60th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

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AGENDA ITEM 7: AVIATION AND ENVIRONMENT

[SUSTAINABLE INFRASTRUCTURE AND OPERATIONS AT AIRPORTS]

(Presented by DGCA India)

SUMMARY

India's aviation sector is rapidly growing and leading in sustainable airport practices. Key initiatives include solar-powered airports, electric vehicles, water recycling, digital solutions like facial recognition, and operational efficiency tools. India has the most Level 5 carbon-accredited airports in the Asia-Pacific region. The conference is invited to recognize India's efforts, Encourage other Asia-Pacific countries to adopt similar practices.

[SUSTAINABLE INFRASTRUCTURE AND OPERATIONS AT AIRPORTS]

1. INTRODUCTION

1.1 India's aviation sector is experiencing a meteoric rise, fuelled by soaring demand and the government's unwavering commitment to its growth through supportive policies. The industry has undergone a remarkable transformation, shedding its previous limitations and evolving into a vibrant and competitive sector. This dynamic shift has propelled India to the forefront of the global aviation ecosystem, becoming the third-largest domestic aviation market in the world, after the USA and China.

1.2 India's aviation industry has experienced significant growth in the past 10 years. The number of operational airports in the country has doubled from 74 in 2014 to 157 in 2024 and the aim is to increase this number to 350-400 by 2047. India's aviation sector is rapidly expanding, necessitating sustainable practices to mitigate environmental impact. Indian airports have pioneered various sustainability measures that significantly contribute to decarbonization and resource efficiency in airport operations.

1.3 As per the ACI ACA Scheme is an international, voluntary and industry recognised certification scheme, designed to assess and recognise the efforts of participating airports to map, manage and reduce their greenhouse gas emissions. As per ACI, in the Asia Pacific and Middle East Region, out of 115 airports accredited with levels ranging from 2 to 5, there are 30 Indian airports. Out of 04 Level 5 accredited airports, 03 airports are from India.

2. DISCUSSION

Sustainable Practices at the Airports

2.1 Solar Power Leadership

India is making impressive strides in integrating solar power into its airports. Cochin International Airport in Kerala holds the distinction of being the world's first fully solar-powered airport, generating enough energy to meet its own needs and even supplying excess power back to the grid. The Airports Authority of India (AAI) has also been actively installing solar power plants across various airports, with 73 airports switching to 100% green energy usage since 2014.

2.2 Green Transportation

India is making significant progress in green transportation at its airports. Delhi Airport has launched the largest Electric Vehicle (EV) program among Indian airports, deploying 57 EVs for airport operations, with plans to add more. These EVs help reduce greenhouse gas emissions and support the airport's goal of becoming a Net Zero Carbon Emission Airport by 2030. Additionally, 66 Indian airports are now operating on 100% green energy, as part of the government's push toward carbon neutrality. The Airports Authority of India (AAI) has also introduced the SUGAM Green Airports Mission, which focuses on sustainable infrastructure, energy-efficient buildings, and renewable energy adoption.

2.3 Water Harvesting and Sustainable Aquaculture

India is making strides in water harvesting and sustainable aquaculture at its airports, with Cochin International Airport (CIAL) leading the way. CIAL has successfully implemented Total Sustainability Management (TSM) at its golf course, where treated water from the airport's sewage treatment plant is used for water harvesting through 12 artificial lakes. This ensures efficient water utilization while maintaining a green landscape. These efforts not only promote environmental sustainability but also generate additional revenue through high-quality fish production. CIAL's approach to photovoltaic agriculture farming,

combining organic vegetable cultivation with solar fields, has also been a major success, yielding 90 metric tons in the last harvest.

2.4 **Smart Parking and Digitalization**

Indian airports are embracing smart parking and digitalization to enhance efficiency and passenger convenience. Airports are integrating automated parking systems with real-time availability tracking. Delhi Airport has introduced AI-powered parking management, reducing congestion and optimizing space utilization. Chennai Airport has implemented contactless payment solutions for parking, allowing seamless transactions.

The DigiYatra initiative is revolutionizing air travel with facial recognition-based boarding, eliminating the need for physical documents**.** SITA's Smart Path technology is being deployed across nine Indian airports, enabling contactless travel and biometric authentication at key touchpoints. Airports like Visakhapatnam, Ranchi, Bhubaneswar, Indore, Raipur, Bagdogra, Patna, Goa (Dabolim), and Coimbatore are integrating advanced digital solutions to streamline passenger flow.

2.5 **Operational Efficiency Measures**

Indian airports are implementing advanced airside technologies to enhance operational efficiency and reduce emissions which includes but not limited to Adoption of Airport Collaborative Decision Making, Bridge Mounted Equipment, TaxiBots, and Eastern Cross Taxiway. These innovations are transforming Indian airports into sustainable aviation hubs, improving efficiency while significantly reducing environmental impact.

2.6 **India's National Climate Commitments & Global Role**

India is committed to be a leader in climate action, by making responsible development choices that move the economy along low GHG emissions pathways towards net zero by 2070. Building upon Prime Minister's "**Panchamrit Pledges**" (five nectar elements) at the 26th Conference of Parties (COP 26) of the UNFCCC in Glasgow, including the target of net-zero emissions by 2070, India updated its NDCs in August 2022 as follows:

I. Meet 50% of India's cumulative electric power installed capacity from non-fossil sources by 2030.

II. Reduce the emission intensity of GDP by 45% below 2005 levels by 2030.

III. To put forward and further propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for L.I.F.E. – Lifestyle for Environment as a key to combating climate change.

Managing Growth with Focus on Sustainability

2.7 The Government has encouraged airports to adopt sustainable cargo handling practices that foster waste reduction along the supply chain. The Government has taken proactive regulatory measures, which complement developments on the ground including but not limited to Plastic waste management. Additionally, the Government has enabled the development of infrastructure for waste segregation and recovery at or close to airport premises. Further, India is considering a clear methodology and the sharing of good practices that are essential for ensuring that segregation processes are efficient and effective.

2.8 India is the 3rd market in terms of passengers starting their journey in the country travelling both domestically and internationally. In 2024, New Delhi airport was the 7th busiest passenger airport in the world. In 2024, the airports of Delhi (DEL), Mumbai (BOM), Bangalore (BLR)

and Chennai (MAA) collectively handled 80% of air cargo handled out of India. In 2024, Indian airports moved 3.36 MMT of air cargo. These figures show that India has approached **balancing growth with sustainability** through a mix of policies, international cooperation, technological innovation, and grassroots initiatives as detailed in above paras which has resulted India leading the region in airport carbon accreditation, with 30 accredited airports and 3 of the 4 Level 5 certified airports in Asia-Pacific.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

a) Note the comprehensive sustainability initiatives implemented at Indian Airports;

b) Encourage adoption of similar practices at other airports in the Asia-Pacific region;

c) Promote knowledge sharing among States to accelerate progress toward ICAO's environmental objectives.

d) Invite ICAO to use Indian airports as **case studies** to define sustainability best practices tailored to Asia-Pacific.

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