# 6. National Policy on Sustainable Aviation Fuel - Economy

India is formulating a national policy on Sustainable Aviation Fuel (SAF) alongside a long-term roadmap through 2050, as part of its efforts to achieve Net Zero emissions by 2070.

## Sustainable Aviation Fuel (SAF)

**Definition** - SAF is a bio-based alternative to fossil jet fuel (Aviation Turbine Fuel – ATF) that can be blended with conventional fuel without modifications to existing aircraft engines.

**Sources** - Produced from non-edible oils, algae, agricultural waste, used cooking oil, municipal solid waste, molasses, bagasse, and advanced synthetic fuels (Power-to-Liquid technologies).

**Emission Reduction Potential** - SAF can cut life-cycle $CO_2$ emissions by up to 80%, depending on the feedstock and production process.

### Need for a National Policy on SAF

**Global Compliance Requirement** - From 2027, under ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), member states (including India) must ensure airlines offset emissions above a baseline.

**Certification Gaps** - India currently lacks a Life Cycle Assessment (LCA) benchmark within the CORSIA framework, unlike Brazil (sugarcane ethanol) and the US (corn ethanol), making international recognition difficult.

**Domestic Strategy** - A national policy will provide blending mandates, incentives, certification standards, and R&D support, aligning India with global aviation decarbonisation efforts.

### ICAO's CORSIA – Background

Launched in 2016 by ICAO to ensure carbon-neutral growth of international aviation from 2020 onwards.

**Nature** - First-ever global market-based mechanism targeting international aviation emissions.

**Implementation Phases** -

1. **Pilot Phase (2021–2023)** – voluntary participation.
2. **First Phase (2024–2026)** – still voluntary but many states (including India) participate.
3. **Second Phase (2027–2035)** – mandatory for most ICAO members, except Least Developed Countries (LDCs), Small Island Developing States (SIDS), and Landlocked Developing Countries (LLDCs).

### India's Potential and Opportunities

**Blending Targets** - India has proposed blending 1% SAF in ATF by 2027, 2% by 2028, and 5% by 2030, starting with international flights.

**Feedstock Demand** - Achieving the 5% target by 2030 would need about 6 billion litres of ethanol, if ethanol is the only feedstock used.

**Industry Assessment (Deloitte 2024)** -

1. Production potential - 8–10 million tonnes of SAF annually by FY40.
2. Investments required - ₹6–7 lakh crore ($70–85 billion).
3. Emission reduction - 20–25 million tonnes $CO_2$ annually.

**ISMA–TERI Collaboration** - Conducting LCAs on sugarcane-based SAF (syrup, molasses, bagasse) to create benchmarks for CORSIA compliance.

### Challenges

**High Costs** - SAF costs 3 times conventional jet fuel; synthetic SAF (Power-to-Liquid) can be up to 7 times costlier.
**Classification Issue** - SAF is still listed under fossil fuel category. If reclassified as bioenergy, it can access existing subsidies (e.g., Gobardhan scheme).
**Technological Barriers** - Requires advanced conversion technologies, refining infrastructure, and certification systems.
**Feedstock Limitations** - Sustainable biomass availability (used cooking oil, molasses, algae, agricultural residues) is still inadequate.
**Market Development** - Airlines, airports, and oil companies face uncertainty due to absence of blending mandates and pricing mechanisms.

## Efforts & Initiatives in India

**Institutional Framework** - Jointly managed by Ministry of Petroleum and Natural Gas (MoPNG) and Ministry of Civil Aviation (MoCA).

1. **MoPNG** - Production, feedstock development, certification standards.
2. **MoCA** - Airline obligations, airport readiness, global compliance.

**Bio-Aviation Turbine Fuel Programme Committee** - Set up by MoPNG to promote SAF adoption.
**Indian Oil Corporation (IOC)** - Targeting 35,000 tonnes of SAF per year from used cooking oil collected from hotels and restaurants.
**Strategic Clean Energy Partnership (SCEP) with US** - Joint workshops on SAF R&D, certification, and market creation.
**CSIR–Indian Institute of Petroleum (IIP)** - Developed SAF from palm stearin, sapium oil, algae oil, karanja, and jatropha, with provisional certification from CEMILAC for use in military aircraft.

## Broader Significance

**Environmental** - SAF adoption reduces aviation's carbon footprint and helps India move towards net-zero emissions (2070 target).
**Strategic** - Reduces dependence on imported ATF and positions India as a SAF hub for Asia-Pacific aviation.
**Economic** - Generates large-scale investments, employment in feedstock cultivation, and infrastructure development.
**Global Standing** - Positions India as a responsible ICAO member and a leader in green aviation technologies.

## Conclusion & Way Forward

India's SAF policy must move beyond pilots and voluntary targets to a comprehensive national framework with -

1. Clear blending mandates (domestic + international flights).
2. Fiscal incentives (tax breaks, subsidies, carbon credits).
3. Strong R&D push for Power-to-Liquid technologies and biomass utilization.
4. Certification mechanisms aligned with ASTM D7566 and CORSIA LCA benchmarks.

With robust government–industry–research collaboration, India can transform SAF into a strategic growth sector, supporting both its aviation expansion and climate goals.
Source - https - //www.downtoearth.org.in/energy/sustainable-aviation-fuel-policy-in-the-works-as-india-targets-net-zero-by-2070