



ICAO

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# 9th Meeting of the AFPP Steering Committee

**Lomé, Togo**

23 to 25 December 2023



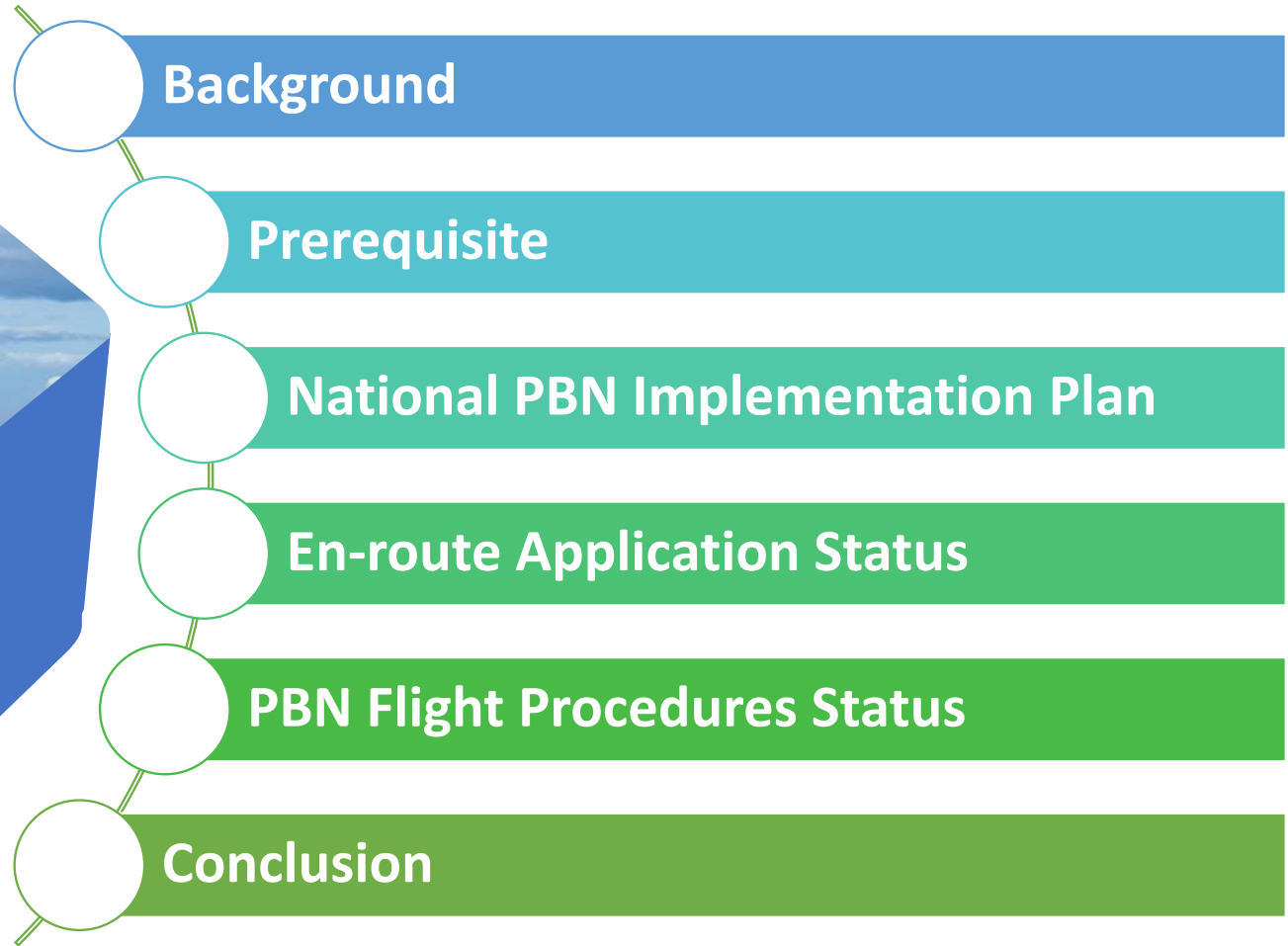
9th Meeting of the AFPP Steering Committee, Lomé, 23 to 25 October 2023

**Agenda item 3: Review of the implementation status of the Programme**  
**Working Paper 3.4: PBN implementation Status in the AFI Region**





## Outline





# Background

African Flight Procedure Programme (AFPP)

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In 2008 ICAO developed the performance-based navigation (PBN) concept and called Member States to develop National PBN Implementation Plan (NPIP) to implement it for all phases of flight by 2016

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To this end, the AFI Region provided a PBN implementation roadmap to serve as model for the development of their own plan

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PBN implementation starts with prerequisites followed by a national PBN implementation plan and then, design of routes and flight procedures

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The current WP presents the implementation status of these elements as of 23 October 2023



# Prerequisite for PBN implementation

African Flight Procedure Programme (AFPP)

□ Prior to PBN implementation, WGS-84 data meeting the ICAO accuracy requirements (Annex 15, Doc. 9674) shall be availed:

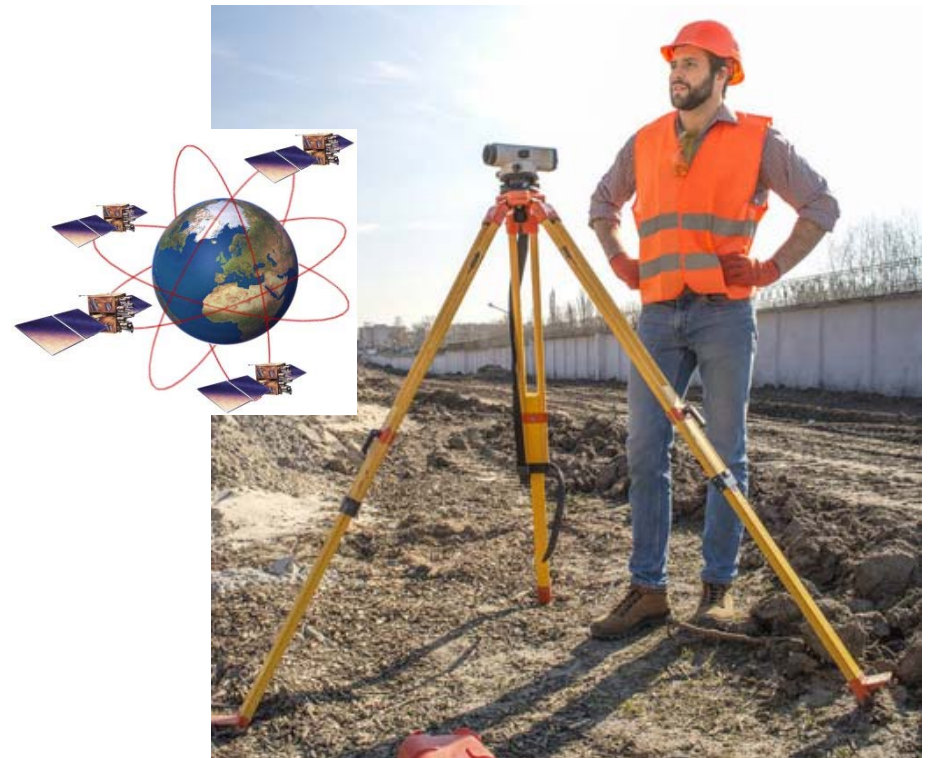
☞ The data must be current

- Less than five (05) years

☞ Data shall be collected and processed by a registered company

☞ Data to be collected are related to:

- Runway features (THR, Profile)
- Nav aids and landing aids
- Obstacles.

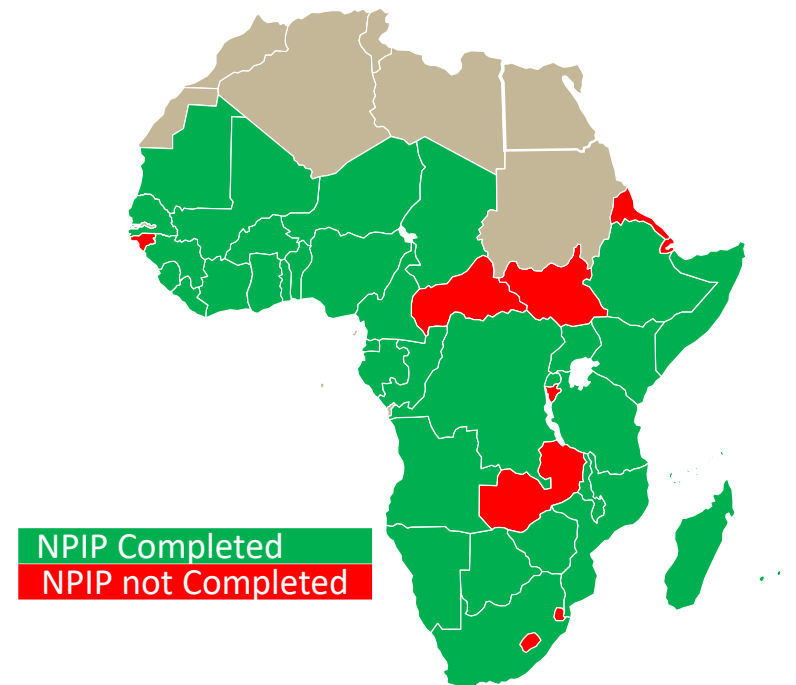




# National PBN Implementation Plan

African Flight Procedure Programme (AFPP)

- ❑ NPIP completion:
  - ☞ Initial target date (A36-23): 2016
  - ☞ Now:
    - A mater of urgency (A37-11)!
- ❑ Total AFI States : 48
- ❑ NPIP completed:
  - ☞ WACAF : 22 (92%)
  - ☞ ESAF : 17 (71%)
- ❑ Remaining States:
  - ☞ WACAF : 2 (8%):
    - Central African Republic and Guinea-Bissau.
  - ☞ ESAF : 7 (29%):
    - Burundi, Djibouti, Eritrea, Eswatini, Lesotho, South Sudan and Zambia.





# En route application status

African Flight Procedure Programme (AFPP)

- ☐ Monitored by the Regional Offices:
  - 👉 PBN Route Lab workshop





# PBN Flight Procedures Status

African Flight Procedure Programme (AFPP)

## ☐ PBN flight procedures refer here to:

### ☞ Two types of STARs:

- PBN standard STARs;
- STARs using Continuous Descent Operations Techniques (CDO).

### ☞ Two types of SIDs:

- PBN standard SIDs;
- STARs using Continuous Climb Operations Techniques (CCO).

### ☞ Instrument Approach Procedures:

- RNP APCH (with LNAV minima);
- APV baro-VNAV (RNP APCH with LNAV/VNAV minima).





# PBN Flight Procedures Status

African Flight Procedure Programme (AFPP)

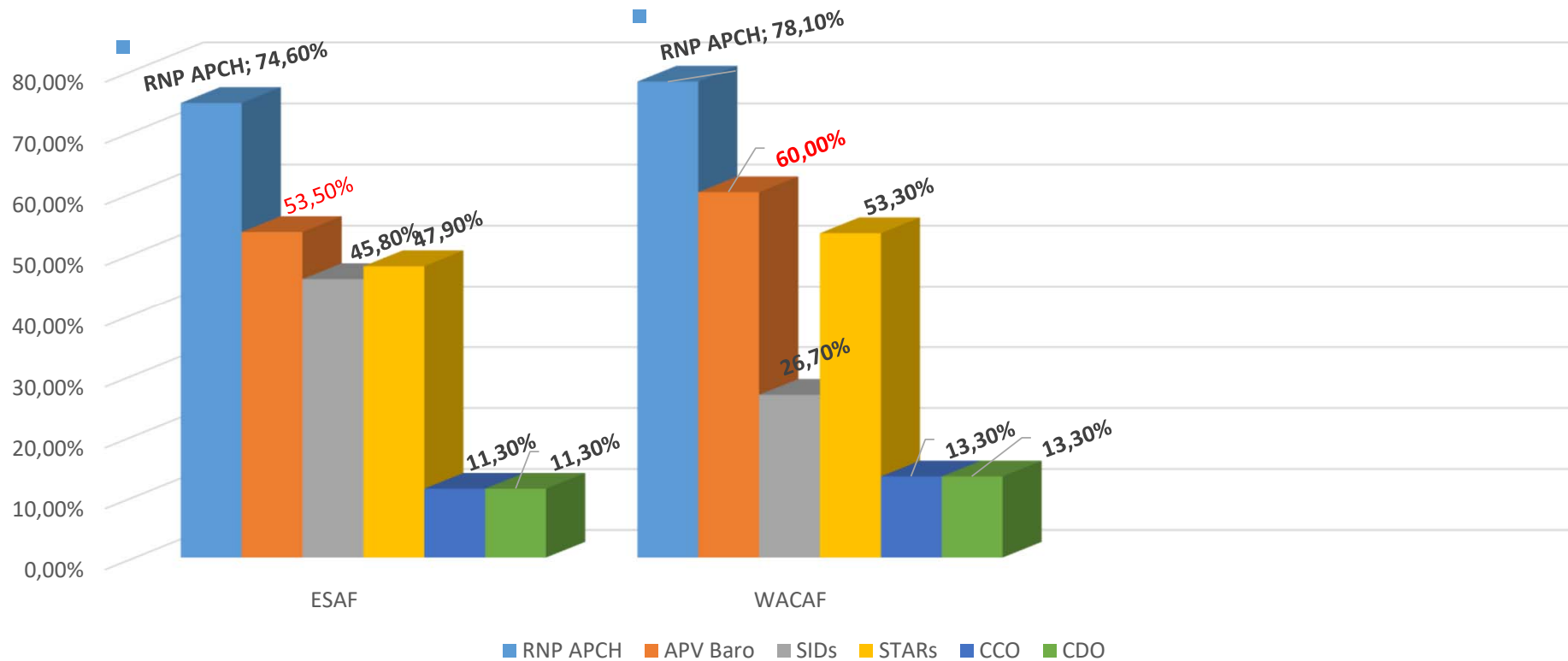
Reg. Office	# Inst. RWY	RNP APCH	APV Baro	SIDs	STARs	CCO	CDO
ESAF RO	142	106 (74.6%)	76 (53.5%)	65 (45.8%)	68 (47.9%)	16 (11.3%)	16 (11.3%)
WACAF RO	105	82 (78.1%)	63 (60.0%)	28(26.7%)	56 (53.3%)	14 (12.9%)	12 (12.9%)
<b>TOTAL</b>	<b>247</b>	<b>188 (76.1%)</b>	<b>139 (56.3%)</b>	<b>93 (37.7%)</b>	<b>124 (50.2%)</b>	<b>30 (12.1%)</b>	<b>30 (12.1%)</b>



# PBN Flight Procedures Status

African Flight Procedure Programme (AFPP)

Ratios per type of flight procedure and per Regional Office





# Conclusion

African Flight Procedure Programme (AFPP)

## PBN Implementation rate per other States (RNP APCH)\_ESAF

States	Angola	Botswana	Comoros	Djibouti	Eritrea	Ethiopia	Kenya	Lesotho	Madag.	Malawi	Mauritius	Mozambique
# Int. A/P	2	5	3	1	2	4	2	1	7	2	1	10
# inst RWYs	4	9	3	2	3	9	6	2	12	4	2	18
RNP APCH	3	7	3	2	2	9	6	2	6	4	2	16
Rate (%)	75.0	77.8	100.0	100.0	67.7	100.0	100.0	100.0	75.0	100.0	100.0	88.9



# Conclusion

African Flight Procedure Programme (AFPP)

## PBN Implementation rate per other States (RNP APCH)\_ESAF

States	Namibia	Reunion I.	Rwanda	Seychelles	Somalia	South Africa	South Sudan	Tanzania	Uganda	Zambia
# Int. A/P	3	1	1	1	5	10	1	3	1	4
# RWYs	5	4	1	2	3	25	2	6	2	8
RNP APCH	4	3	1	2	1	15	2	6	2	6
Rate (%)	80.0	100.0	100.0	100.0	33.3	60.0	100.0	100.0	100.0	75.0



# Conclusion

African Flight Procedure Programme (AFPP)

## PBN Implementation rate per other States (RNP APCH)\_WACAF

States	Benin	Burkina Faso	Cameroon	Cabo Verde	Central Af. Rep.	Chad	Côte d'Ivoire	DR Congo	Eq. Guinea	Gabon	Gambia	Ghana
# Int. A/P	1	2	5	2	2	1	1	5	1	3	1	1
# RWYs	2	4	10	4	4	2	2	9	2	5	2	2
RNP APCH	2	4	6	4	2	2	2	7	2	5	2	2
Rate (%)	100.0	100.0	60.0	100.0	50.0	100.0	100.0	77.8	100.0	100.0	100.0	100.0



# Conclusion

African Flight Procedure Programme (AFPP)

## PBN Implementation rate per other States (RNP APCH)\_WACAF

States	Guinea	Guinea Bissau	Mali	Mauritania	Niger	Nigeria	Congo	Senegal	Sierra Leone	Togo
# Int. A/P	1	1	5	4	3	5	2	2	12	1
# RWYs	2	2	8	2	6	10	4	3	2	2
RNP APCH	2	2	8	2	6	9	4	3	2	2
Rate (%)	100.0	100.0	100.0	100.0	100.0	90.0	100.0	100.0	100.0	100.0



# Conclusion

African Flight Procedure Programme (AFPP)

❑ As a conclusion, efforts need to be made to achieve full PBN implementation in the Region

❑ Overall implementation rate:

👉 RNP APCH : 76.1%;

👉 APV baro : 56.3%;

👉 SIDs : 37.7%;

👉 STARs : 50.2%;

👉 CCOs : 12.1%;

👉 CDOs : 12.1%.



# Conclusion

African Flight Procedure Programme (AFPP)

## ☐ Main shortcomings :

- ☞ Non-realistic number of international airports in the AFI eANP;
- ☞ Maintenance of the procedures:
  - Lack of archives;
  - Lack of regulatory approval;
  - Lack of flight validation;
  - Aerodrome obstacle non-periodically or preventively (WGS-84 survey or resurvey):
    - WGS-84 survey must be performed maximum every five (05) years.





# Conclusion

African Flight Procedure Programme (AFPP)

## ❑ Non-realistic number of international airports in the eANP:

☞ Some of the “international” airports are VFR airports

☞ Mauritania: Nema, Atar, Zouerate;

☞ Central African Republic: Berberati;

☞ Comoros: Anjouan;

☞ Mauritania: Nema, Atar, Zouerate;

☞ Mozambique: Mocimboa da Praia;

☞ Somalia: Burao;

☞ Zambia: Ndola.



# Conclusion

African Flight Procedure Programme (AFPP)

## ☐ States without PBN implementation:

### ☞ Sao Tome and Principe:

- Designed and pending for flight validation

### ☞ Burundi

### ☞ Eswatini

- Pending for regulatory approval

### ☞ Zimbabwe

### ☞ Liberia:

- Pending for safety assessment and approval



Thank You!

Questions?

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