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INTERNATIONAL
CIVIL AVIATION
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Global & Regional PBN Updates

Irwandi Krisnata/ Regional Officer, PBN

ICAO APAC RSO

PBNICG/13 Meeting

Bangkok – Thailand, 14-16 October 2026

ICAO

Global & Regional PBN Updates

Assembly Resolution A37-11

States complete a PBN implementation plan as a matter of urgency to achieve:

- implementation of RNAV and RNP operations (where required) for en route and terminal areas;
- implementation of approach procedures with vertical guidance (APV) (Baro-VNAV and/or augmented GNSS), including LNAV only minima, for all instrument runway ends, either as the primary approach or as a back-up for precision approaches by 2016 with intermediate milestones as : 30 per cent by 2010, 70 per cent by 2014; and
- implementation of straight-in LNAV only procedures, for instrument runways at aerodromes where there is no local altimeter setting available and where there are no aircraft suitably equipped for APV operations with a maximum certificated take-off mass of 5 700 kg or more;

Global & Regional PBN Updates

Asia and Pacific Ministerial Declaration on Civil Aviation

(Beijing & Delhi Declaration)

4.0 Air Navigation Services

4.1 Commit to resources in modernization and innovation in Air Navigation Services, in tandem with developments in the airport and airline capacity, to support recovery and meet future demand for air travel and new entrants.

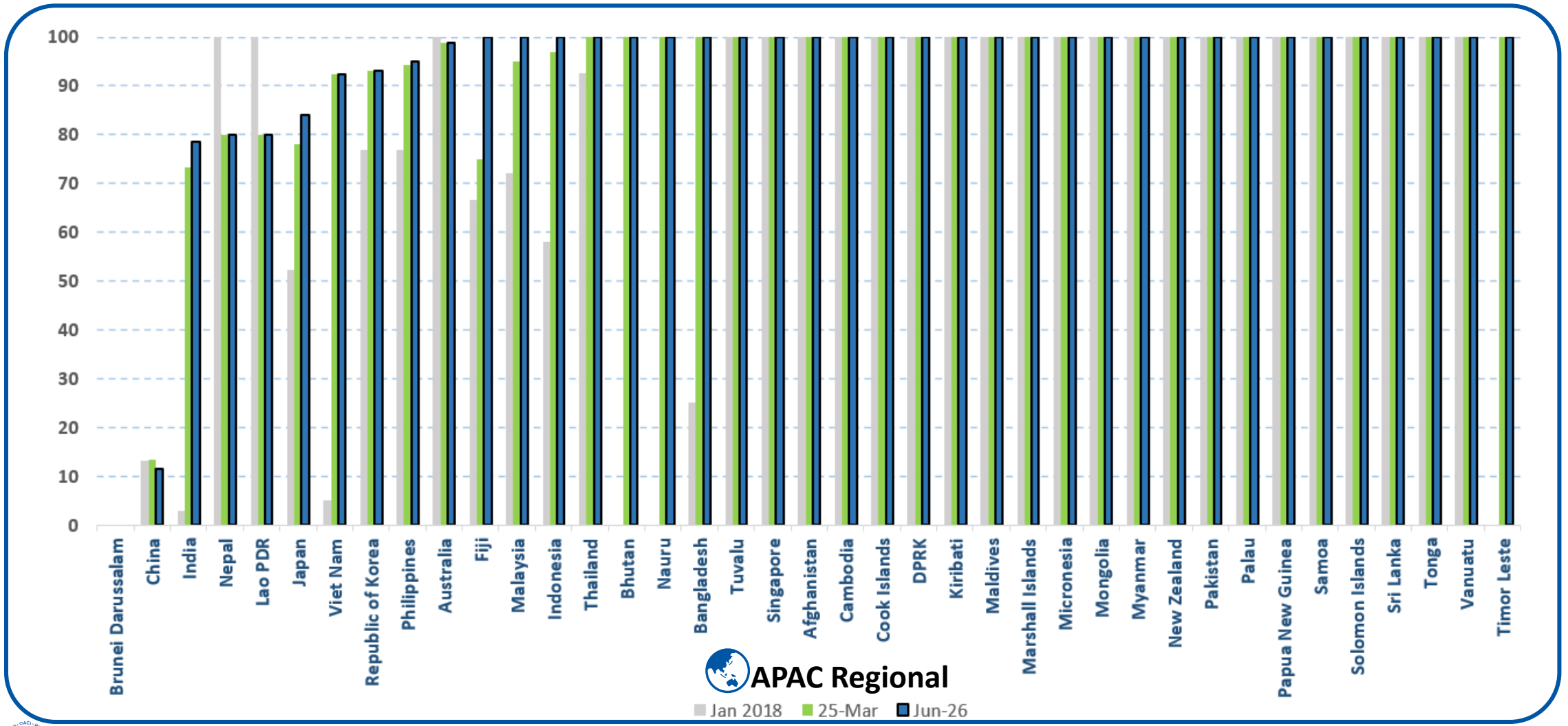
4.2 Commit to implement the ICAO Standards and Procedures for Air Navigation Services (PANS), and the Asia/Pacific Seamless ANS Plan (including prioritized GANP elements) and its subsidiary plans to enhance ANS capacity and harmonization in the Asia and Pacific Region focusing on as a matter of priority:

- …
- Performance Based Navigation (PBN) implementation in accordance with ICAO Assembly Resolution A37-11 on Global PBN Goals;

Global & Regional PBN Updates

PBN Implementation (Approach Procedures) APAC Trends

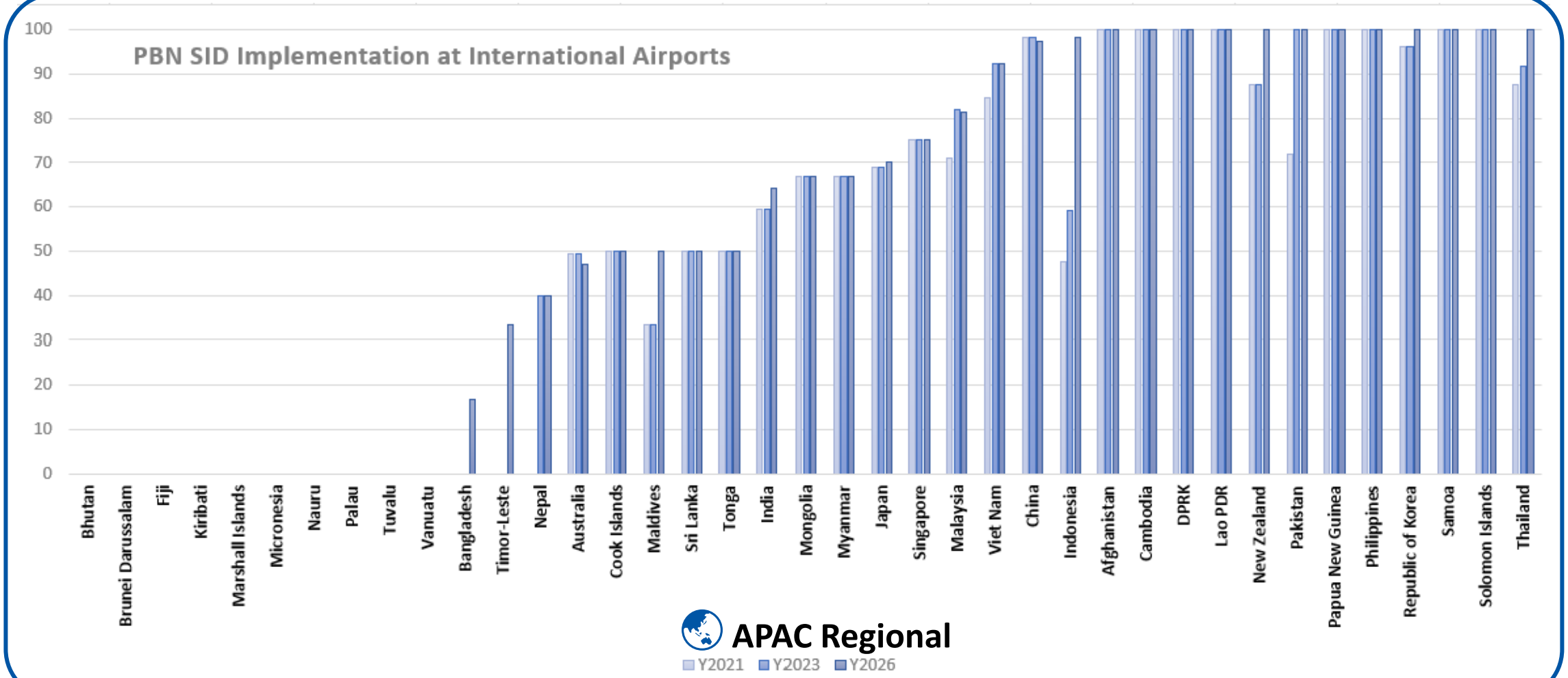
International Airport



Source: iSTARS / Jeppesen

Global & Regional PBN Updates

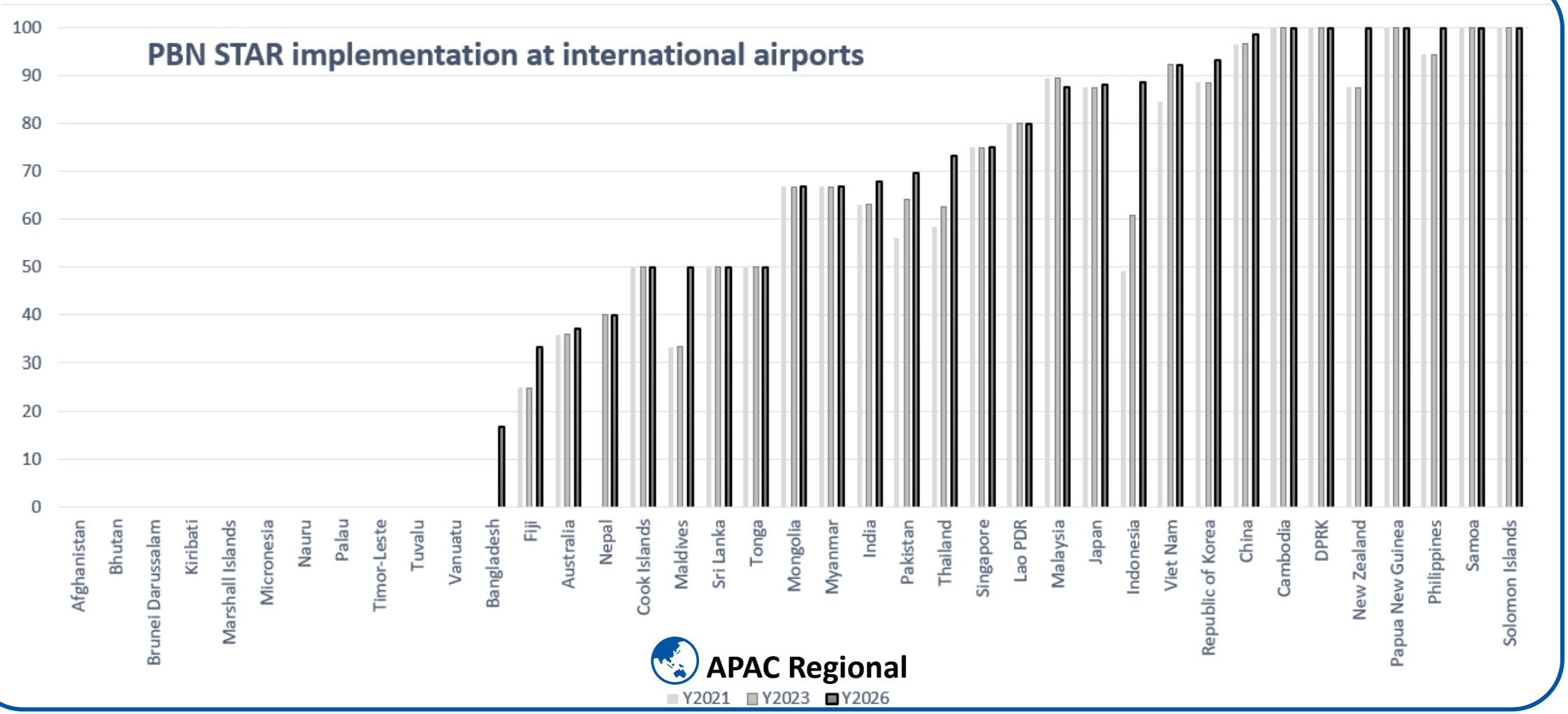
PBN Implementation APAC Trend (SID) - *International Airport*



Source: iSTARS / Jeppesen

Global & Regional PBN Updates

PBN Implementation APAC Trend (STAR) - *International Airport*

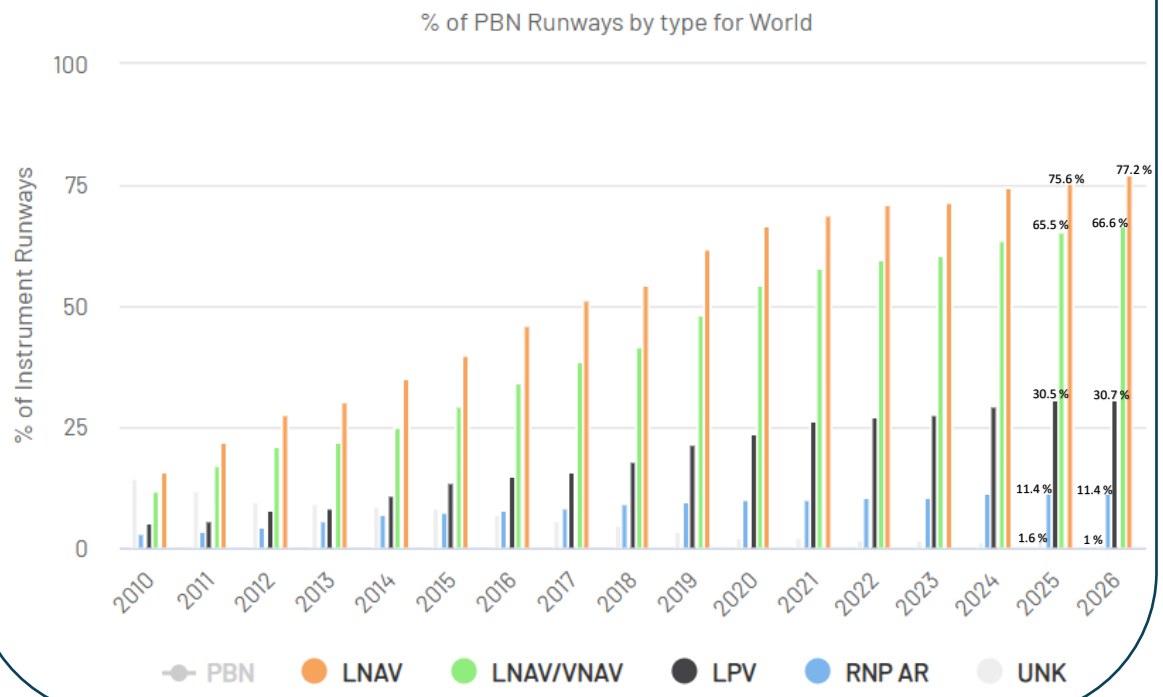


Source: iSTARS / Jeppesen

Global & Regional PBN Updates

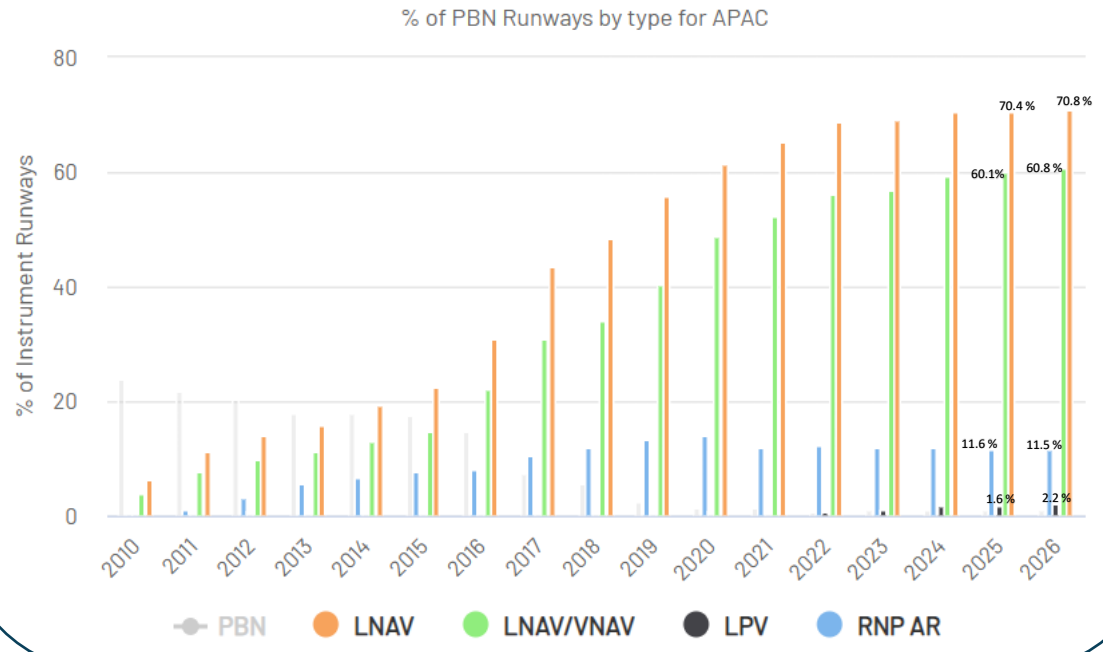
PBN Implementation **(Approach Procedures)** Trends - *International Airport*

Global



Source: iSTARS / Jeppesen

APAC Regional



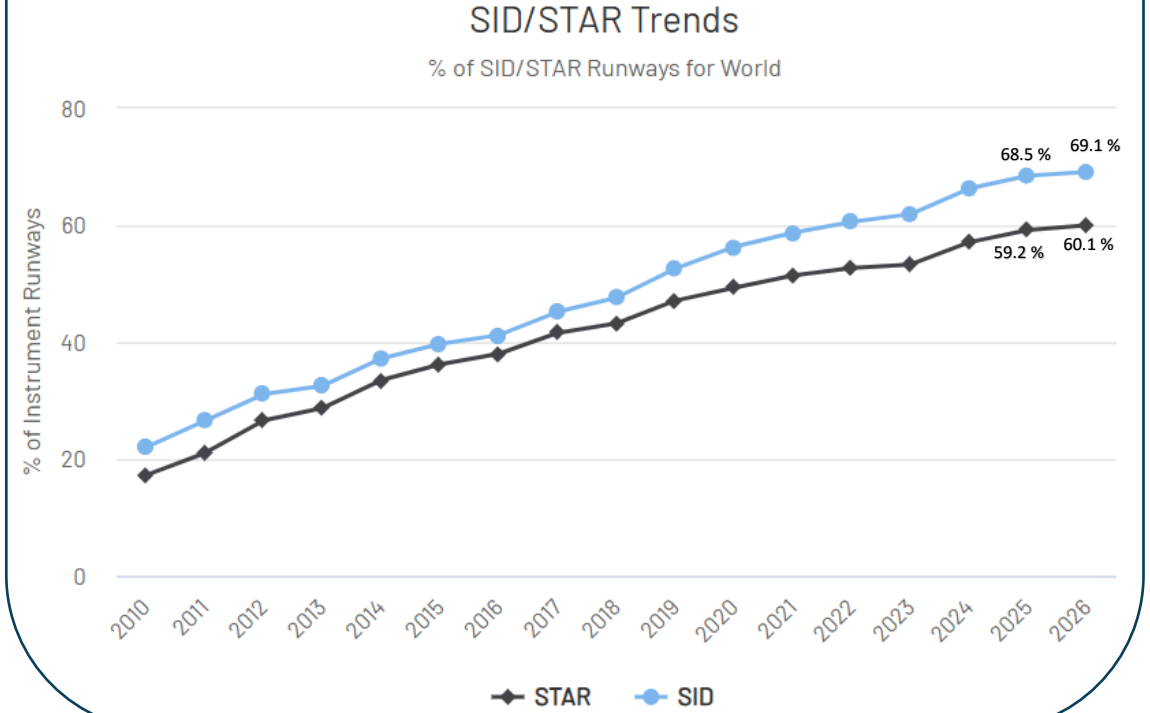
- **LNAV** increasing slightly from **70.4% to 70.8%** (+0.4 %).
- **LNAV/VNAV** increasing slightly from **60.1% to 60.8%** (+0.7 %).
- **RNP AR** remained unchanged at **11.5% compare with 2025**
- **LPV** increased from **1.6% to 2.2% (**+0.6 %).

Global & Regional PBN Updates

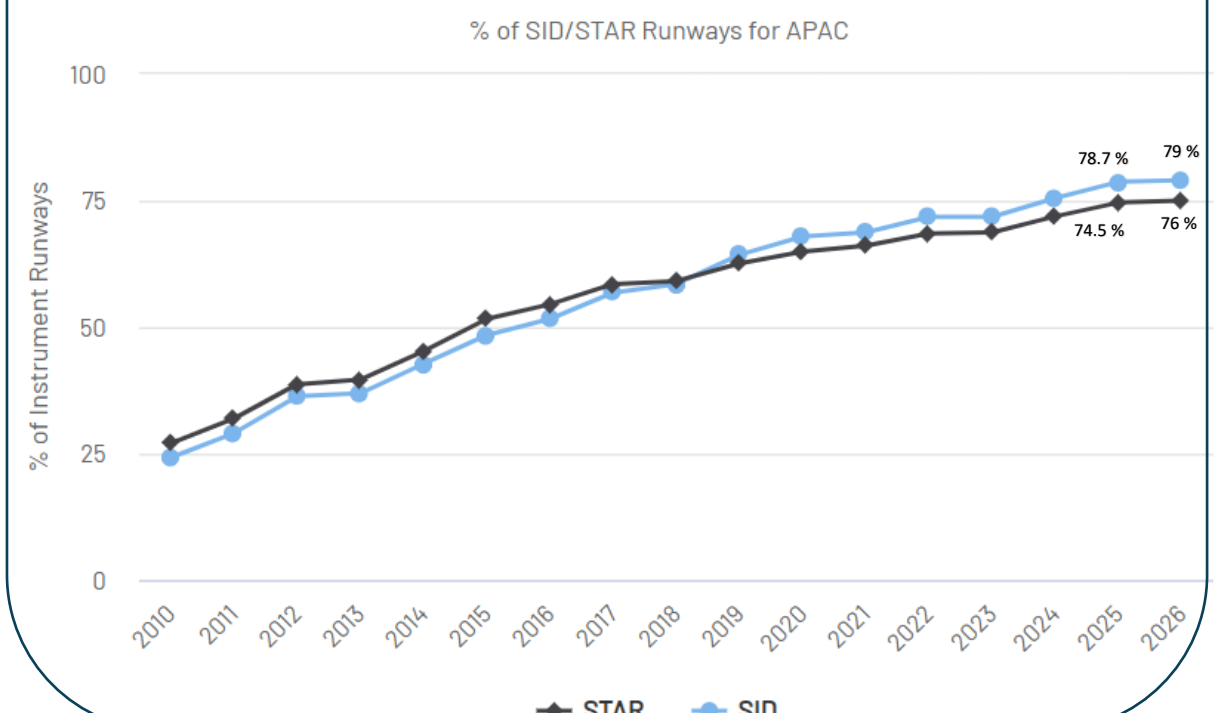
PBN Implementation **(Terminal Procedures)** Trend - *International Airport*

Source: iSTARS / Jeppesen

Global



APAC Regional

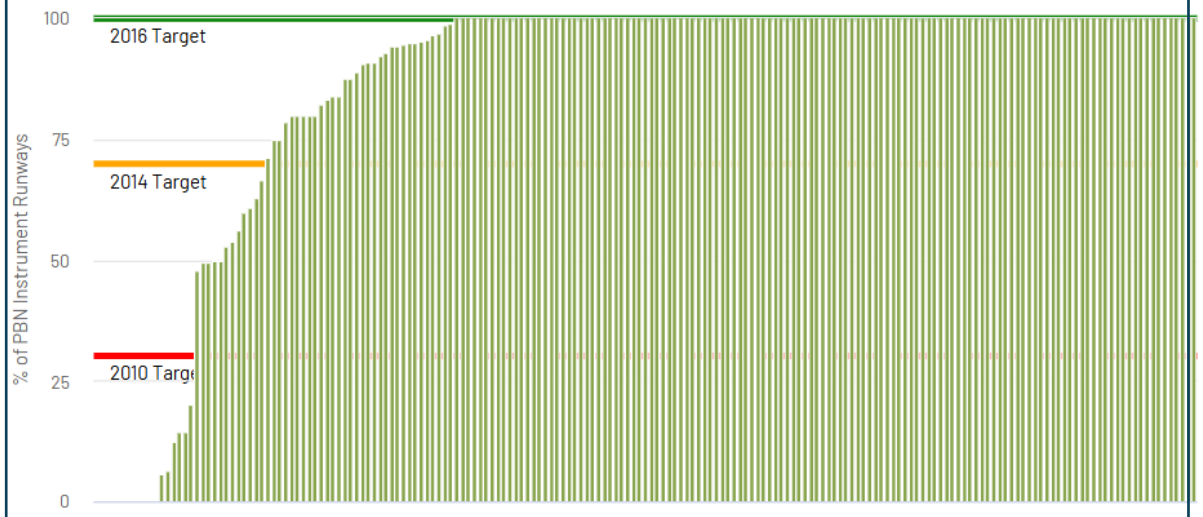


- **SID implementation** increased slightly from **78.7% to 79.0%** (+0.3 %)
- **STAR implementation** increased from **74.5% to 76.0%** (+1.5 %)

Global & Regional PBN Updates

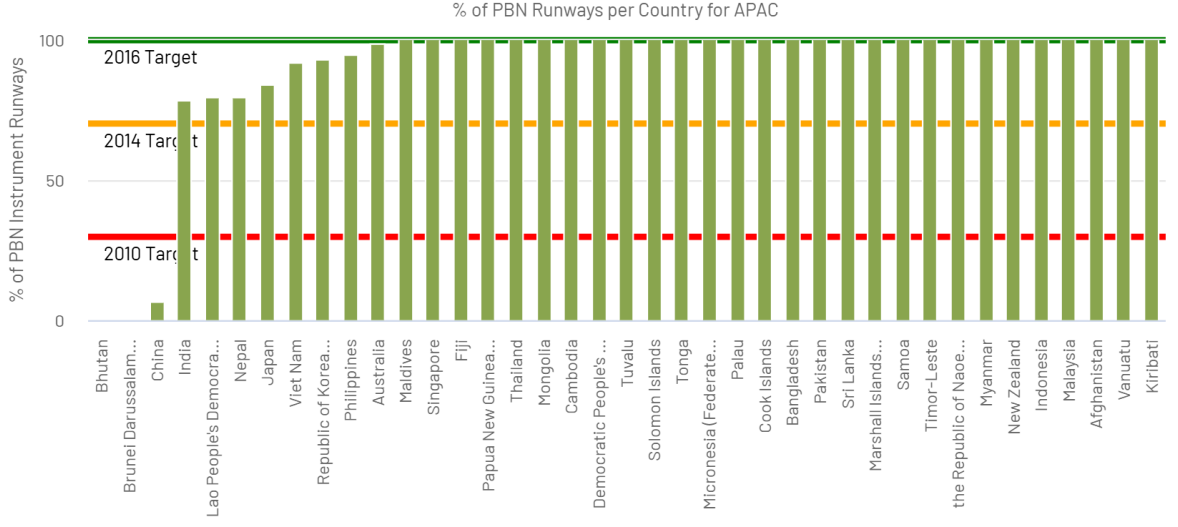
PBN Implementation (% of PBN Runway) - *International Airport*

Global



States in World	PBN Runway Ends	Intr. Runway Ends	PBN Runway Ends (%)
187	2554	3179	80.34%

APAC Regional



States in APAC	PBN Runway Ends	Intr. Runway Ends	PBN Runway Ends (%)
39	474	633	74.88%

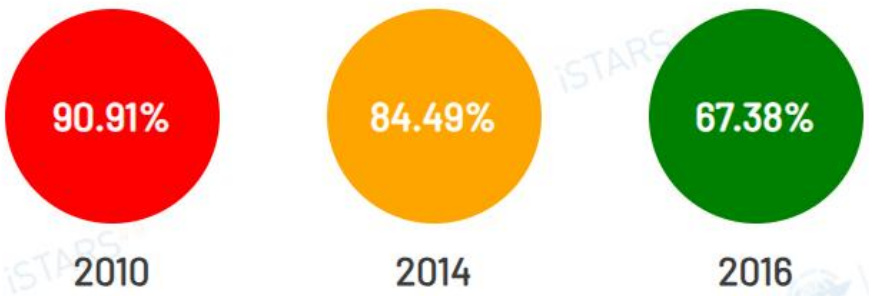
Source: iSTARS / Jeppesen

- **APAC** attained **74.9%** Instrument Runway implementing PBN, remaining **below** the **Global** average of **80.3%**

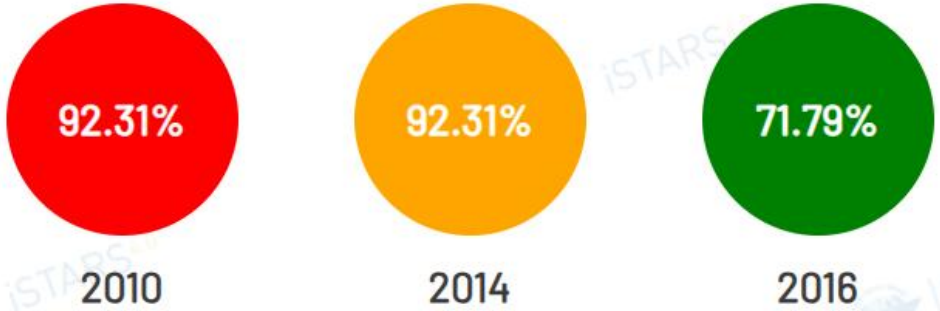
Global & Regional PBN Updates

PBN Implementation (% of States meeting the Resolution A37-11 Targets)

Global



APAC Regional



Source: iSTARS / Jeppesen

APAC recorded *(28 of 39 member states)* **71.79%** States Reach Resolution, **Above** the **Global** average of **67.38 %**

SUMMARY

APAC PBN Implementation (2025 vs 2026)

- **LNAV** increasing slightly from **70.4% to 70.8%** (+0.4 %).
- **LNAV/VNAV** increasing slightly from **60.1% to 60.8%** (+0.7 %).
- **RNP AR** remained unchanged at **11.5% compare with 2025**
- **LPV** increased from **1.6% to 2.2% (**+0.6 %).
- **SID implementation** increased slightly from **78.7% to 79.0%** (+0.3 %)
- **STAR implementation** increased from **74.5% to 76.0%** (+1.5 %)

APAC States vs Global Implementation

Based on number of Instrument Runway:

APAC attained **74.9%** Instrument Runway implementing PBN, remaining **below** the **Global** average of **80.3%**

Based on States meet the Resolution A37-11 Target

APAC recorded *(28 of 39 member states)* **71.79%** States Reach Resolution, **Above** the **Global** average of **67.38 %**

Review of Key Element of ANS Seamless Plan 4.0

and

USOAP PQ

related to PBN



ICAO

Global Air Navigation Plan

Doc. 9750

5th edition



6th edition (web version)



Home - ICAO GANP Portal

- ✓ **Global Air Navigation Plan (GANP),** provides the global strategic framework for harmonization and modernization of air navigation systems, enabling States and stakeholders to address future air traffic growth and technological developments while maintaining safety, efficiency and sustainability.
- ✓ To facilitate a better understanding of the Aviation System Block Upgrade (ASBU) framework, ICAO has evolved the presentation of GANP information from traditional document-based format towards a **web-based platform** through ICAO Doc 9967, Global Air Navigation Plan, Volume II.

Asia/Pacific Seamless ANS Plan (Version 4.0)

CORRIGENDUM TO THE ASIA/PACIFIC SEAMLESS ANS PLAN VERSION 4.0

The *Asia/Pacific Seamless ANS Plan* is amended as follows.

The text proposed to be removed has been strikethrough and the text to be inserted is highlighted in Grey.

i) Paragraph 5.6 Table 1: Asia/Pacific ASBU Block 0, Block 1 and Block 2 Priority

Functional Category	Element	Description	Priority	Responsibility for Review
Technology	~~NAVS-B0/1 to B0/4~~	~~SBAS, GBAS, ABAS, MON (PARS 7.5, 7.7)~~	~~2~~	~~CNS SG~~
	NAVS-B0/1	GBAS (PARS 7.5, 7.7)	2	CNS SG
	NAVS-B0/2	SBAS (PARS 7.5, 7.7)	2	
	NAVS-B0/3	ABAS (PARS 7.7)	1	
	NAVS-B0/4	Nav. MON (PARS 7.7)	1	

Asia/Pacific Seamless ANS Plan

1. **APANPIRG** Conclusion 36/5 adopted a corrigendum to the APAC Seamless ANS Plan Version 4.0

The allocation of priority was based on factors including its importance in promoting Seamless ANS:

Priority 1 – critical upgrade assignment based on whether the implementation of an element could bring most benefit to the region or regional upgrade by States and is essential to achieve the service level required globally;

Priority 2 – recommended upgrade assignment for those elements which would bring benefits to the region and generally to be implemented from 2025, but States are encouraged to implement earlier if beneficial; and

Priority 3 – assigned to those elements which may not be universally implemented in the Asia/Pacific Region.

APAC ANS SEAMLSESS PLAN 4.0 → ASIA PASIFIC AIR NAVIGATION PLAN VOL III *(soon)*

(relevant with PBN)

Priority No 1

Regional Planning Element	Definition Target	Definitopn of Indicator as Progress
APTA-B0/1	Where practicable, all instrument runways serving aeroplanes should have the following approach procedures consistent with APTA B0/1 (Priority 1) and APTA-B0/2: a) SBAS/GBAS CAT1 precision approaches; or ILS CAT1 approaches (with APV approach as a backup); or b) Approaches with Vertical Guidance (APV); RNP APCH with LNAV-VNAV or LPV Minima; or c) if an APV is not practical, straight-in RNP APCH with Lateral Navigation (LNAV) or SBAS based LPV Minima	% of instrument runways which are provided with the approach procedures [(a) or (b) or (c)] as described
APTA-B0/2	Where practicable, all aerodromes should have RNAV 1 (ATS surveillance environment) or RNP 1 (ATS surveillance and non-ATS surveillance environments) SID/STAR procedures	% of aerodromes having at least one runway end provided with RNAV 1 or RNP1 SID/STAR procedures
NAVS-B0/3	ABAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/3 subject to an assessment of benefits and costs.	Indicate whether State has established procedures using ABAS systems? Indicate YES-100% or NO-0%
NAVS-B0/4	Navigation Minimal Operating Networks (Nav. MON) system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/4 subject to an assessment of benefits and costs.	indicate whether State has established a NAV MON network? Indicate • 100% = YES / Completed /Operational • 80% = Final stage of implementation • 60% = Intermediate stage of implementation • 40% = Early stage of implementation • 20% = Planning / Feasibility Study stage • 0% = NO / Related work not commenced

Priority No 2

Regional Planning Element	Definition Target	Definitopn of Indicator as Progress
APTA-B0/4	Terminal Areas serving high-density international aerodromes should implement CCO (Continuous Climb Operations) operations consistent with APTA-B0/4 where practicable	% of high-density international aerodromes implemented CCO
APTA-B0/5	Terminal Areas serving high-density international aerodromes should implement CDO (Continuous Descent Operations) operations consistent with B0/5 where practicable	% of high-density international aerodromes implemented CDO
APTA-B0/7	Terminal Areas serving high-density international aerodromes should implement performance-based aerodrome operating minima-aerodromes advanced aircraft consistent with APTA-B0/7	% of high-density international aerodromes implementing Performance Based Operating Minima for aerodromes advanced aircraft
APTA-B0/8	Terminal Areas serving high-density international aerodromes should implement performance-based aerodrome operating minima-basic aircraft consistent with APTA-B0/8	% of high-density international aerodromes implementing Performance Based Operating Minima for basic aircraft
FRTO-B1/2	ACCs should enable, where practicable, RNP routes	% of ACCs with established RNP routes
NAVS-B0/1	GBAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/1 subject to an assessment of benefits and costs.	indicate whether GBAS systems have been established meeting the definition Indicate - “In Preparation/Planning -0-25%, - -“Under Development/Implementation 25 75%” - “In Operation-100%”
NAVS-B0/2	SBAS system should be established as appropriate to the level and type of aircraft operations and the operating environment consistent with NAVS-B0/2 subject to an assessment of benefits and costs.	indicate whether SBAS systems have been established meeting the definition Indicate - “In Preparation/Planning -0-25%, - -“Under Development/Implementation 25 75%” - “In Operation-100%”

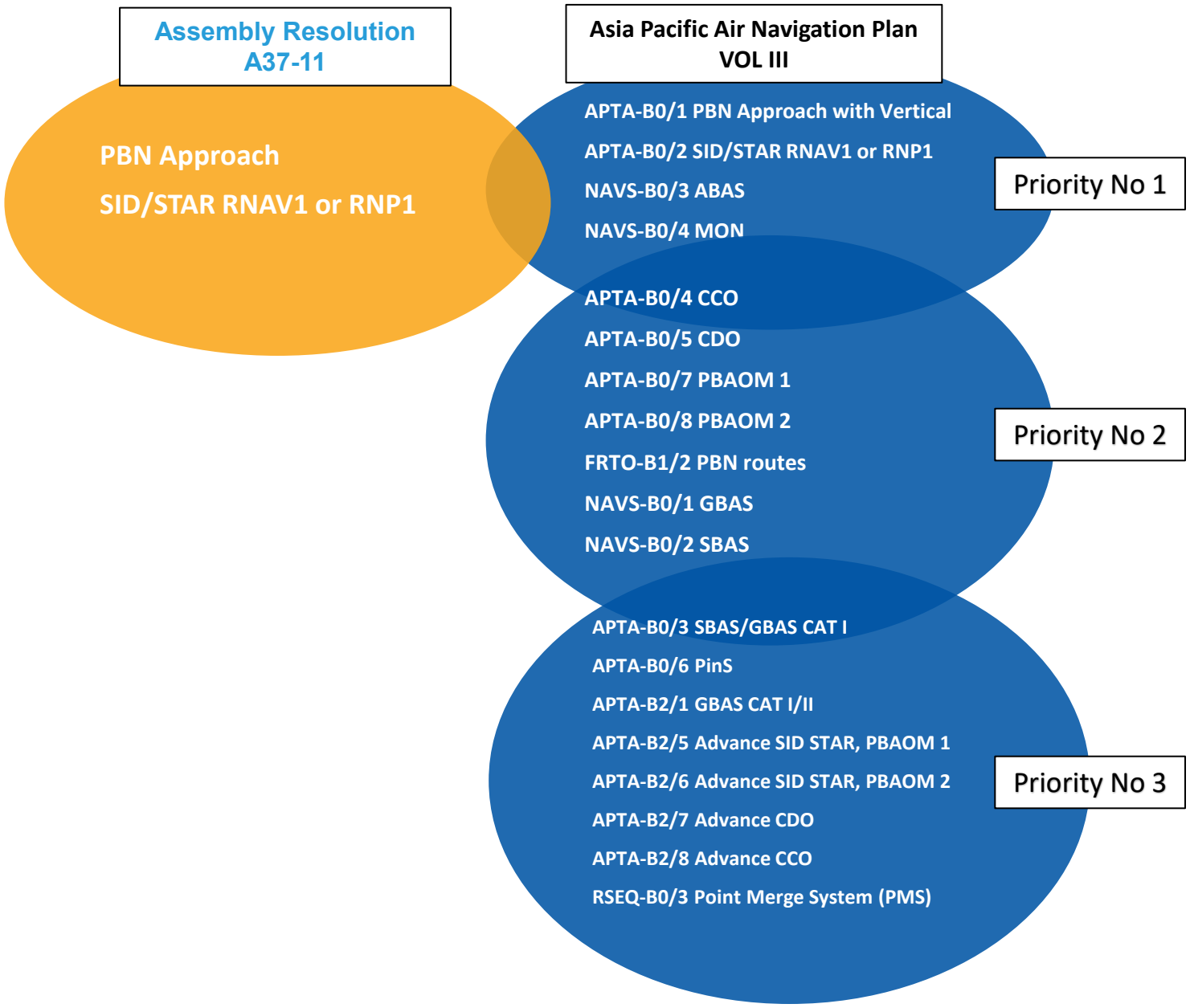
APAC ANS SEAMLSESS PLAN 4.0 → ASIA PASIFIC AIR NAVIGATION PLAN VOL III *(soon)*

(relevant with PBN)

Priority No 3

Regional Planning Element	Definition Target	Definiton of Indicator as Progress
APTA-B0/3	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement SBAS/GBAS CAT I precision approach procedures n accordance with APTA-B 0/3	% of high-density international aerodromes and terminal airspace which fulfil the criteria
APTA-B0/6	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement PBN Helicopter Point in Space (PinS) operations consistent with APTA- B0/6	% of high-density international aerodromes and terminal airspace which fulfil the criteria
APTA-B2/1	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement GBAS CAT II/III precision approach procedures consistent with APTA- B2/1	% of high-density international aerodromes and terminal airspace which fulfil the criteria
APTA-B2/5	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement advanced capability PBN SID and STAR procedures and performance-based aerodrome operating minima for advanced aircraft with SVGS consistent with APTA-B2/5	% of high-density international aerodromes and TMA which fulfil the criteria
APTA-B2/6	Where there is an operational benefit Terminal Areas serving all high-density international aerodromes should implement advanced capability PBN SID and STAR procedures and performance-based aerodrome operating minima for advanced aircraft with SVGS consistent with APTA-B2/6	%age of Terminal Areas servicing high-density international aerodromes implementing advanced capability PBN SID and STAR procedures
APTA-B2/7	Where there is an operational benefit, all Terminal Areas serving high-density international aerodromes should implement Advanced CDO operations consistent with APTA-B2/7	% of high-density international aerodromes implementing Advanced CDO operations
APTA-B2/8	Where there is an operational benefit, all Terminal Areas serving high-density international aerodromes should implement Advanced CCO operations consistent with APTA-B2/8	% of high-density international aerodromes implementing Advanced CCO operations
RSEQ-B0/3	Where there is an operational benefit, Terminal Areas serving all high-density international aerodromes should implement point merge operations consistent with RSEQ B0/3	% of high-density international aerodromes implementing point merge operations Indicate -“In Preparation/Planning -0-25%, “Under Development/Implementation- 25-75% “In Operation-100%” % of relevant aerodromes fulfil the criteria Indicate -“In Preparation/Planning -0-25%, - Under Development/Implementation- 25-75% - In Operation-100%”

ASSEMBLY RESOLUTION A37-11 & APAC ANS SEAMLSESS PLAN 4.0



PBN IMPLEMENTATION FRAMEWORK: FROM PLANNING TO OVERSIGHT

1 Strategic Objectives
(What is to be achieved)

- Assembly Resolution A37-11
- APAC Air Navigation Plan (Vol III)
- APAC Seamless ANS Plan 4.0

Defines the global and regional objectives, priorities and performance expectations for PBN implementation.



2 Regulatory Framework
(How implementation is supported)

- ICAO Annexes (SARPs)
- PANS-OPS
- PANS-ATM
- ICAO Guidance Material

Provides the standards, procedures and guidance necessary for the safe and harmonized implementation of PBN.



3 State Implementation
(What States put in place)

- National Air Navigation Plan
- Regulations and procedures
- Procedure design
- Safety assessment
- Validation and publication
- Operational implementation
- Oversight and training

Establishes the regulatory, operational and oversight arrangements necessary to support PBN implementation.



4 USOAP Monitoring
(How implementation is assessed)

- Universal Safety Oversight Audit Programme (USOAP)
- Protocol Questions (PQs)
- Effective Implementation (EI)
- Continuous Monitoring Approach (CMA)

Assesses States' effective implementation of ICAO provisions, including those related to PBN.



Assembly Resolution A37-11 and the APAC Air Navigation Plan define the expected PBN outcomes, while ICAO provisions and USOAP support and assess their effective implementation.

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PQ Relevant with PBN (ANS area)

7.109	If the State has initiated the implementation of performance-based navigation (PBN), are the prescribed navigation specifications appropriate to the level of communications, navigation and air traffic services?	1) Where applicable, review the mechanism for safety assessments to be conducted before and after implementation. 2) Where applicable, review documented evidences that the safety of the system is assured: a) Procedure design capabilities b) Flight plan adopted for PBN (letter "R" in item 10) c) World Geodetic System - 1984 (WGS-84) implementation.	STD A11 2.7 PANS Doc 4444 (ATM) App. 2 GM Doc 9613		CE-7
7.110	Does the State ensure that ATS routes and significant points are established and designated in accordance with the requirements of Annex 11?	1) Review mechanism to ensure implementation of principles set forth in Annex 11. 2) Verify the process implemented for coordination with ICAO Regional Offices (including the elimination of five-letter name-code (5LNC) duplicates).	STD A11 2.13 & 2.15 App. 1, App. 2 & App. 3		CE-6
7.205	Has the State established for flight procedures inspectors: a) job descriptions; b) appropriate minimum qualifications; and c) experience requirements?	1) Review job descriptions for flight procedures inspectors (including tasks related to the approval process of flight procedures). 2) Verify that qualifications criteria include: a) aeronautical certificates commensurate with their job responsibilities, and b) operational and technical work experience compatible with the activities they are required to perform.	GM Doc 9734 Part A, C3 Doc 10068 2.1.4 & 2.1.5		CE-3

PQ Relevant with PBN (ANS area)

7.209	Does the flight procedures inspectorate have sufficient human resources to carry out its functions?	1) Review ability to attract new inspectors as well as existing vacancies and level of turnovers in past years. 2) Review methodology established for determining staffing needs to carry out all safety oversight-related tasks including: a) review and revision of regulations, b) training, c) development of guidance material, d) issuance of approvals, e) conducting of surveillance, and f) resolution of identified safety concerns. Note to the auditor: This PQ is linked to ORG PQ 2.053.	GM Doc 9734 Part A, C3 Doc 10068 2.1.4		CE-3
7.211	Has the State developed a formal training programme detailing the type of training to be provided to its flight procedures inspectors?	1) Review contents of training programme. 2) Confirm inclusion of initial, on-the-job, recurrent and specialized training, including timelines to be provided, as applicable.	GM Doc 9734 Part A, C3 Doc 10068 2.1.5		CE-4

PQ Relevant with PBN (ANS area)

7.215	Is the training programme appropriately implemented for flight procedures inspectors?	1) Review most recent training plan. 2) Verify that the most recent training plan is in accordance with the programme and includes: a) Detailed training types; b) Priorities; and c) Time frames. 3) Verify that each inspector's training is detailed. 4) Verify that the type and frequency of training provided (initial, OJT, recurrent and specialized) is sufficient to acquire/maintain the required level of knowledge, skills, competence and qualifications in accordance with the duties and responsibilities assigned to each technical staff member. 5) Verify that OJT is provided by an experienced senior inspector.	GM Doc 9734 Part A, C3 Doc 10068 2.1.5		CE-4
7.229	Does the State ensure that appropriate minimum qualification requirements for flight procedures designers are met?	1) Review the mechanism established to ensure effective implementation. 2) Review qualifications required for new procedures design staff.	GM Doc 9734 Part A, C3 Doc 10068 2.1.7.4		CE-6

PQ Relevant with PBN (ANS area)

7.231	Has the State established and implemented a formal surveillance programme for the continuing supervision of the instrument flight procedure design service (IFPDS) provider?	1) Review that surveillance programme includes: a) Types of surveillance activities (audits, inspections, safety events analyses, etc.), b) Time frames or frequency of the activities, and c) Scope of the activities. 2) Confirm if plan is in compliance with surveillance programme, including unannounced and follow-up inspections (Implementation may be adapted using a risk-based method). 3) Sample checklists and audits/inspections reports of previous and current years.	GM Doc 9734 Part A, C3		CE-7
7.233	Has the State established and implemented a mechanism/system with time frame for elimination of deficiencies identified by flight procedures inspectors?	1) Review the list of deficiencies that have been identified through surveillance and the remedial actions planned or taken. 2) Review mechanism to advise, establish deadlines, review and accept, and follow up on actions to verify effective implementation of corrective action plans (CAPs). 3) Review effective resolution of safety issues or appropriate enforcement (commensurate with the safety risk).	GM Doc 9734 Part A, C3		CE-8
7.234	Does the State ensure that instrument flight procedures (IFPs) are reviewed periodically (including validation) to ensure that they continue to comply with changing criteria and meet user requirements?	1) Review mechanism established to ensure effective implementation. 2) Sample documentation regarding periodic reviews done and verify that they are still valid in terms of minimum obstacle clearances. 3) Confirm that maximum interval for review is five years.	PANS Doc 8168 (OPS) Vol. II, Part 1, Section 2, C4 STD A11 App. 7, 6	Yes	CE-7

PQ Relevant with PBN (ANS area)

7.243	Does the State ensure that the flight procedure designers of the service providers are properly trained for their assigned functions and tasks?	1) Review mechanism established to ensure effective implementation. 2) Review documented training programme and verify if it includes, when applicable, initial, recurrent or specialized training. 3) Review method used by the State to confirm that training records are maintained.	PANS Doc 8168 (OPS) Vol. II, Part I, Section 2, C4, 4.7 GM Doc 9734 Part A, C3 Doc 9906 Vol. 2		CE-7
7.247	Does the State ensure that all IFPs comply with measures that control the quality of the process (including obstacles check)?	1) Review mechanism established to ensure effective implementation. 2) Verify reports and results of flight validations (including assurance that adequate obstacle clearance has been provided). 3) Review how the State ensures that IFP packages also include a list of relevant obstacles and identification and description of controlling obstacles.	STD A11 App. 7, 5 PANS Doc 8168 (OPS) Vol. II, Part I, Section 2, C4, 4.1.2 & 4.6.1 Doc 9906 Vol. 1 & Vol. 5	Yes	CE-6
7.249	Does the State ensure that the IFPDS provider publishes obstacle clearance altitude/height (OCA/H)?	1) Review mechanism established to ensure effective implementation. 2) Review AIP AD 2.24 to see if published. 3) If aerodrome operating minima have been established by the State, verify if they are shown.	STD A4 11.10.7.2 A11 2.23 PANS Doc 8168 (OPS) Vol. II, Part I, Section 4, C5, 5.4 & C9, 9.4.3.1	Yes	CE-6

PQ Relevant with PBN (ANS area)

7.253	Does the State ensure that flight procedures are in accordance with the criteria promulgated by the State?	1) Review mechanism established to ensure effective implementation. 2) Verify that AIP procedures have been approved in accordance with the criteria promulgated by the State. 3) Sample approval records, as applicable: a) SID procedures (departures and arrivals) b) Approach procedures c) Circling procedures d) En-route procedures e) Holding procedures f) Noise abatement procedures g) Altimeter setting procedures h) Procedures for simultaneous operations on parallel runways. i) Procedures for SSR and transponder.	STD A11 2.34 & App. 7 PANS Doc 8168 (OPS) Vol. II GM Doc 9906 Vol. 1, 7.10	Yes	CE-6
7.255	Does the State ensure that IFPDS providers retain all procedure design documentation, so as to allow any data anomalies or errors found during the production, maintenance or operational use of the procedure to be corrected?	1) Review mechanism established to ensure effective implementation. 2) Review procedures, working files, documentation and data.	PANS Doc 8168 (OPS) Vol. II, Part I, Section 2, C4, 4.5.2		CE-7

Questions for discussion

1. What are the **principal challenges** for the States in the region to reach 100% PBN implementation as per **Assembly resolution A37-11** and **Beijing/Delhi Declaration**?
2. Does the current **prioritization** of PBN-related elements within the APAC Seamless ANS Plan Version 4.0 appropriately reflect regional implementation needs and operational requirements?
3. Have States conducted the necessary **safety assessments** and safety assurance activities associated with PBN implementation?
4. Have States incorporated PBN implementation objectives and activities within their National Air Navigation Plans **(NANP)** and related strategic planning documents?

Action by Meeting

The meeting is invited to:

1. Note the information presented;
2. Encourage states to exchange information on challenges, best practices, and lessons learned associated with PBN implementation including:
   - ✓ implementation of the ICAO Assembly Resolution A37-11 global PBN goals;
   - ✓ implementation of PBN-related elements contained in the APAC Seamless ANS Plan;
   - ✓ establishment of PBN regulatory frameworks, safety assessment processes and oversight activities.
3. Encourage states to report PBN update on ANS seamless monitoring trough states Focal Point

Thank You



ICAO