

# Report of the Sixteenth African (AFI) Air Traffic Service Incident Analysis Group (AIAG16) Meeting

Johannesburg, South Africa  
6 and 7 March 2019

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# Introduction

On the 6<sup>th</sup> and 7<sup>th</sup> of March 2019, the African and Indian Ocean (AFI) Air traffic Service (ATS) Incident Analysis Group (AIAG) met for the 16<sup>th</sup> meeting (AIAG16). The meeting took place at the Holiday Inn Hotel, Sandton, South Africa.

IATA Assistant Director Safety and Flight Operations - Safety Focus, Mr. Blessing KAVAI, welcomed participants and thanked them and their organizations for their continued support and participation in the AIAG process. He commended the group for what has been achieved over the past, more than, two decades. He continued to explain that, as with all processes, the AIAG must continue to improve and evolve. To this end, a new AIAG Terms of Reference (ToR) and an updated methodology are introduced to the AIAG16. Mr. Kawai reminded the meeting of the Abuja safety targets and the need to reduce the number of AIRPROX events by 50% year on year towards zero. An "Olympic" target that can not be achieved without timely, exhaustive feedback reports to allow the AIAG process to be fruitful.

Mr. Kawai, introduced the IATA team along with the AIAG16 chairman, Mr. Cobus Toerien, and wished the meeting successful deliberations.

Mr. Toerien welcomed all participants to the AIAG16. He introduced the new AIAG ToR (Attachment A) and reminded the participants that the AIAG meeting is conducted under;

- the IATA Competition Law Guidelines for Industry Committee Meetings (Attachment B) and
- Chatham House Rules (Attachment C).

He further explained that under the new AIAG ToR, an interim AIAG teleconference will be conducted with core members and invited applicable states. The call will take place in September of each year. The interim call will focus on the implementation status of the face2face AIAG actions and recommendations as well as preliminary analysis on events for the year to date.

## Attendance

The AIAG16 meeting was attended by 72 participants. They represented:

- 7 International organizations
- 9 Airlines/airspace users
- 11 Civil Aviation Authorities
- 7 Air Navigation Service Providers

The AIAG Attendance list is attached in Attachment D.

## AIAG Award

The Chairman consulted the AIAG Award Forum, the previous winners of this award, and it was decided to continue with the award, introduced by former chairman, Mr. Gerrit Plaisier in 2014.

The AIAG Award Certificate, depicts a compressor / turbine blade of an aircraft engine. This represents the crucial, but often not recognised, role played in the safe operation of the engine. The AIAG Award is presented to an individual who plays a crucial, but often not recognised role to the improvement of safety in the AFI Region through the AIAG process.

This year's recipient, Mr. Seboseso Machobane, Regional Officer- ATM & SAR, ICAO Eastern and Southern Africa Office (retired), has been an active participant of the AIAG for many years and his participation, guidance and leadership in all meetings has greatly contributed to AIAG's success in improving Aviation Safety in the AFI Region.

In addition, the AIAG Award Forum also agreed to recognize members who have played a vital part in AIAG for many years but have left AIAG since retirement in 2018. An AIAG Scroll of Merit was awarded to Mr. Gerrit

Plaisier, the long-standing Chairman of AIAG, and Mr. Kevin Ewels from the AFI Regional Monitoring Agency (ARMA) in recognition of their significant contribution to AIAG in the past.

## ARMA Scrutiny Activities

Ms. Nonjabulo Gumede, ARMA Specialist, presented the results of the 2017 AFI Collision Risk Assessment (CRA) 12 to the meeting. This can be viewed in attachment E to this report. CRA12 shows that the overall collision risk in AFI is  $58.6 \times 10^{-9}$ , which is significantly higher than the Target Level of Safety (TLS) which is  $5 \times 10^{-9}$ .

Ms. Gumede went on to enlighten the meeting as to the factors that influence the poor performance in the CRA. She impressed upon the meeting that a significant reduction in the vertical collision risk could be achieved through every AFI state implementing Strategic Lateral Off-set Procedures (SLOP) within their airspace. She implored all states present to consider publishing SLOP before June 1, 2019 to have a positive impact on the CRA13 results. Ms. Gumede invited any state/organization who required assistance in implementing SLOP to contact the ARMA.

## Matters Arising from AIAG15

Feedback was provided by states on the implementation of the AIAG15 recommendations as follows:

- DNKK (Nigeria – Kano FIR)
  - Feedback can be seen in Attachment F
- FACA / FAJA (South Africa – Cape Town and Johannesburg FIR)
  - Feedback can be seen in Attachment G
- FBGR (Botswana – Gaborone FIR)
  - ATC refresher training begun
  - Staffing remains a challenge, 10 ATC trainees recruited, however will not be qualified until 2019/20
- FCCC (Congo – Brazzaville FIR)
  - Feedback can be seen in Attachment H
- FLFI (Zambia – Lusaka FIR)
  - ATC training in Human factors undertaken
  - Airspace study undertaken to review route structure
  - ATC refresher training budgeted for in next financial year
- FNAN (Angola – Luanda FIR)
  - Feedback can be seen in Attachment I
- FQBE (Mozambique – Maputo FIR)
  - ATC refresher training for approach and area controllers
  - VHF and HF communications equipment purchased in 2018
- FSSS (Seychelles – Seychelles FIR)
  - Implementation of Space based ADS-B planned for 2019/20
  - VFR joining procedures implemented and ATC and OPR educated
  - Implementation of VFR routes planned
- GOOO (Senegal – Dakar FIR)
  - Feedback can be seen in Attachment H
- HKNA (Kenya – Nairobi FIR)
  - ATM procedures have been reviewed
  - LoA's / LoP's currently under review with neighbouring FIR's

- East African School of Aviation (EASA) now include coordination procedures in ATC refresher trainings
- HTDC (United Republic of Tanzania – Dar es Salam FIR)
  - Feedback can be seen in Attachment J

## Outcomes of the AIAG16 Meeting

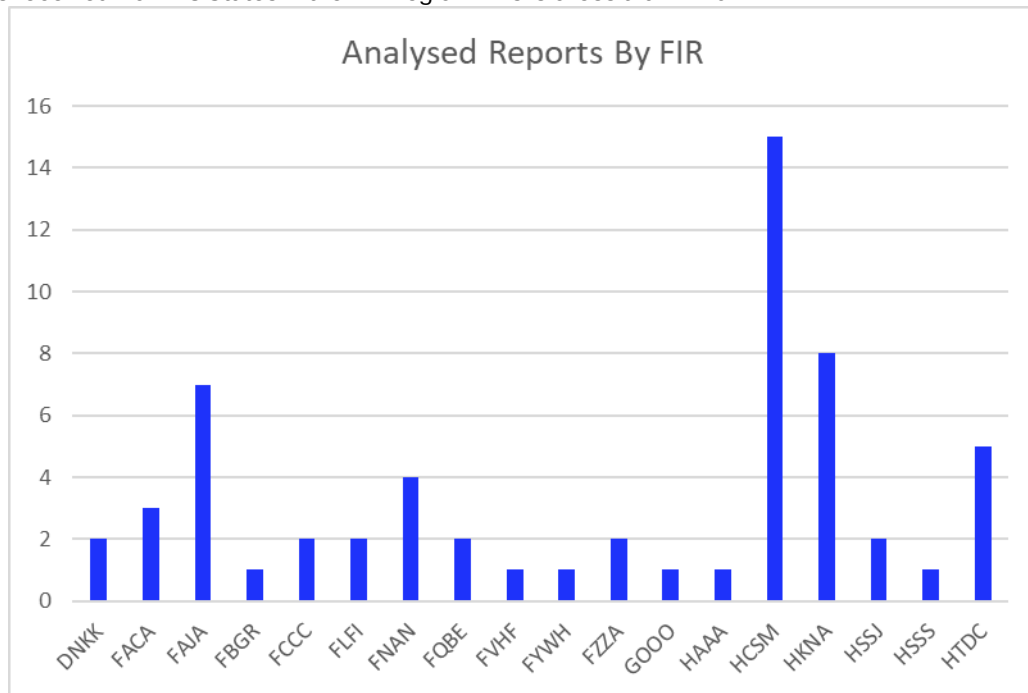
The meeting broke into 3 groups to carry out the work of the AIAG16.

The participants of the AIAG16 meeting were introduced to the updated taxonomy as described in the updated ToR. The new categories below:

- MAC : Airprox / ACAS/TCAS alerts / loss of separation / near mid-air collisions.
- RI-VAP<sup>1</sup> : Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft.
- GCOL : Collision while taxiing to / from the runway in use.
- ATM : Air Traffic Management / Communication, Navigation or Surveillance (ATM/CNS) services.

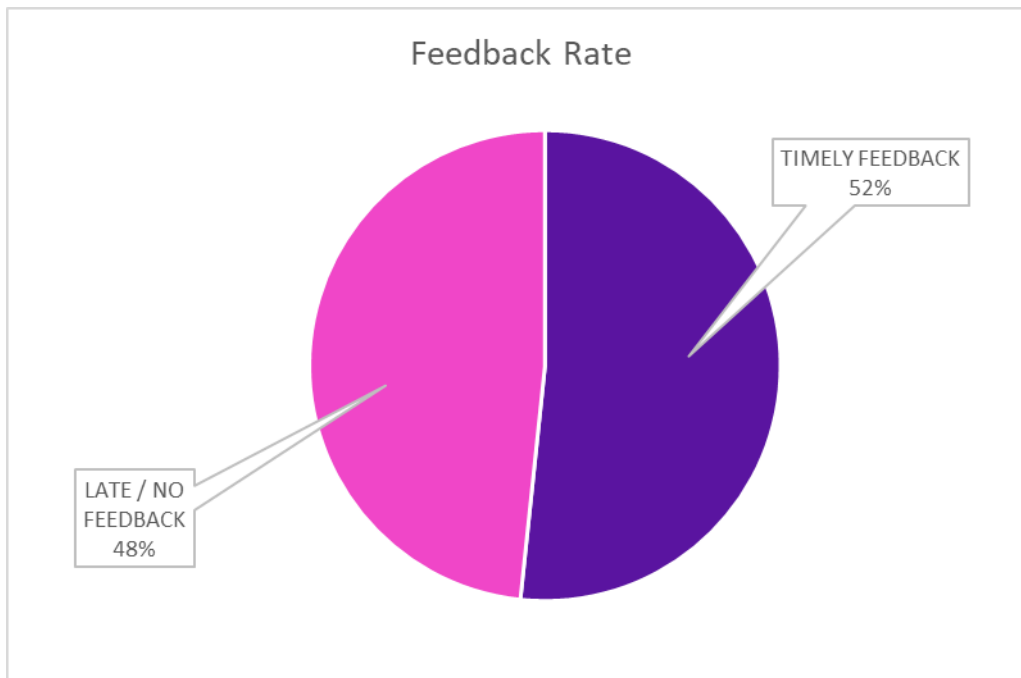
## Overall Analysis Results

The AIAG16 meeting analysed a total of 60 UCR's which occurred during the period January 1 to December 31, 2018 as received from 18 States in the AFI Region. This is 6 less than in 2017.

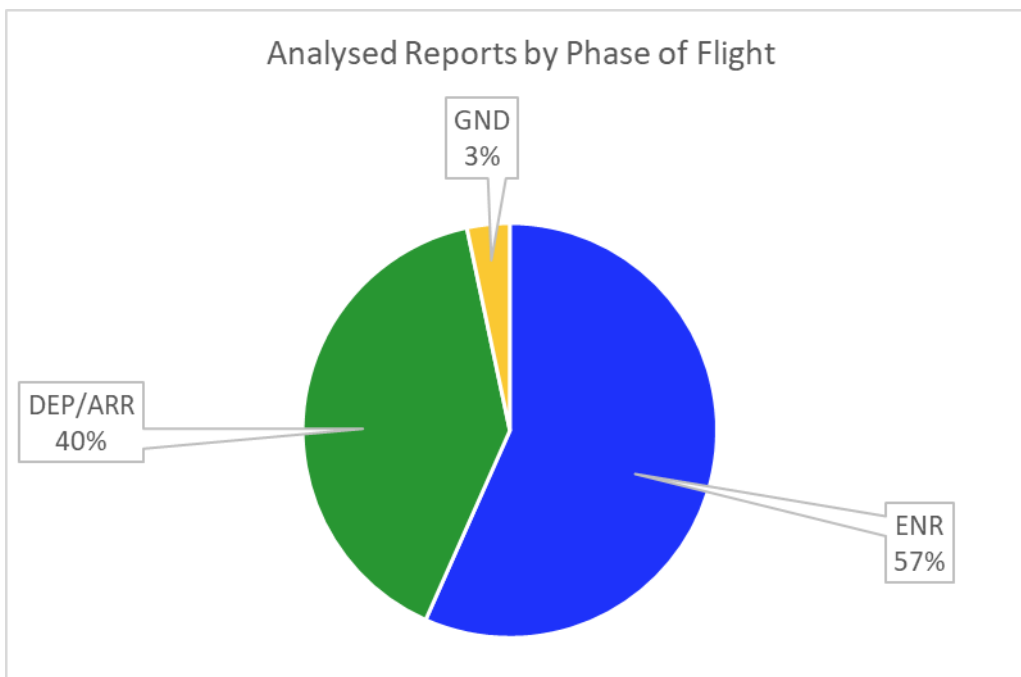


The Investigation feedback rate has reduced to a low of 52% in 2018, including late feedback provided during the AIAG Meeting. This compares poorly to the previous 2 years where the feedback rates were 71% in 2017 and 55% in 2016. The success of AIAG and the improvement of ATS safety in the AFI Region hinges critically on the quality of the investigations and feedback reports, which should be completed and forwarded to the secretariat ([asrafi@iata.org](mailto:asrafi@iata.org)) well before the AIAG meeting commences.

<sup>1</sup> Where such presence leads to the potential collision with an aircraft either on ground or in the air (approach / take off).



Analysis of the UCR's indicated that the majority, 57%, of the events took place en-route, whilst 40% occurred within the TMA, the arrival / departure phases of flight. The occurrence of loss of separation events involving aircraft on the ground is an emerging concern contributing 3% to the AIAG16 events.

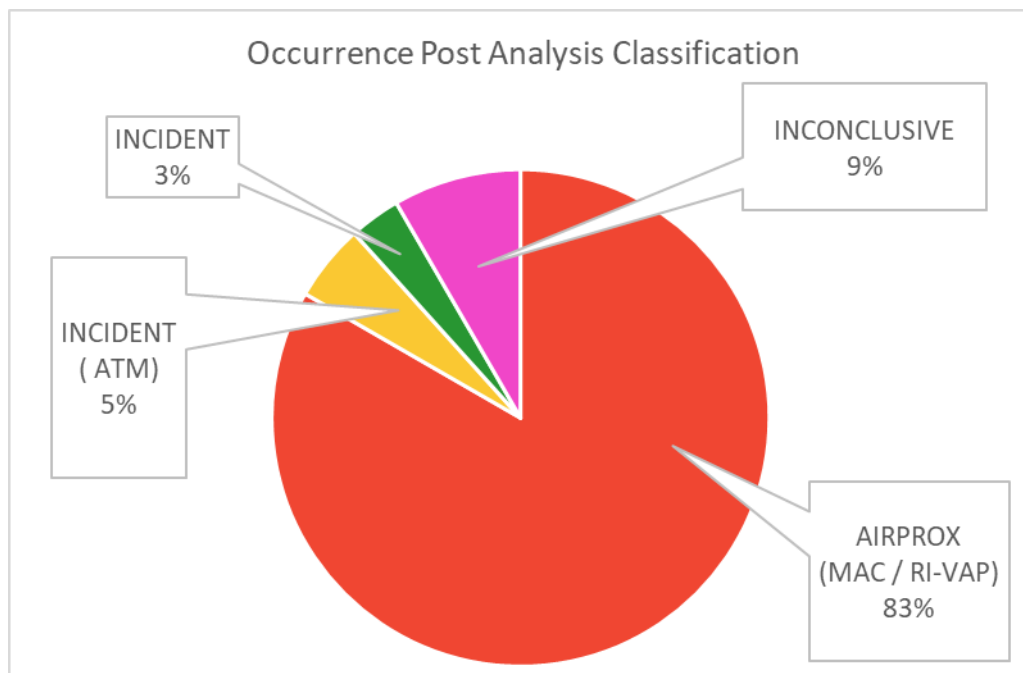


The AIAG16 analysis classified the occurrences as follow:

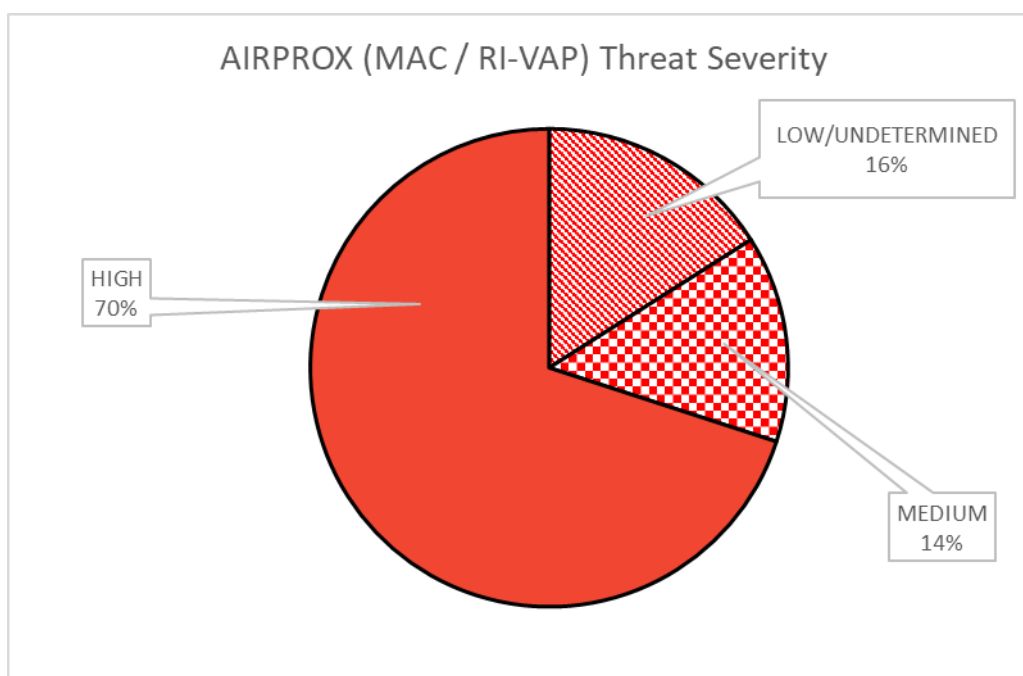
- MAC / RI-VAP 50
- ATM 3
- Event 2
- Inconclusive 5

Although the overall number of analysed events has reduced from the previous year, this is not indicative of an improvement in the overall safety. The analysis revealed an increase in the number of events where there is a confirmed loss of separation; 40 in 2017 to 50 in 2018. The analysis also showed an escalating risk with respect

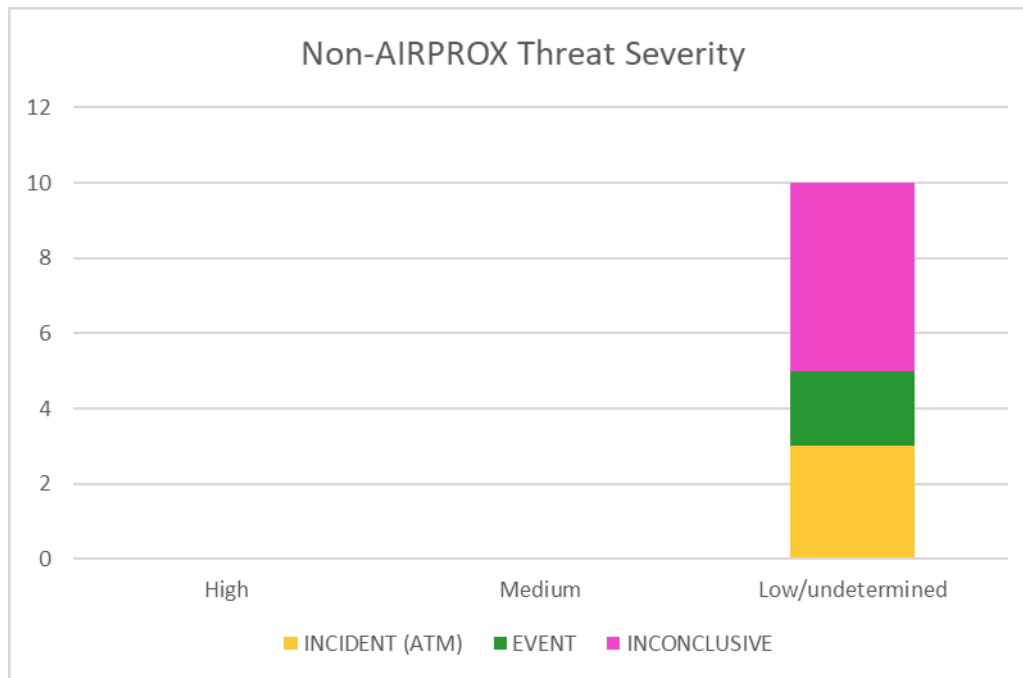
to loss of separation in the ATM category of events, increasing from 3 to 7 in the last year. Adding to this concerning trend is the growing number of inconclusive reports which more than doubled from 4 in 2017 to 9 in 2018.



When comparing the threat severity of MAC / RI-VAP events analysed, 35 of the confirmed 50 MAC / RI-VAP events were classified as high risk. Although this is an improvement on the 2017 result where 90% of the AIRPROX events were high risk, the risk factor remains extremely high.



The risk severity of the remaining events, where it was confirmed that there was no loss of separation or where the data analysed was inconclusive, were all classified as low or undetermined. This being an improvement on the 2017 results which included 1 high and 4 medium risk events.



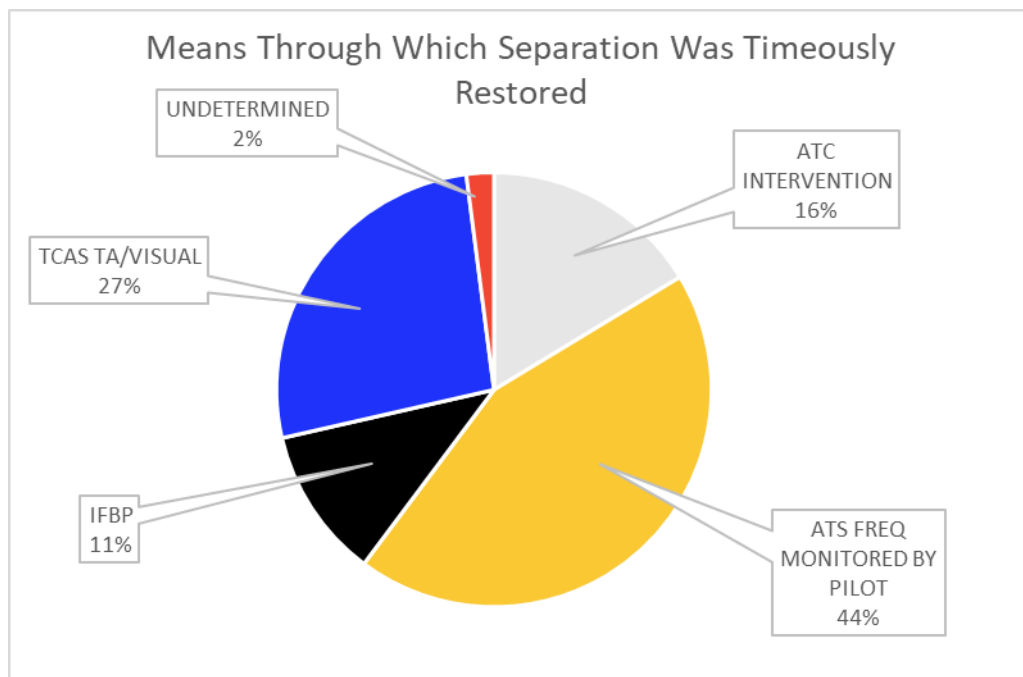
Analysis indicated that in the 50 MAC / RI-VAP events analysed, the separation minima was compromised, but timeously restored by means of one, or a combination of, the following:

- ATS Frequency monitoring by the pilot 43
- TCAS TA / Visual 26
- ATC Intervention 16
- IFBP 11
- Undetermined 2

A marked improvement is noted with respect to the separation being restored by undetermined means; 2% compared to 50% in 2017. It should also be considered that this has been achieved despite an almost 20% reduction in the feedback rate.

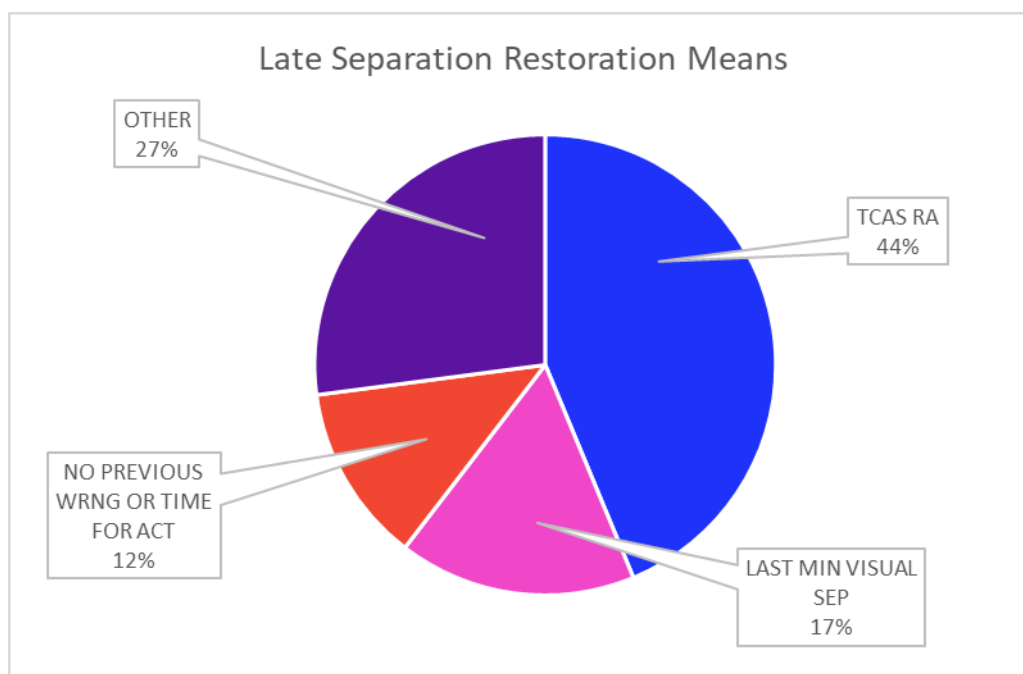
IFBP remains an important safety net, especially in the North East AFI Region where IFBP remains critical, having played a part in the restoration of separation in 10 of the 11 MAC events in this area.

The upward trend where separation is restored by crew through the monitoring of the ATS frequency (18% to 44%) and TCAS TA / VISUAL (14% to 27%) over the past year, is a concern in that the crew is effectively doing the work of the ATS.



When separation was compromised, despite initial intervention, the value of TCAS RA has proved vital in collision avoidance in 21 of the 50 MAC / RI-VAP events, which is a 14% improvement when compared to the 58% of last year. The decrease in the use of TCAS RA however, is not indicative of an improvement in the safety nets.

The avoidance of collision was achieved through last minute visual separation in 8 events while the remaining 19 events were avoided through what can be interpreted as providence (no warning, no action or undetermined means). This is a 14% increase from 2017 and is indicative of extremely high risk in the safety management system.



In line with a more holistic systems approach to analysis going forward the AIAG has combined causes and contributory factors into a single subject category - Causal Factors. Analysis history has shown that there is never a single cause to any event; and that errors are symptoms of a greater problem in the system. For the effective addressing of safety issues all causal factors require addressing.

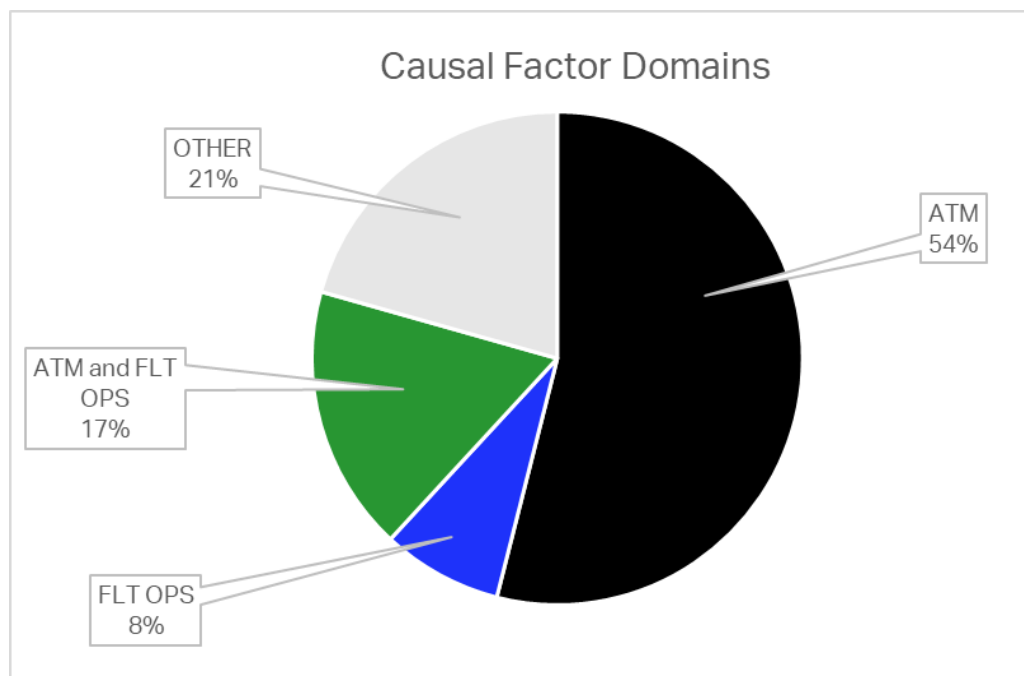


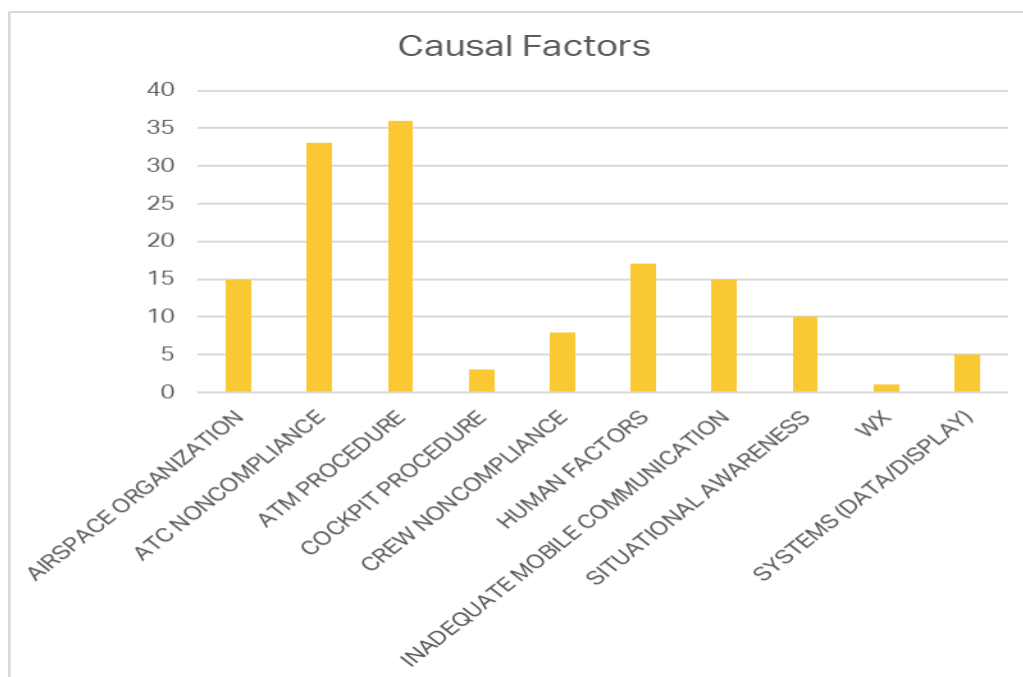
The following causal factors were identified through the 2018 analysis:

• ATM Procedure	36
• ATC Non-compliance	33
• Human Factors	17
• Inadequate Mobile Comms	15
• Airspace Organization	15
• Situational awareness	10
• Crew Non-compliance	8
• Systems – Data & Display	5
• Weather	1

The analysis showed that 54% of the causal factors are found in the ATM domain and 17% in a combined ATM / flight operation (FLT OPS) environment; while 8% are found only in-flight operations.

Analysis indicates that ATM Procedures and ATC non-compliance were the biggest causal factors in 2018. This is disappointing considering the reported improvement in staffing levels and training in the region which were previously thought to be the biggest contributory factors. This is certainly indicative that there are underlying causal factors that are not being adequately addressed.





## Individual Flight Information Region (FIR) Analysis Results

### DNKK (Nigeria – Kano FIR)

Nr of ASR Analysed	2
Feedback Rate	100%
AIAG Classification	<ul style="list-style-type: none"> <li>MAC / RI-VAP 1</li> <li>EVENT 1</li> </ul>
Causal Factors	<ul style="list-style-type: none"> <li>procedural non-compliance</li> <li>human factors <ul style="list-style-type: none"> <li>situational awareness</li> <li>complacency</li> </ul> </li> <li>data and display (limitation)</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>Review of procedures</li> <li>Review training and recurrence training</li> <li>Improve supervisory oversight</li> </ul>

### FACA / JA (South Africa – Cape Town and Johannesburg FIR)

Nr of ASR Analysed	10
Feedback Rate	70%
AIAG Classification	<ul style="list-style-type: none"> <li>MAC / RI-VAP 6</li> <li>EVENT 4</li> </ul>
Causal Factors	<ul style="list-style-type: none"> <li>Procedural non-compliance <ul style="list-style-type: none"> <li>RPAS activities</li> </ul> </li> <li>Communication <ul style="list-style-type: none"> <li>Congestion</li> </ul> </li> <li>Human Factors <ul style="list-style-type: none"> <li>Situational Awareness</li> </ul> </li> <li>ATM Operations <ul style="list-style-type: none"> <li>Traffic mix</li> </ul> </li> <li>Weather</li> <li>TCAS system limitation</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>Implementation and enforcement of RPAS regulations</li> </ul>

	<ul style="list-style-type: none"> <li>• Review ATM procedures on a cut-off point between landing and taking off aircraft</li> <li>• Improve airspace coordination</li> <li>• Revision of Apron procedures i.e. Communication and Coordination</li> </ul>
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#### FBGR (Botswana – Gaborone FIR)

Nr of ASR Analysed	1
Feedback Rate	100%
AIAG Classification	• MAC / RI-VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Human factors <ul style="list-style-type: none"> <li>– Overload ATM operations</li> </ul> </li> <li>• Procedural non-compliance</li> <li>• Coordination</li> <li>• Communication <ul style="list-style-type: none"> <li>– Congestion</li> </ul> </li> <li>• Staffing</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review of manpower planning: <ul style="list-style-type: none"> <li>– Avoid combination of sectors / frequencies</li> <li>– Address fatigue risk</li> <li>– Provision of reliefs especially during air shows and pick hours</li> </ul> </li> <li>• Increase the radar safety nets</li> <li>• Review ATM procedures and LoA's to address coordination challenges</li> </ul>

#### FCCC (Congo – Brazzaville FIR)

Nr of ASR Analysed	2
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 2
Causal Factors	<ul style="list-style-type: none"> <li>• Procedures non-compliance</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> </ul> </li> <li>• Conflict identification</li> <li>• Communication</li> <li>• Coordination</li> <li>• ATM operations</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Declutter workstations and displays</li> <li>• Review and update LoA between Brazzaville and: <ul style="list-style-type: none"> <li>– Khartoum</li> <li>– Juba</li> </ul> </li> <li>• ATC awareness training <ul style="list-style-type: none"> <li>– Aircraft performance</li> <li>– Understand display limitations</li> </ul> </li> <li>• Improve communication facilities</li> <li>• Develop conflict probe capability</li> </ul>

#### FLFI (Zambia – Lusaka FIR)

Nr of ASR Analysed	2
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 1 ATM 1
Causal Factors	<ul style="list-style-type: none"> <li>• Procedural non-compliance</li> <li>• ATM operations</li> <li>• Communications</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> </ul> </li> <li>• Coordination (blanket clearance issued)</li> <li>• Controller working position – display</li> </ul>

Recommendations	<ul style="list-style-type: none"> <li>• Consider the implementation of surveillance</li> <li>• Change management is followed with all changes in procedures and technology</li> <li>• Introduction of consoles for flight progress board</li> </ul>
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#### FNAN (Angola – Luanda FIR)

Nr of ASR Analysed	4
Feedback Rate	75%
AIAG Classification	MAC / RI-VAP 4
Causal Factors	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Coordination</li> <li>• ATM operations</li> <li>• Procedural non-compliance</li> <li>• Human factors</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Clarification on HF, VHF and CPDLC procedures</li> <li>• Implementation of A-CDM (Airport Collaborative Decision Making)</li> <li>• Language proficiency recurrence training</li> <li>• Introduction of surveillance</li> <li>• Review of SMS and leave policy</li> <li>• Introduction of SLOP</li> </ul>

#### FQBE (Mozambique – Beira FIR)

Nr of ASR Analysed	2
Feedback Rate	100%
AIAG Classification	MAC – RI-VAP 2
Causal Factors	<ul style="list-style-type: none"> <li>• Procedural non-compliance</li> <li>• ATM operations <ul style="list-style-type: none"> <li>– VIP movement</li> </ul> </li> <li>• Coordination</li> <li>• Communication</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review and coordinate procedures for VIP operations</li> <li>• Review ATC training and recurrence training program</li> <li>• Improve the VHF coverage and efficiency (127.7 and 130.9 MHZ).</li> </ul>

#### FVHF (Zimbabwe – Harare FIR)

Nr of ASR Analysed	1
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Procedural non-compliance</li> <li>• Human factors</li> <li>• Coordination</li> <li>• ATM operations</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review ATC training and recurrence training program</li> <li>• Review SMS</li> </ul>

#### FYWH (Namibia – Windhoek FIR)

Nr of ASR Analysed	1
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Procedural non-compliance</li> <li>• Communications <ul style="list-style-type: none"> <li>– ATM communication</li> <li>– Crew communication</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Coordination</li> <li>• Airspace organisation</li> <li>• Staffing</li> <li>• Crew using non-ICAO Language on frequency</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review ATC training and recurrence training program – radio telephony</li> <li>• Review and update LoA's</li> <li>• Review manpower planning</li> </ul>

#### FZZA (Democratic Republic of Congo – Kinshasa FIR)

Nr of ASR Analysed	2
Feedback Rate	50%
AIAG Classification	MAC / RI-VAP 1 ATM 1
Causal Factors	<ul style="list-style-type: none"> <li>• Weather</li> <li>• ADS-B failure</li> <li>• Lack of situational awareness by the ATCO</li> <li>• Outdated map was used with some missing reporting points (GARIK)</li> <li>• Poor quality of VHF communications</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Implementation of refresher / recurrence training,</li> <li>• Consider radar monitoring facility at tower/approach control positions</li> <li>• Enhance ADS-B redundancy</li> <li>• Improve VHF coverage and efficiency</li> <li>• Ensure current aeronautical information (maps) on all positions</li> </ul>

#### GOOO (Senegal – Dakar FIR)

Nr of ASR Analysed	1
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> <li>– High workload</li> </ul> </li> <li>• Communication <ul style="list-style-type: none"> <li>– VHF coverage</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Sectorization of Nouakchott UTA</li> <li>• Improve VHF coverage</li> <li>• Continuation training / recovery training</li> </ul>

#### HAAA (Ethiopia – Addis FIR)

Nr of ASR Analysed	1
Feedback Rate	0%
AIAG Classification	MAC / RI – VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Communication</li> <li>• ATM operations</li> <li>• Procedural non-compliance</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review ATM procedures</li> <li>• Improve civil / military coordination</li> </ul>

#### HCSM (Somalia – Mogadishu FIR)

Nr of ASR Analysed	15
Feedback Rate	0%
AIAG Classification	MAC / RI-VAP 11 ATM 1 EVENT 3
Causal Factors	<ul style="list-style-type: none"> <li>• RPAS in conflict with civil aircraft</li> <li>• ATM operations</li> </ul>

	<ul style="list-style-type: none"> <li>– Airspace structure</li> <li>• Procedural non-compliance</li> <li>• Coordination</li> <li>• Communication</li> <li>• Hotspots identified <ul style="list-style-type: none"> <li>– HARGA</li> <li>– EVEBU</li> <li>– AVEDA</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Effective implementation of safety management system and oversight</li> <li>• Improve ATM situational awareness</li> <li>• Airspace redesign to deconflict hotspots EVEBU, HARGA and AVEDA</li> <li>• Airspace reclassification to Class A</li> <li>• Mandate the use of IFBP &amp; SLOP</li> <li>• Implementation of CPDLC</li> <li>• RPAS regulation and enforcement</li> <li>• Improve civil/military coordination</li> </ul>

#### HKNA (Kenya – Nairobi FIR)

Nr of ASR Analysed	8
Feedback Rate	38%
AIAG Classification	MAC / RI-VAP 8
Causal Factors	<ul style="list-style-type: none"> <li>• Procedure noncompliance</li> <li>• Coordination</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> </ul> </li> <li>• Equipment</li> <li>• Lack of aeronautical information</li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Review airspace to deconflict hotspots at FIR converging points</li> <li>• Review and update ATM procedures <ul style="list-style-type: none"> <li>– Altitude deconfliction for opposite direction operations</li> <li>– Continuous decent operations (CDO) procedures</li> </ul> </li> <li>• Establish guidelines for this specific type of operation <ul style="list-style-type: none"> <li>– Require ATC to provide guidance and inform pilots of situation, no ICAO procedure, ICAO lacks specific guidance on this type of operation</li> </ul> </li> </ul>

#### HSSJ (Republic of South Sudan – Khartoum FIR South Sector (Juba))

Nr of ASR Analysed	2
Feedback Rate	0%
AIAG Classification	MAC / RI-VAP 2
Causal Factors	<ul style="list-style-type: none"> <li>• Procedural non-compliance</li> <li>• ATM operation <ul style="list-style-type: none"> <li>– Airspace congestion</li> </ul> </li> <li>• Human factors <ul style="list-style-type: none"> <li>– Workload</li> <li>– Situational awareness</li> </ul> </li> <li>• Airspace structure</li> <li>• Communication <ul style="list-style-type: none"> <li>– Frequency congestion</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Effective implementation of safety management system and oversight</li> <li>• Separate tower and approach frequencies</li> <li>• Review manpower planning</li> <li>• Review airspace structure <ul style="list-style-type: none"> <li>– Develop and implement SID and STAR procedures</li> </ul> </li> </ul>

#### HSSS (Republic of Sudan – Khartoum FIR)

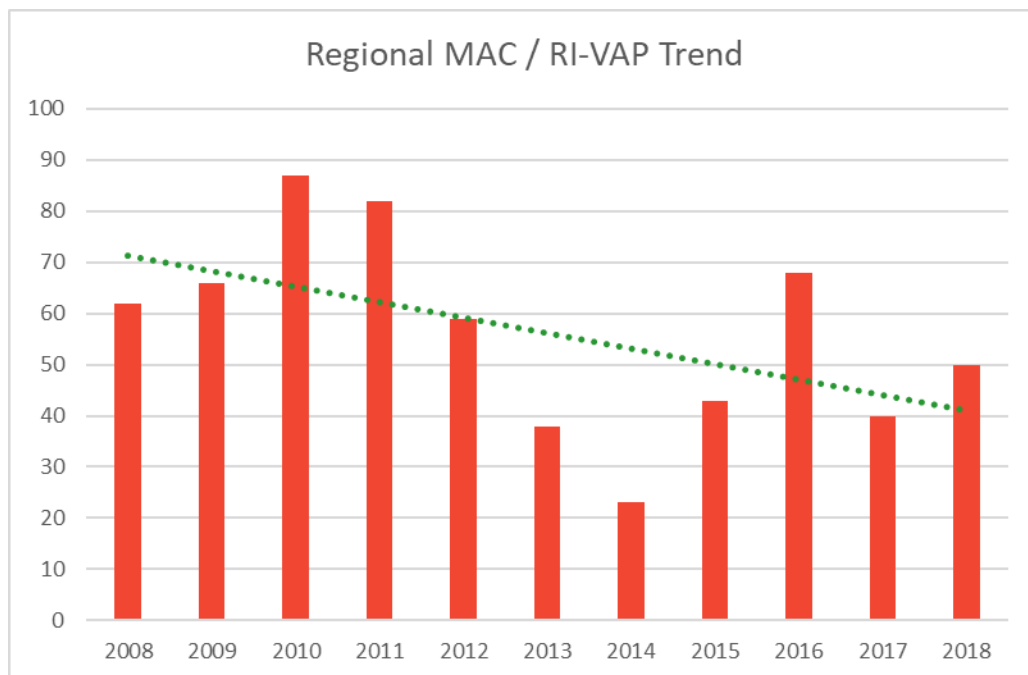
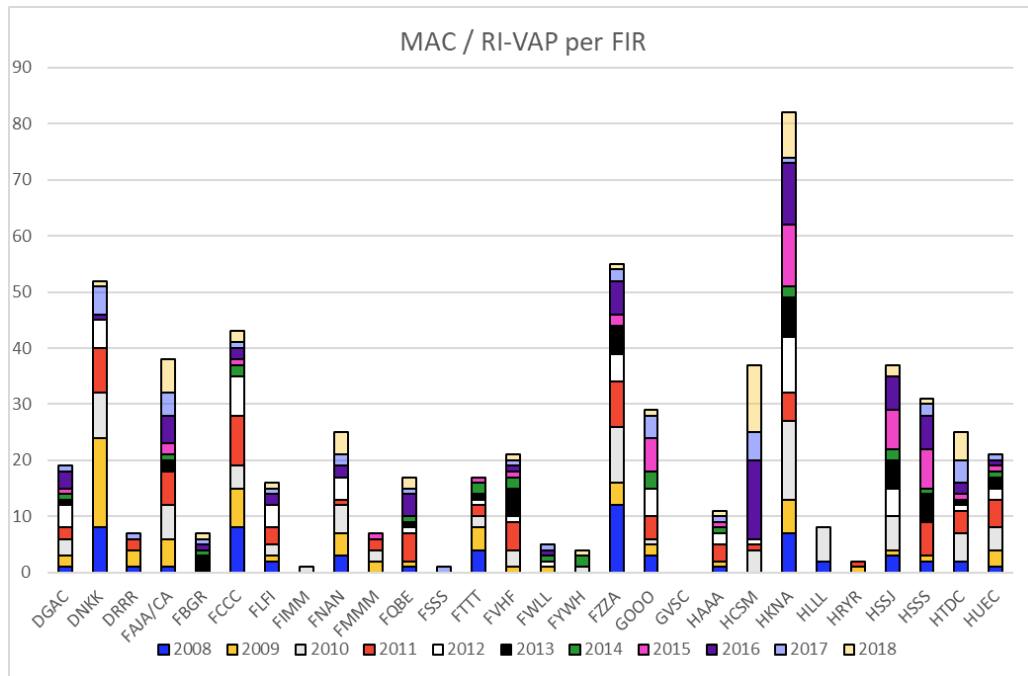
Nr of ASR Analysed	1
Feedback Rate	100%
AIAG Classification	MAC / RI-VAP 1
Causal Factors	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Coordination</li> <li>• Procedural non-compliance</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Upgrade VHF coverage over the southern sector</li> <li>• Implement ATC training on ATM equipment capabilities <ul style="list-style-type: none"> <li>– FDR for tracking</li> </ul> </li> <li>• Review HF procedures and fix/time processing</li> </ul>

#### HTDC (United Republic of Tanzania – Dar es Salaam FIR)

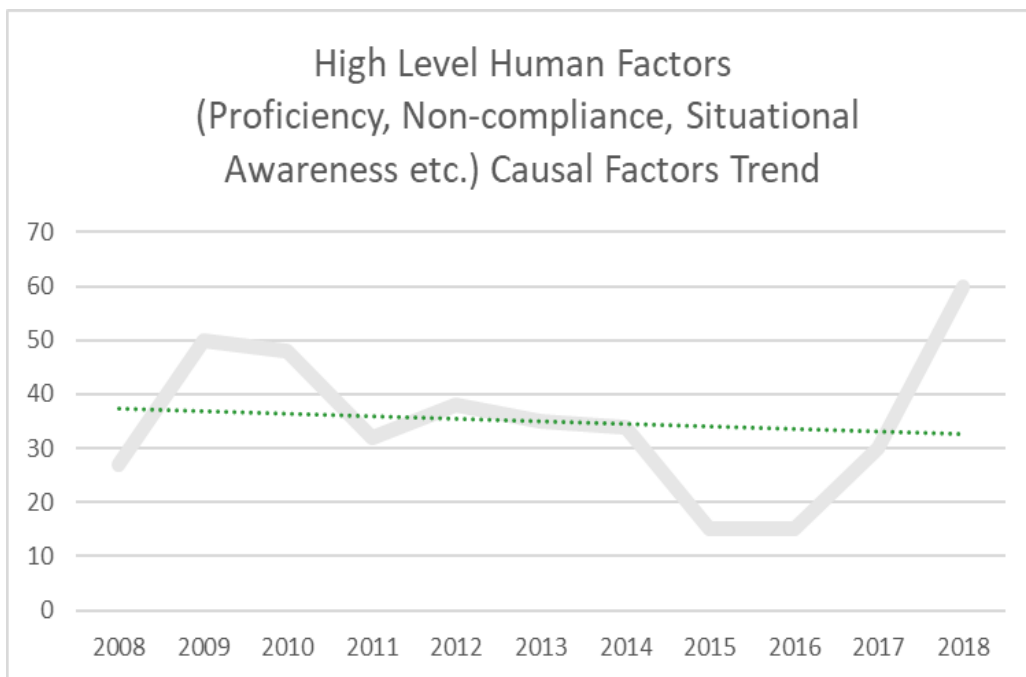
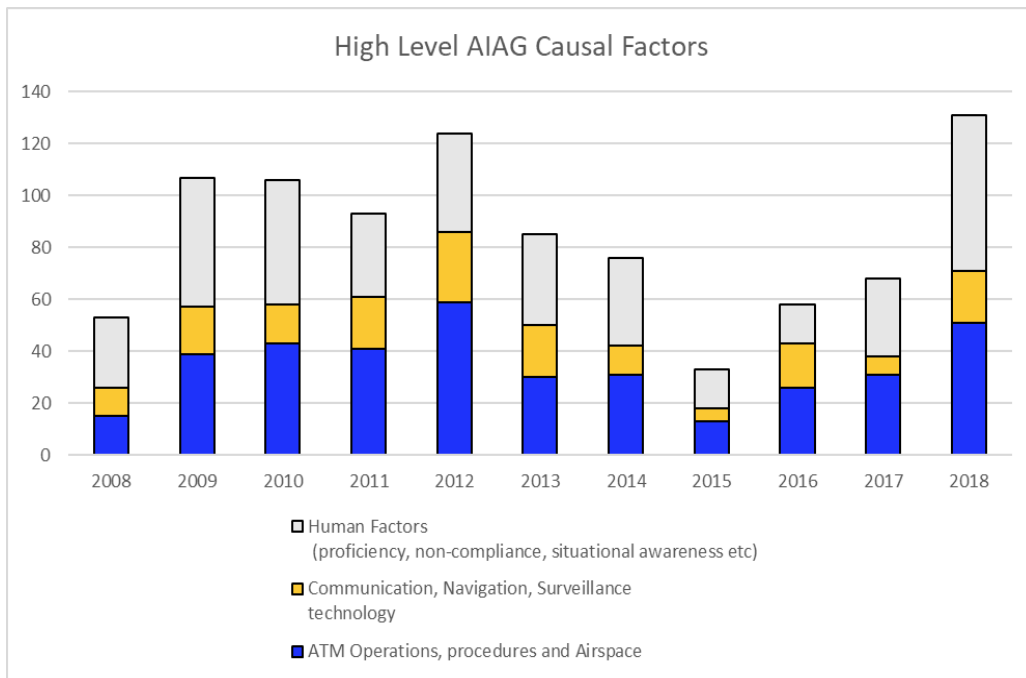
Nr of ASR Analysed	5
Feedback Rate	100%
AIAG Classification	MAC / RI – VAP 5
Causal Factors	<ul style="list-style-type: none"> <li>• Procedure non-compliance,</li> <li>• ATM operations <ul style="list-style-type: none"> <li>– Lack of radar monitoring</li> <li>– Airspace organization</li> </ul> </li> <li>• Coordination</li> <li>• Communication</li> <li>• Human factors <ul style="list-style-type: none"> <li>– Situational awareness</li> <li>– Comfort factor</li> </ul> </li> </ul>
Recommendations	<ul style="list-style-type: none"> <li>• Implementation of refresher / recurrence training <ul style="list-style-type: none"> <li>– Standard phraseology</li> </ul> </li> <li>• Implement operational oversight/supervision</li> <li>• Consider implementing surveillance and monitoring at tower position,</li> <li>• Review manpower planning</li> <li>• Repair ATM operational recording devices</li> </ul>

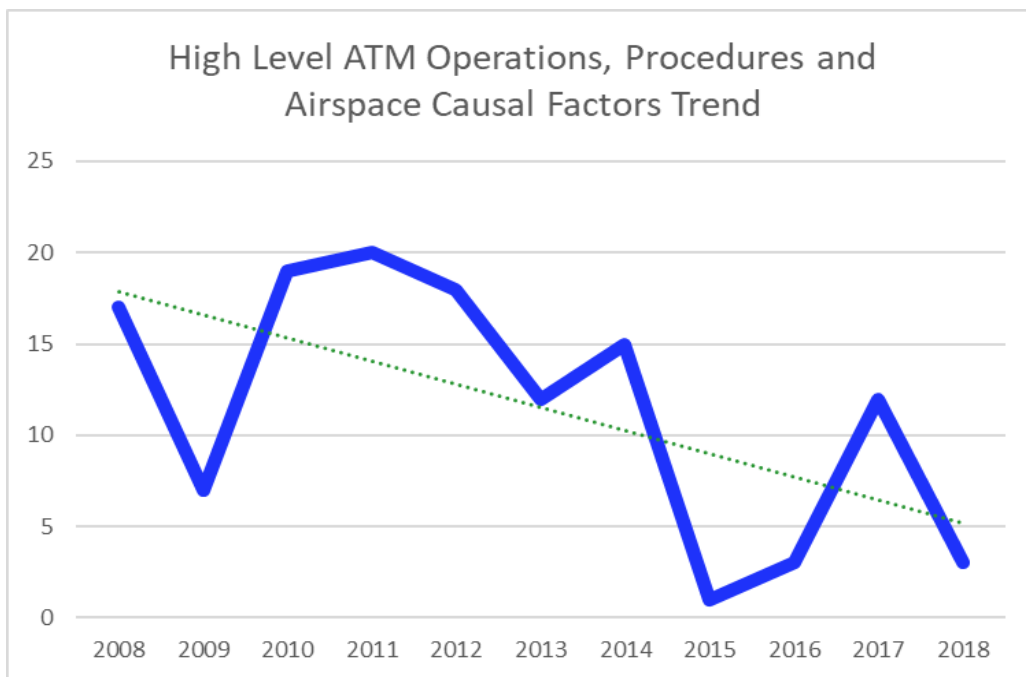
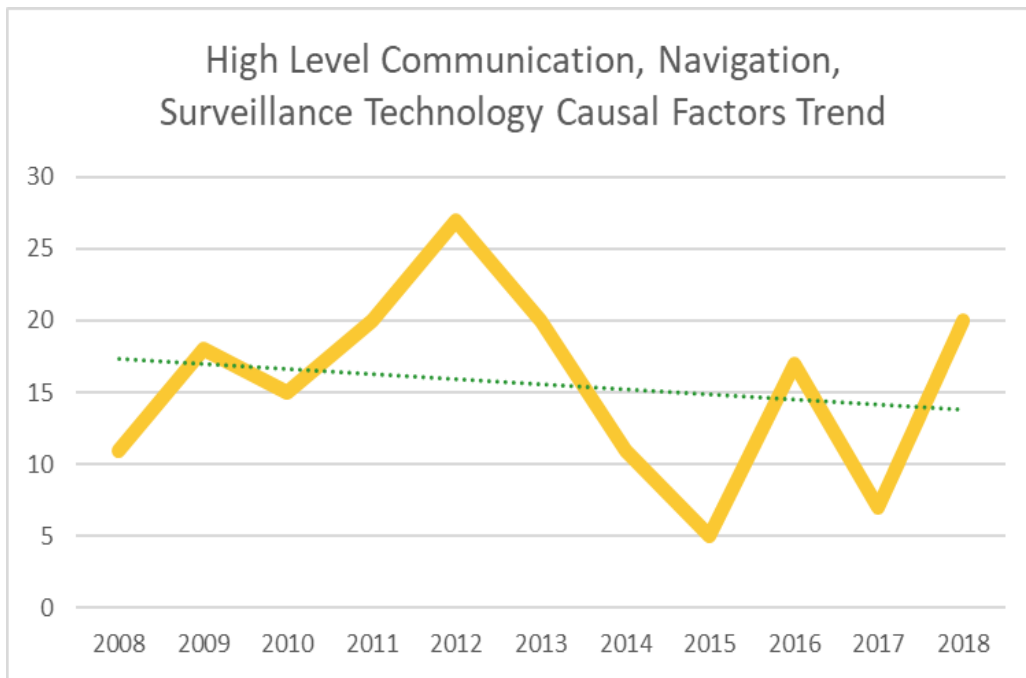
## 10-year Trends

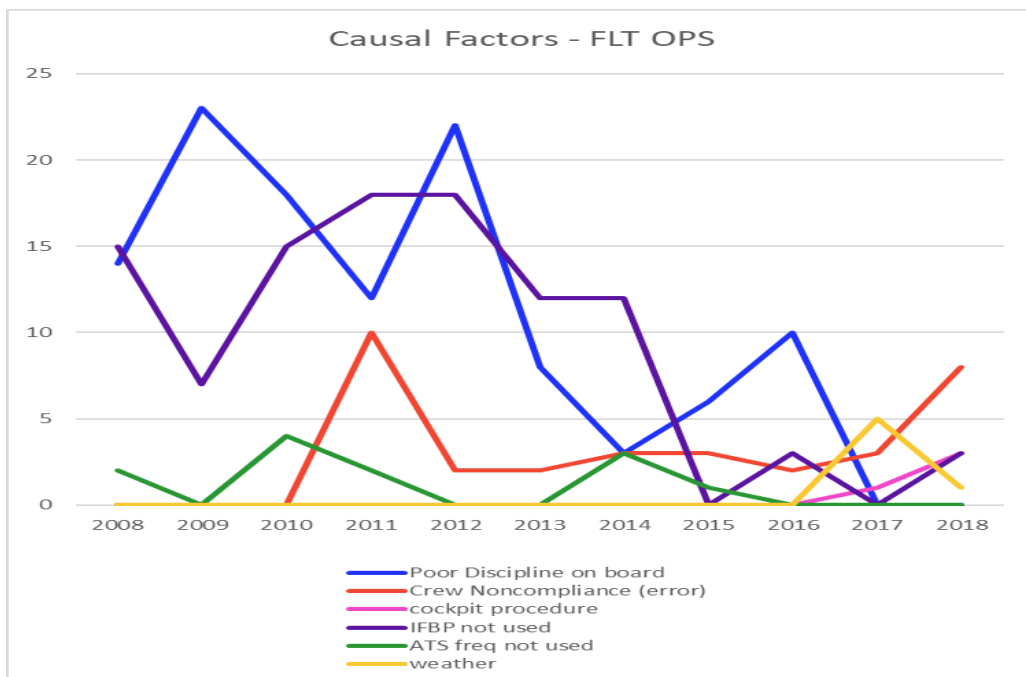
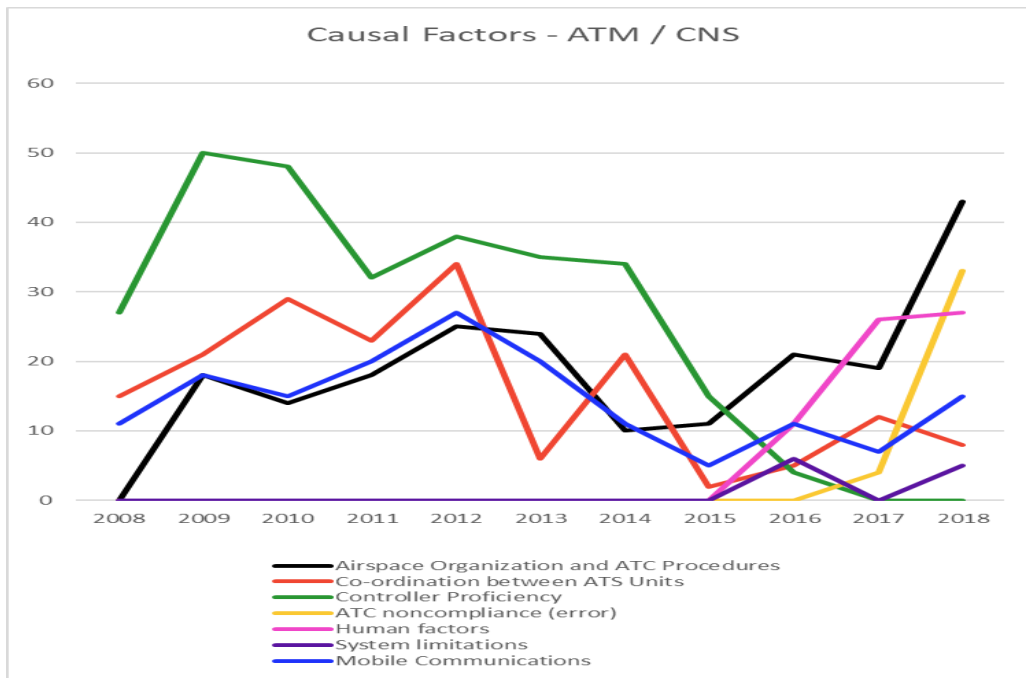
### Regional 10-year results





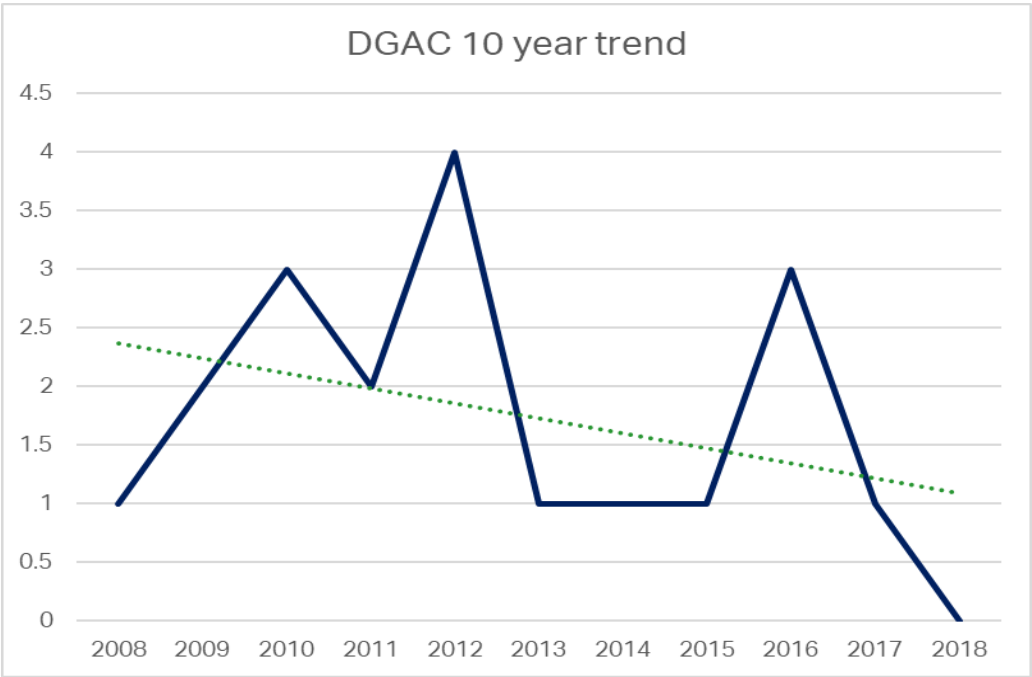




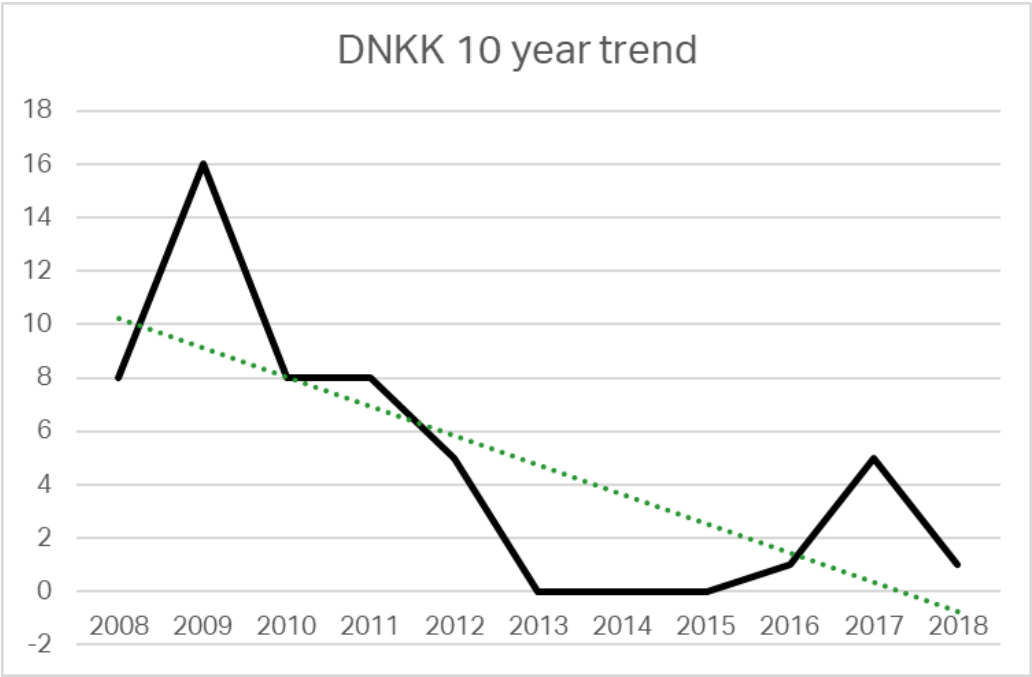


10-year MAC / RI-VAP trend per FIR

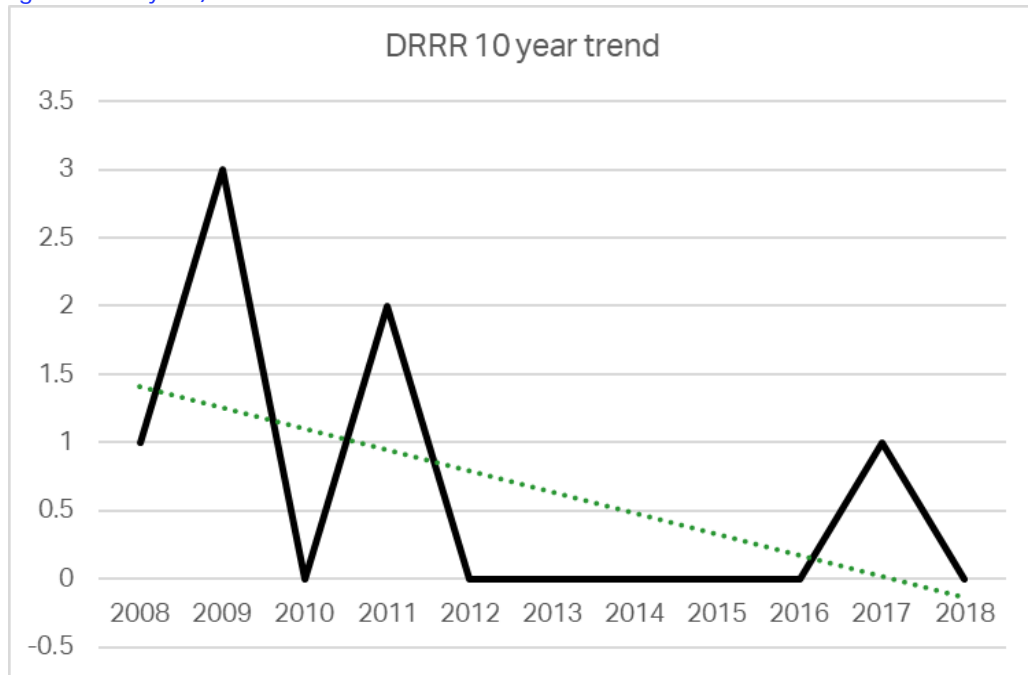
DGAC (Ghana – Accra FIR)



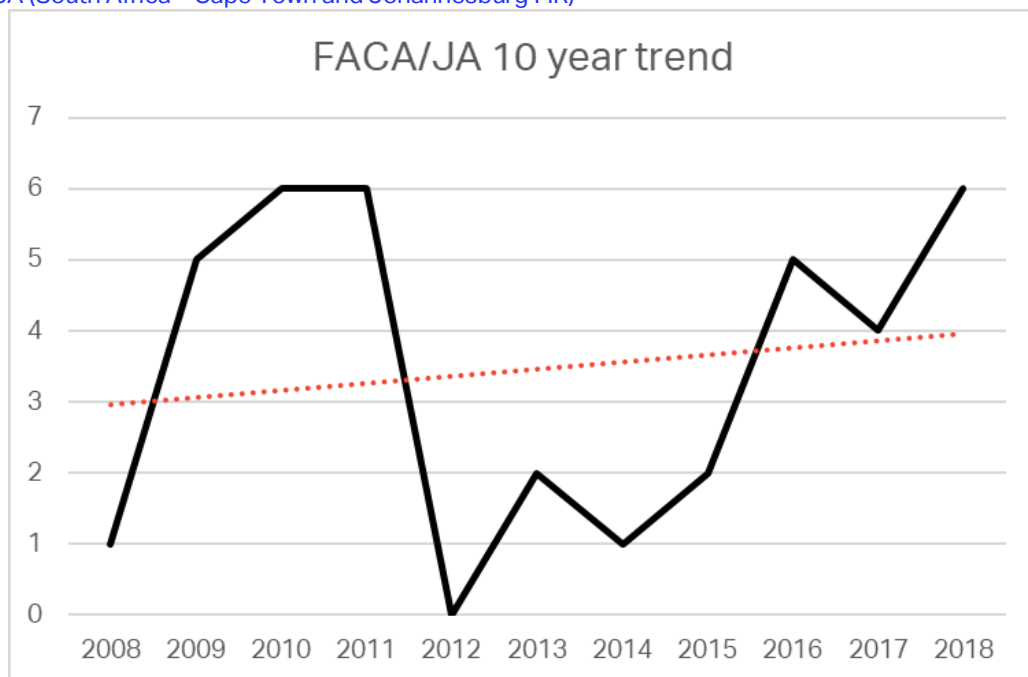
DNKK (Nigeria – Kano FIR)



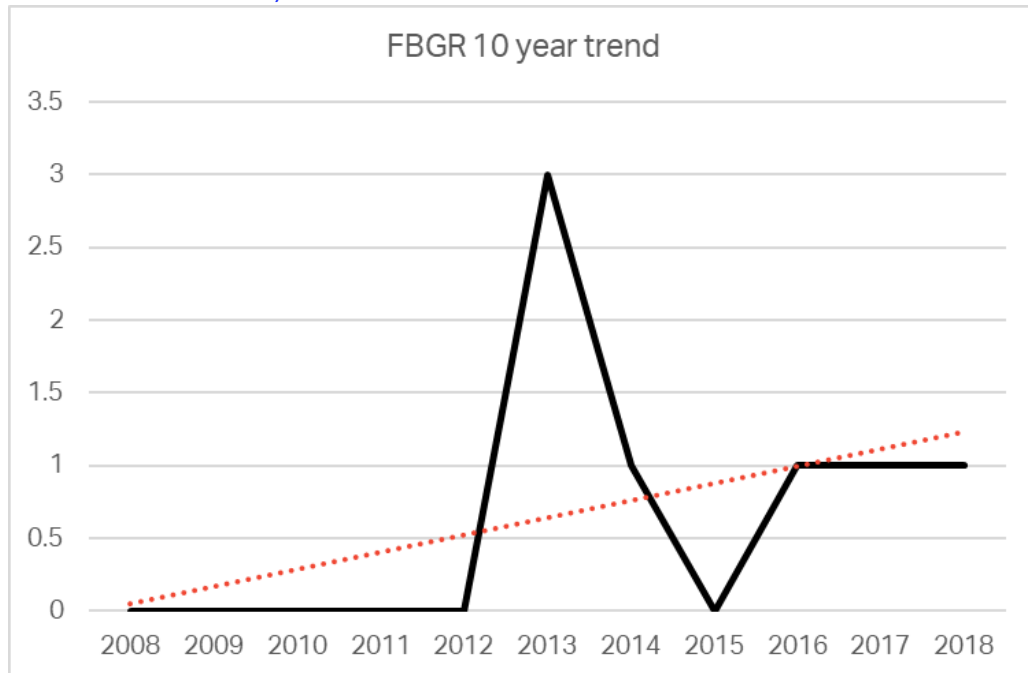
DRRR (Niger – Niamey FIR)



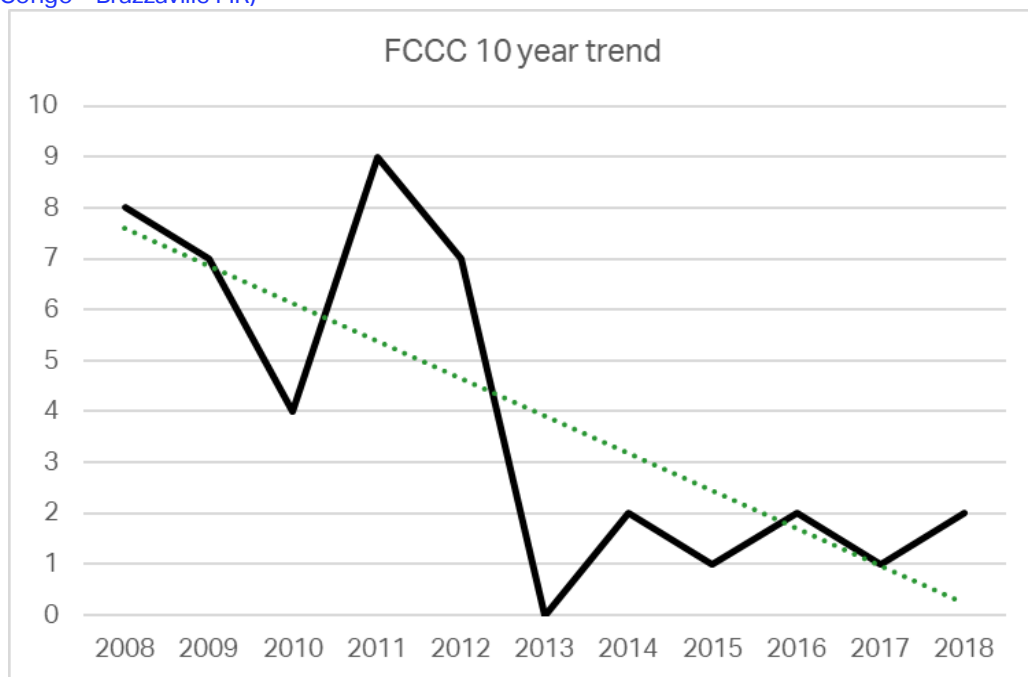
FACA/JA (South Africa – Cape Town and Johannesburg FIR)



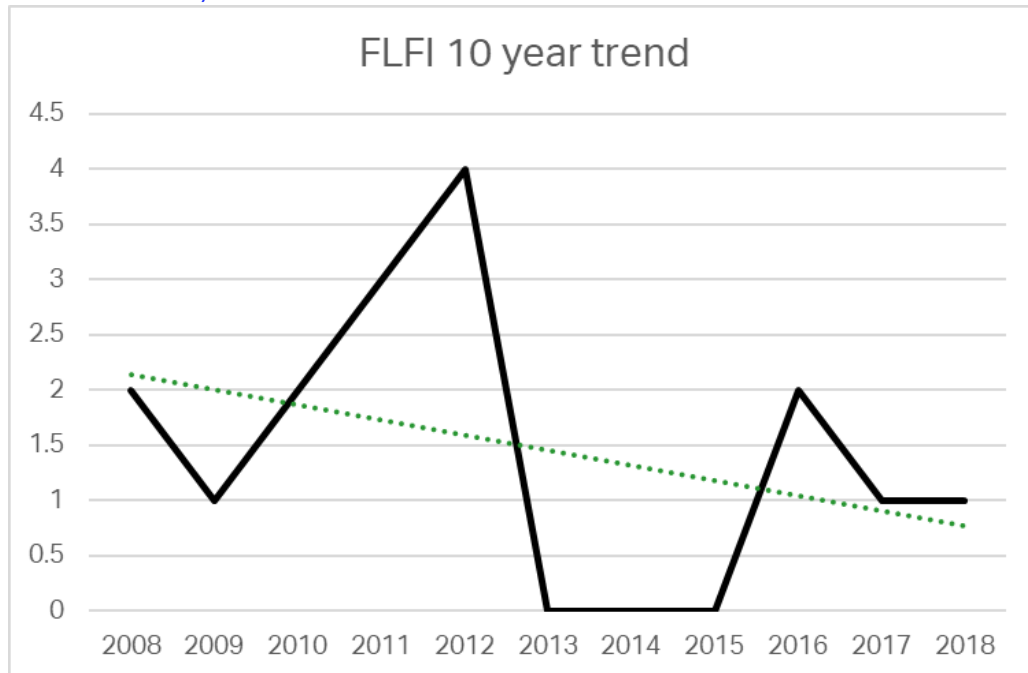
FBGR (Botswana – Gaborone FIR)



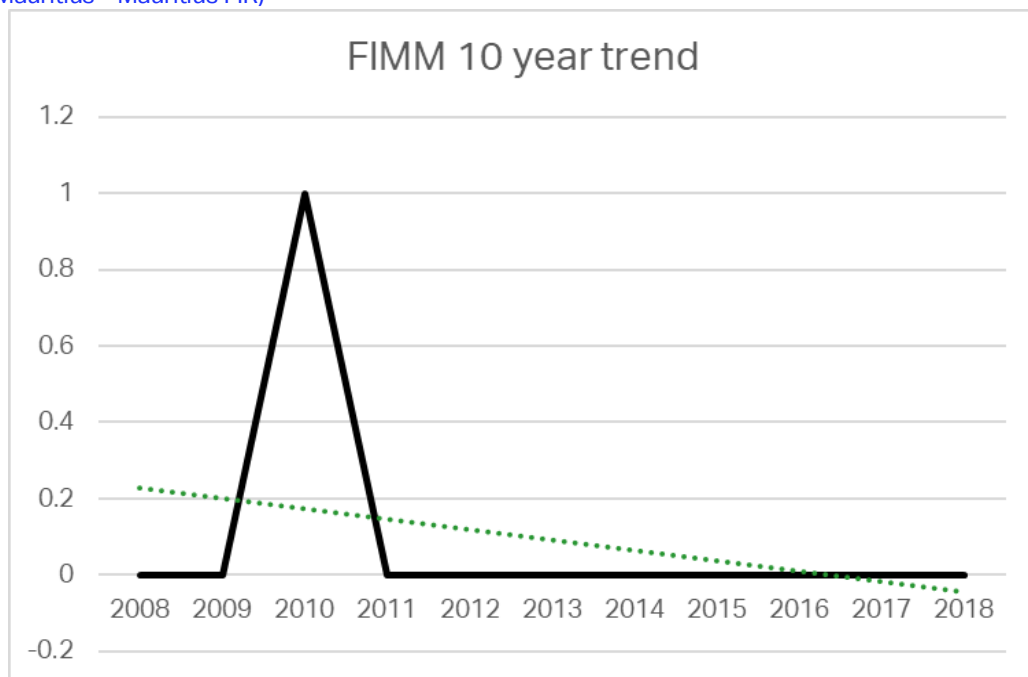
FCCC (Congo – Brazzaville FIR)



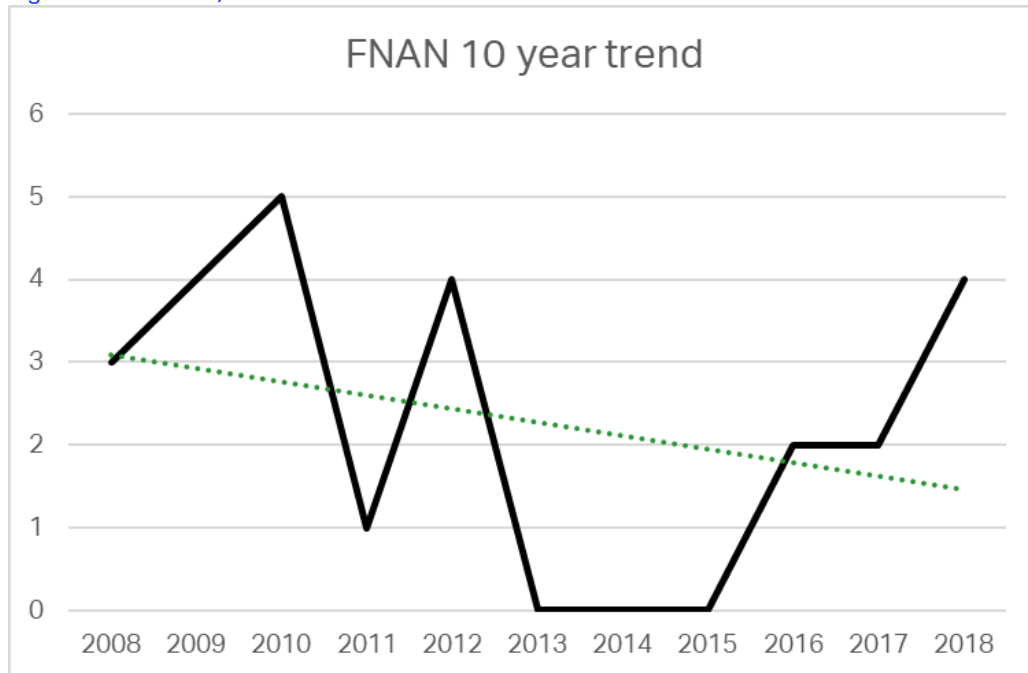
FLFI (Zambia – Lusaka FIR)



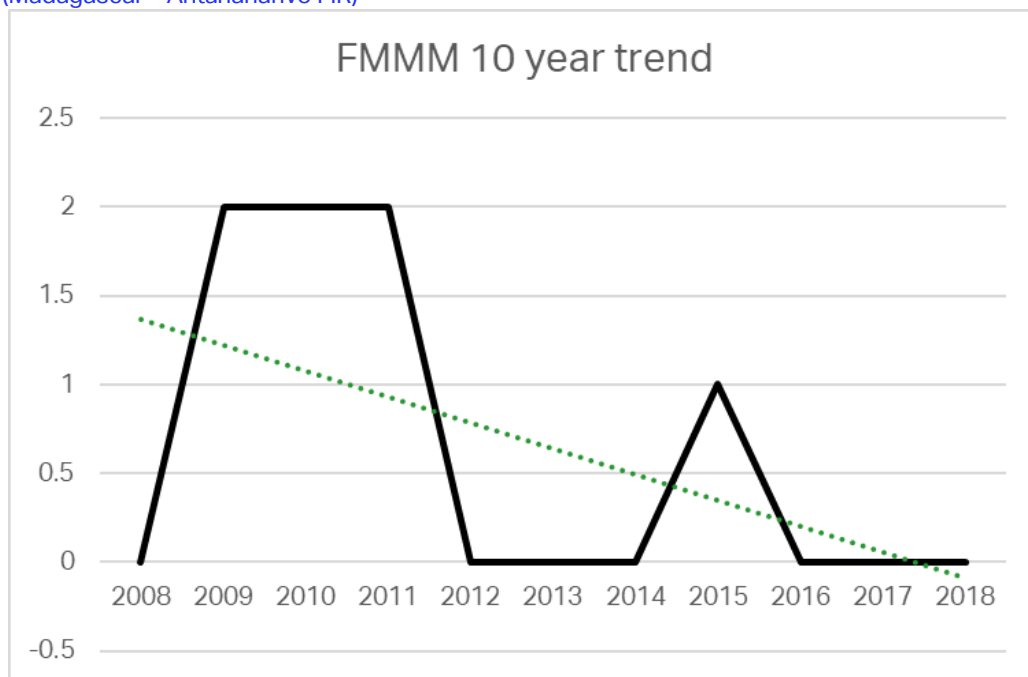
FIMM (Mauritius – Mauritius FIR)



FNAN (Angola – Luanda FIR)

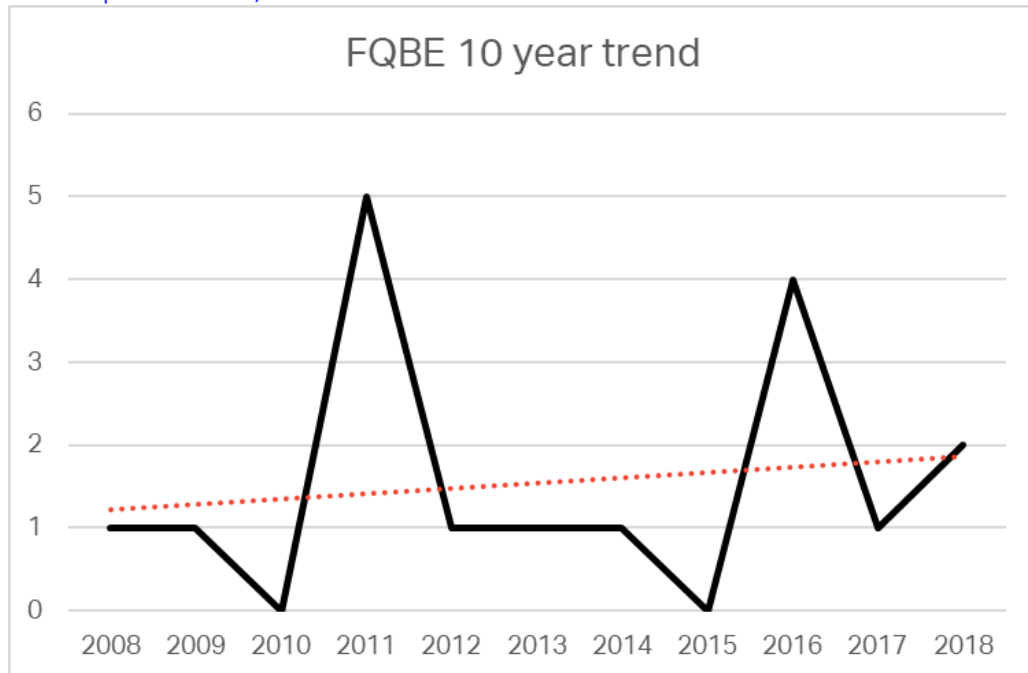


FMMM (Madagascar – Antananarivo FIR)

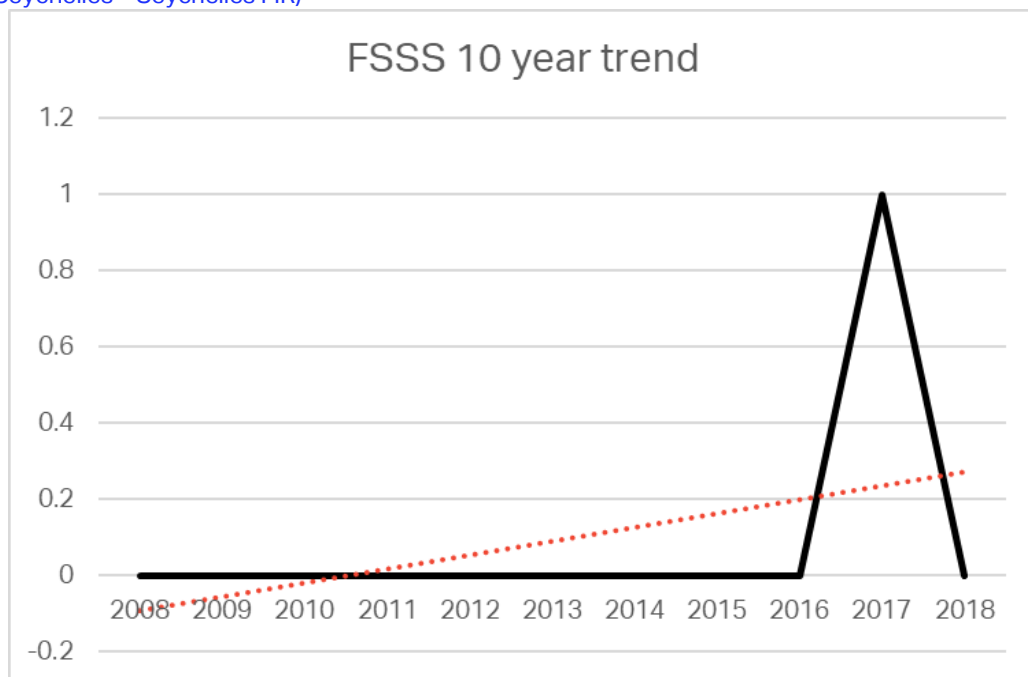




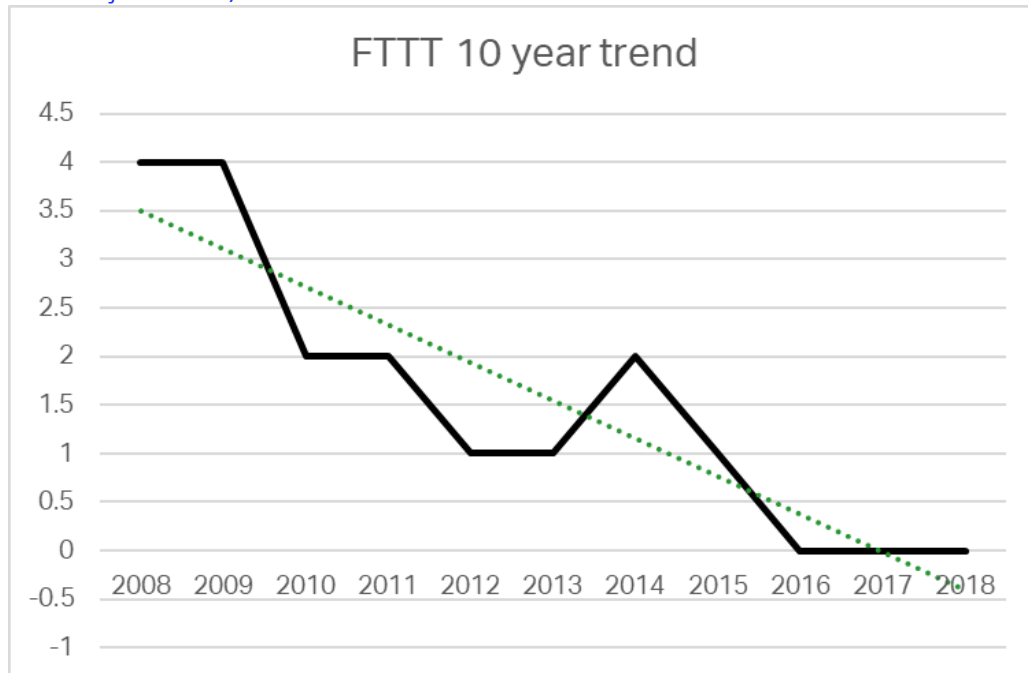
FQBE (Mozambique – Beira FIR)



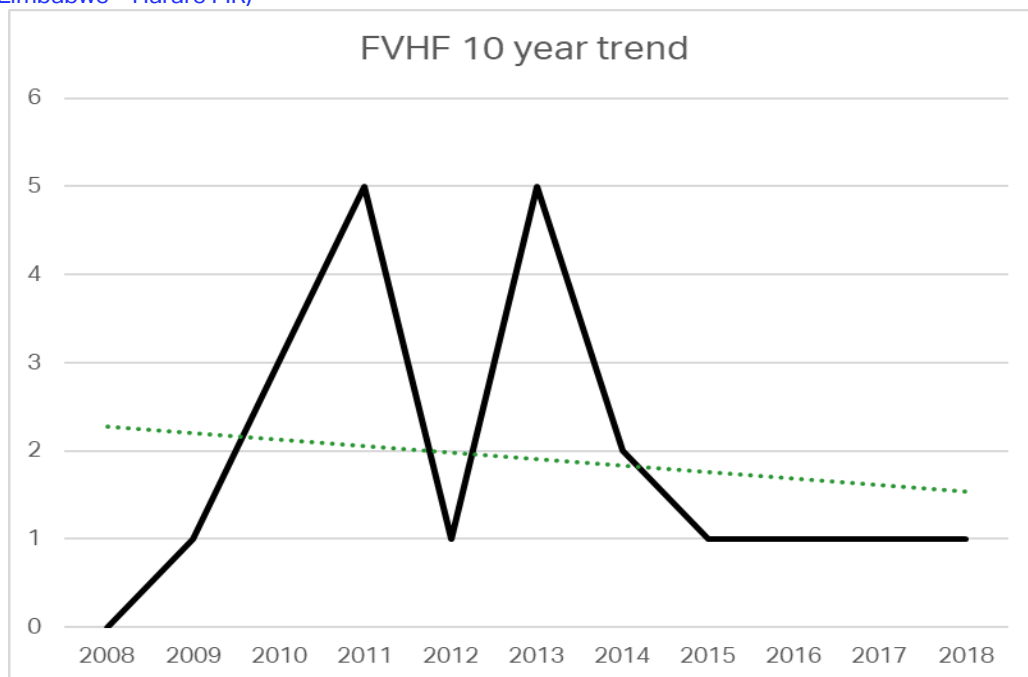
FSSS (Seychelles – Seychelles FIR)



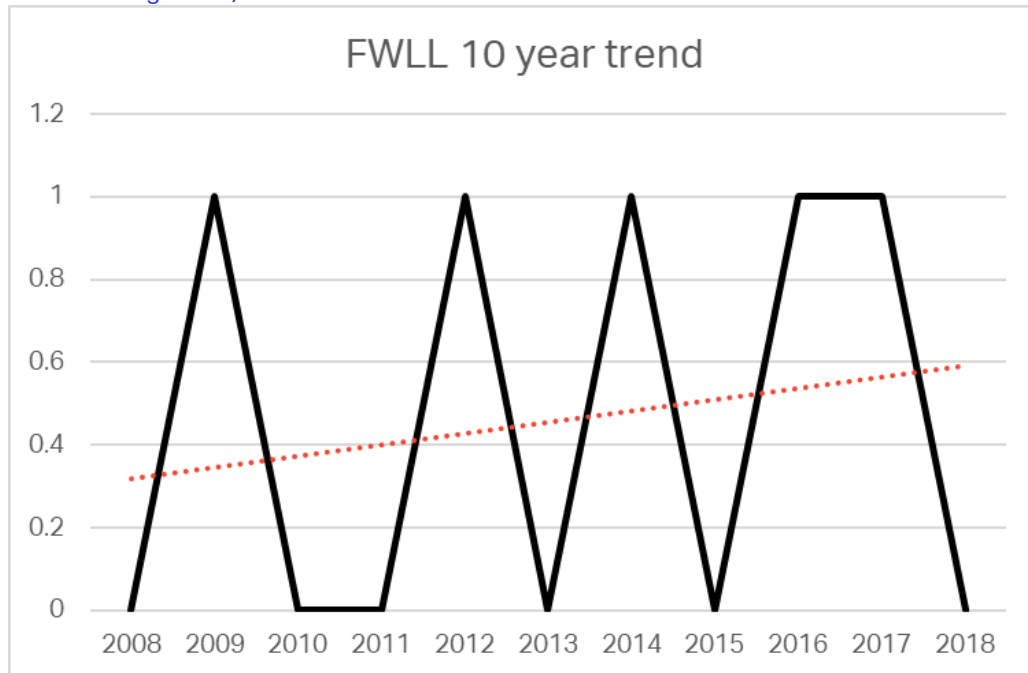
FTTT (Chad – N'Djamena FIR)



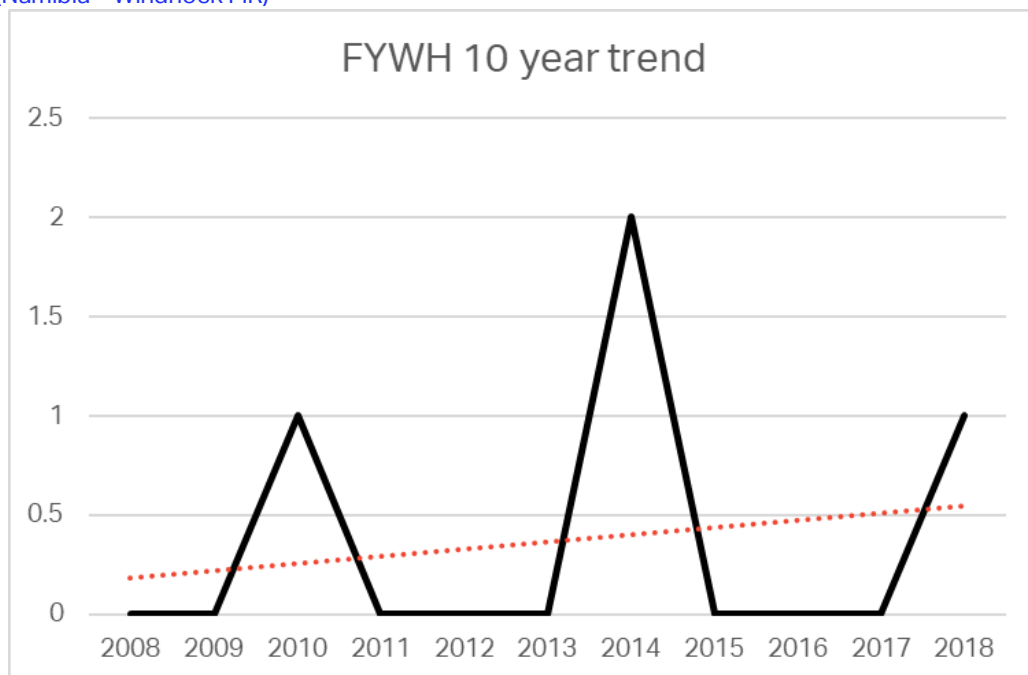
FVHA (Zimbabwe – Harare FIR)



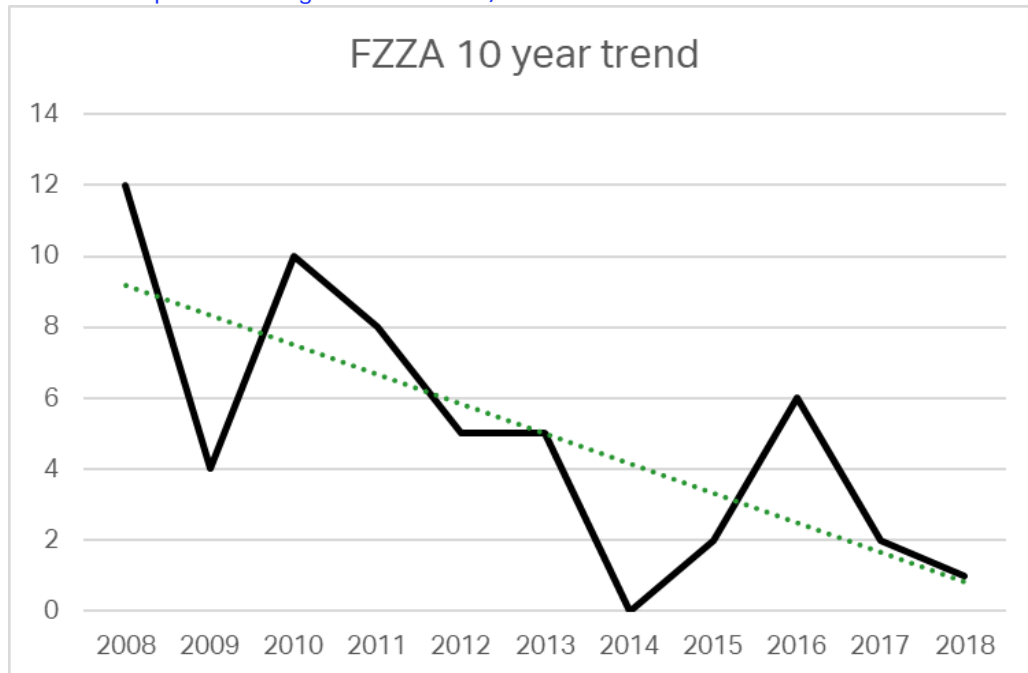
FWLL (Malawi – Lilongwe FIR)



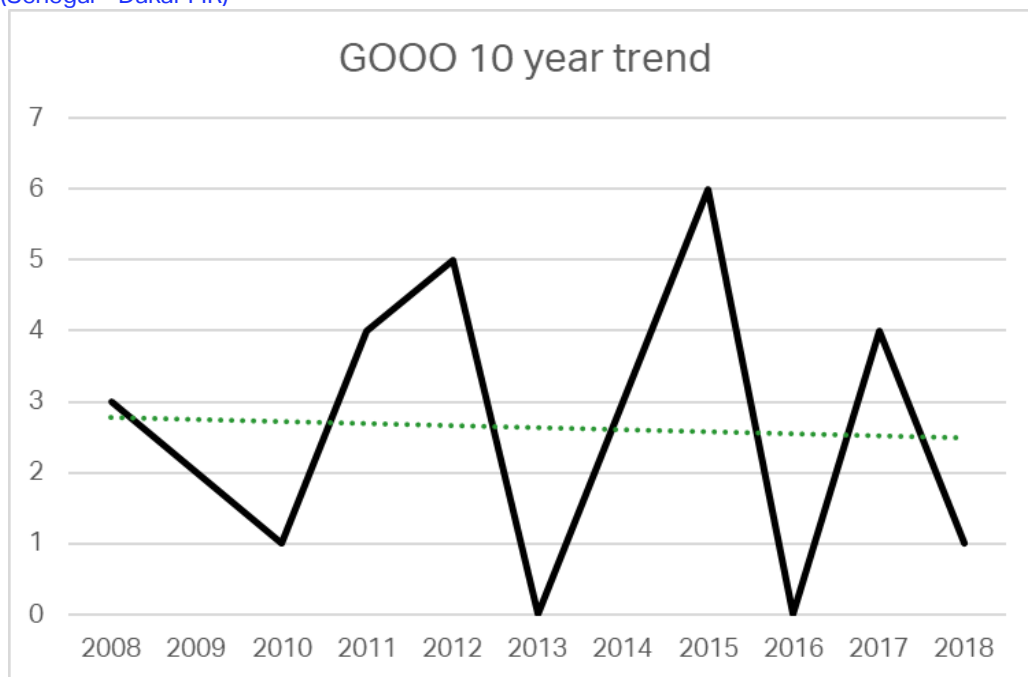
FYWH (Namibia – Windhoek FIR)



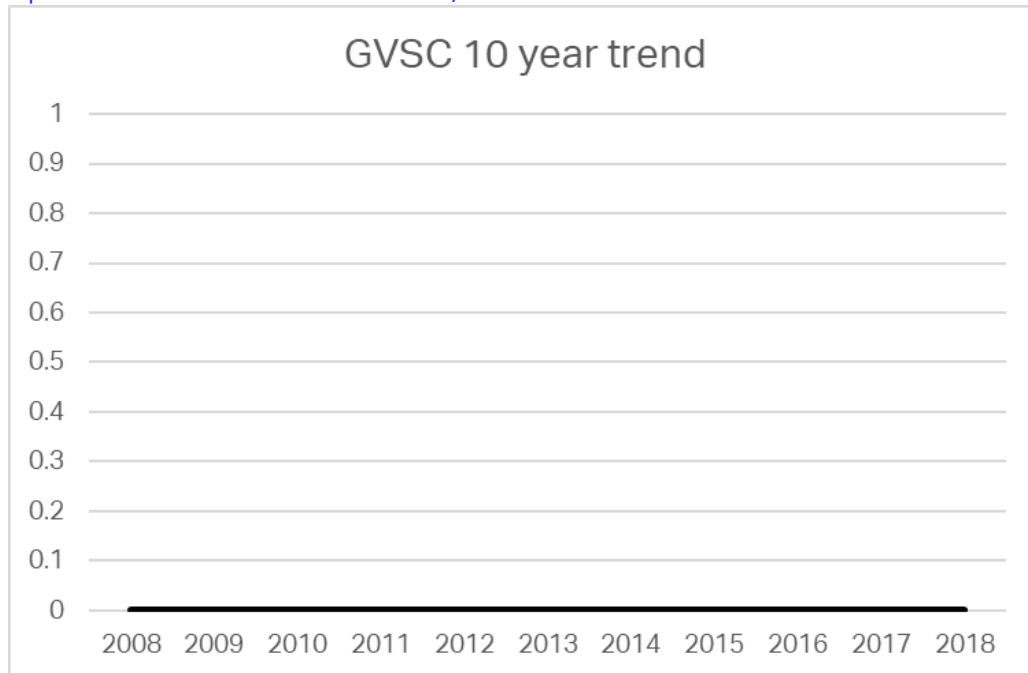
FZZA (Democratic Republic of Congo – Kinshasa FIR)



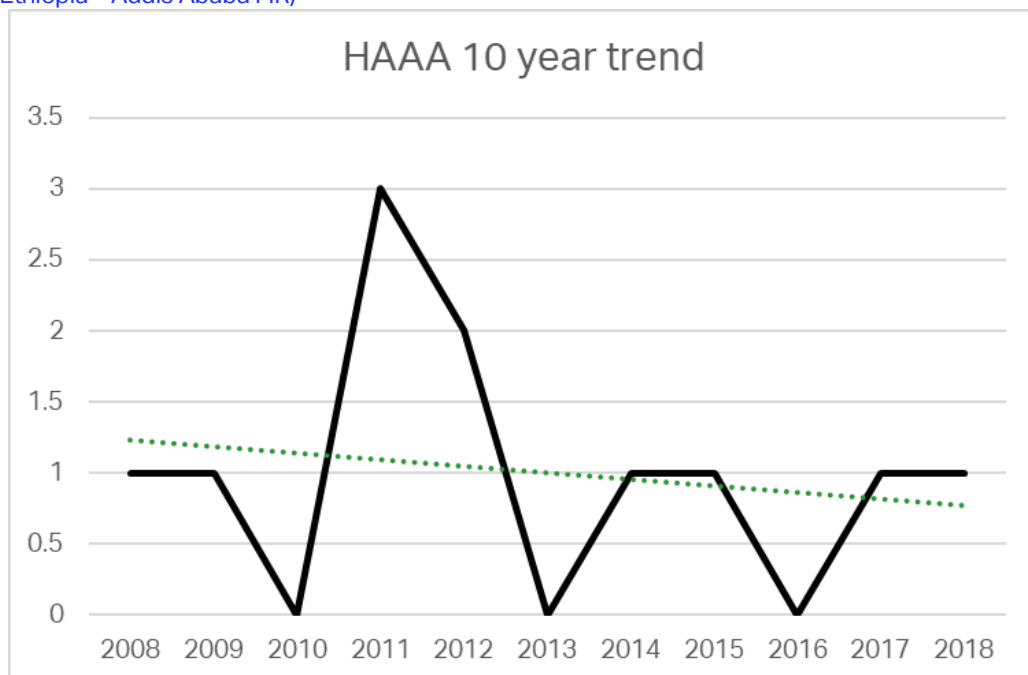
G000 (Senegal – Dakar FIR)



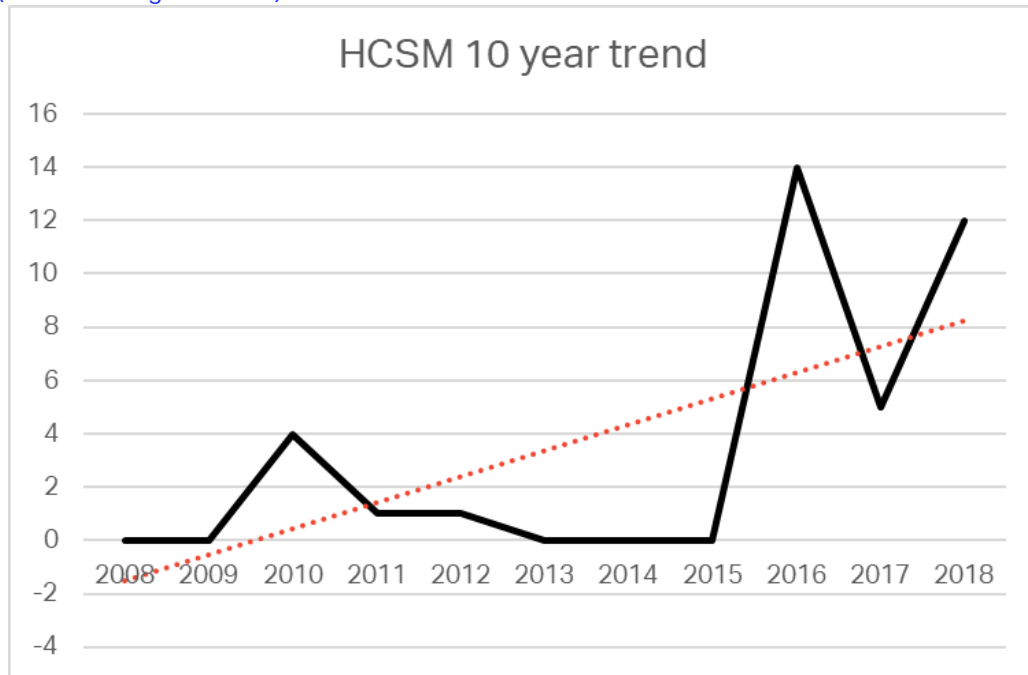
GVSC (Republic of Cabo Verde – Sal Oceanic FIR)



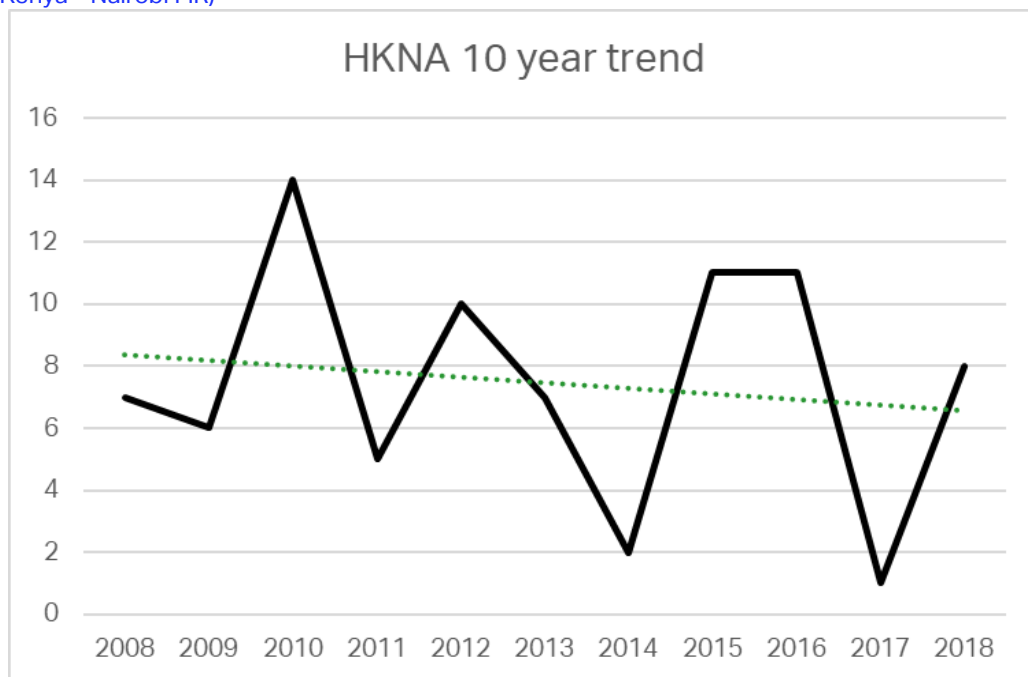
HAAA (Ethiopia – Addis Ababa FIR)



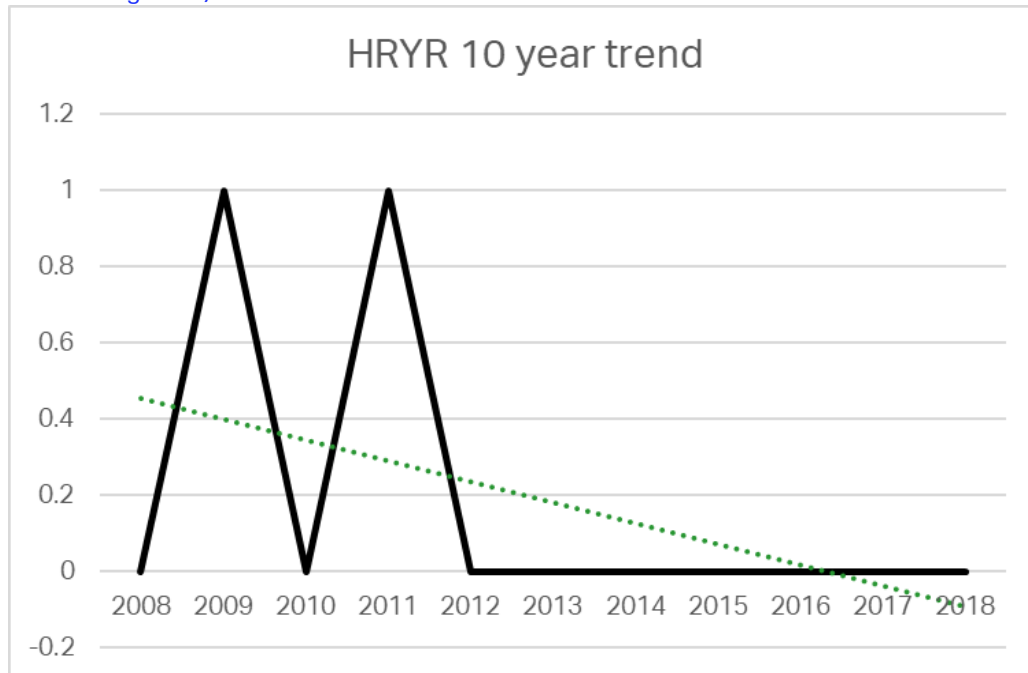
#### HCSM (Somalia – Mogadishu FIR)



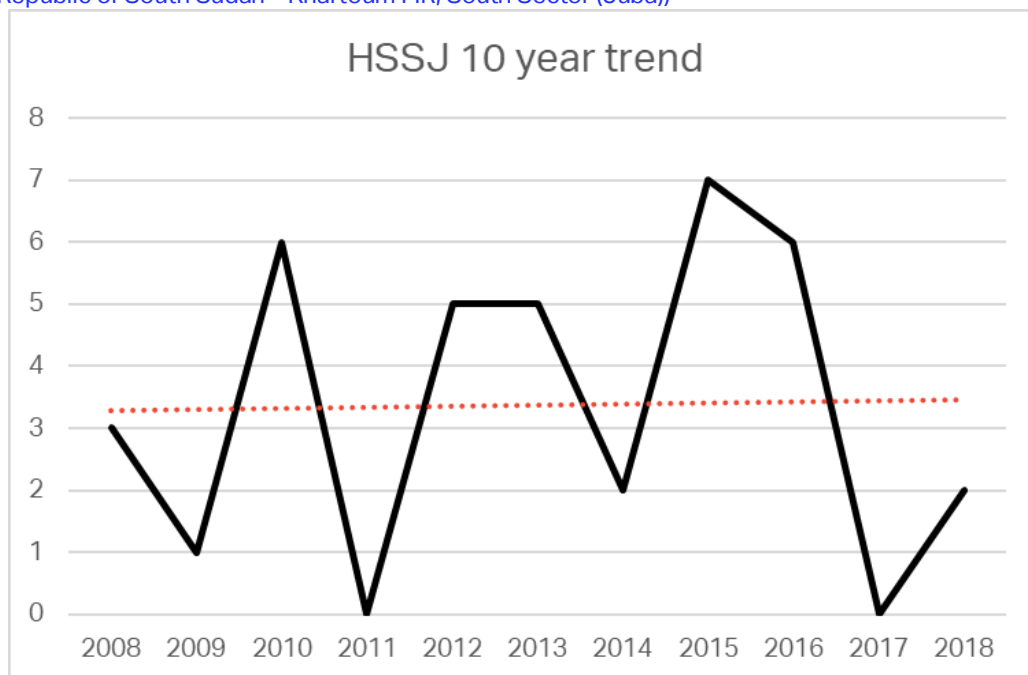
#### HKNA (Kenya – Nairobi FIR)



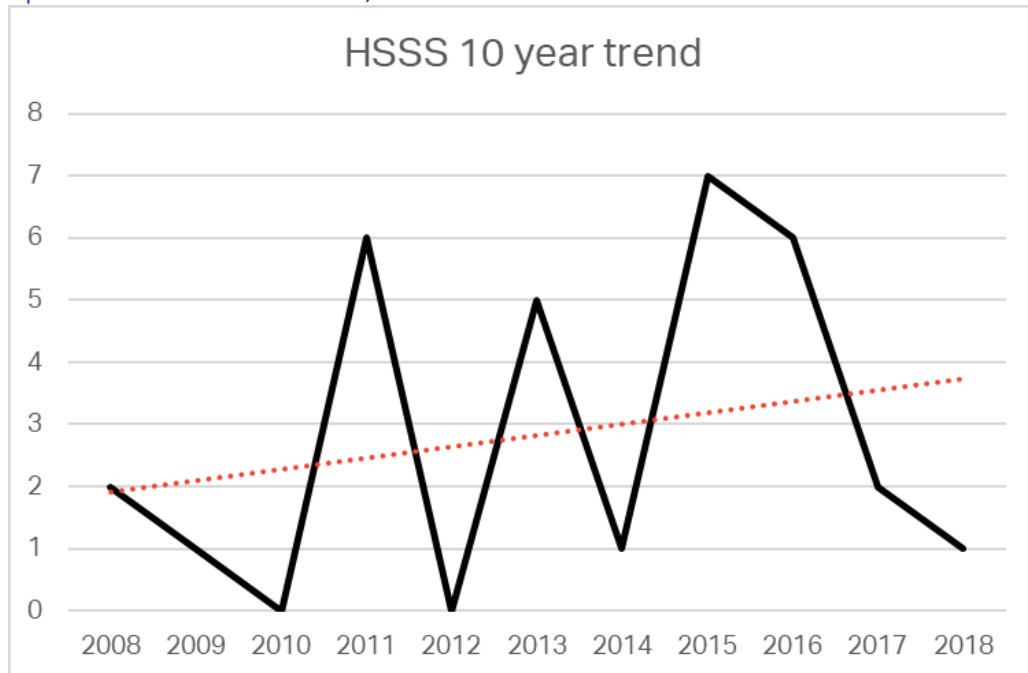
#### HRYP (Rwanda – Kigali FIR)



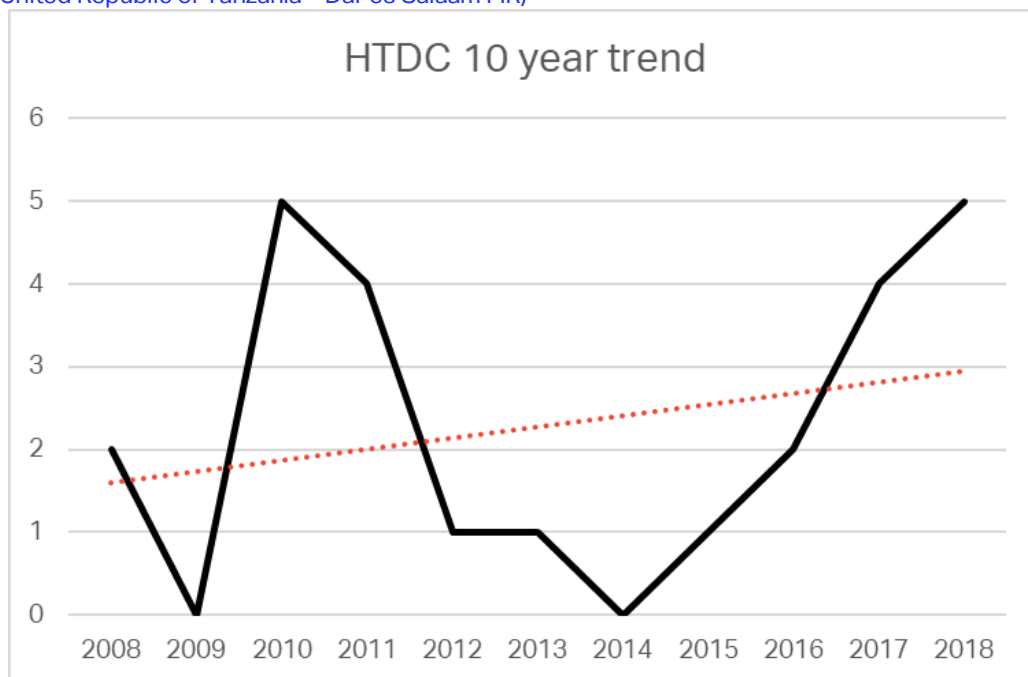
#### HSSJ (Republic of South Sudan – Khartoum FIR, South Sector (Juba))



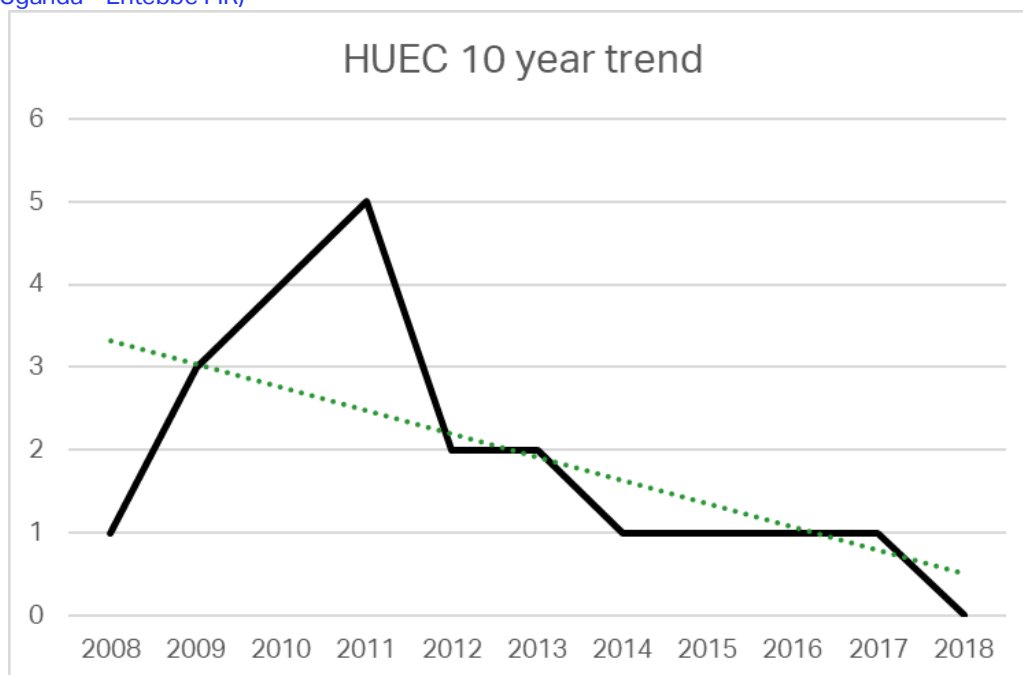
HSSS (Republic of Sudan – Khartoum FIR)



HTDC (United Republic of Tanzania – Dar es Salaam FIR)







## Final Conclusions

- Although the overall regional trend of MAC/RI-VAP events shows an improvement over the past 10 years, the AIAG16 analysis shows a growth in the number of confirmed loss of separation events, despite the decrease in the overall number of events analysed from the previous year.
- The overall threat severity in the region shows a general improvement, bringing down the number of high-risk loss of separation events by 20%. The risk factor in the region however remains alarming high.
- The AIAG analysis process is being hindered by the lack of timely, adequate feedback with a low of just 52% this year. The AIAG feedback rate has been as high as 94% in years previous and States / ANSP's should strive towards this level of feedback once again.
- Safety nets such as TCAS, IFBP and SLOP continue to play a prominent role in the identification and resolution of loss of separation events, particularly in the East African region.
- ATM procedures, ATC non-compliance, airspace organization and poor aeronautical mobile communications are the top causal factors identified by the AIAG16. This is indicative of underlying causal factors that are not being directly identified and addressed, such as the myriad of human factors and organizational issues.
- There remains a lack of maturity in the over all SMS and just culture implementation in the region. A more holistic approach to causation is required to fully address all causal factors to ensure the effective implementation of corrective and preventative actions in the region.
- The effective implementation of civil / military coordination and cooperation remains a challenge, particularly in the managing of VIP movements, impacting on safety and efficiency in the region.
- Lack of or inadequate recurrence training for ATC remains a concern, particularly in the subjects of contingency and recovery procedures.

# AIAG16 General Recommendations

In addition to the State specific recommendations, the following general recommendations are applicable to all States, ANSP's, Operators and Organizations:

- As part of the overall Safety Management System, States should consider the implementation of a planned and managed change management process in the deployment of all new technology, airspace and procedures.
- To facilitate effective investigation, analysis and corrective action; Air Safety Reports and Mandatory Occurrence Reports should be filed without delay after the event and shall contain as much factual detail as possible.
- Investigation of events should drill down deep into all causal factors, finding not only the "what" happened, but more importantly, the "why" it happened. Reports should provide facts to facilitate in-depth AIAG analysis, as well as detailed corrective and preventative action and should consider the SARPs of ICAO Annex 19 and the principals of Just Culture.
- IATA to consider providing de-identified reports for pre-analysis to the registered participants of the AIAG meetings.
- Efforts should be made to implement more effective civil / military coordination and cooperation in the pursuit of improving both safety and efficiency in the region.
- Emphasis should be placed on the inclusion of contingency and recovery procedures in the recurrence training syllabus for ATCO's.
- Those states that have not already done so, to publish SLOP in their IAIP.
- Concerted effort should be made to further develop the safety culture (including just culture) in the region through effective implementation of State Safety Programs and effective oversight of ANSP Safety Management Systems.

## Action for Secretariat

- Update methodology flow chart to better breakdown causal factors and align to updated taxonomy.
- Update the analysis spreadsheet inline with methodology and updated taxonomy.
- Disseminate AIAG16 awards to recipients.

## List of Attachments

- |                       |   |
|-----------------------|---|
| • AIAG16 Attachment A | AIAG terms of reference   |
| • AIAG16 Attachment B | IATA competition law guidelines for industry committee meetings |
| • AIAG16 Attachment C | Chatham house rules   |
| • AIAG16 Attachment D | Attendance  |
| • AIAG16 Attachment E | AFI collision risk assessment 12                                |
| • AIAG16 Attachment F | AIAG15 matters arising – Nigeria                                |
| • AIAG16 Attachment G | AIAG15 matters arising – South Africa                           |
| • AIAG16 Attachment H | AIAG15 matters arising – ASECNA                                 |
| • AIAG16 Attachment I | AIAG15 matters arising – Angola                                 |
| • AIAG16 Attachment J | AIAG15 matters arising – Tanzania                               |
| • AIAG16 Attachment K | AIAG16 group 1 report   |

- AIAG16 Attachment L AIAG16 group 2 report
- AIAG16 Attachment M AIAG16 group 3 report