UPSC Mains practice – reference note

GS-III · 18-11-2026 · 15 marks · https://www.shanmugamiasacademy.in/upsc-mains-practice/2026-11-18-sustainable-aviation-fuel

On 17 November 2026, Indian Oil Corporation said it had received government approval to supply sustainable aviation fuel (SAF) commercially from its Panipat refinery. Discuss the potential of SAF in decarbonising Indian aviation and examine the challenges in meeting India's SAF blending targets. (15 marks, 250 words)

1. The news hook (17 November 2026)

- IOC Chairman A.S. Sahney said at an industry event on 17 November 2026 that IOC has government approvals to supply SAF commercially from its Panipat refinery (Haryana); he did not give the approved volume or a start date (PTI, via ETV Bharat).
- The Panipat SAF unit is planned to make about 35,000 tonnes a year from used cooking oil sourced from large hotel and restaurant chains – enough, he said, for the 1% international blending target of 2027. Further SAF investment will follow supply agreements with airlines; an MoU with Air India is in place.

2. Key facts to quote

Fact	Detail
India's SAF targets	1% in 2027 and 2% in 2028, for international flights initially – announced by the National Biofuels Coordination Committee, Ministry of Petroleum and Natural Gas, November 2023
Panipat refinery	Crude capacity about 3,01,000 barrels a day; first in India to receive ISCC CORSIA certification for SAF production (2025); expansion by 2,00,000 barrels a day by 2027
Second IOC plant	Alcohol-to-jet, with US-based LanzaJet, using ethanol – 86,800 tonnes a year, target completion March 2028
ICAO frame	CORSIA – second, mandatory phase 2027–35; net-zero carbon emissions by 2050 for international aviation (ICAO Assembly, 2022); collective aim of a 5% cut in CO_2 by 2030 through cleaner energies (CAAF/3, Dubai, 24 November 2023)
Indian milestones	First Indian bio-jet flight Dehradun–Delhi, 27 August 2018 (CSIR-IIP fuel); RUCO by FSSAI, 10 August 2018; National Policy on Biofuels 2018, amended 2022; Global Biofuels Alliance, G20 New Delhi, September 2023
Tamil Nadu angle	CPCL, an IOC subsidiary (formerly Madras Refineries Ltd, 1965), runs the Manali refinery in Chennai; the 2027 target will apply to international departures from Chennai, Coimbatore, Madurai and Tiruchirappalli

3. Static links

- GS-III: infrastructure – energy, airports; environment – climate change mitigation; science and technology – biotechnology and fuels.
- Paris Agreement and India's updated NDC; net-zero by 2070 (announced at COP26, Glasgow, 2021).
- Ethanol blending programme and the food-versus-fuel debate; second-generation (2G) ethanol – IOC's 2G ethanol plant at Panipat (2022).

4. Previous-year question (UPSC)

- No UPSC Mains question so far has asked about sustainable aviation fuel directly. Closest: GS-III 2022 (15 marks): "Do you think India will meet 50 percent of its energy needs from renewable energy by 2030? Justify your answer. How will the shift of subsidies from fossil fuels to renewables help achieve the above objective?" Prelims 2020 asked which raw materials the National Policy on Biofuels allows.

5. Common mistakes

- Writing that the 1% target applies to all flights from 2027 – it applies to international flights initially.
- Calling SAF "zero-emission" – it burns like jet fuel; the saving is on a life-cycle basis.
- Ignoring cost and feedstock – the question asks you to examine the challenges, not only to praise the technology.

Official sources

- ETV Bharat (PTI) – IOC gets govt nod for commercial sustainable aviation fuel supply from Panipat refinery (17 November 2026) – https://www.etvbharat.com/en/business/ioc-gets-govt-nod-for-commercial-sustainable-aviation-fuel-supply-from-panipat-refinery-enn26111702486
- ICAO – ICAO Conference delivers strong global framework to implement a clean energy transition for international aviation (24 November 2023) – https://icao.int/Newsroom/Pages/ICAO-Conference-delivers-strong-global-framework-to-implement-a-clean-energy-transition-for-international-aviation.aspx
- S&P Global Commodity Insights – India announces SAF targets, biogas blending mandates (27 November 2023) – https://www.spglobal.com/commodity-insights/en/news-research/latest-news/energy-transition/112723-india-announces-saf-targets-biogas-blending-mandates
- Indian Oil Corporation – news release on ISCC CORSIA certification of the Panipat refinery (August 2025) – https://iocl.com/NewsDetails/59413

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