

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGION**

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AGENDA ITEM 7: AVIATION AND ENVIRONMENT

**INFRASTRUCTURE READINESS AND ACCOUNTING
MECHANISMS FOR SUSTAINABLE AVIATION FUELS (SAF)**

(Presented by India)

SUMMARY

India has outlined a phased roadmap for Sustainable Aviation Fuels (SAF) blending in international flights, supported by blending options, supply chain models, and flexible accounting mechanisms consistent with ICAO Annex 16, Volume IV. The paper underscores that infrastructure readiness and harmonized reporting are prerequisites for scaling SAF deployment and presents India's approach to achieving SAF production and integration into airlines operating from its territory.

Infrastructure Readiness and Accounting Mechanisms for Sustainable Aviation Fuels (SAF)

1. INTRODUCTION

- 1.1 Sustainable Aviation Fuels (SAF) are a cornerstone of ICAO's Long-Term Aspirational Goal (LTAG) and a critical enabler of CORSIA implementation. SAF provides the most immediate pathway to reduce lifecycle CO₂ emissions from aviation, complementing technological innovations and operational improvements.
- 1.2 Large-scale adoption of SAF depends on infrastructure readiness across refineries, airports, and supply chains, as well as robust accounting and reporting mechanisms. Current SAF infrastructure is limited and unevenly distributed, with challenges in refinery conversion, blending facilities, storage, certification, and airport integration. Developing States face additional barriers in financing, logistics, and access to technology.
- 1.3 Ensuring infrastructure readiness and harmonized accounting mechanisms is essential to scale SAF deployment globally and achieve aviation's decarbonization goals. Coordinated international action is required to establish regional SAF hubs, promote public-private partnerships, and enable technology transfer and financing mechanisms.

2. DISCUSSION

2.1 Logistics and Supply Chain Integration with Airports in India

- 2.1.1 India has set phased SAF blending for international flights, with the indicative targets of 1% SAF blending by 2027, 2% SAF blending by 2028, 5% SAF blending by 2030 for the adoption of Sustainable Aviation Fuels (SAF) as part of its broader decarbonization strategy. Achieving these targets requires not only scaling up SAF production but also ensuring that blending and distribution infrastructure is aligned with the operational realities of Indian airports. The integration of SAF into the aviation fuel supply chain must therefore be carefully designed to match both national objectives and local infrastructure capacities.
- 2.1.2 For Sustainable Aviation Fuels (SAF) to be effectively deployed in India, blending with conventional aviation turbine fuel (ATF) is a necessary step. Two primary blending options are available, each with distinct advantages.
 - The first option, blending at the refinery, is generally preferred. In this model, feedstock is processed into SAF, which is then blended directly with ATF at the refinery. Once blended, the fuel is certified and supplied to airports. This approach ensures better quality control, as blending occurs under standardized refinery conditions with established monitoring systems.
 - The second option involves blending at the airport fuel farm. Here, SAF is produced at the refinery and transported separately to the airport, where it is blended with ATF at the fuel farm before being supplied to aircraft. While this method offers greater flexibility in blending, it requires additional infrastructure at airports to handle separate SAF streams and blending operations.
- 2.1.3 To complement these blending options, India has identified diverse supply chain models that reflect the operational realities of airports and fuel distribution systems. These models include:

- Pipeline to Fuel Farm to Hydrant System to Aircraft: ATF is supplied via cross-country pipelines to airport fuel farms and then distributed through underground hydrant pipelines directly to aircraft.
- Pipeline to Fuel Farm to Refueller Bowser to Aircraft: Fuel reaches the airport via pipeline, is stored at the fuel farm, and then transported to aircraft using refueller trucks.
- Tanker Truck to Fuel Farm to Hydrant System to Aircraft: ATF is transported by road tanker to the airport fuel farm, then supplied to aircraft through hydrant systems.
- Tanker Truck to Fuel Farm to Refueller Bowser to Aircraft: Fuel is delivered by road tanker to airport storage tanks and supplied to aircraft using bowsers.

India emphasizes that infrastructure readiness across these supply chain models is critical to ensure SAF can be efficiently integrated into airport fueling systems. These models were identified to capture the diversity of operational contexts across Indian airports—ranging from large international hubs with pipeline connectivity to regional airports reliant on road tanker deliveries. By mapping these pathways, India seeks to ensure that SAF deployment strategies are tailored to local infrastructure realities, while maintaining flexibility and scalability.

2.2 Approach on SAF Accounting and Reporting Mechanism

- 2.2.1 To complement the diverse blending options and supply chain models identified for Indian airports, India has also adopted flexible accounting and reporting mechanisms that reflect varying levels of operational and infrastructure maturity across the SAF supply chain. These mechanisms ensure transparency, credibility, and compatibility with ICAO’s global framework under Annex 16, Volume IV:

Approach	Description
Mass Balance	SAF is mixed with conventional fuel during storage or transport. Accurate accounting at each step allows certified SAF to be attributed to specific end users. Compatible with real-world blending at depots or refineries.
Direct Transport	SAF is physically segregated and delivered directly from the production facility to the end user (e.g., airport fuel farm). Offers highest integrity, suitable where dedicated SAF infrastructure exists.
SAF Purchased-Based Claim	A chain of custody model allows SAF producers to sell the environmental attributes of SAF separately from the physical fuel. SAF may be produced and blended at one location, but its climate benefits can be claimed by an aircraft operator elsewhere, based on verified documentation. Under this model, the physical SAF should be directed to the No Point of Return (NPR), ensuring that while the fuel itself follows its logistical pathway, the associated environmental attributes are transparently tracked and transferred to the rightful claimant.

Under ICAO Annex 16, Volume IV, claims for CORSIA Eligible Fuels (CEF) are based on purchasing and blending records, without requiring demonstration that the fuel was physically uploaded into an aircraft. The underlying assumption is that once SAF is produced, it will be used in aviation.

- 2.2.2 Each of these traceability models will be encoded in registry logic and verified by recognized third-party assurance bodies, ensuring credibility and consistency. States may adopt any of these models depending on their infrastructure maturity and blending targets, thereby maintaining flexibility while ensuring compliance with CORSIA.
- 2.2.3 India emphasizes that identifying and adopting these models is critical to align SAF deployment with the diverse infrastructure realities across its airports. By linking blending options, supply chain pathways, and accounting mechanisms, India seeks to create a robust and transparent system that supports SAF integration into aviation fueling operations, while ensuring compatibility with ICAO’s global framework.

2.3 India's Roadmap for SAF Readiness and Transparency

India stresses that scaling Sustainable Aviation Fuels (SAF) requires both infrastructure readiness and harmonized accounting mechanisms. Without adequate facilities and clear reporting standards, production targets will not translate into actual use. To address this, India supports the creation of regional SAF hubs to pool resources, the promotion of public–private partnerships to drive investment and innovation, and stronger capacity-building to help States develop infrastructure and reporting systems. It also calls for technology transfer and financing mechanisms to ensure equitable access for developing economies, alongside robust chain-of-custody models that guarantee transparency and credibility in SAF claims. Together, these measures provide the foundation for effective and equitable SAF deployment.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to:

- a) note the roadmap adopted by India in advancing SAF deployment, as outlined in Section 2;
- b) recommend States to support initiatives for capacity-building, technology transfer, and financing mechanisms that enable equitable participation of developing States in SAF deployment; and
- c) encourage State to facilitate enhanced international cooperation and knowledge sharing to accelerate the development of SAF infrastructure and reinforce the integrity of reporting systems.

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