



Sustainable Aviation Fuel (SAF)

For Prelims: Sustainable Aviation Fuel (SAF), United States Federal Aviation Administration Clearinghouse, ASTM D4054 certification, ASTM International, Greenhouse Gas Emissions, International Civil Aviation Organization (ICAO), World Economic Forum's Clean Skies for Tomorrow Initiative.

For Mains: Significance of Sustainable Aviation Fuel (SAF) in achieving the Net Zero Greenhouse Gas Emission.

Why in News?

Recently, the **Indian Institute of Petroleum (IIP)**, a laboratory of the [Council of Scientific and Industrial Research \(CSIR\)](#), has tied up with **Boeing, Indigo, Spicejet** and the three **Tata Airlines - Air India, Vistara** and **AirAsia India** to support the production of **Sustainable Aviation Fuel (SAF)**.

What is Sustainable Aviation Fuel (SAF)?

- **About:**
 - **Sustainable Aviation Fuel (SAF)**, also referred to as **bio-jet fuel**, is created using **domestically developed methods** using **cooking oil** and **oil-rich seeds from plants**.
 - The **SAF samples** produced by the institutes are undergoing strict testing at the **US Federal Aviation Administration Clearinghouse** to meet the standards required for the **ASTM D4054 certification** from **ASTM International**.
- **Sources of Production:**
 - The **CSIR-IIP** has created fuel using different materials, such as **non-edible** and [edible oils](#), as well as used **cooking oil**.
 - They used various sources, including **palm stearin, sapium oil, palm fatty acid distillates, algae oil, karanja, and jatropa**.
- **Benefits of SAF Scaling in India:**
 - **Scaling up the production and use of SAF** in India can bring several benefits, including **reducing [GHG emissions](#), improving air quality, enhancing energy security, creating jobs in the renewable energy sector, and promoting [sustainable development](#)**.
 - It can also help the [aviation industry](#) **meet its environmental targets** and contribute to global efforts to combat **climate change**.
 - **Biofuel for aviation** can be mixed with regular **jet fuel** and used together. Compared to traditional fuel, it has **[lower sulfur content](#)**, which can decrease air pollution and support India's goal of achieving **[Net Zero emissions](#)**.

What is ASTM Certification?

- **ASTM International**, formerly known as the **American Society for Testing and Materials**, is a global organization that develops and publishes technical standards for a wide range of **products, materials, and systems**.
- **ASTM standards** are used by **industry, governments, and other organizations** to

ensure **quality, safety** and reliability in products and processes.

- **ASTM certification** is a process by which a product or material is tested and evaluated against relevant **ASTM standards**.
 - Certification can be used to demonstrate that a product or material meets certain requirements, such as **performance specifications, safety standards, or environmental regulations etc.**

What are the Efforts for Promoting the SAF Worldwide?

- **CORSIA Program:** The [International Civil Aviation Organization \(ICAO\)](#) has established the **Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)** to address aviation emissions.
 - **CORSIA** requires airlines to offset any emissions above **2020** levels and encourages the use of **SAF** to reduce emissions in the first place.
- **Clean Skies for Tomorrow Initiative:** The [World Economic Forum](#) has launched the **Clean Skies for Tomorrow initiative**, which aims to accelerate the production and use of SAF.
 - This initiative **brings together stakeholders from the aviation, fuel, and technology sectors** to collaborate on developing and scaling up SAF production.
- **SAF Blending Targets:**
 - The [European Union \(EU\)](#) has established blending targets for **sustainable aviation fuel** to reduce **GHG emissions** from aviation which aims to increase the use of **SAF** in aviation fuel over time.
 - Starting in **2025**, the blending of **SAF** with **conventional jet fuel** made of **gasoline** and **kerosene** will begin at **2%**.
 - The **blending targets** will increase **every five years**, with a goal of reaching **63% SAF blending in 2050**.
- **Sustainable Skies Act and SAF Production Incentives:**
 - To encourage the use and production of **sustainable aviation fuel (SAF)** in the **United States**, the US Congress introduced the **Sustainable Skies Act in May 2021**.
 - The **Sustainable Skies Act provides a \$1 billion** grant over **five years** to expand the number of **SAF-producing facilities** in the **US**.

Note:

- **Some other sustainable sources of fuels that India is working on include:**
 - [Biodiesel](#)
 - [Ethanol blending in conventional fuel](#)
 - [Hydrogen Fuel Cell](#)

What are the Challenges Associated with SAF?

- **High Cost:** The **cost of producing SAF** is currently higher than traditional jet fuel, making it less economically viable for airlines to **invest in SAF production** and use.
- **Resource Availability:** There is **limited infrastructure** for the **production, storage, and distribution of SAF**, making it difficult to scale up production and supply of SAF.
- **Feedstock Availability:** The availability of **feedstock for SAF production** is limited, and there is competition for resources between other industries, such as the food and **agriculture sectors**.
- **Certification:** The certification process for **SAF** is **complex and time-consuming**, and there is a lack of globally recognized standards for **SAF production**.
- **Public Awareness:** There is a need to raise **public awareness** and **understanding** of the **benefits of SAF** and to **encourage greater support from policymakers and investors**.

Way Forward

- **Increase Investment:** Governments, airlines, and investors need to increase investment in SAF production and infrastructure to reduce costs and increase availability. This includes funding R&D, as well as building new facilities and retrofitting existing ones to produce SAF.
- **Support Policy and Regulatory Frameworks:** Governments can implement policy and regulatory frameworks that incentivize the use of SAF, such as tax incentives, subsidies, and mandates for airlines to use a certain percentage of SAF.
- **Encourage Collaboration:** Collaboration between stakeholders, including airlines, fuel producers, and research institutions, can help to build a more integrated and efficient SAF supply chain.
- **Promote Public Awareness:** Raising public awareness about the benefits of SAF and the need for sustainable aviation can increase demand and encourage greater support from policymakers and investors.
- **Develop new feedstock sources:** Investing in research to develop new feedstock sources for SAF production, such as municipal solid waste and agricultural waste, can help to increase feedstock availability and reduce competition with other industries.

[Source: DTE](#)

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