows the accident rate according to the Jet damage type (hull loss) for RASG AFI versus the world for the period 2006 - 2015.



Source: IATA GADM

**Figure 6b: Turboprop Damage Type (Hull Loss) RASG AFI vs World 2006-2015**

The graph below shows the accident rate according to the Turboprop damage type (hull loss) for RASG AFI versus the world for the period 2006 - 2015.

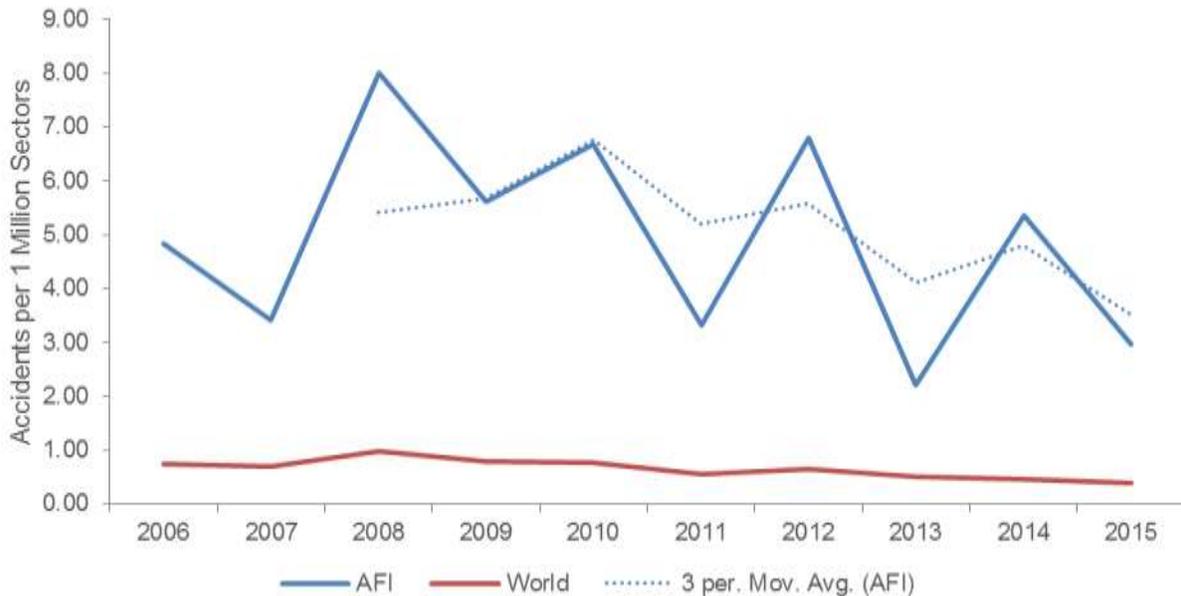


Source: IATA GADM

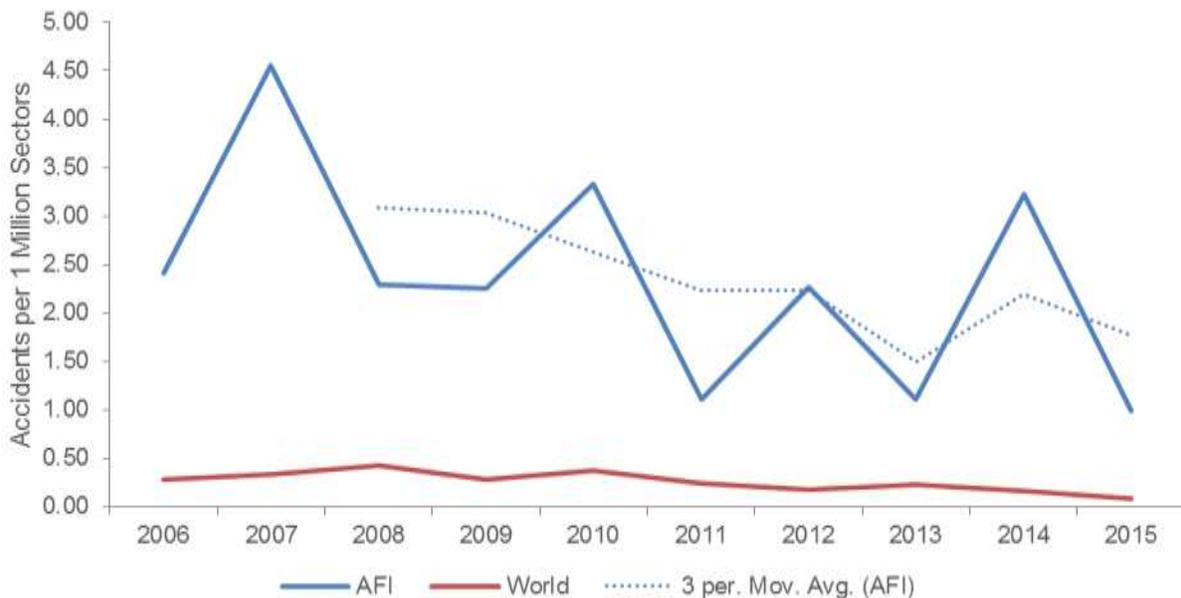
**Figure 7: RASG - AFI Region High-risk Accident Trend (2006 – 2015)**

The graphs below show the trend for RASG - AFI Region in the three (3) accident occurrence categories for which targets were set in Abuja in 2012. Though there was a significant growth in traffic volumes since 2012 the rate had a slight downward trend.

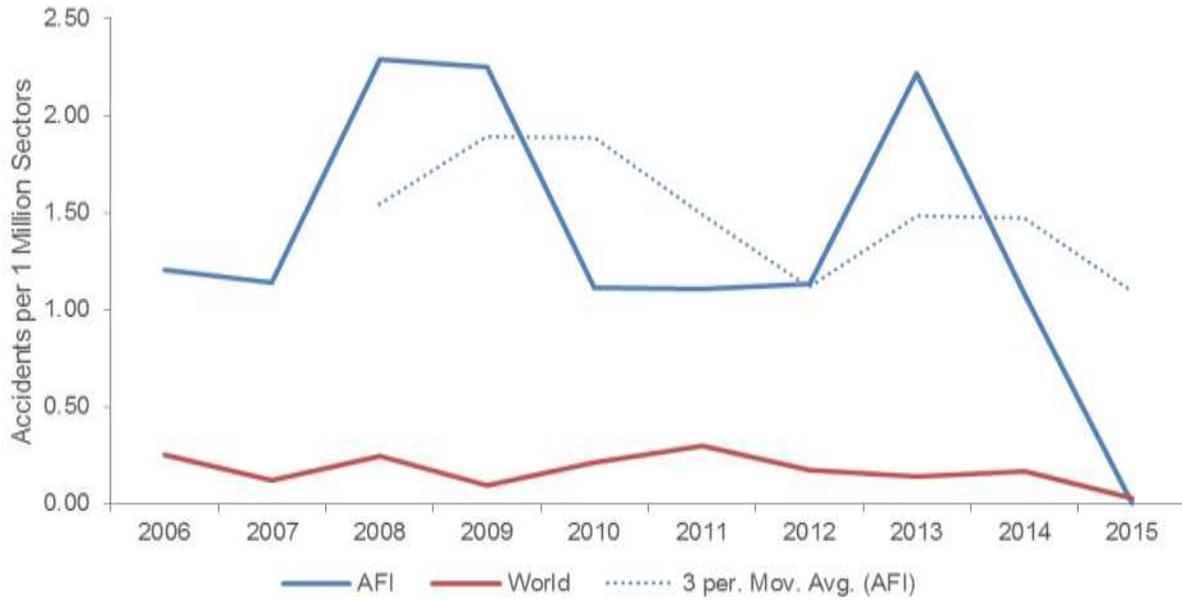
**7a. Runway Safety Related Accidents (Jet & Turboprop)**



**7b. LOC-I Accidents (Jet & Turboprop)**



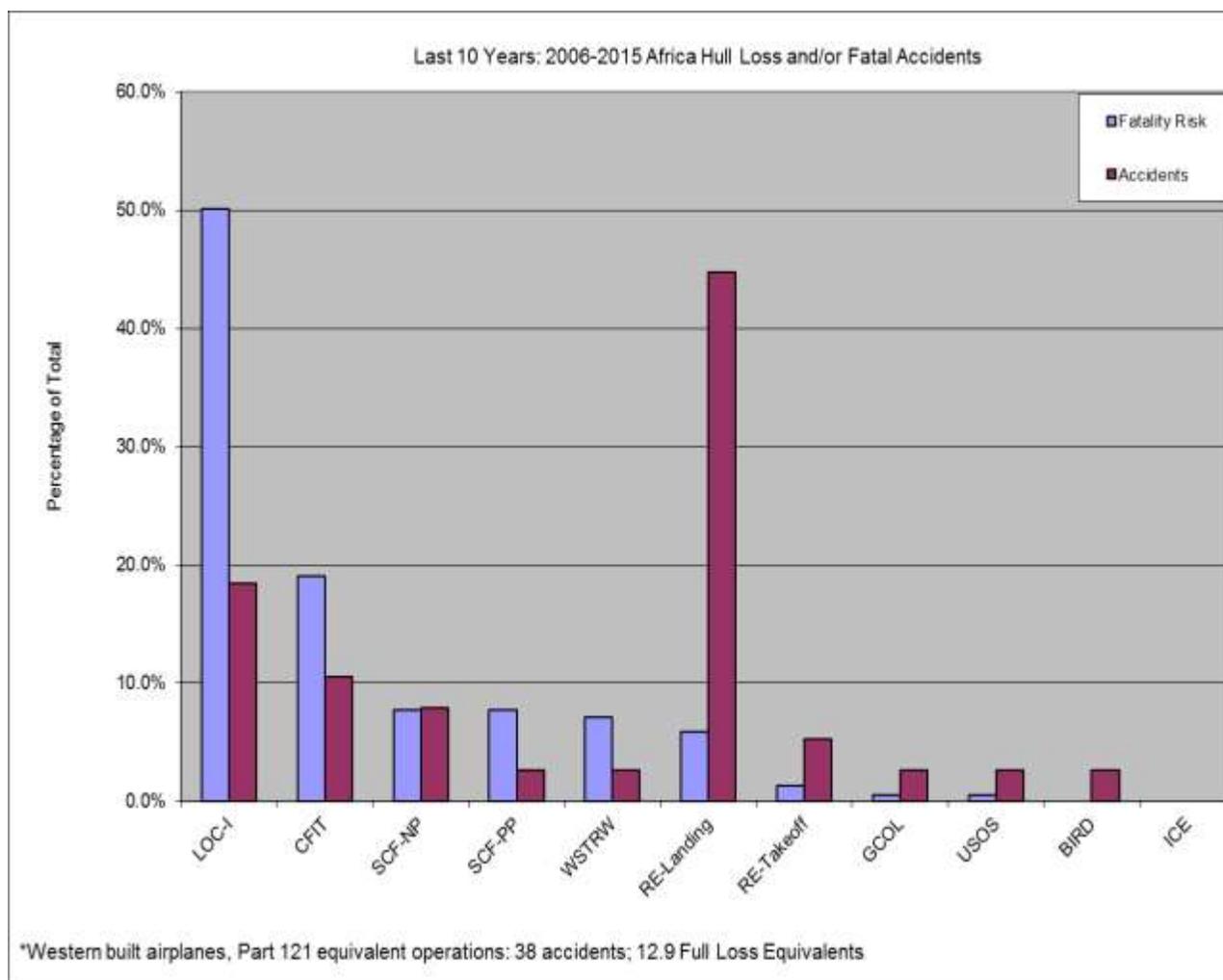
**7c. CFIT Accidents (Jet & Turboprop)**



Source: IATA GADM

**Figure 8 AFI Hull Loss & Fatality Risk for 2006 - 2015**

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 AFI Region for the period were: LOC-I, CFIT and RE-Landing with LOC-I recording the highest fatality risk.



Source: Boeing

### 2.1.4. Summary Status of Implementation of Abuja Safety Targets – RASG-AFI Region

Safety Target	Situation as at end of 2015	Achievements
Reduce Runway related accidents and serious incidents by 50% by end of 2015	Runway Related Accidents & serious incidents had a rate of <b>6.8</b> accidents per million sectors in 2012 and <b>2.8</b> by end of 2015. Though a general down trend (positive) over the 3 years a lot more work still needs to be done by stakeholders  <i>(Source: IATA)</i>	Twelve (12) Runway Safety Teams had been established at 12 international airports within AFI Region as of December 2015. Pursuing the establishment of local RST in each State, will help alleviating the RS risks.
Reduce Controlled Flight Into Terrain (CFIT) related accidents and serious incidents by 50% by end of 2015	CFIT related Accidents & serious Incidents had a rate of <b>1.2</b> per million sectors in 2012 and went down to <b>0</b> in 2015. Though a down trend, work is needed to maintain the status quo (Fleet modernisation by AFI operators; Introduction of PBN procedures (APV) by RASG-AFI States; establishment and maintenance of CCO/CDO ).  <i>(Source: IATA)</i>	Safety Target met.
Reduce LOC-I related accidents and serious incidents by 50% by the end of 2015	LOC-I related accidents & serious incidents had a rate of <b>2.25</b> per million sectors in 2012 and went down to <b>0.80</b> by end of 2015. Though a down trend, efforts have to be maintained to bring this rate further down. (Follow up on implementation of action plans from ICAO NBO workshop and the IATA/BOEING JNB workshop)  <i>(Source: IATA)</i>	Safety target has been met

States to establish and strengthen autonomous Civil Aviation Authorities by end of 2013	Comprehensive data on status of CAAs not available. Although many States have in place, appropriate legal provisions establishing autonomous CAAs, effectiveness is still a challenge.  <i>(Source: ICAO)</i>	At least the twenty two <b>(22)</b> States that have attained the 60% EI Target, amongst the forty eight (48) RASG-AFI States have effective autonomy
Resolve ALL identified Significant Safety Concerns [existing ones by July 2013 and new ones within 12 months]	Four <b>(4)</b> States with four <b>(4)</b> SSCs.  <i>(Source: ICAO)</i>	Four <b>(4)</b> SSCs in four <b>(4)</b> States in 2015 as compared to thirteen (13) SSCs in seven (7) States. Progress made although Safety Target not met.
Implementation of State specific ICAO Plans of Actions by July 2013	Thirty two <b>(32)</b> States have accepted ICAO Plans of Action and are at different stages of implementation  <i>(Source: ICAO)</i>	The Abuja Safety Targets are fully incorporated in the Plans of Action.  Most States with ICAO Plans of Action have registered significant progress in the level of safety oversight
Progressively increase the Effective Implementation (EI) score of ICAO's USOAP results to no less than 60% (35% or 19 of all African States by end of 2013, and 70% or 38 of all African States by end of 2015 and 100% or 54 of all African States by end of 2017)	Twenty two <b>(22)</b> States have attained 60% of EI or greater  <i>(Source: ICAO)</i>	Safety Target not met.  Number of States with EI of 60% or greater has increased from ten <b>(10)</b> in 2012 to twenty two <b>(22)</b> at the end of 2015.
Implement State Safety Programmes (SSP) and ensure that all Service Providers implement a Safety Management System (SMS) by end of 2015	Comprehensive data on status of SSP/SMS implementation not available.  However, none of the forty eight (48) States has attained level 4 of the implementation of SSP  <i>(Source: ICAO)</i>	Eleven (11) States have initiated implementation of SSP and the highest attained is level 2

Certify all international aerodromes by end of 2015	Forty eight (48) International Aerodromes were certified.  <i>(Source: ACI Africa, based on available information)</i>	Safety Target Not Met.  Twenty one percent (21.39%) of the total number of Two hundred and twenty nine (229) international airports within AFI had been certified as of December 2015.
Require all African airlines to obtain an IATA Operational Safety Audit (IOSA) certification by end of 2015	By end of 2015 eleven (11) airlines from eleven (11) States were added to the IOSA Registry.  However, no State had yet incorporated the IOSA requirement in the regulatory standards.  <i>(Source: IATA)</i>	From a total of 20 airlines on the IOSA Registry in 2012 there were 30 airlines on the Registry by end of December 2015

## 2.2 Proactive Safety Information

### 2.2.1 ICAO USOAP 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: Legislation; CE-2: Regulations; CE-3: Organization; CE-4: Technical Staff Qualification & Training; CE-5: Technical Guidance & Tools; CE-6: Licensing, Certification, Approvals & Authorizations; CE-7: Continuous Surveillance; 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

The audit results of the RASG-AFI States by the year 2015 end (to which the ICAO ESAF and WACAF Regional Offices are accredited) have indicated some improvements in the number of States with SSCs from 6 to 4 (4 in ESAF and none in WACAF) and from 15 to 22 States with at least 60% EI (from 6 to 10 in ESAF and 9 to 12 in WACAF). The Average EI% for AFI States has increased from 42% to 45.43%.

New targets set by the ICAO Regional Offices within RASG-AFI for the end of 2016 is that 70% of AFI States must reach the 60% EI; all SSCs resolved and new ones avoided.

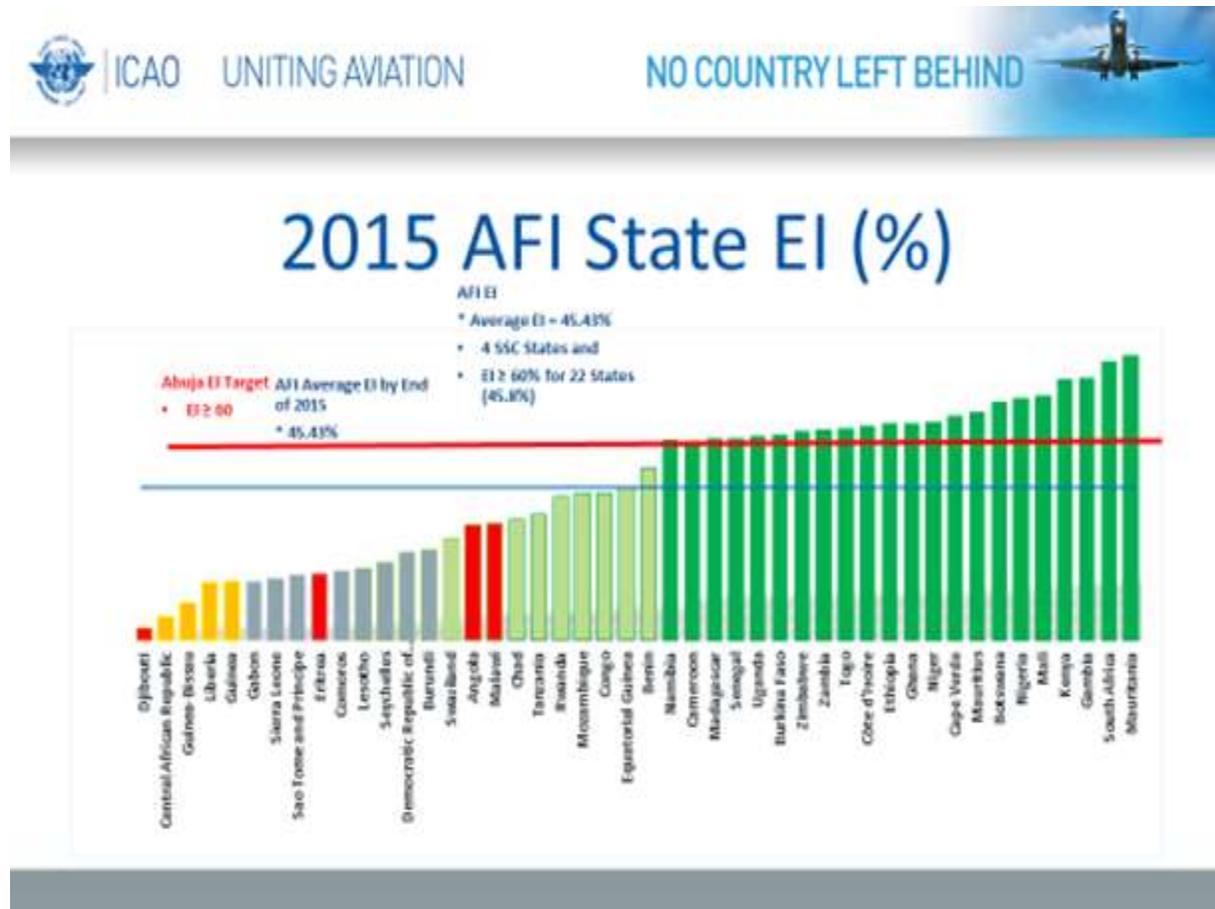
Figure 9: Progress on Safety Targets.



Source: ICAO

**Figures 10a: Status of RASG-AFI States' Safety Oversight – %EI at the end of 2015.**

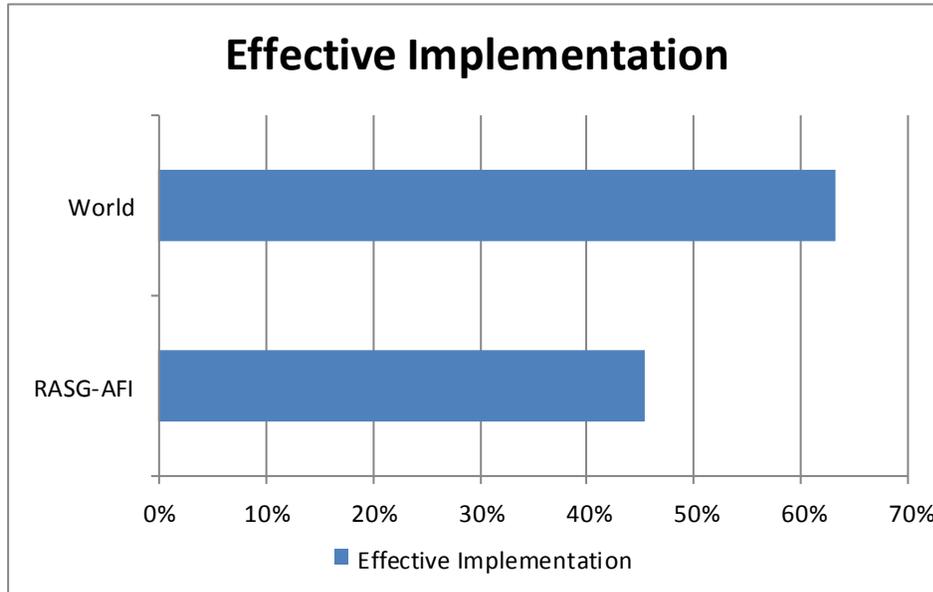
This Figure depicts the status of the 46 audited (out of the 48) AFI States. The world average Effective Implementation (EI) was 60% (this has now risen 63.15%), while for the RASG-AFI region the average has risen from 42 to 45.43%.



 4 RASG-AFI States with SSCs

 22 RASG-AFI States attained EI ≥ 60%

**Figure 10b: Status of RASG-AFI States' Safety Oversight - RASG-AFI % EI (45.43%) Vs World %EI (63.15%) end of 2015.**

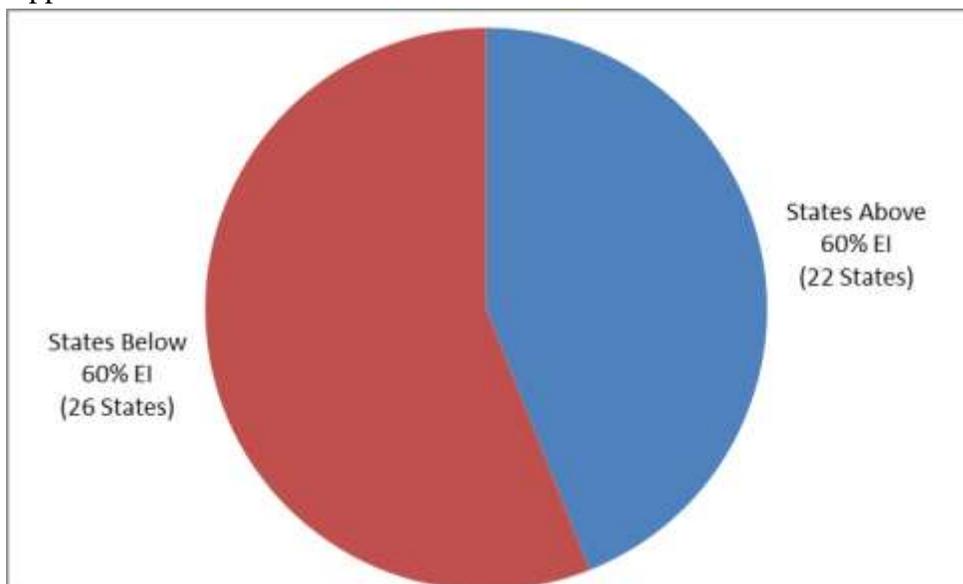


Source: ICAO iSTAR

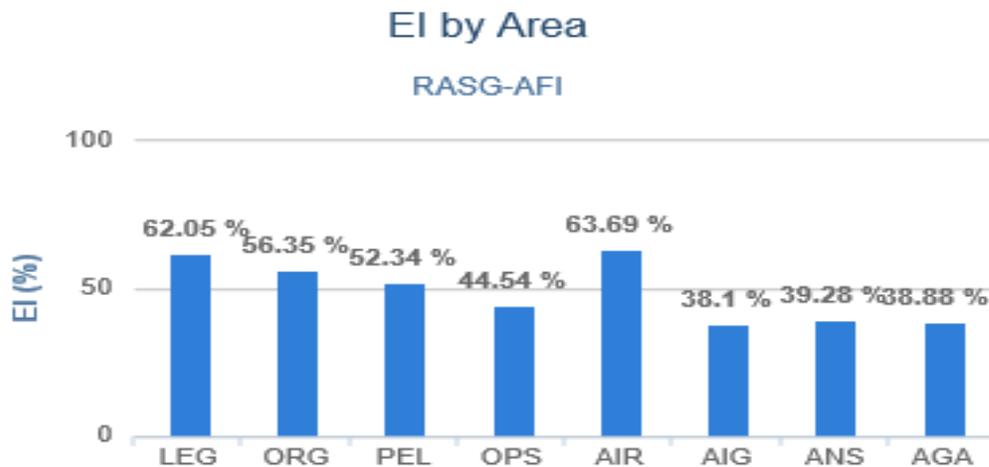
**Figure 11: States Safety Oversight Maturity**

The chart below indicates that 45.8% of the States in the RASG-AFI region have an EI of 60% or higher (i.e. 22 States as at December, 2015 end). The list of these States can be found in

Appendix 3

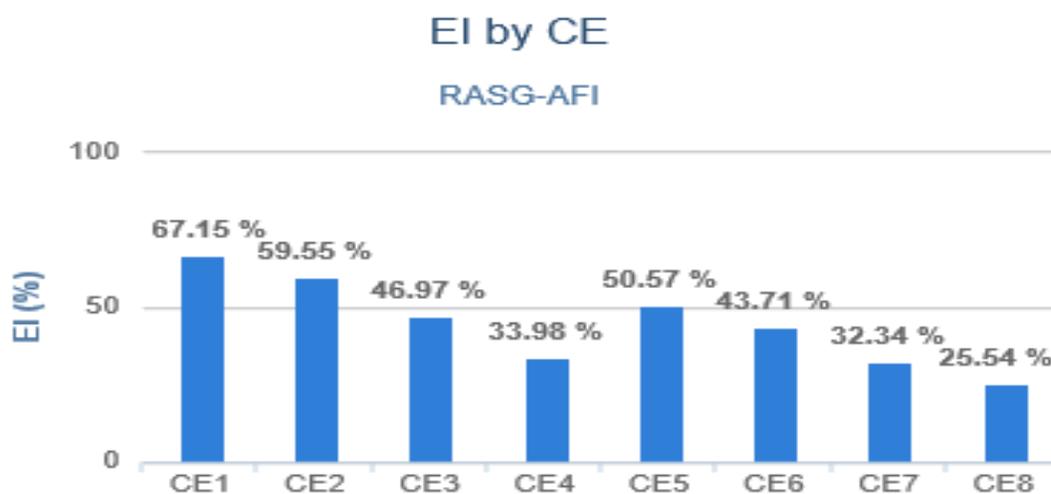


**Figure 12a: Effective Implementation of Safety Oversight Systems within RASG-AFI States by Audit Area**



In the AFI region, the average Effective Implementation in the area of AIR is highest at 63.69% and lowest in the area of AIG at 38.1% (see Figure 12 above). Effective Implementation by Critical Element (CE) indicates lowest score in CE-8 (Resolution of Safety Issues) followed by CE-4 (Technical Personnel Qualification and Training). See Figure 13 below (Source: ICAO iSTAR).

**Figure 12b: Effective Implementation of Safety Oversight Systems within RASG-AFI States by Critical Elements (CE)**



### 2.2.2 Regional Safety Initiatives

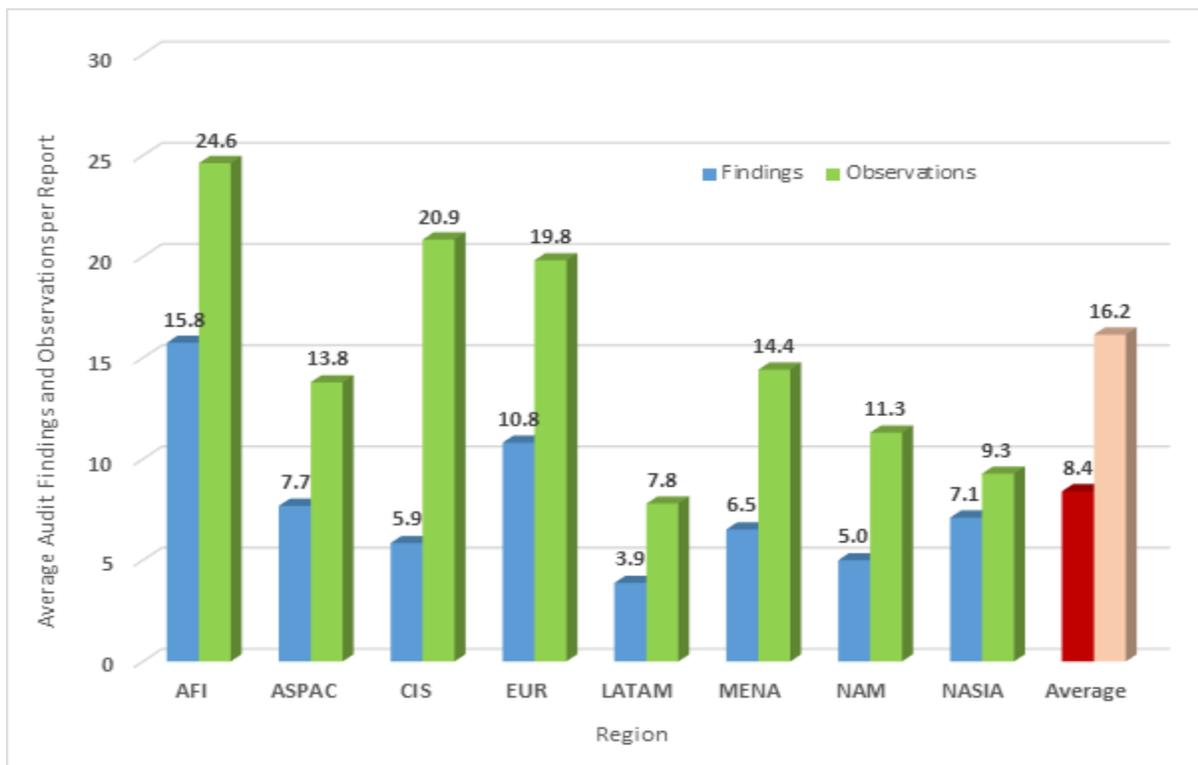
From the results of the ICAO USOAP CMA Activities, low %EI scores have been registered in the areas of fundamental safety oversight as well as aircraft accident and incident investigation systems. The Safety Support Teams of the RASG-AFI have identified these deficiencies and have developed project documents intended to improve capacities in these areas. However, funding challenges are being encountered for the successful implementation of the projects. Therefore, there is an urgent need for RASG-AFI and its partners to devise means of funding for the identified projects, in a timely manner, if the desired safety targets set for 2016 are to be met.

### 2.2.3 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 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 observations for AFI versus other regions and the world average.

**Figure 13: Trend in IOSA Findings & Observations per Region**

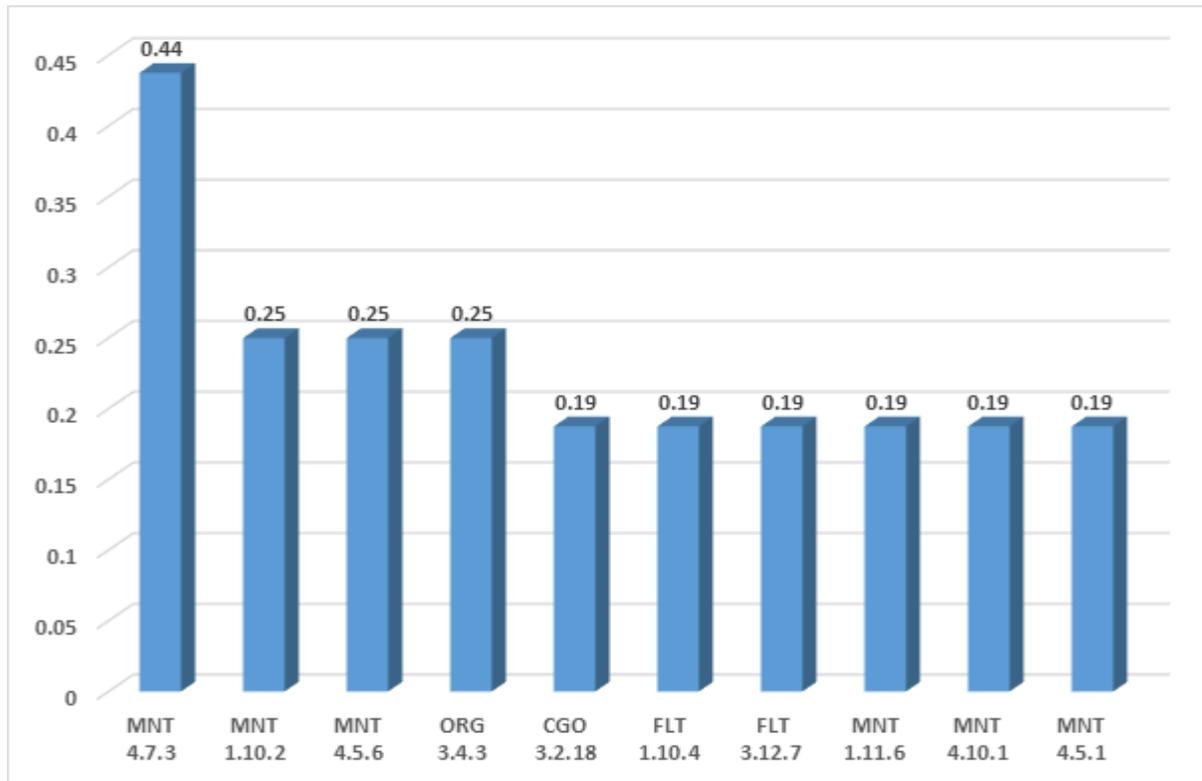


Source: IATA

The above pattern in findings and observations relates to IOSA audits conducted during the year 2015.

**Figure 14: RASG-AFI Trend in IOSA Top Findings per Audit Area**

The following graph shows the RASG-AFI trend in 2015 IOSA top findings per audit area where issues in Maintenance featured the most followed by Organisation and Cargo as well Flight issues at a slightly lower level. The pattern remains unique for each region.

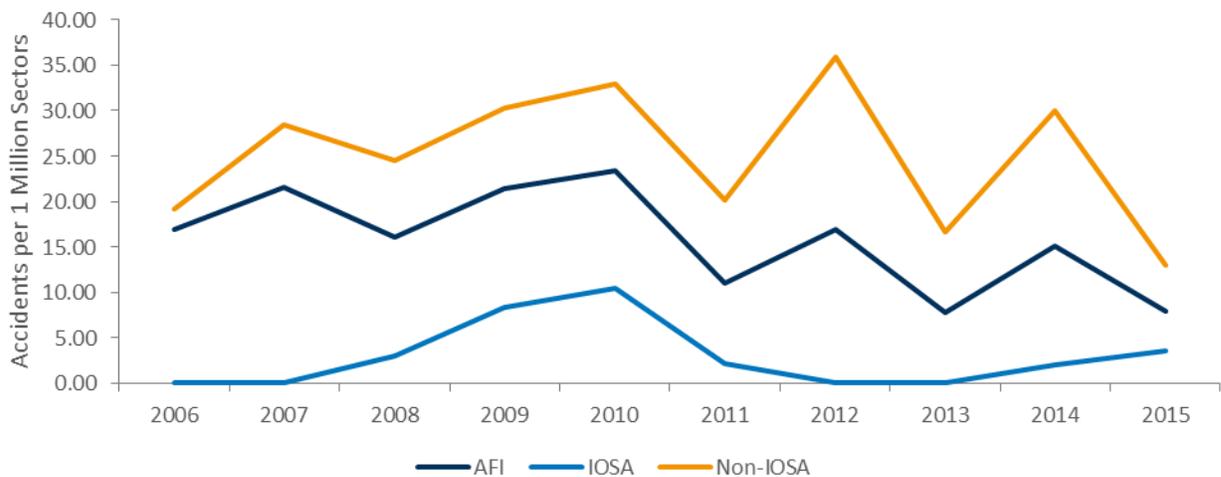


Following the call made in Abuja for RASG-AFI States to amend their regulations and make the IATA Operational Safety Audit (IOSA) a requirement for all eligible operators by December 2015, RASG has also identified the program as a best safety practice for improving regional safety performance. However, despite these efforts, States still had not made any progress in this direction by December 2015 and all the audits that have taken place since July 2012 (Abuja Declaration) were mainly through an IATA sponsored training initiative or to a minor extent on a voluntary basis.

The total number of AFI operators on the IOSA Registry as of December 31, 2015 was thirty (30).

**Figure 15: 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 2006-2015, per million flight sectors for operators from RASG AFI Region (dark blue) versus RASG AFI Region IOSA-registered operators (light blue) and Region non-IOSA-registered operators (orange). It is therefore obvious to see how the IOSA certified operators have outperformed non-IOSA certified carriers in the Region.



Source: IATA

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

### 2.3 Predictive Safety Information

One of the Abuja Safety Targets is for States that have attained  $EI \geq 60\%$  to Implement State Safety Programmes (SSP) and ensure that all Service Providers implement a Safety Management System (SMS) by end of 2015. However, not much progress has been registered in meeting this objective. Therefore, there is a need for RASG-AFI to devise a better strategy for the successful implementation of SSP/SMS by the concerned States/organizations.

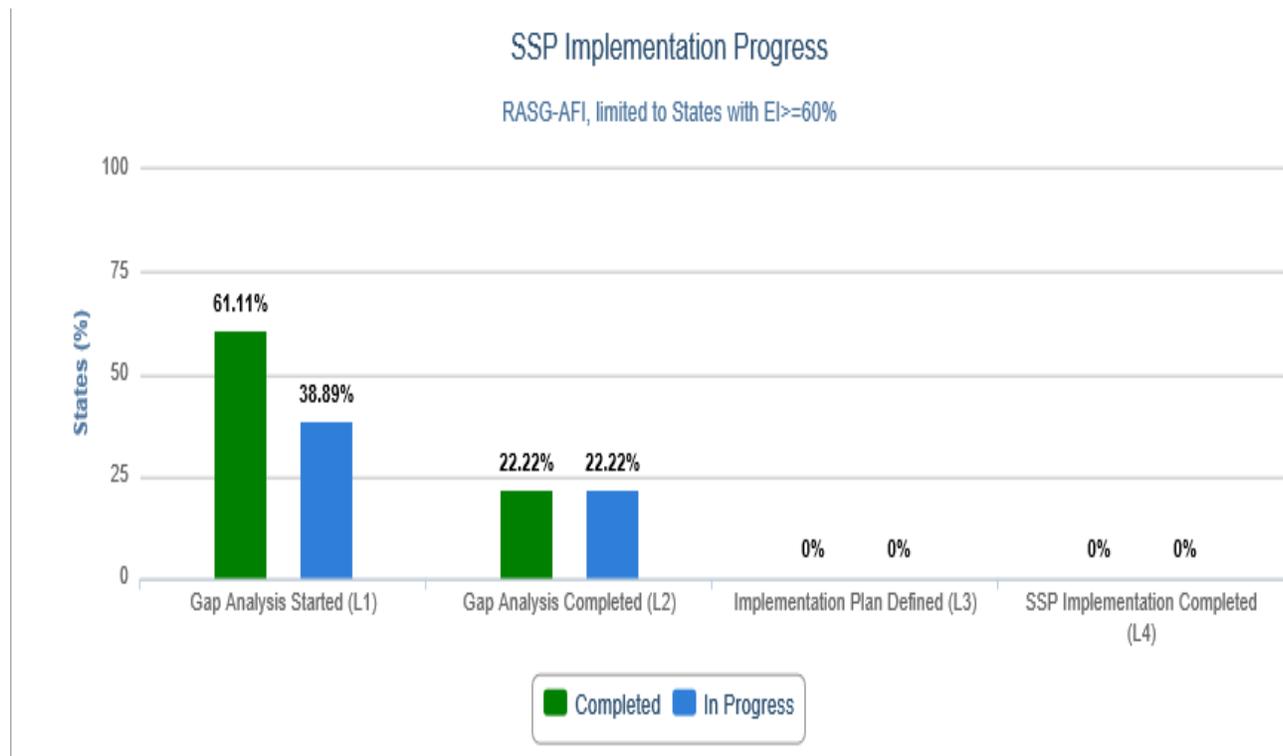
SSP is a framework that allows the State safety oversight authority and service providers to interact more effectively in the resolution of safety concerns. The SSP statistics release high level information about each Gap Analysis project. SSP implementation project has been measured for each State using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

A State having reviewed all Gap Analysis Questionnaire (GAQ) has reached Level 2.

A State having reviewed AND defined actions for all GAQs has reached Level 3.

A State having completed all actions has reached Level 4.

**Figure 16: RASG-AFI States' Safety Programme Implementation (SSP) Progress.**



Source: ICAO iSTAR

**Table 2: RASG-AFI States that have initiated the implementation of SSP.**

Out of the 48 RASG-AFI States, none has so far attained Level 4 of SSP implementation. Only 11 States have initiated the implementation of SSP and the highest level attained is Level 2.

Code	State Name	Progress	Level (Up %)	
BFA	Burkina Faso	Gap Analysis Completed	L2 / 85.5% L3	●●●○
CPV	Cabo Verde	-		○○○○
CMR	Cameroon	-		○○○○
CIV	Cote d'Ivoire	Gap Analysis Started	L1 / 76.4% L2	●●○○
ETH	Ethiopia	Gap Analysis Completed	L2 / 90.9% L3	●●●○
GMB	Gambia	-		○○○○
GHA	Ghana	Gap Analysis Started	L1	●○○○
KEN	Kenya	Gap Analysis Completed	L2 / 98.2% L3	●●●○
MDG	Madagascar	-		○○○○
MRT	Mauritania	Gap Analysis Started	L1	●○○○
MUS	Mauritius	-		○○○○
NAM	Namibia	-		○○○○
NGA	Nigeria	Gap Analysis Started	L1 / 01.8% L2	●○○○
SEN	Senegal	Gap Analysis Started	L1 / 50.9% L2	●●○○
ZAF	South Africa	Gap Analysis Completed	L2 / 96.4% L3	●●●○
TGO	Togo	Gap Analysis Started	L1 / 29.1% L2	●●○○
UGA	Uganda	Gap Analysis Started	L1 / 07.3% L2	●○○○
ZWE	Zimbabwe	-		○○○○

### 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, the effectiveness is lacking.

## 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 AFI region.

**Mandate:** the mandate of the ATS Incidents Analysis Group 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 AFI Region. Other Stakeholders can be invited to attend.

**Secretariat:** IATA Safety and Flight Operations AFI will provide 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 will be 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 2 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.

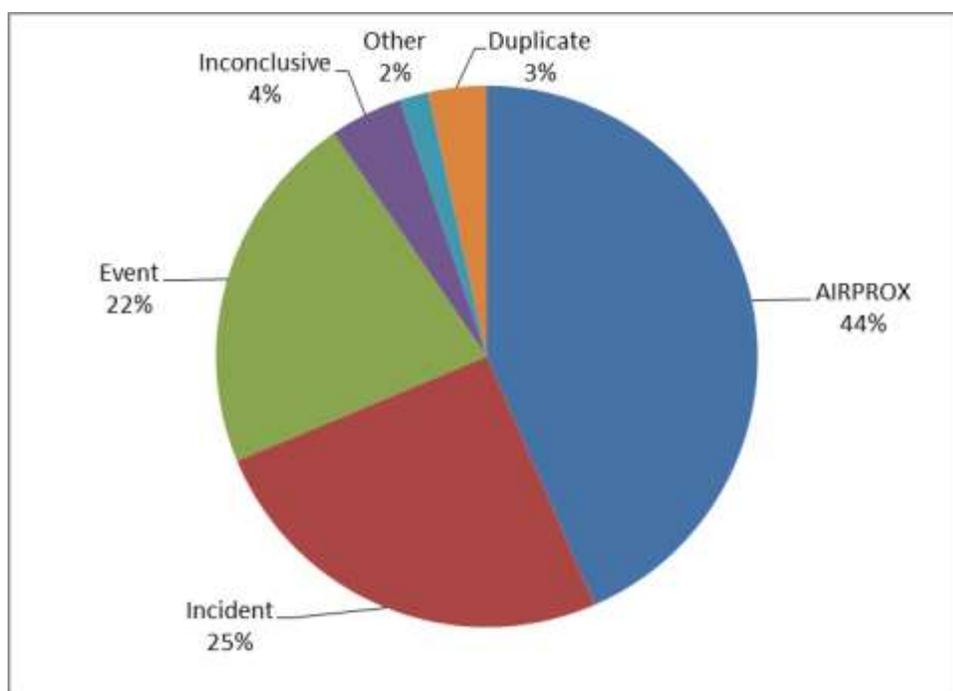
### 2.4.1 Thirteenth Meeting of AIAG (AIAG/13 - March 02 to 03, 2016)

The meeting which was convened by IATA was held at Balalaika Hotel in Sandton, Johannesburg and in attendance were: 85 participants from 44 organizations including 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), World Food Program (WFP) and International Air Transport Association (IATA). The 13<sup>th</sup> AIAG meeting analyzed a total of one hundred and fifteen (115) reports that were submitted either by operators or ANSPs for the year 2015.

Breakdown of Analyzed 2015 Incidents:

**Figure 17: Distribution of UCRs by Category after Analysis**

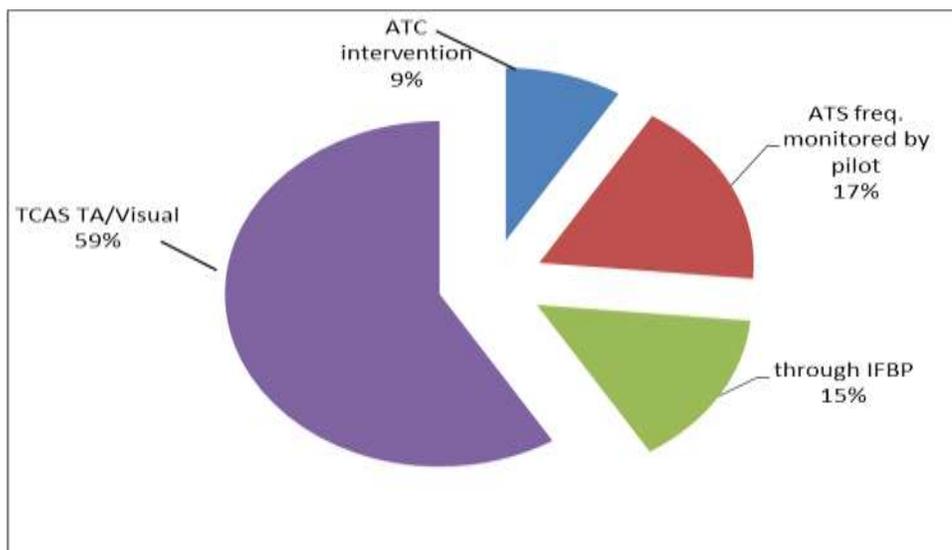
The graph below shows the distribution by category after analysis of the 115 UCRs by AIAG.



In order to enhance the analysis process, it is vital that **timely feedback** is received from the ANSPs (for example only 18% feedback on the 115 UCRs was received before AIAG/13 Meeting)

**Figure 18: Means through which Separation Minima was timely restored**

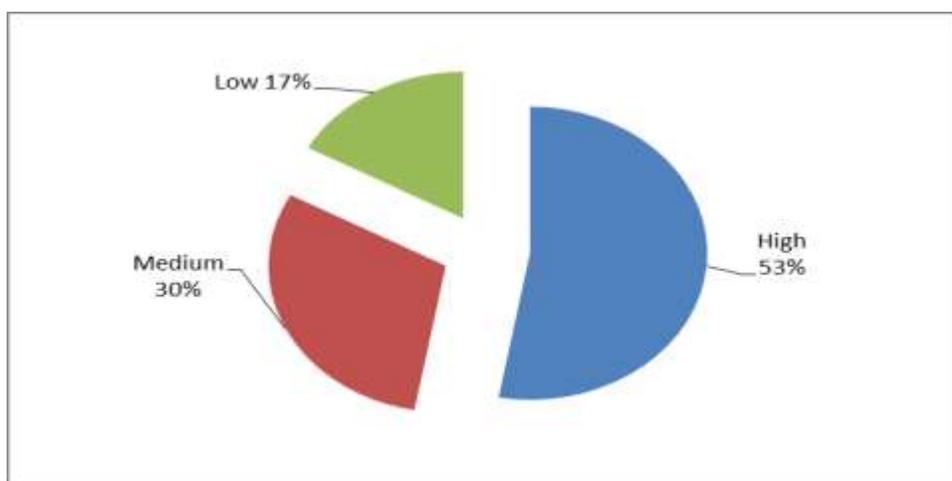
This graph below shows that 59% of separation among conflicting traffic was restored by use of TCAS; 17% by monitoring of ATS frequency by pilots; 15% by use of In-Flight Broadcast Procedure (IFBP) and 9% by ATC intervention.



Source: IATA

**Figure 19: Threat Severity Levels**

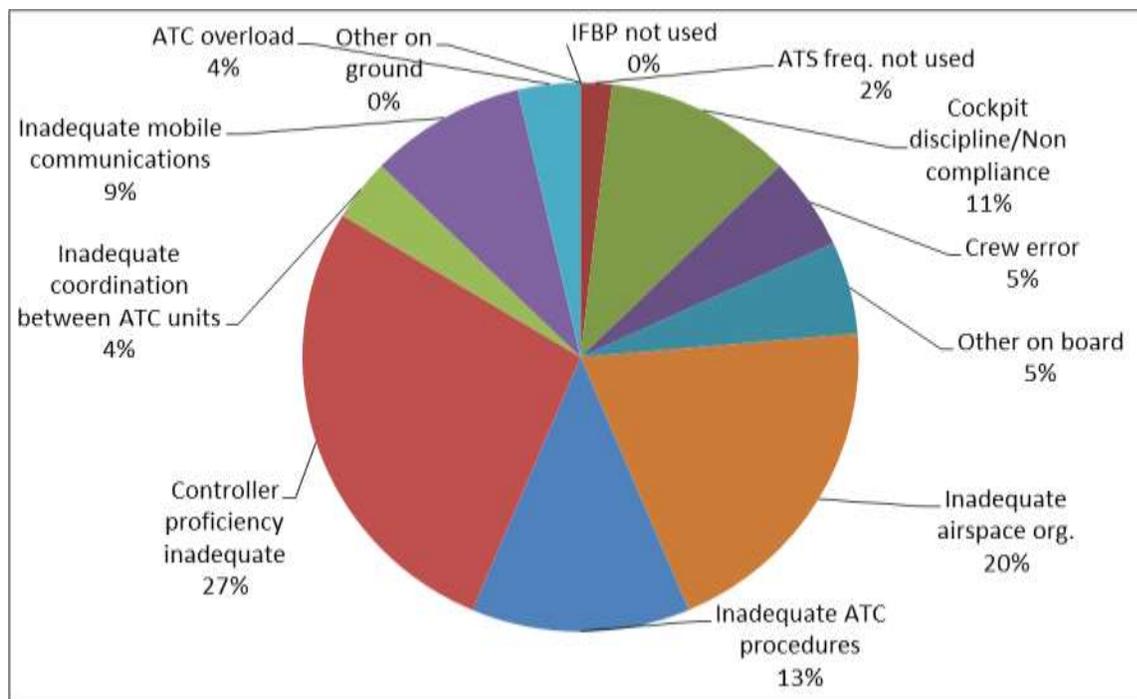
For those UCRs classified as AIRPROX, the threat levels of severity were as indicated in the graph below.



Source: IATA

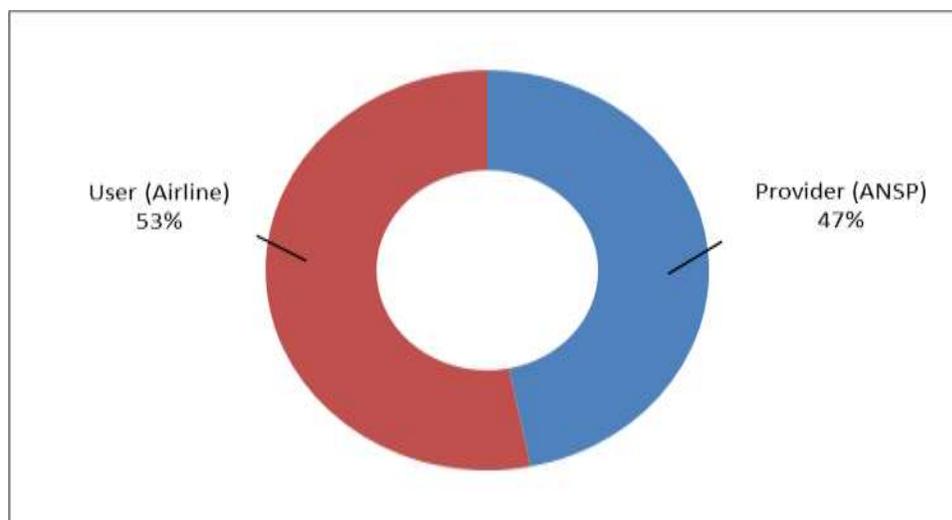
**Figure 20: UCRs within RASG AFI - Contributing Factors**

According to AIAG analysis the following graph shows the factors that contributed to the UCRs and the highest number (27%) was due to inadequacy in Air Traffic Controller proficiency.



**Figure 21: Initiators of Avoidance Action**

As per graph below, 53% avoidance actions were initiated by flight crew as opposed to 47% by ATC.



Source: IATA

## 3.0 Conclusions and Recommendations

### 3.1 Conclusions

Based on the analyses, the following conclusions are drawn:

- On a positive note, the revised approach adopted by RASG AFI in 2015 resulted in,
  - Attainment of at least 60% EI by an additional seven (7) States namely, Botswana; Cameroon; Madagascar; Mali; Namibia; Niger; Zambia; and resolution of an SSC of three (3) SSCs in State namely, Sierra Leone (1SSC) and Botswana (2SSCs); by end of 2015
  - Development of project documentation for identified States to address deficiencies in Fundamentals of Safety Oversight (FSO) and Aircraft Accident/Incident Investigation (AIG)
  - Two (2) AFI CIS missions conducted in Zambia and Malawi intended to assist the States in improving the EI scores and resolving an SSC in Malawi.
  - Designation of focal points by RASG-AFI States to enhance monitoring of implementation of the Abuja Safety Targets by AFCAC
  - There were neither CFIT nor LOC-I related accidents reported in 2015 (Abuja Safety Target met)
- Continuing Challenges:
  - There is still need for States to accelerate the process of achieving autonomy of CAAs
  - Securing of required funding for the implementation of the identified projects to assist States improve EI score and resolve SSCs
  - Runway Safety related accidents still remain the most predominant
  - Except for a few States that already had IOSA as a requirement for their operators prior to Abuja Ministerial Meeting in 2012, no additional State has so far made progress in fulfilling this Abuja Safety Target
  - There is only 20% of certified International Aerodromes in RASG-AFI ( as per ACI Africa survey)
  - Although this report has captured predictive safety information to some extent, there is still need to develop this aspect.

### 3.2 Recommendations

- The Offices of ICAO President/Secretary General should **rigorously pursue** the engagement of Heads of States/Government Ministers responsible for aviation in a bid to establish autonomous CAAs and enhancing State commitment in implementing the Abuja Safety Targets.
- ICAO to encourage States with low activities and low EI to delegate some of their oversight functions to another State or an RSOO.
- All stakeholders should continue to support programs that address causal factors primarily related to Runway Safety accidents. In particular States/CAAs/Airport Operators to provide the necessary support for the establishment of at least one (1) Runway Safety Team (RST) per State.
- Stakeholders should continue to support the implementation of PBN (APV Procedures) in RASG-AFI Region as well as the acquisition of suitable equipage in order to address Runway Safety and CFIT related accidents
- ANSPs should provide timely feedback on UCRs to ensure efficiency of AIAG in providing analysis of incidents.
- States should have provision in their National Regulations that require their Air Operators to undergo IOSA certification

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

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

## 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 Project (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 above as at December 2015

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

## Appendix 4 –List of Certified AFI International Airports

The only available data for monitoring the certification of aerodromes within the AFI Region was via voluntary reporting. Unfortunately Letters and Questionnaires were in many cases unanswered.

To overcome this problem, ACI surveyed all its members on the question of certification and the data presented is as a result of the responses received. The figures presented are subject to the following qualifications:

- Not all aerodromes in RASG-Africa are members of ACI
- Not all members responded to the questionnaire

However, on the best available information, the following data was compiled:

- Total number of Aerodromes on the database: 229
- Total Number of Certified Aerodromes: 48
- Total percentage of Certified as per database: 21,39%

## Appendix 5: Acknowledgement

RASG-AFI acknowledges the efforts made by, and thanks the members of the RASG-AFI Annual Safety Report Team (ASRT) that contributed to the production of this *RASG-AFI Annual Safety Report – First Edition*.

Blessing KAVAI .....	IATA
Kebba Lamin JAMMEH .....	ICAO
Papa Atoumane FALL.....	AFCAC
Chamsou D I-ANDJORIN.....	BOEING
Maury SECK.....	AIRBUS

- AFRAA
- CANSO /
- ASECNA
- ACI Africa
- Other members to be co-opted based on interest and need

## 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  
F-NI – Fire/Smoke (Non-Impact)  
FSO – Fundamentals of Safety Oversight  
GCOL – Ground Collision  
IATA – International Air Transport Association  
ICAO – International Civil Aviation Organisation  
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  
RE-Landing – Runway Excursion Landing  
RI – Runway Incursion  
RWY – Runway  
SAM – South America  
SARPs – Standard and Recommended Practices  
SCF-NP – System/Component failure or Malfunction (Non-Powerplant)  
SMS – Safety Management Systems  
SSC – Significant Safety Concerns  
SSP – State Safety Programme  
SST – Safety Support Team  
TXWY – Taxiway  
UCR-Unsatisfactory Condition Report  
UNK - Unknown  
USOAP – Universal Safety Oversight Audit Programme  
USOS – Undershoot/Overshoot  
WACAF – Western and Central Africa  
WSTRW – Windshear or Thunderstorm  
3 per. Mov. Avg. (AFI) – 3 Year Moving Average (takes average rate over 3 years)

## ICAO's Aviation Safety Partners

