



ICAO

International Civil Aviation Organization

African Flight Procedure Programme

Eighth Meeting of the African Flight Procedure Programme Steering Committee

(Dar Es Salam, 23 - 24 August 2022)

Agenda item 4: Review of the implementation status of the Programme
4.2: PBN implementation status in the AFI Region

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This paper presents an update on the implementation of the ICAO Performance-Based Navigation implementation in the AFI Region at the end of the Project Phase II.

REFERENCES:

- ICAO Assembly Resolution A37-11
- AFPP Phase II Programme Document

RELATED ICAO STRATEGIC OBJECTIVE(S):

- Safety
- Air Navigation Capacity and Efficiency
- Environmental protection

1. Introduction

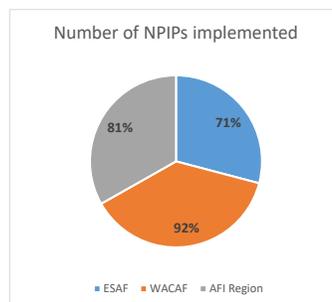
- 1.1 ICAO has developed the Performance-Based Navigation concept in 2007 and based on its multiple operational benefits, States were urged through Assembly Resolution A36-23, to complete PBN implementation plan by 2009 with the goal to implement PBN operations for all phases of flight, including approaches with vertical guidance. In 2010, the ICAO General Assembly took Resolution A37-11 whereby PBN implementation has become a matter of urgency.
- 1.2 It should be also recalled that PBN is one of the key enablers of some of the Aviation System Block Upgrade (ASBU) modules, namely APTA-B0/4 (CDO), APTA-B0/5 (CCO) and APTA-B0/5 (PinS).
- 1.3 This working paper provides the implementation status of the PBN in the AFI Region with breakdowns since the start of the AFPP.

2. Discussion

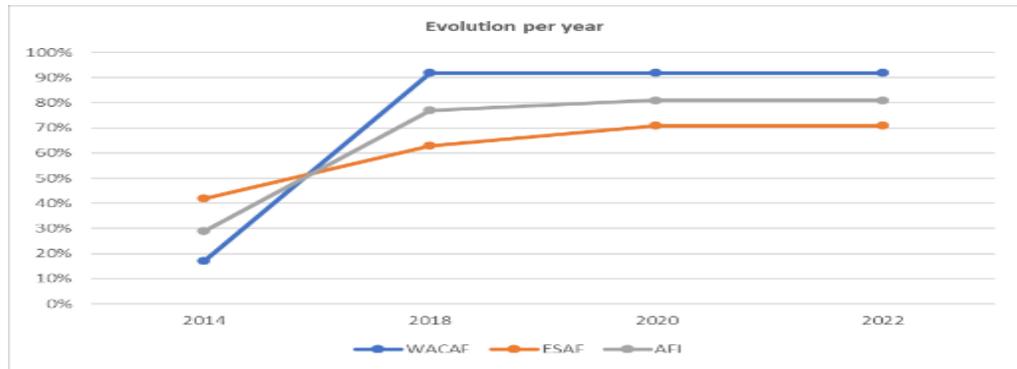
- 2.1 As it was clearly stated in the ICAO Assembly Resolution A36-23, a proper PBN implementation within a State should normally start with the issuance of a National PBN Implementation Plan (NPIP). To this end, a Regional PBN implementation plan was developed by ICAO and forwarded to the AFI States for customization.
- 2.2 The national PBN implementation plan shall be followed by the implementation of PBN approaches, departure (SIDs) and arrival (STARs) flight procedures as well as implementation of PBN routes. Additionally, with the advent of the ASBU concept, the SIDs and STARs can accommodate Continuous Climb Operations and Continuous Descent Operations techniques commonly known as CCO/CDO.
- 2.3 PBN operations rely on the use of geographical coordinates based on the World Geodetic System of 1984 referential commonly called WGS-84. Unfortunately, in the Region, some States and ANSP do not conduct WGS-84 surveys on a regular basis as stipulated in the ICAO WGS-84 Manual (Doc. 9674).
- 2.4 It is also noted that a number of States have developed and implemented PBN flight procedures without any national PBN implementation plan. Such situations raise a question: Is a national PBN plan still needed?
- 2.5 The tables and charts below provide the PBN implementation status in the AFI Region as of 23 August 2022. The figures are based on the list of international airports provided in the AFI eANPs. However, with regards to the PBN flight procedures, for some States, the figures can be improved by updating this list.

2.6 National PBN plans implementation status

| Reg. Office/Region | # States | # NPIPs |
|--------------------|----------|----------|
| ESAF | 24 | 17 (71%) |
| WACAF | 24 | 22 (92%) |
| AFI Region | 48 | 39 (81%) |



| Year | WACAF | ESAF | AFI |
|------|-------|------|-----|
| 2014 | 17% | 42% | 29% |
| 2018 | 92% | 63% | 77% |
| 2020 | 92% | 71% | 81% |
| 2022 | 92% | 71% | 81% |



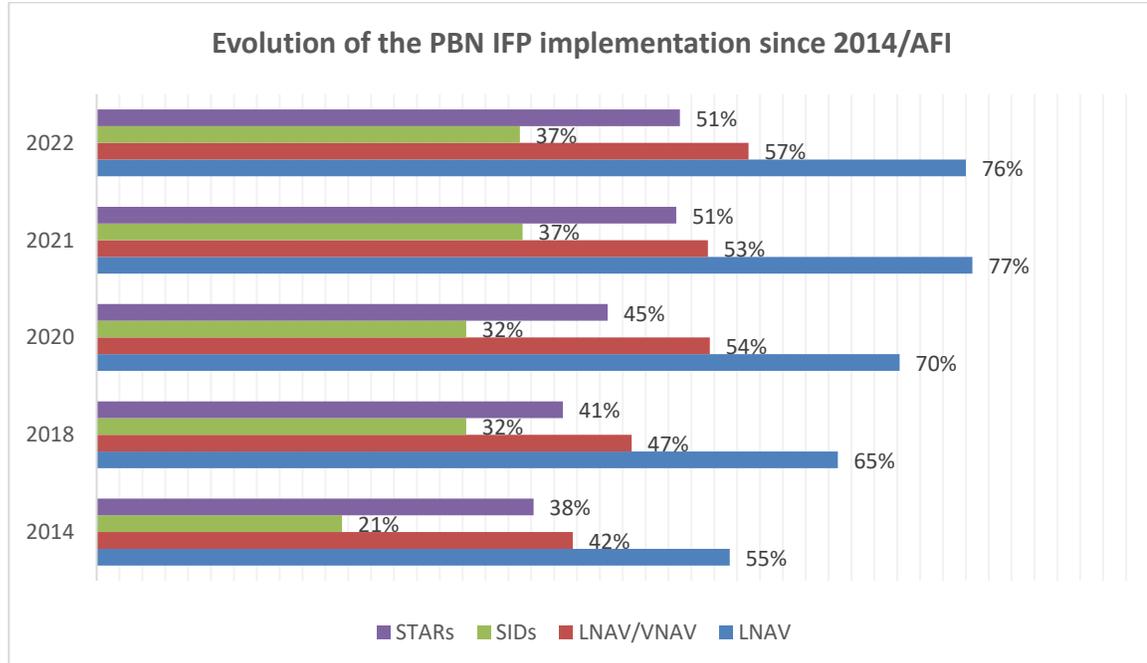
2.6.1 States that have not yet issued NPIPs in the AFI Region are Burundi, the Central African Republic, Djibouti, Eritrea, Eswatini, Guinea-Bissau, Lesotho, South Sudan and Zambia.

2.7 PBN flight procedures implementation status

2.7.1 The table and chart below provide a snapshot of the PBN flight procedure implementation as of 23 August 2022.

| Reg. Off. | # Inst. RWY | #RNP APCH | Baro VNAV | SID | CCO | STAR | CDO |
|-----------------|-------------|------------|------------|-----------|-----------|------------|-----------|
| ESAF | 138 | 98 | 72 | 63 | 20 | 66 | 20 |
| WACAF | 90 | 75 | 59 | 22 | 06 | 51 | 08 |
| AFI Reg. | 228 | 173 | 131 | 85 | 26 | 117 | 28 |

2.7.2 The following chart gives the breakdown of the PBN flight procedure implementation since 2014.



2.7.3 The following States have not yet implemented any PBN flight procedure for internal airports:

- a) ESAF: Burundi, Eswatini, South Sudan and Zimbabwe;
- b) WACAF: Cabo Verde, Sao Tome and Principe.

Note: In Eswatini, Sao Tome and Principe and Cabo Verde, flight procedure design projects are ongoing.

3. **Action by the meeting**

3.1 The Meeting is invited to:

- a) Take note of the content;
- b) Encourage States and ANSPs to conduct WGS-84 surveys on a regular basis and implement PBN flight procedures at least in the international airports as applicable;
- c) Remind the Member States that the AFPP is still available to assist with the training of flight procedure designers, the development of instrument flight procedures and the provision of flight procedure design automation solutions.
- d) Remind the Member States that a list of well-known registered WGS-84 survey companies and flight procedure design offices is also available.

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