



ICAO | UNITING AVIATION

Agenda Item 5.3

Challenges confronting the accelerating PBN implementation in MID Region

ICAO MID - PBN SG6
10 – 11 NOV 2021





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- The COVID-19 pandemic has brought a significant decrease in domestic, regional, and international air traffic volumes.
- Before this crisis, ICAO declared that the implementation of Performance Based Navigation (PBN) flight procedures was a priority for air navigation.
- This reality all over the world had various, effective results. More than ever, air navigation needs safer, greener, and more cost-effective flight procedures for our airports; **PBN is the key**

Source: ICAO website



Image source: ICAO WEBSITE



potential benefits of PBN for greener flights:

- Environmental impact and cost-efficiency;
- Less fuel burn (reduced CO2 emissions and fuel costs);
- Less impact of aircraft noise (stabilised paths and area avoidance);
- Low investments (reduced investment in ground-based systems and associated costs);

Source: ICAO website

Source: ICAO Doc 9501 - Environmental Technical Manual Volume IV — Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)



Image source: ICAO WEBSITE



Image source: Great performance academy



potential benefits of PBN for greener flights:

- Less operating costs;
- **Supports UN sustainability goals;** and
- ICAO's **(CORSA)** relies on the use of emissions units from the carbon market to offset the amount of CO₂ emissions that cannot be reduced using technological and operational improvements, and sustainable aviation fuels.

Source: ICAO website

Source: ICAO Doc 9501 - Environmental Technical Manual Volume IV — Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)



Image source: GLOBAL AIRSPACE



Image source: JDA Journal



potential benefits of PBN for greener flights:

- Many States are calculating CO₂ emissions; PBN implementation is a good opportunity for obtaining better CO₂ emissions results, but it requires the training and involvement of national experts.
- Aircraft noise is a major issue for the population living in an airport vicinity. PBN trajectories are more precise than conventional ones and make it easier to adapt to the overflight of inhabited areas as required for improved noise calculation results.

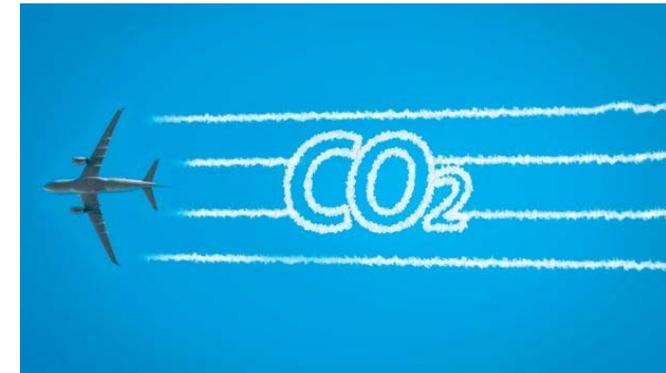


Image source: The Irishtimes magazine

Source: ICAO website

Source: ICAO Doc 9501 - Environmental Technical Manual Volume IV — Procedures for demonstrating compliance with the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)



PBN & Safety improvement:

- More stabilised approach paths for APVs (Approach Procedures with Vertical guidance);
- Predictable and repeatable flight paths;
- Less pilot and controller workload (fewer radio transmissions; fewer communication errors, greater predictability, fewer go-arounds, less time in flight);
- Reliable and accurate; and
- More safety culture.



Capacity and accessibility optimisation

- More efficient use of airspace and higher capacity (shorter and more direct routes; less time in flight, less congestion, fewer airspace conflicts);
- More efficient operations (continuous climb and descent operations, fewer constraints);
- More efficient support to trajectory-based operations; and
- More accessibility (even at the most challenging airports in all weather-operations).



Image source: ICAO WEBSITE



challenges in accelerating PBN implementation in MID Region:

- Worldwide, the implementation of PBN flight procedures is not **always easy and fast**. Several challenges can occur, often due to:
 - a) the lack of knowledge and experience of the stakeholders.
 - b) Operational and cultural difficulties when shifting from conventional navigation to PBN navigation in daily operations are often at the origin of observed delays.



Image source: FORBES WEBSITE



challenges in accelerating PBN implementation in MID region:

- a) Insufficient number of procedure designers;
- b) Insufficient procedure design work in some States to attain or maintain proficiency;
- c) Lack of airspace and procedure design training: initial, On-the-Job Training (OJT), and/or recurrent;
- d) Lack of knowledge to integrate procedure design efficiently into airspace design;
- e) Lack of depth in procedure design organization to perform quality assurance (QA);
- f) Insufficient expertise in procedure design organization to provide adequate QA of procedures;

source MID FPP project document



challenges in accelerating PBN implementation in MID region:

- h) Lack of operational approval expertise to obtain proper operational approval and to oversee operators for PBN operations;
- i) Lack of regulatory expertise to oversee the process leading to procedure publication; and
- j) Lack of service provision for Air Traffic Control/ Air Traffic Management (ATC/ATM) training for PBN implementation.
- k) Lack of PBN implementation plan (creation/updates)
- l) Lack of seamless PBN ground-based infrastructure sensors
- m) Lack of GNSS availability (Jamming (intended or non-intended) – spoofing)
- n) Lack of GNSS vulnerability legal framework/regulation
- o) Lack of regional data support procedure design itself



challenges in accelerating PBN implementation in MID region:

- p) the entire airspace, particularly the terminal areas (TMAs), are not redesigned by shortening the distances and optimising flight profiles through continuous descent and climb operations (CDO/CCO).
- q) Most of air Operators not yet consider better-equipped fleets to obtain greener flights.

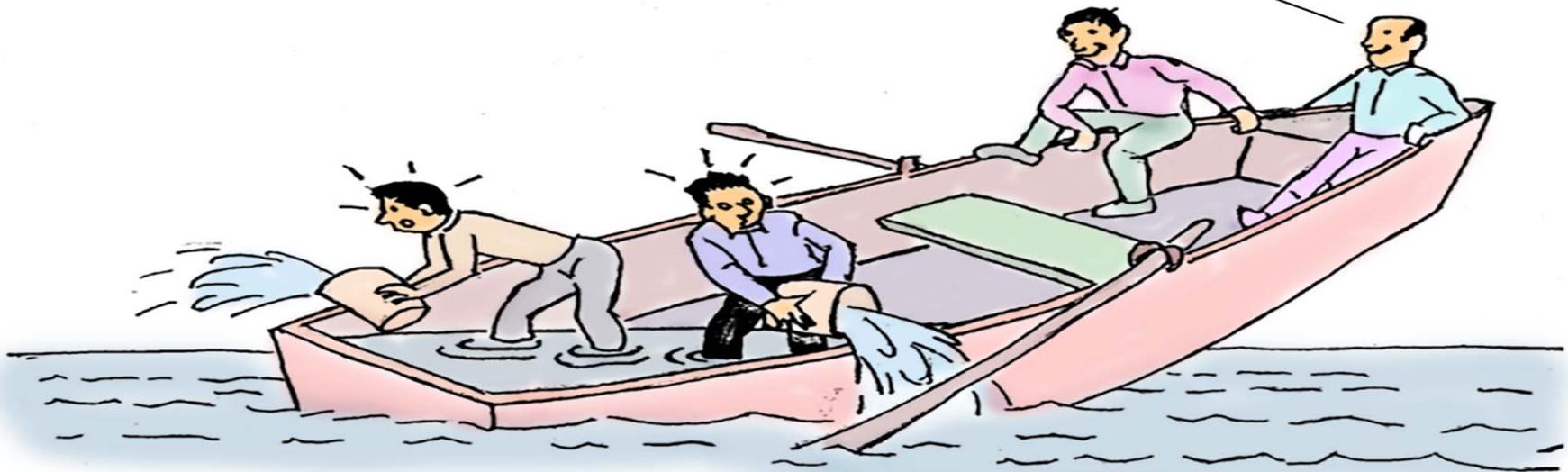


The meeting is invited to:

- note the information provided in this presentation;
- Establish a mechanism to expedite PBN implementation in MID Region



Sure glad that hole isn't at our end.





THANK YOU

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