

**Sixth Meeting of the APIRG Airspace and Aerodrome Operations Sub-group
(AAO/SG6),**

4 – 8 September 2023

Agenda Item 3: Achievements in Airspace and Aerodrome Operations

IMPLEMENTATION OF THE AFI FREE ROUTE AIRSPACE (AFI FRA)

(Presented by the AFI FRA PMT)

SUMMARY	
This paper presents the progress made towards implementation of AFI Free Routing Airspace (AFI FRA) as per the APIRG 22 Conclusion 22/36 in line with B1-FRTO ASBU module.	
Action by the Meeting is contained in Para 3 of this paper.	
REFERENCE(S)	<ul style="list-style-type: none"> ➤ Doc 9750, Global Air Navigation Plan ➤ Doc 7474, Air Navigation Plan — Africa-Indian Ocean Region ➤ APIRG 22 Conclusion 22/37 ➤ APIRG 23 Conclusion 23/02
Strategic Objectives	A - Safety, B - Air Navigation Capacity and Efficiency, and E - Environmental Protection.

1 INTRODUCTION

- 1.1. Free Route Airspace (FRA) is a concept which allows States/ANSPs to define airspaces in which flights are not obliged to follow the published fixed route network, but to follow direct routes as close as possible to their preferred route, from a defined point of entry to a defined point of exit, via intermediate points if necessary, while remaining under the control of ATS units.

- 1.2. FRA is an integral part of the global air navigation plan through the ASBU FRTO module under Block B1/1. The precursor of FRA is the in-flight requested direct routings that can be converted to plannable direct routes under Block 0/1 once they are published. FRA take into account the flexible use of airspace under B0/2 and conflict detection and monitoring tools under B0/4. At the mature stage, the FRA can be built in interrelation with RNP routes under Block B1/2. This clearly demonstrates the evolutionary nature of FRA implementation.

- 1.3. States or Regions that have developed and successfully implemented FRA concept of operations have demonstrated that there are clear benefits to airspace users as well as improvement of airspace utilization. The overall benefits of FRA includes but not limited to reduced flight time, fuel consumption and CO2 emissions

- 1.4. The AFI FRA implementation project aims to support airspace users reduce their fuel consumption and CO2 emissions and meet the industry objective of achieving carbon neutrality by 2050. AFI FRA implementation project was established in 2020 and is progressing well (See Appendix 1). The project is closely related to the ATM Master Plan, the Flexible Use of Airspace, Air Traffic Flow Management (ATFM) and the Performance Based Navigation (PBN) AFI projects.

2 DISCUSSION

- 2.1. The ICAO Global Air Navigation Plan (GANP) advocates the application of FRA at regional or sub-regional level. The geographical extent of the airspace of application should be sufficiently large to derive significant benefits from the FRA concept.
- 2.2. On the basis of APIRG Conclusion 22/37, establishing a project team for the implementation of the FRA in the AFI region, and with conclusion 23/02 recommending States to give priority to the implementation of the FRA, several activities continue to be carried out since 2020 by the project team and are generating a lot of interest from airspace users.
- 2.3. The team's initial efforts were focused on developing a concept of operations to serve as a reference document for the Region. It is now in its second edition. A gap analysis of Communication, Navigation and Surveillance (CNS) resources, ATM tools and airspace management procedures was then carried out to gauge the States' level of readiness, and showed that some States were ready and some others almost ready for implementation, while a few remind not yet ready.
- 2.4. Several lessons are being learned from the case studies of two pioneering states in the AFI region, Mauritius for the Oceanic FIR and Nigeria for the Continental FIR, not forgetting the contributions of other regions and organizations, notably Eurocontrol, IATA, CANSO, AFRAA, etc.

2.5. Progress made since the last AAO SG

2.5.1 *AFI FRA PMT/4, Mauritius: Review of the AFI FRA roadmap*

The AFI Free Route Airspace Project Management Team (AFI FRA PMT) held the fourth PMT meeting face to face in Mauritius from 24 to 28 October of 2022. The meeting was intended to sensitize more on the FRA concept of operations (CONOPS) and also to review the level of preparedness at regional level and agree on the implementation date as guided by the aforementioned road map attached to this WP.

The AFI FRA PMT is divided into three clusters based on regional representation. The three clusters, Western & Central Africa, Southern Africa and the Eastern Africa continue to hold virtual meetings with a focus to agree on their roadmaps and action plans as well as addressing any other related challenges within the States.

2.5.2 *AFI FRA safety assessment*

- 2.5.2.1. ICAO held an AFI FRA risk assessment workshop virtually from 27 February 2023 to 2 March 2023, which achieved the following objectives:

- To raise ANSPs and CAAs awareness on safety management system & management of change in ATM,
- The need to develop an AFI FRA register of risks,
- Develop the potential mitigation measures
- Develop KPIs to monitor post FRA implementation.

(The details is attached as Appendix 2 to this WP)

2.5.2.2. Following the AFI FRA risk assessment workshop, the AFI FRA PMT was assigned the responsibility to advance the following activities: Development a mechanism for FRA implementation lessons learnt dissemination, Coordinate the review of the AFI FRA implementation roadmap.

2.5.2.3. As a result of the AFI FRA risk assessment workshop both Ghana and ASECNA have completed their safety risk assessments exercise and finalized their FRA implementation roadmap and are ready to implement FRA within their individual airspace by 28 December 2023.

2.6. *Direct PBN Routes as a precursor to FRA*

2.6.1. The FRA implementation project has generated a lot of interest from airlines, which are increasingly requesting direct routes that cross several FIRs, connecting city pairs by routes that are as direct as possible.

2.6.2. Other requests are motivated by the creation of routes compatible with Extended Range Twin Operations Approval (ETOPS) operations. Several of these direct routes were analyzed at the Performance Based Navigation (PBN) Route Laboratory organized by ICAO from 22 to 26 of May 2023 where the FRA project team participated very actively. The implementation of direct plannable routes requires effective coordination with all FIRs concerned and a review of respective Letters of agreements/Letters of Procedures (LOAs/LOPs).

2.6.3. A need was identified at the Route Laboratory to revive the dormant PBN project team in line with **APIRG Conclusion 24/14 which** aims at optimizing the ATS route structure in the AFI En-route airspace and foster the harmonized implementation of the RNAV/5, RNP/4, and RNP/2 in line with the FRTO B1/2 of ASBU. The Team require to working closely with the FRA project team as participants and final objectives of both projects closely relates.

2.7. **Way forward to advance FRA implementation within AFI**

2.7.1. *Refining fixed ATS route network*

It has been noted that some fixed routes previously requested by airlines are no longer in use, it is therefore important to review and clean up the AFI route network. To maximize the efficiency of FRA and to ensure safe and efficient transfer of flight, all efforts need to be made to ensure all required realignment of the fixed ATS route network in adjacent airspace (such as lower airspace) not applying FRA.

2.7.2. *FRA Connection with lower airspace ATS fixed route Network*

The inter connectivity between FRA and the underlying fixed ATS route network needs to be ensured through the availability of a set of waypoints taking into account the various climbing and descending profiles.

The AFI FRA PMT plans to hold a face-to-face meeting before the end of the year in order to review the AFI FRA implementation roadmap-based on the cluster leads progress reports, develop a regional monitoring dashboard to track KPIs, finalize the process and platform for lessons learnt dissemination and to integrate the upper FRA airspace with TMA terminal operations.

3. **ACTION BY THE MEETING**

3.1. The meeting is invited to;

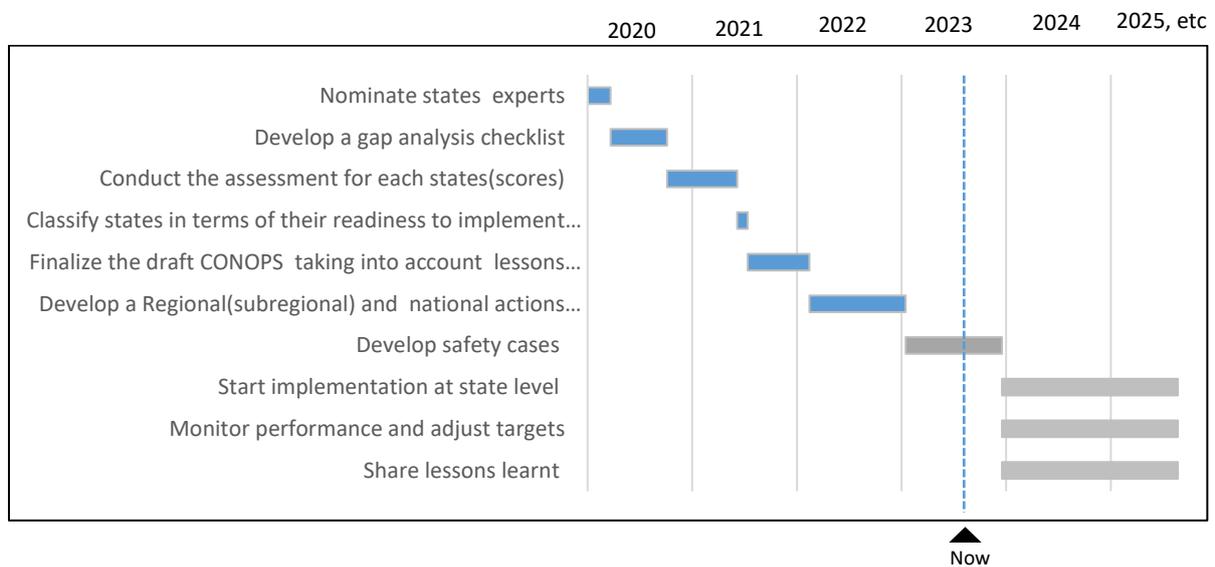
- a) Take note of the progress made in the implementation of FRA in the AFI region.



- b) Endorse the convening of the face-to-face meeting of the FRA PMT for the connection of FRA with lower airspace.
- c) Urge States that may not have actively participated in the FRA implementation to do so by providing required information and avail focal points towards FRA implementation.
- d) Urge States to implement actions necessary for the harmonization and realization of FRA.

- THE END-

Appendix 1 : FRA ROADMAP



Appendix 2 : RISK ASSESSMENT SPREADSHEET