



ICAO

*International Civil Aviation Organization*

**The Fifth Meeting of the South Asia, Indian Ocean and Southeast Asia ATM Coordination Group (SAIOSEACG/5)**

Bangkok, Thailand, 13 – 16 January 2026

---

## **Agenda Item 9: Any Other Business**

### **Indonesia's National Air Navigation Plan (NANP): Alignment with the Regional Air Navigation Plan (RANP) and PBN Implementation (Presented by Indonesia)**

#### **SUMMARY**

This Information Paper provides an overview of Indonesia's National Air Navigation Plan (NANP) alignment with the ICAO Regional Air Navigation Plan (RANP), with a particular emphasis on the implementation of Performance-Based Navigation (PBN) within the SAIOSEAC region.

## **1. INTRODUCTION**

1.1 The paper aims to share current practices, progress, and general observations to support regional awareness and harmonization, without seeking endorsement or decision by the meeting.

1.2 The ICAO Regional Air Navigation Plan (RANP) provides the strategic framework to ensure harmonized development of air navigation systems and services across regions, including the SAIOSEAC sub-region.

1.3 At the national level, Indonesia develops and maintains a National Air Navigation Plan (NANP) to translate global and regional objectives into implementable actions, taking into account local operational, technical, and institutional considerations.

## **2. DISCUSSION**

### Alignment between Indonesia's NANP and RANP

2.1 Alignment between Indonesia's National Air Navigation Plans (NANP) and the Regional Air Navigation Plan (RANP) is essential to ensure the effectiveness and coherence of air navigation system development at both national and regional levels. Such alignment enables interoperability across Flight Information Region (FIR) boundaries, which is critical in regions where air traffic flows frequently across FIRs' airspace without regard to political borders. Harmonized planning ensures that CNS/ATM systems, procedures, and operational concepts implemented by individual States can function seamlessly with those of neighboring States, reducing operational discontinuities and safety risks as follows:

- a) ensure interoperability across FIR boundaries,
- b) support seamless airspace operations, and
- c) maximize the benefits of regional initiatives such as PBN and cross-FIR coordination.

2.2 Furthermore, alignment between Indonesia's NANP and the RANP helps maximize the

benefits of regional initiatives, including Performance-Based Navigation (PBN). Regional initiatives are most effective when participating states implement agreed solutions in a synchronized manner. Without alignment, uneven implementation may limit operational benefits, create bottlenecks, or require interim workarounds that reduce overall system efficiency.

2.3 At the regional level, Indonesia’s NANP incorporates regional priorities as defined in the RANP and associated PBN implementation plans. These priorities reflect region-specific operational challenges, such as traffic growth patterns, geographic constraints, infrastructure gaps, and environmental considerations. By embedding these regional priorities into Indonesia’s NANP, this will ensure that national investments and policy decisions are responsive not only to domestic needs but also to collective regional objectives.

2.4 This dual alignment allows Indonesia to maintain national sovereignty over implementation while ensuring consistency with agreed regional strategies. It also facilitates coordinated planning among States, AirNav Indonesia, the airport operator, airline operators, and other stakeholders involved in the delivery of air navigation services across the region. Indonesia, within the SAIOSEAC region, generally structures Indonesia’s NANPs to reflect:

- a) ICAO Global Air Navigation Plan (GANP) objectives, and
- b) regional priorities as defined in the RANP and associated with PBN implementation plans.

2.5 Several key alignment elements are commonly observed in Indonesia’s NANP across the SAIOSEAC region. One important element is phased implementation planning, whereby States adopt a structured, step-by-step approach to system modernization. Phasing allows States to prioritize high-impact initiatives, manage financial and human resource constraints, and progressively introduce more advanced capabilities in line with regional timelines. Key alignment elements commonly observed include:

- a) phased implementation planning,
- b) capability-based development of CNS/ATM systems, and
- c) linkage between national milestones and regional performance objectives.

2.6 Differences in implementation timelines and levels of maturity among States reflect variations in traffic demand, airspace complexity, resource availability, and institutional arrangements. Effective alignment is achieved through clear linkage between national milestones and regional performance objectives. By mapping national implementation milestones to regional performance targets, States can demonstrate their contribution to regional outcomes and support performance monitoring at the regional level. This linkage enhances transparency, facilitates progress tracking, and strengthens collective accountability for the successful implementation of regional air navigation initiatives.

#### PBN Implementation within Indonesia’s NANP Framework

2.7 Performance-Based Navigation (PBN) constitutes one of the core components of Indonesia’s National Air Navigation Plan (NANP), serving as a primary enabler for the modernization and optimization of the national air navigation system. Through the systematic application of RNAV and RNP specifications, PBN directly supports improvements in airspace capacity and operational efficiency by enabling more precise route design, reducing track miles, and optimizing the use of available airspace. The transition from conventional navigation to PBN allows for flexible airspace structures that are less constrained by ground-based navigation aids, thereby supporting dynamic traffic growth while maintaining safety margins. PBN is a core component of Indonesia’s NANP, supporting improvements in:

- a) airspace capacity and efficiency,
- b) predictability of flight trajectories, and

- c) access to aerodromes in constrained environments.

2.8 Furthermore, PBN significantly improves access to hundreds of medium and small aerodromes in Indonesia to overcome the constrained environments, particularly those affected by complex terrain, obstacle limitations, airspace congestion, or environmental restrictions. The application of advanced RNP specifications enables a tailored approach and departure procedures that enhance operational resilience while maintaining the required safety performance. This is especially relevant in Indonesia, where diverse geographical conditions necessitate navigation solutions that go beyond conventional procedures. Typical PBN implementation priorities include:

- a) RNAV-based en-route structures,
- b) RNAV SID/STAR procedures in terminal airspace, and
- c) selective application of RNP specifications, where operationally justified.

2.9 In terminal airspace, RNAV Standard Instrument Departure (SID) and Standard Terminal Arrival Route (STAR) and procedures are prioritized to enhance traffic sequencing, reduce controller workload, and improve runway throughput. RNAV SID/STAR implementation enables the design of efficient terminal flows that are aligned with runway configurations and environmental objectives, as well as improving flight predictability during high-density operations.

2.10 Selective application of RNP specifications, is pursued where operationally justified. Such applications are carefully assessed to ensure that benefits outweigh implementation and operational costs, and that aircraft and crew capability requirements are clearly defined.

2.11 The integration of PBN implementation into Indonesia’s NANP enables a clearer linkage between national planning objectives and regional airspace concepts. By aligning PBN roadmaps with Asia-Pacific regional strategies, Indonesia ensures consistency with ICAO global air navigation priorities and supports interoperability with neighboring States. This alignment strengthens the strategic coherence of airspace modernization initiatives and ensures efficient resource allocation.

2.12 Moreover, integrated PBN planning improves coordination with adjacent FIRs, particularly for cross-border routes and terminal flows. Harmonized navigation specifications, procedure design criteria, and implementation timelines facilitate seamless transitions across FIR boundaries, reduce operational complexity, and enhance overall network performance. Such coordination is essential for maintaining safe, efficient, and predictable operations within the increasingly interconnected regional airspace environment.

**3. ACTION BY THE MEETING**

- 3.1 The meeting is invited to:
  - a) note the information contained in this paper; and
  - b) discuss any relevant matters as appropriate.

.....