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## MAGAZINE NOTES

# The Sustainable Aviation Fuel (SAF) Transition & Feedstock Crisis

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ENVIRONMENT

ECONOMY

SCIENCE &amp; TECH

GS3

CURATED &amp; WRITTEN BY

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# The Sustainable Aviation Fuel (SAF) Transition & Feedstock Crisis



Down to Earth

Chapter 2 · 1 min read

- Indian Oil Corporation (IOC) secured India's first certification to produce SAF at **Panipat refinery**
- Plans: ~35,000 tonnes annual production
- IATA: SAF could provide nearly **65% of emissions reductions** for aviation net-zero by 2050

## India's Blending Mandates

- **1% SAF** blending in international flights by 2027
- **5%** by 2030
- **15%** in domestic flights by 2040

## Feedstock Challenge — The UCO Crisis

- India generated 3.4 million tonnes UCO (used cooking oil) in 2024
- Theoretical potential: 2.5 billion litres; actual collection: only ~**250 million litres**
- India's strategy relies on co-processing UCO (cost-effective, minimal refinery upgrades)
- Weak collection ecosystem means UCO is excessively reused in cooking — generating toxic, cancer-causing trans fats — or dumped into drains, polluting water
- This creates massive supply uncertainty, rendering commercial SAF scaling highly risky

## RUCO Initiative (FSSAI, 2018)

- Mandates food businesses must not reuse cooking oil more than **3 times**; must hand over UCO to licensed collectors for biodiesel conversion
- **Critical evaluation:** Implementation weakened post-launch; without strict audits and formalisation of local "ragpicker" supply chains, massive volumes bypass the clean-energy transition

## Way Forward

- Treat UCO as a **strategic energy resource** rather than waste
- Introduce economic incentives for safe UCO disposal; strict penalties for reselling degraded oil
- Broaden SAF production pathways: **Fischer-Tropsch** (agricultural residues), **Alcohol-to-jet** (India's ethanol base) — not solely HEFA pathway (requires UCO/fats)

## UPSC Angle

- **GS3:** Environment, energy, aviation policy, circular economy

 **FACTS CORNER — KNOWLEDGE PEDIA** **SAF CORE DATA:**

IOC Panipat: India's first certified SAF producer

IATA target: SAF = 65% of aviation emission reductions by 2050

India SAF mandates: 1% (2027), 5% (2030), 15% (2040)

India UCO generation: 3.4 million tonnes (2024)

UCO collection rate: ~250 million litres vs 2.5 billion litres potential

 **RUCO INITIATIVE:**

Launched by: FSSAI (2018)

Rule: Max 3 reuses of cooking oil

Purpose: Divert UCO to biodiesel/SAF production



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