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AGENDA ITEM 4: AIR NAVIGATION

COLLABORATIVE APPROACHES TO SUSTAINABLE AIRSPACE MANAGEMENT

(Presented by Bangladesh)

INFORMATION PAPER

SUMMARY

This paper highlights the need for collaborative airspace management in high-density FIRs to improve efficiency, safety, and environmental performance. In this paper Bangladesh has outlined its initiatives—such as PBN implementation, ATM modernization, and civil-military coordination—to optimize airspace use within the Dhaka FIR.

The paper calls for regional cooperation on flexible airspace use, cross-border harmonization, and ICAO support for ATFM and surveillance enhancements to sustain aviation growth across the Asia-Pacific region.

COLLABORATIVE APPROACHES TO SUSTAINABLE AIRSPACE MANAGEMENT

1. INTRODUCTION

1.1 Airspace congestion and its inefficient management pose significant challenges to safety, efficiency, and environmental sustainability. As air traffic volumes in the Asia-Pacific region continue to grow, collaborative airspace management becomes essential to accommodate increased demand, optimize capacity, and reduce environmental impacts.

1.2 This paper highlights the importance of regional and cross-sector coordination in airspace optimization and presents Bangladesh's initiatives and recommendations for sustainable airspace management considering congestion in the high-density FIRs.

2. DISCUSSION

2.1 In high-density FIRs where civil and military operations overlap, challenges such as limited route flexibility and legacy infrastructure can affect the optimal utilization of airspace. To address these complexities, ICAO's Global Air Navigation Plan (GANP) and the Asia/Pacific Seamless ANS Plan underscore the strategic importance of implementing Performance-Based Navigation (PBN), Air Traffic Flow Management (ATFM), and the Flexible Use of Airspace (FUA) as key enablers for efficient and harmonized airspace management.

2.2 Bangladesh operates a joint civil-military airspace, which is experiencing a steady growth in air traffic—consistent with trends across the Asia-Pacific region. In this context, Bangladesh emphasizes the need for robust civil-military coordination and regional collaboration to ensure the efficient and safe management of its airspace.

Key Challenges in High-Density FIRs

2.3 The effective management of high-density FIRs presents a complex challenge that demands careful attention to several critical factors, each with distinct operational implications. These include:

a) Limited ATS Route availability and Airspace Structure inflexibility;

b) Overlapping of Civil-Military Operations in designated airspaces;

c) Inadequate ATFM implementation and coordination at both the State and regional levels;

d) Environmental concerns from prolonged flight times and consequential fuel burn.

Initiatives Undertaken by Bangladesh

2.4 To mitigate the effects underlined in the designators, mentioned above, the following is a description of the steps undertaken by Bangladesh. These mitigation measures have helped Bangladesh in somehow reducing the impediments in the smooth flow of air traffic. This information is shared to apprise the ICAO Regional Office and the member States for information and knowledge:

a) **Implementation of PBN Routes and STARs/SIDs:** This has enhanced the flow of traffic at major airports in Bangladesh

b) **Thales ATM System Deployment:** The system now operational at Hazrat Shahjalal International Airport (HSIA**)** has brought about nationwide modernization of ATM infrastructure including surveillance coverage, automation, and system integration.

c) **Civil-Military Airspace Coordination Framework:** Routine engagement are being done with Bangladesh Armed Forces to establish conditional route use, dynamic airspace allocation, and joint planning.

d) **ATFM Familiarization and Capacity Building:** Participation in ICAO ATFM workshops and development of foundational ATFM procedures.

e) **Environmental Mitigation Measures:** Flight Design Procedures Experts at the ATM Division are continually redesigning flight paths, effecting separation standards, and lower emissions.

Regional Collaboration

2.5 For strengthening regional collaboration in the management of air traffic in high density FIRs, this paper suggests the following:

a) **Cross-Border Airspace Harmonization**: Joint route planning and cross-FIR PBN procedures between the neighboring States for the implementation of PBN standards across different countries or regions to ensure seamless and efficient air navigation.

b) **Flexible Use of Airspace (FUA)**: Institutionalize regional FUA agreements for better access to reserved airspace during peak periods. A Regional FUA can transform APAC's airspace management, reducing delays, cutting costs, and supporting sustainable growth. ATFM Information Sharing Platforms:

c) **ATFM Information Sharing Platforms**: Air Traffic Flow Management (ATFM) information-sharing platforms help optimize air traffic by providing real-time data on airspace capacity, weather, delays, and restrictions. In APAC region, where air traffic is growing rapidly, these platforms can significantly improve efficiency, reduce delays, and enhance collaboration among aviation stakeholders.

d) **Regional Civil-Military Forums**: Engage in APAC-wide dialogues to foster trust, transparency, and joint contingency planning, adopt ICAO's SWIM standards for seamless data exchange, develop a regional ATFM coordination center, integrate ATFM with PBN & FUA for maximum efficiency and encourage military participation in ATFM platforms for better airspace utilization.

e) **Satellite-Based Navigation and Surveillance Integration**: By integrating satellite-based navigation (PBN) and surveillance (ADS-B), APAC states can reduce congestion, improve safety, and optimize airspace use in high-density FIRs. A regional approach will ensure cost-effective and harmonized implementation.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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