India’s 2030 SAF roadmap: Turning mandates into action

September 2026

Message from Sustainable Aviation Fuel Association (SAFA)

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India's sustainable aviation fuel (SAF) journey is entering a defining phase. With the country moving from policy ambition towards implementation, the opportunity before us is not simply to meet emerging SAF requirements, but also to build the foundations of a strong, competitive, and globally connected Indian SAF industry.

Jointly developed by PwC and the SAFA and titled 'India's 2030 SAF roadmap: Turning mandates into action', this report comes at a particularly important juncture. It looks beyond blending targets to the seven interconnected levers that will determine the pace and scale of India's SAF transition—market demand, technology, feedstock, supply chains, infrastructure, investment, and policy.

The report reinforces an important industry perspective: India has significant structural strengths, including a growing aviation market, diverse feedstock resources, a mature ethanol ecosystem, world-scale refining capabilities, renewable energy potential, and emerging SAF projects. The opportunity now is to bring these strengths together and translate them into bankable projects, reliable supply chains, certified production, and sustained market demand.

For SAFA, this is precisely where our role as an industry platform becomes important. SAFA is committed to bringing together policymakers, producers, refiners, airlines, airports, technology providers, feedstock stakeholders, investors, researchers, and global partners to facilitate informed dialogue and accelerate practical action across the value chain.

India's SAF transition will require collaboration and long-term commitment. The immediate priority is to make the emerging mandate work in practice while simultaneously building the capabilities that can take India beyond compliance towards a market-driven, technology-diverse, and export-oriented SAF ecosystem.

We believe India has the opportunity to become not only a significant SAF consumer, but also a competitive producer and supplier to the global market.

SAFA is committed to working with all stakeholders to help turn this opportunity into action and to power the SAF transition together.

Message from PwC

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Aviation has increasingly become an important part of India's growth story, connecting people, businesses, and regions across the country. As air travel continues to expand, reducing the sector's emissions will also become increasingly important. Improvements in aircraft efficiency and operations, along with new propulsion technologies will help reduce emissions, but they will take time and cannot address the challenge completely on their own. This is where SAF can play a crucial and practical role in lowering emissions across the existing fleet as well as supporting future clean aviation growth.

Developed with SAFA, this report examines the seven levers for SAF growth in India: demand, technology, feedstock, supply chains, infrastructure, investment, and policy. A key aspect among most of these levers is their interdependencies—producers wait for firm demand; investors, for bankable returns; and feedstock and infrastructure providers, for committed volumes. At the same time, technology costs largely follow a global learning curve rather than a domestic one. Policy is the exception, as it is the only lever that can be moved by design and helps set the other levers in motion. That is precisely why it is the most crucial growth driver.

To highlight the implications of these levers and their interdependencies, the report presents SAF growth perspectives across three scenarios: (a) strong policy push with incentives and support, (b) a revenue-neutral model funded from within the aviation industry and fuel system, and (c) a policy-neutral approach. Based on each scenario, we look at the pace at which SAF can reach price parity with aviation turbine fuel (ATF) and offer guiding forecasts, as the actual situation may shift as costs and technologies evolve. A key pattern emerges across all three scenarios: The clearer and more durable the support, the sooner SAF stands on its own feet and the shorter the path to wider market adoption. India's ethanol programme showed what alignment between the government, industry, and agriculture can achieve with the right policy push. However SAF begins from a more challenging place, with more nascent supply chains, capital-intensive plant setup, sustainability rules which are written from an international standpoint, and fare-sensitive market demand with limited appetite for a green premium. Nevertheless, with the right nuanced and directed policy push, the SAF growth story is on the verge of take-off.

This report sets out an SAF growth roadmap in two phases: the first focused on a mandate-delivered SAF glide path, through enforceable rules, predictable support, certified domestic supply, and organised feedstock collection; and the second, an SAF acceleration phase as costs fall and reach parity, widening the market towards voluntary demand, with a broader technology mix and future export-led growth. While the SAF mandate would help create a market, sustaining it requires good execution and technology innovation to build and grow the SAF industry. A vibrant SAF market will require policymakers, refiners, airlines, airport operators, technology developers, and financiers to engage with these findings and act on them together to make the growth roadmap a reality.

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01 Executive summary

Aviation generates roughly 2% of global greenhouse gas emissions and is among the hard-to-abate sectors to decarbonise. The aviation sector is expected to keep growing in the coming years. Most aircraft operating through the energy transition will continue to rely on liquid fuel. The International Air Transport Association (IATA) estimates that sustainable aviation fuel (SAF) will deliver around 65% of the emission reductions needed to achieve net zero by 2050, far exceeding the contributions from efficiency improvements, new aircraft technologies, offsets, and carbon capture.[1] To achieve this, around 500 MMTPA of SAF production capacity will be required. SAF is therefore currently the most practical near-term option for decarbonising the aviation sector.[2]

SAF is not just about cutting emissions but also enabling energy security and industrial opportunity. For India, both the challenge and opportunity are significant as it is the world's third-largest aviation market with consumption of around 9.16 MMT ATF in FY 2025–26.[3] Moreover, it is structurally a growing market. The country also has a large biomass and residue base, a mature ethanol market, world-scale refining capacity, competitive renewable energy, and established export infrastructure. Early certified projects and technology partnerships indicate that the industry is beginning to move beyond pilots. The policy signal is also taking shape with India setting indicative SAF blending targets for international flights at 1% in 2027, 2% in 2028, and 5% in 2030[4] alongside the start of the Carbon Offsetting and Reduction Scheme for International Aviation's (CORSIA's) second phase. The April 2026 amendment to the ATF Control Order brings SAF-blended ATF within its regulatory scope. A dedicated national SAF policy is under discussion. Together, these measures create an initial market, but they do not yet provide the enforcement, long-term offtake, price support, or institutional coordination needed to make projects viable.

This paper assesses seven levers that are envisaged to shape India's SAF market: demand, technology, feedstock, supply chain, infrastructure, investment, and policy. Six levers largely respond to commercial signals. Policy is the only lever that can lead the process by making demand enforceable, deciding how the initial premium is shared, reducing investment risk, supporting feedstock and technology development, and giving infrastructure providers the confidence to invest. The pace of India's SAF transition will therefore depend less on

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1 IATA, Fly Net Zero by 2050 (last accessed on 23 September 2026)

2 IATA, Annual Review 2026 (last accessed on 25 September 2026)

3 PPAC, Domestic Consumption of Petroleum Products (last accessed on 16 September 2026)

4 PIB, Unveils SAF Feasibility Report - India' roadmap to emerge as global leader in Sustainable Aviation Fuels (last accessed on 23 September 2026)

resource availability and more on the clarity, durability, and sequencing of policy. The paper then compares the trajectory of SAF price projections under three policy scenarios against the ATF reference price. A strong policy push scenario, which combines capital support, production incentives, long-term revenue certainty, and feedstock development, generates the fastest SAF price reduction and strongest private-investment response, leading SAF to achieve price parity with ATF around 2039. A revenue-neutral model uses levies, compliance value, and recycled gains to support a more gradual transition without relying on the government budget. In this case, SAF reaches price parity with ATF around 2047. A policy-neutral path can meet early compliance needs, but it is likely to result in slower price reduction, limited private investment, and greater dependence on imported SAF or feedstock, and the gap with ATF will remain material even by 2050.

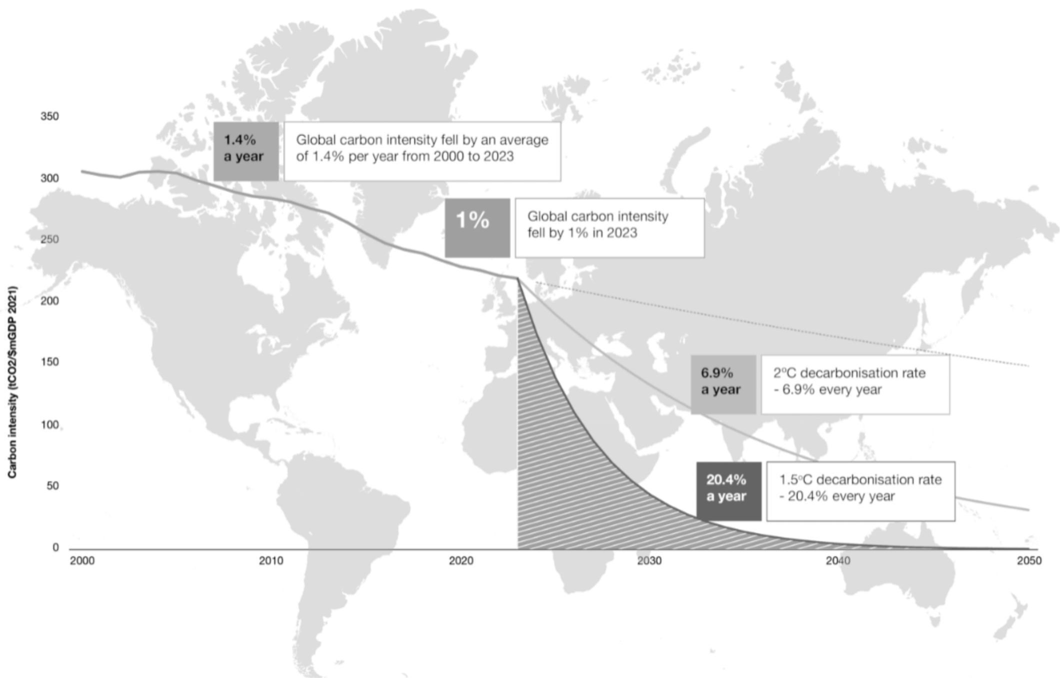
The policy scenario analysis provides a useful framework for considering the SAF transition. Until SAF reaches price parity with conventional ATF, demand is likely to remain predominantly mandate-driven. Once SAF becomes price-competitive with ATF, the basis for growth can begin to shift from compliance to commercial adoption. The roadmap discussed in two phases sets out the priorities for doing so. Under phase 1, India should focus on making the mandate effective through clear compliance rules, predictable support, certified domestic supply, organised feedstock collection, next-wave technology projects, and coordinated governance. Under phase 2, the emphasis should shift towards voluntary demand, a broader pathway mix, export-oriented growth, gradual withdrawal of support, and active management of the changing role of conventional ATF.

02 Setting the context

Fossil fuels continue to dominate global energy supply, although investment and policy are increasingly moving towards renewable electricity, electrification, efficiency, and lower-emission fuels. A recent report from the Intergovernmental Panel on Climate Change (IPCC) indicates that there is more than a 50% likelihood that global temperatures will rise by 1.5°C within the next two decades if current emission trends continue.[5] This projection underscores the importance of the Paris Agreement, the legally binding international climate treaty adopted in 2015.

The Paris Agreement aims to coordinate global action on climate change by seeking to limit global warming to well below 2°C above pre-industrial levels, while pursuing a 1.5°C limit. According to the IPCC, crossing the 1.5°C threshold would have catastrophic climate impacts. Countries therefore need to act to reduce their GHG emissions. Each signatory to the Paris Agreement was required to submit a national climate action plan, or Nationally Determined Contribution, setting out strategies for decarbonisation and adaptation.[6]

Figure 1: Decarbonisation rate required for 1.5°C and 2°C[7]



Although many countries have strengthened their climate commitments, current efforts remain insufficient to limit warming to 2°C, let alone 1.5°C. Meeting the 1.5°C target would require an annual global decarbonization rate, exceeding 20%. Limiting warming to 2°C above pre-industrial levels would require a 6.9% annual global decarbonisation rate.

The challenge is particularly acute in energy-intensive, hard-to-abate sectors such as steel, cement, chemicals, shipping, and aviation. These sectors cannot be decarbonised solely by replacing fossil power with renewable electricity and therefore require a combination of low-carbon alternative fuels, efficiency gains, new production technologies, enabling infrastructure, and coordinated policy.

5 IPCC, Global warming of 1.5°C, Special Report, IPCC (last accessed on 16 September 2026)
6 UNFCCC, The Paris Agreement (last accessed on 16 September 2026)
7 PwC, Net Zero Economy Index 2024 (last accessed on 16 September 2026)

Aviation sector: In focus

Aviation is one such hard-to-abate sector, which contributes about 2% of global CO_2 emissions.[8] This is expected to rise as global air passenger demand increases. In 2025, nearly 5 billion passengers travelled by air, and global passenger traffic, measured in revenue passenger-kilometres (RPK), grew by 5.7% year on year.[9] Growth is expected to continue as IATA forecasts under its mid-range scenario that global passenger demand will grow at a CAGR of 3.1% from 2024 to 2050, meaning demand would more than double to around 20.8 trillion RPKs by 2050.

Against this backdrop, aviation has committed to reach net-zero CO_2 emissions by 2050.[10] The International Civil Aviation Organization’s (ICAO’s) long-term aspirational goal applies to international aviation and supports the temperature goals of the Paris Agreement, while IATA’s member airlines have made a parallel industry commitment. The pathway does not rely on a single solution. It combines more efficient aircraft and engines, improvements to flight and ground operations, new propulsion technologies, lower-carbon fuels, and market-based measures for residual emissions.

- Aircraft technology and fleet renewal reduce fuel burn directly through more efficient engines, lighter materials, improved aerodynamics, and higher-capacity aircraft. These gains are essential, but progress is constrained by long development cycles, slow fleet turnover, and ongoing supply-chain bottlenecks.
- Operational and infrastructure-related measures, including improved air-traffic management, more direct routes, higher load factors, more efficient taxiing, and lower-emission airport operations, can reduce fuel use in the near term without replacing the existing fleet. Their benefits are immediate and cumulative, but their overall abatement potential is relatively limited. IATA attributes only around 3% of the emission reductions required by 2050 to these measures.[11]
- Electric- and hydrogen-powered aircraft offer long-term decarbonisation pathways for short- to medium-haul routes, although advances in aircraft design, batteries, hydrogen storage, and airport infrastructure will take time to mature. IATA allocates approximately 13% of the required 2050 reduction to new technology, including electric and hydrogen.[12]
- Market-based measures and carbon offsets can address emissions that cannot yet be eliminated at source. IATA attributes approximately 19% of the required 2050 reduction to offsets and carbon-capture measures.[13]

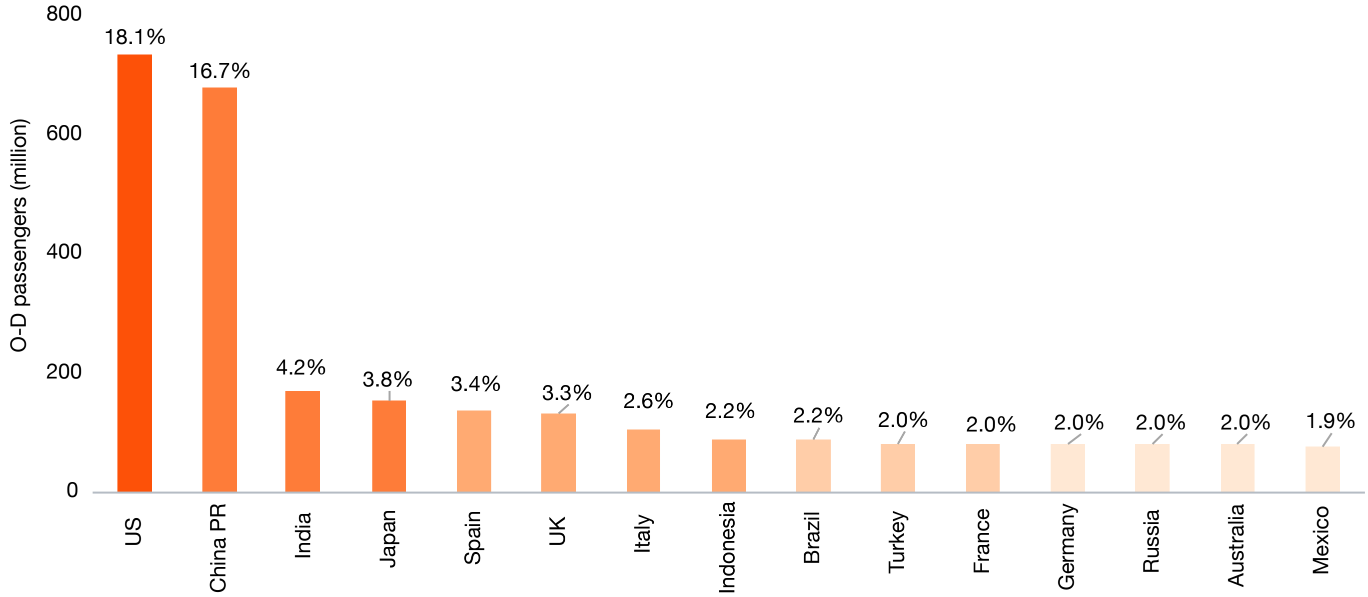
These levers reduce emissions but cannot close the gap on their own. Passenger demand is expected to more than double by 2050, most aircraft in service during the transition will continue to rely on liquid fuel, and alternative propulsion will initially serve only part of the network. SAF therefore bridges this gap between today’s aviation fleet and the net-zero aviation system being developed. It can lower lifecycle emissions using existing aircraft and fuel-distribution systems and is especially important for medium- and long-haul flights. Its advantages are both practical and environmental. SAF can be produced from sustainable waste, residue, biomass, or renewable electricity-based pathways. Once certified and blended to the required specification, the resulting fuel can be used in existing aircraft and distributed through conventional jet-fuel systems.

8 ATAG Fact sheet, ATAG (last accessed on 16 September 2026)
9 IATA, Annual Review 2026 (last accessed on 16 September 2026)
10 ICAO, Strategic Plan 2026 – 2050 (last accessed on 16 September 2026)
11 IATA, Fly Net Zero by 2050 (last accessed on 16 September 2026)
12 Ibid.
13 Ibid.

Where India stands

In India, rising incomes and a rapidly expanding middle class are creating a structural source of demand among first-time flyers, and India is already the third-largest air transport market in the world in terms of departing Origin-Destination (O-D) passenger traffic, behind the US and China, accounting for around 4.2% of the global total (Figure 2).[14] The number of operational airports has more than doubled from 74 in 2014 to 157 in 2024,[15] while its airlines hold one of the world's largest aircraft order books.

Figure 2: Top 15 largest markets by O-D air passenger traffic and % share of global (2024)[16]



This growth translates directly into fuel consumption. India's ATF consumption reached a record 9.16 million tonnes in FY 2025–26 compared with 8.98 million tonnes in FY 2024–25.[17] Domestic operations account for roughly 66% of consumption; international traffic, for about 31%; and the military, for the remainder.[18] Importantly, India produces nearly twice the ATF it consumes, exporting the surplus, which means the country is both a large jet-fuel consumer and a significant supplier to a global market that is itself beginning to decarbonise. With crude imports meeting around 88% of domestic requirements,[19] the fuel question is as much about energy security as it is about climate.

14 IATA, Aviation in India - Sustaining – and growing – a dynamic air transport market (last accessed on 16 September 2026)

15 PIB, India's Soaring Skies with Inclusive and Booming Aviation (last accessed on 16 September 2026)

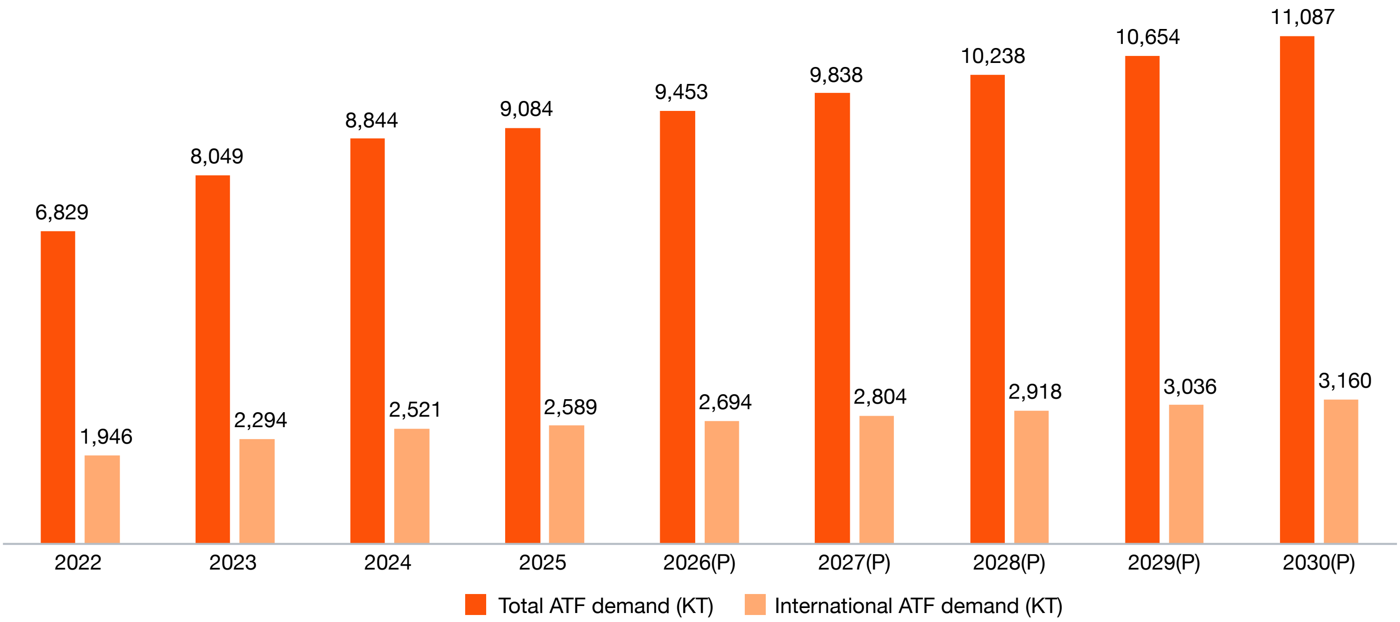
16 IATA, Aviation in India - Sustaining – and growing – a dynamic air transport market (last accessed on 16 September 2026)

17 PPAC, Domestic Consumption of Petroleum Products (last accessed on 16 September 2026)

18 PPAC, Monthly Report on Natural Gas Production, Availability and Consumption (last accessed on 16 September 2026)

19 PIB, India's Growth Linked to Energy and Maritime Strength (last accessed on 16 September 2026)

Figure 3: ATF demand growth in India (KT)[20]

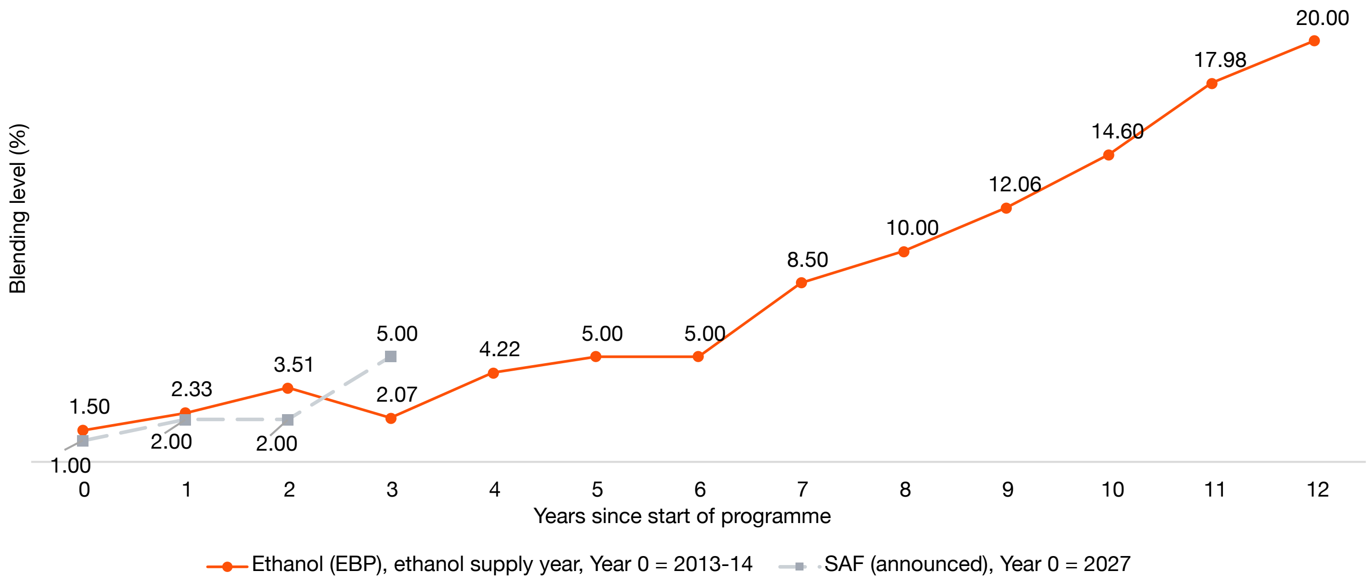


Under its updated Nationally Determined Contribution submitted in August 2022, India committed to cutting the emissions intensity of its GDP by 45% from 2005 levels and to sourcing about 50% of cumulative electric power installed capacity from non-fossil sources by 2030, alongside its longer-term net-zero target for 2070.[21] The non-fossil capacity target was met in June 2025, five years early, and non-fossil capacity reached about 262.7 GW, or 51.5% of total installed capacity, by November 2025, against a 2030 ambition of 500 GW.[22]

The more instructive precedent for SAF, however, is liquid fuel rather than power. India's ethanol programme has already shown that progress can be rapid when policy, industry, and agriculture are aligned. The National Policy on Biofuels, 2018, amended in 2022 to broaden the eligible feedstock base and bring forward the blending timeline, underpinned an Ethanol Blended Petrol Programme that lifted blending from under 1.5% in 2013–14 to 20% in 2025–26, five years earlier than the original target.[23,24] Production capacity increased nearly fivefold from 421 crore litres in 2014 to about 2,000 crore litres in 2026. This capacity expansion has reduced crude oil imports, saved valuable foreign exchange,[25] lowered GHG emissions, and strengthened farmers' incomes through new market opportunities.

20 PPAC, Domestic Consumption of Petroleum Products (last accessed on 16 September 2026)
21 UNFCCC, India's Updated First Nationally Determined Contribution Under Paris Agreement (last accessed on 16 September 2026)
22 PIB, 2025 Marks Highest-Ever Renewable Energy Expansion in India's Energy Transition Journey (last accessed on 16 September 2026)
23 PIB, Cabinet approves Amendments to the National Policy on Biofuels -2018 (last accessed on 16 September 2026)
24 PIB, Ethanol Blending in India (last accessed on 16 September 2026)
25 Ibid.

Figure 4: Blending trajectories for ethanol and SAF[26]



SAF's starting position, however, differs markedly. Ethanol benefitted from an established agricultural base, an administered price, assured offtake through long-term agreements with public oil marketing companies, and a domestic consumer who never had to choose the fuel. SAF has none of these to the same extent. Its supply chain is at an early stage, its conversion pathways require more capital, its sustainability and traceability requirements are set by international rather than domestic standards, and conventional ATF remains abundant and comparatively cheap. Willingness to pay a green premium is limited in a price-sensitive aviation market. Scaling SAF will therefore depend much more on deliberate policy design than the ethanol programme did.

However, the underlying advantages are strong as India generates more than 750 MMT of biomass annually, of which around 230 MMT is estimated to be surplus, alongside used cooking oil, municipal solid waste, molasses and ethanol streams, and, over time, green hydrogen paired with captured carbon.[27] India is also a low-cost producer of renewable electricity, which matters for alcohol-to-jet (ATJ) and power-to-liquid economics. It has world-scale refining capacity, established fuel export logistics, and existing certification pathways. The Panipat Refinery has secured ISCC CORSIA certification and is configured to convert used cooking oil into around 30,000 tonnes of SAF a year.[28]

India has announced indicative SAF blending targets of 1% in 2027, 2% in 2028, and 5% in 2030 for international flights, aligning them with the start of CORSIA's second phase, and a dedicated national SAF policy is under discussion. The targets are modest in volume but decisive in intent as they are expected to convert SAF from an aspiration into a planning assumption for refiners, airlines, airports, and investors.

26 NITI Aayog, MoPNG, ROADMAP FOR ETHANOL BLENDING IN INDIA 2020-25, PIB, Government measures to increase Ethanol Blending beyond 20%, accessed on 16 September 2026, PIB, Government Brings SAF-blended aviation fuel under ATF Control Order (last accessed on 16 September 2026)

27 PIB, SAF: A practical and immediate solution to decarbonize the aviation sector (last accessed on 16 September 2026)

28 IOCL, Press Release (last accessed on 16 September 2026)

Current activity indicates that India's SAF ecosystem is beginning to move beyond pilot projects towards commercial deployment, although most investment remains public-sector-led. The Panipat Refinery is planning two production routes: approximately 30,000 TPA of neat SAF through co-processing of used cooking oil in the existing refinery and an 86,800 TPA ATJ facility using ethanol feedstock and a leading sustainable fuel technology company's expertise. The refinery secured India's first ISCC CORSIA certification for SAF production in August 2025.[29,30] The refinery has also signed an MoU with Air India for the future supply of certified SAF from Panipat to support CORSIA compliance. However, the arrangement is an MoU rather than a publicly disclosed binding, long-term offtake contract.[31] Similar partnership arrangements have also been explored by the other leading Indian refiners for pilot projects and offtake willingness.

India enters the SAF transition from a position of genuine structural advantage—strong projected demand, a diverse feedstock base, world-scale refining and export capabilities, early certified projects, and growing technology partnerships. Yet these strengths have not yet translated into a bankable market. Demand remains mandate-led, feedstock supply chains are fragmented, private investment is limited, and long-term offtake and price support remain uncertain. Turning this potential into a globally competitive SAF industry will require coordinated action across the ecosystem. The next section examines the seven strategic levers that govern the pace, scale, and durability of that transition.

29 Indian Oil, World Environment Day message from Director (Refineries) (last accessed on 16 September 2026)

30 Indian Oil, Press Release (last accessed on 16 September 2026)

31 PIB, IndianOil & Air India Sign MoU for Supply of Sustainable Aviation Fuel (last accessed on 16 September 2026)

03 The strategic levers shaping India's SAF ecosystem

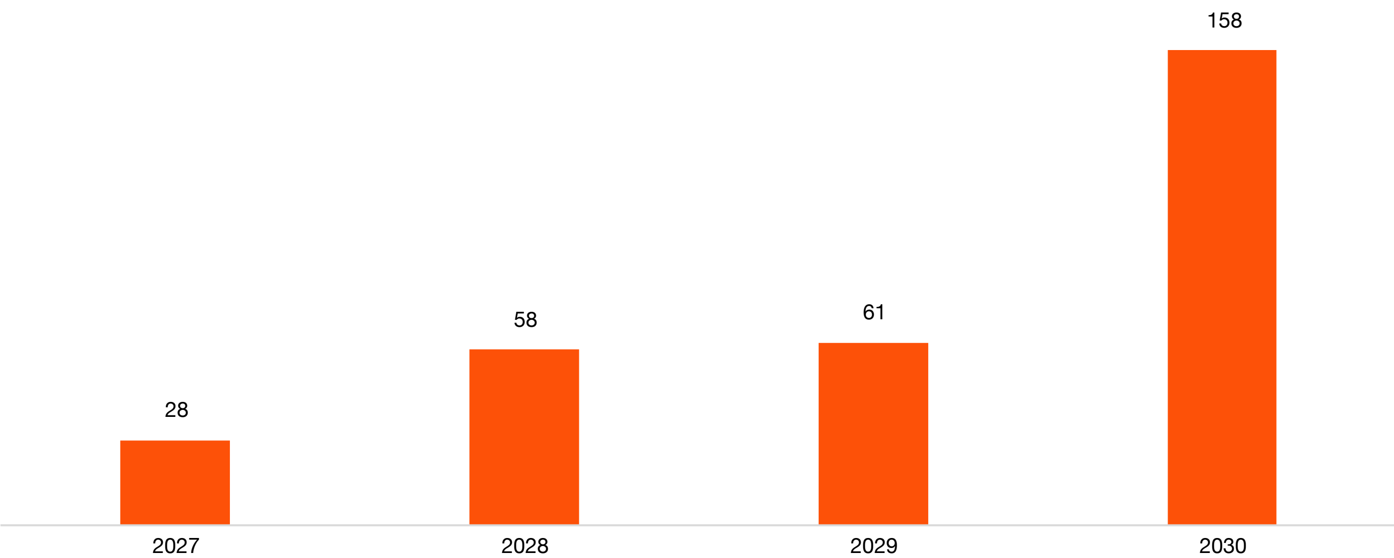
Scaling SAF depends on more than building production capacity or announcing blending targets. A functioning market also requires dependable offtake, traceable feedstock, bankable projects, certified supply chains, and airport infrastructure able to receive blended fuel. To understand how India's SAF ecosystem is likely to develop, this paper considers seven interdependent levers: market demand, technology evolution, feedstock availability, supply chain readiness, infrastructure development, investment attractiveness and policy interventions. Each lever is assessed against three questions: what it determines, where India stands today, and whether it can advance independently or mainly in response to developments elsewhere in the ecosystem.

Figure 5: Seven strategic levers shaping India's SAF ecosystem

The seven levers

01 **Market demand** in India is expected to be driven primarily by policy rather than preference. The indicative blending trajectory of 1% in 2027, 2% in 2028, and 5% in 2030 on international flights translates into growing SAF requirements, and an additional driver is CORSIA's second phase, which begins in January 2027. Voluntary demand beyond the mandate is negligible as SAF currently sells at three to five times the price of ATF, and willingness to pay a green premium is limited in a fare-sensitive market.

Figure 6: India's indicative SAF demand projection (KT)[32]



02 **Technology evolution** dictates both SAF costs and the range of feedstocks India can use. Of more than 40 routes assessed by IATA, the following pathways are considered the most commercially promising.[33]

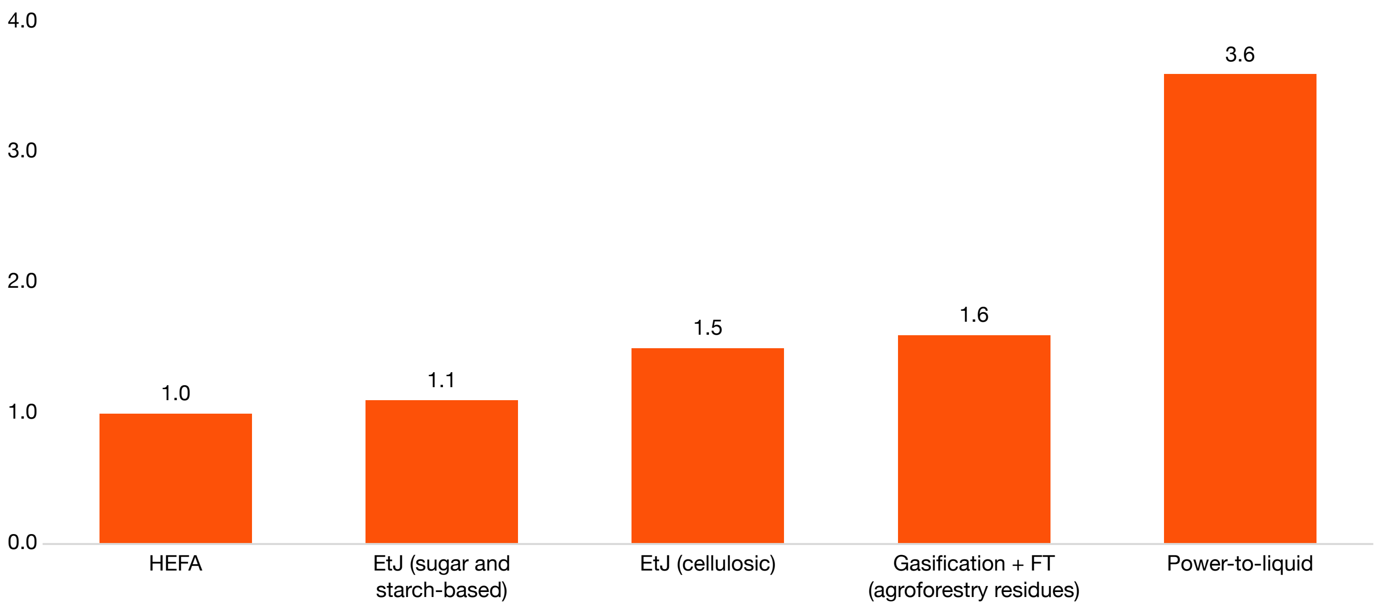
1. Hydroprocessed esters and fatty acids (HEFA), which converts virgin and waste oils into SAF, is the only fully commercial route (TRL 9) and the lowest-cost pathway, at roughly 2-2.5 times the cost of conventional jet fuel. It can be deployed in standalone plants or co-processed in existing refineries, making it India's fastest route to near-term volume; however, its growth is constrained by waste-oil availability and aggregation.
2. Ethanol-to-jet (EtJ) is at TRL 7–8 and is particularly relevant to India because of its mature ethanol industry: conventional ethanol is easier to transport and may approach HEFA economics, whereas cellulosic ethanol broadens the feedstock base but remains more expensive and less available.

32 PPAC, Domestic Consumption of Petroleum Products (last accessed on 16 September 2026)
33 IATA, Global Feedstock Assessment for SAF Production (last accessed on 16 September 2026)

3. Agricultural and forestry residues and municipal solid waste can be processed through gasification followed by Fischer-Tropsch synthesis, currently at TRL 7–8, offering greater long-term scale while requiring large plants, dependable aggregation, feedstock pre-processing, and substantial capital investment. Variable MSW quality can also cause technical delays and project cancellations.
4. Power-to-liquid routes combine captured CO_2 with renewable hydrogen and are not constrained by biomass availability but remain the least mature of the selected pathways (around TRL 7) and currently cost four to five times as much as HEFA because of electrolyser, renewable power, carbon capture, and grid requirements.

For India, this points to a sequenced portfolio: HEFA and refinery co-processing for early mandates, EtJ as the next scalable route, residue- and waste-based FT for larger post-2030 volumes, and e-SAF as the long-term pathway where low-cost renewable electricity, hydrogen, and captured carbon can be integrated economically.

Figure 7: Indicative levelised SAF cost by production route, indexed HEFA = 1[34]



03 **Feedstock availability** determines how much SAF India can produce and at what cost. India has a substantial resource base: Government assessments estimate annual biomass generation at more than 750 MMT, including roughly 230 MMT of surplus agricultural residue.[35] Separately, the Ministry of Petroleum and Natural Gas estimates that India's feedstock base could in theory support 19–24 MMT of SAF production each year, compared with an estimated requirement of 8–10 million tonnes at a 50% blend.[36] The main constraint is not total resource volume, but the share that can be collected sustainably and delivered economically. Used cooking oil can supply early HEFA and refinery co-processing projects, but as available volumes are limited, its long-term scale will depend on agricultural residue and the expansion of ethanol-to-jet pathways.

34 IATA, Global Feedstock Assessment for SAF Production (last accessed on 16 September 2026)
35 PIB, SAF: A practical and immediate solution to decarbonize the aviation sector(last accessed on 16 September 2026)
36 PIB, SAF using indigenous feedstock (last accessed on 16 September 2026)

04 **Supply chain readiness** determines whether available feedstock can be collected, traced, and delivered to SAF plants competitively. For used cooking oil, India already has a collection framework through FSSAI’s Repurpose Used Cooking Oil (RUCO) initiative,[37] which requires food businesses to divert unusable cooking oil from the food chain via enrolled aggregators and non-food producers.[38] RUCO provides a useful foundation for collection, but CORSIA requires more rigorous controls. Every economic operator in the eligible fuel supply chain, from the point of origin and first gathering point to intermediate producers, fuel producers, traders, and blenders, must be certified under an ICAO-approved sustainability scheme, with claims monitored, reported, and verified.[39] Agricultural residues pose a different challenge. The resource is dispersed across many small farms, is seasonal, and is expensive to store and transport. Thus, aggregation hubs, quality standards, traceability, and long-term supply contracts are needed before these residues can support reliable SAF production. International experience shows that large cross-border supply chains can operate at scale. In 2024, 69% of feedstock used for SAF supplied in the EU came from outside it, including 38% from China and 12% from Malaysia.[40] India’s priority is therefore to convert existing collection systems into a certified chain-of-custody system and to build organised residue-aggregation networks centred on conversion plants.

05 **Infrastructure development** determines whether SAF can move efficiently from production plants to aircraft and ultimately to export markets. India has an important advantage: certified SAF is blended with conventional jet fuel before use and can use existing infrastructure. Refinery co-processing can also deliver initial SAF volumes from modified existing units. The remaining gaps are concentrated in a few areas: additional domestic certification and testing capacity beyond Panipat, dedicated blending and quality-control arrangements at selected airports, and adequate storage and handling capacity at export terminals.

06 **Investment attractiveness** determines whether SAF projects move from announcements to construction and how quickly new capacity is added. At present, major Indian refiners can fund initial projects from their own balance sheets and invest in response to government direction. However, private investors and commercial lenders look for a clearer commercial case. They need assured demand through long-term purchase agreements, clarity on how the price gap between SAF and conventional jet fuel will be covered, and stable tax and incentive policies. Without these safeguards, first-of-a-kind plants are treated as high-risk investments.

07 **Policy interventions** define the minimum demand, decide how the early premium is allocated, and establish the rules governing SAF production, blending, and sale. India’s policy framework has developed progressively rather than through a single standalone instrument.

37 FSSAI, About RUCO (last accessed on 16 September 2026)

38 FSSAI, Handling and Disposal of Used Cooking Oil (last accessed on 16 September 2026)

39 ICAO, CORSIA Eligible Fuels (last accessed on 16 September 2026)

40 EASA, ReFuelEU Aviation Annual Technical Report 2025 (last accessed on 16 September 2026)

Figure 8: Evolution of policies around SAF in India[41]

2018

National Policy on biofuels laid the foundation for biofuels, including drop in fuels

2019

BIS Standard IS 17081:2019 developed by Bureau of Indian Standards with IAF and industry to include synthesised hydrocarbons enabling bio-jet fuel use in military and civil aviation

2023

Global Biofuel Alliance launched by India, US, and Brazil to enhance cooperation on sustainable biofuels

2024

- Indicative SAF blending targets announced for international flights
- India opted out of CORSIA’s voluntary phase

2025

- Announcement of forthcoming National SAF policy
- Uttar Pradesh Sustainable Aviation Fuel Manufacturing Promotion Policy drafted to incentivise SAF manufacturing (India’s first state-level SAF policy)
- Official blending targets set for SAF blending

2026

Formally legalised SAF blending by expanding the legal definition of ATF to include synthetic hydrocarbons under IS 17081 (along with conventional IS 1571)

Together, these measures have created standards, targets, and legal recognition, but not yet a bankable market: India still requires an enforceable national mandate, a defined mechanism to bridge the price gap and secure long-term offtake, coordinated feedstock and technology support, and clear institutional accountability to convert policy intent into commercial-scale investment.

41 PIB, National Policy on Biofuels (2018); BIS, IS 17081:2019; PIB, Global Biofuel Alliance launch, G20 New Delhi (September 2023); MoCA/PIB statements on CORSIA participation (2023); MoCA SAF feasibility study and indicative blending targets (September 2025); Invest UP, UP SAF Manufacturing Promotion Policy (2025); PIB, SAF-blended ATF under ATF Control Order (April 2026) (last accessed on 23 September 2026)

Table 1: Status and dependencies of the strategic levers[42]

Lever	What it determines	Status today (indicative)	Can it move on its own?
Market demand	Volume certainty and offtake	Mandate-linked; around 158 KT by 2030	No, follows mandate and price
Technology evolution	Production cost and pathway mix	HEFA proven; ATJ/PtL emerging	Largely exogenous; follows the global learning curve
Feedstock availability	Scale ceiling and cost floor	Large theoretical base; low collectability	Partially, needs regulation and awareness
Supply chain readiness	Delivered feedstock cost and traceability	Fragmented; UCO leakage to the food chain	Partially, responds to enforcement and incentives
Infrastructure development	Capacity to blend, certify, transport, and export	Refinery-integrated options available; airport infrastructure is nascent	No, follows committed volumes
Investment attractiveness	Private capital inflow	Limited to announcements and pilots	No, follows demand certainty and returns
Policy interventions	Price gap, risk allocation, mandates	Blending targets notified; support framework evolving	Yes, it can be moved by design

The seven levers are connected, but the dependencies largely run in one direction. Demand will initially remain close to mandated volumes because few buyers are willing to absorb the current SAF premium. Producers are unlikely to commit additional capacity until that demand becomes credible, while feedstock suppliers and infrastructure operators need committed production volumes before committing their own investment. Technology costs will also depend on broader global deployment. In the present Indian market, policy must therefore move first by establishing enforceable demand, a workable approach to the price premium, and clear implementation rules.

42 PwC analysis, summary of the 7 levers as discussed above

04 Policy: The driving wheel for SAF

As observed in the previous section, six of the seven levers are essentially responsive. Policy is the only lever that can be moved deliberately and at a chosen pace, making it the wheel that turns the others. Putting this principle into practice is more complicated than simply announcing a policy. Different measures address different parts of the SAF ecosystem, and they work over different timeframes. A blending mandate can create demand as soon as it takes effect. Price support and long-term offtake can improve project economics over the life of a plant. Feedstock rules, collection systems, and certification arrangements may take several years to establish. The sequencing of these measures therefore matters. Projects expected to supply the 2030 mandate will need to secure financing and begin construction well before 2028, which means investors must have confidence in the policy framework by 2027. This section describes how policy can activate each lever, how India’s framework has evolved, what remains missing, and how India’s approach compares with countries that already have binding SAF requirements.

How policy pulls each lever

Demand and pricing

A clear mandate converts policy ambition into a defined volume that fuel suppliers must deliver. India has established indicative blending targets for international flights, providing a clear demand signal to producers and investors. However, the current framework does not define financial penalties or other consequences for non-compliance, reducing the certainty lenders need to finance new capacity. The EU sets out two distinct compliance obligations. First, fuel suppliers must ensure that the fuel they supply at covered EU airports contains the required minimum share of SAF; Member States must impose penalties if suppliers fall short. Second, airlines must take on at least 90% of the fuel they need for their annual flights from EU airports.[43] This prevents airlines from circumventing SAF requirements by carrying additional, lower-cost fuel from airports outside the EU, a practice known as fuel tankering. For India, the next step is to specify the obligated entities, covered airports, compliance and reporting processes, and the consequences of any shortfall.

SAF remains considerably more expensive than conventional jet fuel, so policy must determine how that additional cost is allocated among producers, airlines, passengers, and the government. Internationally, different models are being used. The US supports production through tax credits;[44] the UK is developing a 15-year revenue-certainty mechanism based on a guaranteed price;[45] Singapore is to fund its mandate through a levy on departing passengers; and some markets use direct viability gap support.[46] Indian public-sector oil companies have sought initial viability gap funding and tax relief, but no mechanism has yet been announced.[47] This matters because SAF has a relatively modest cost impact at low blend levels but grows materially as blending requirements increase, making the design of a sustainable support mechanism increasingly important.

43 EU, EUR-Lex (last accessed on 16 September 2026)

44 IRS, Clean Fuel Production Credit (last accessed on 23 September 2026)

45 GOV.UK, Sustainable aviation fuel revenue certainty mechanism: approach to industry funding (last accessed on 23 September 2026)

46 Civil Aviation Authority of Singapore (CAAS), New Sustainable Aviation Fuel Levy to Apply From 1 April 2026 for Flights Departing From 1 October 2026 (last accessed on 23 September 2026)

47 The Hindu, Oil marketing companies seek incentives for sustainable aviation fuel, see no delays in adoption (last accessed on 23 September 2026)

Technology

India cannot control the pace at which SAF technologies mature globally, but it can accelerate domestic adoption and reduce local costs. Research funding, demonstration-plant support, and incentives for indigenous technology and refinery co-processing can help new pathways progress from pilot projects to commercial deployment. India already has relevant capabilities to build on: Indian refiners have developed the Trijet process to convert used cooking oil, worked with CSIR-Indian Institute of Petroleum to develop an indigenous single-step pathway, and are also developing ATJ capacity at Panipat. In the near term, co-processing offers the fastest route to volume because it can produce certified SAF using modified refinery units without requiring entirely new facilities.

Infrastructure

Most existing jet-fuel infrastructure can remain in service once SAF is blended to the required specification, although some additional facilities will still be required. These include blending and testing arrangements, dedicated storage where required, certification capability, and suitable handling systems at airports and export terminals. Such investments are unlikely to proceed on forecasts alone; investment decisions require clarity on production volumes, offtake, and the airports covered by the mandate. Early identification of those airports will allow fuel suppliers, airport operators, and logistics providers to sequence investment in line with actual demand while avoiding bottlenecks and underused infrastructure.

Feedstock and supply chain

Regulation is needed to convert a large theoretical resource base into a reliable, certified supply. Only around 8% of India's unconstrained feedstock potential is estimated to be realistically available for SAF.[48] Policy can improve availability through aggregation hubs, common quality standards, digital tracking, long-term supply contracts, and the expansion of collection models already being tested in compressed biogas.

Investment

Policy determines whether SAF projects are financed mainly by public-sector companies or can attract private project financing. Most projects announced in India to date are public-sector-led, partly because first-of-a-kind plants carry construction, technology, and market risks that private lenders price at a premium. Long-term purchase agreements at known or predictable prices can mitigate this risk by giving projects a dependable revenue stream. Predictable tax treatment and time-bound support are equally important. Together, these measures can reduce borrowing costs, help projects reach financial close, and lower the delivered cost of SAF over the plant's operating life.

48 IATA, Global Feedstock Assessment for SAF Production, Outlook to 2050, September 2025 (last accessed on 23 September 2026)

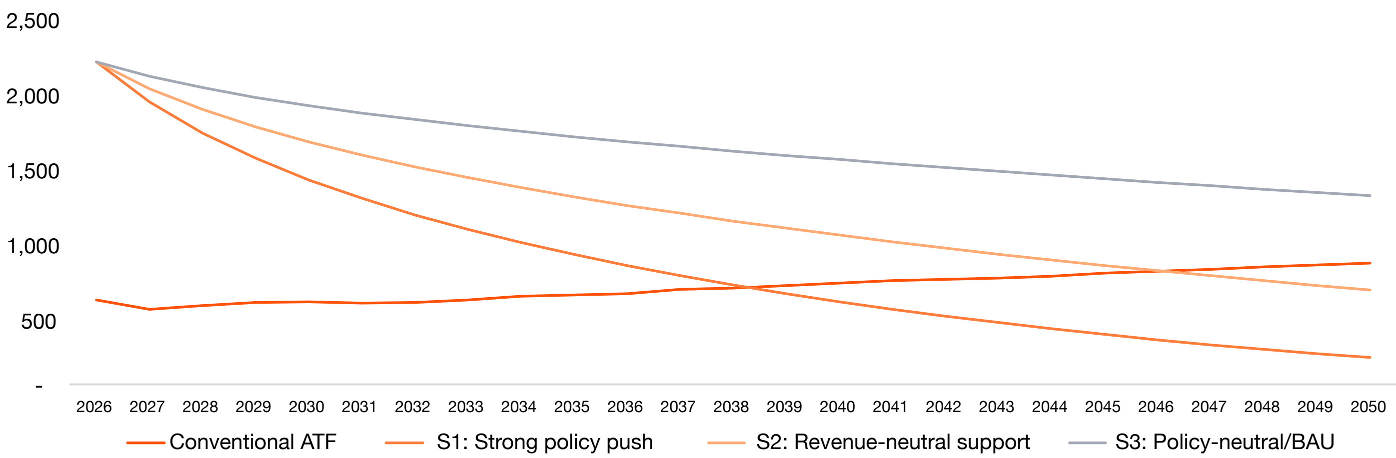
05 Three policy scenarios

The previous section shows that different combinations of policy interventions across the SAF growth levers can have different effects on the scale and pace of SAF growth. In this section, we test three policy approaches: **a strong policy push** in which the government carries part of the early cost and investment risk; **a revenue-neutral approach** in which support is funded through levies, recycled revenues, and compliance value; and a **policy-neutral path** in which the mandate operates without a dedicated support mechanism. The objective is not to forecast a precise future SAF price, but to show how policy can influence the speed of cost reduction and the competitiveness of India's SAF industry.

All three scenarios begin from the same commercial reality: SAF is still substantially more expensive than conventional jet fuel. Indian public-sector refiners estimate the current premium at three to five times the cost of ATF,[49] while EASA's 2024 baseline recorded an average SAF price of EUR2,085 per tonne compared with EUR734 per tonne for conventional jet fuel.[50] Over time, SAF costs should fall as plants become larger and better utilised, technologies mature, equipment is standardised, feedstock collection improves, and lenders become more comfortable financing projects. The scenarios differ in how quickly these changes occur.

Figure 9. compares the trajectory of SAF price projections under three policy scenarios against the ATF reference price. Under a **strong policy push**, capital support, production incentives, long-term offtake, and feedstock infrastructure enable more projects to reach financial close, improve plant utilisation, and reduce financing costs, allowing the SAF price to decline rapidly and reach parity with ATF first, around **2039**. Under **revenue-neutral support**, prices also decline over time, but more slowly than under the strong policy push, as support is funded through levies, compliance value, and recycled revenues rather than direct fiscal expenditure. Price parity is eventually achieved, although several years later than under the strong policy push scenario, with SAF becoming competitive with ATF around **2047**. Under a **policy-neutral or business-as-usual pathway**, SAF prices fall primarily through global technology learning and limited compliance-driven deployment. Investment remains constrained, pathway diversification is slower, and the price gap with ATF narrows only gradually. As a result, SAF does not reach price parity with ATF within the assessment horizon and continues to rely on mandates and compliance requirements for demand. The gap with ATF remains material even by 2050, suggesting that cost competitiveness is unlikely without additional policy support or technological breakthroughs.

Figure 9: Indicative SAF price projections under three policy scenarios (USD/tonne)[51,52]



49 Times of India, India planning to mandate 1% SAF blending with ATF from Jan 2027 (last accessed on 16 September 2026)

50 EASA, ReFuelEU Aviation Annual Technical Report 2025 (last accessed on 16 September 2026)

51 EASA reference prices for EU aviation fuels, EIA, Annual Energy Outlook 2026 (last accessed on 16 September 2026) The ATF price forecasts have been considered as-is from the stated source and agnostic to the SAF price forecasts based on PwC analysis.

52 Note: The SAF price forecasts in the graph are forward-looking, which by their nature involve numerous assumptions, inherent ,risks and uncertainties, both general and specific, and the risk that such predictions, forecasts, projections, and other forward-looking statements will not be achieved.

Scenario 1: Strong policy push

Under a strong policy push, SAF is expected to reach price parity with ATF around 2039. The government would treat SAF as a strategic industry that needs temporary support while production is still small and expensive. The blending mandate would be backed by clear compliance rules, named obligated entities, and penalties for shortfalls. At the same time, a published support framework would reduce the early cost and investment risks that prevent new plants from reaching financial close. The objective would not be to subsidise SAF indefinitely but to build enough domestic capacity, operating experience, and feedstock infrastructure for costs to fall and private investment to take over.

- **Capital support for early plants:** Viability gap funding or grants would help first-of-a-kind ATJ and gasification projects absorb elevated construction and technology risks. These plants have lengthy development periods. Therefore, projects expected to supply volumes for the 2030 mandate would need early support to reach financial close and start construction before 2028.
- **Support linked to actual production:** A payment or tax credit for each unit of certified SAF produced would support operating plants rather than announced capacity. The United States Clean Fuel Production Credit uses this output-based approach.[53]
- **Temporary tax relief:** A time-bound reduction in excise duty or other taxes on the SAF component could prevent the full premium from being passed immediately to airlines and passengers.
- **Long-term revenue certainty:** Multi-year offtake agreements or a government-backed contract that guarantees a minimum price would give lenders greater confidence. The UK applies this approach through a strike-price mechanism: The producer receives support when the market price falls below the agreed level and repays the difference when it rises above that level.[54]
- **Feedstock and traceability support:** Public funding for aggregation hubs, storage, pre-processing, and digital traceability would help mobilise agricultural residues, which account for about 71% of India's realistically available SAF.
- **Technology development and indigenisation:** Support for demonstration plants, pilot facilities, domestic R&D and technology, and commercialisation programmes would help Indian companies develop and scale indigenous SAF technologies. Building domestic capabilities could reduce long-term costs, strengthen energy security, and support a globally competitive SAF technology ecosystem.

Implemented together, these measures would improve project bankability and allow India to develop several production routes in parallel. The result would be faster domestic capacity expansion, earlier private-investor participation, and a shorter period in which demand depends solely on the mandate.

53 IRS, Clean Fuel Production Credit (last accessed on 17 September 2026)
54 GOV.UK, Sustainable aviation fuel revenue certainty mechanism (last accessed on 17 September 2026)

Scenario 2: Revenue-neutral support

Under this scenario, SAF is expected to reach price parity with ATF around 2047. India would still support SAF growth, but without relying on direct government spending. The additional cost would instead be funded from within the aviation and fuel ecosystem, for example, through a passenger levy, carbon-compliance savings, or revenues generated by new domestic production and reduced imports. A support mechanism with a dedicated source of funding is less exposed to annual budget decisions, giving investors greater confidence that it will remain available over the long life of a SAF project.

- **A ring-fenced levy:** Singapore funds its mandate through a defined levy rather than the budget, which makes the cost visible, bounded, and attributable.[55] The same structure applied in India would place the cost differential on travellers transparently rather than implicitly.
- **Recycling of fiscal gains:** Indirect tax revenues from new conversion capacity, import substitution of crude and ATF, and export earnings are measured against the support extended, with the net position assessed over the programme rather than year by year.
- **Carbon-credit monetisation:** As CORSIA-eligible fuel reduces the offsetting liability of an operator, a compliance saving already offsets part of the price gap. Whether that saving is allocated between the airline and producer is a policy design choice, and it is one India has not yet made.
- **Cross-subsidy across the fuel basket:** A modest charge on the much larger volume of conventional jet fuel could help fund the smaller volume of SAF. This approach would be relatively easy to manage when SAF accounts for only 1% of the fuel mix. However, the amount collected would need to rise as the blending requirement reaches 5%. The mechanism should therefore reflect the expected cost of the 2030 mandate, rather than only the smaller requirement in 2027.

Although the resulting cost trajectory is slower than under the strong policy push, this is not a passive scenario. Capacity is built mainly by participants that already hold an advantage, refiners able to co-process and ethanol producers with surplus capacity, rather than by a broad set of new entrants. SAF prices decline at a moderate pace as the levy, recycled revenues, and compliance value support operating volumes, but pathway diversification and private investment develop more gradually.

55 Civil Aviation Authority of Singapore (last accessed on 17 September 2026)

Scenario 3: Policy-neutral/business as usual (BAU)

Under this scenario, India continues with the policy direction already in place—the indicative SAF blending targets, the April 2026 regulatory amendment, and CORSIA compliance from 2027—but introduces no dedicated support to reduce the cost premium. If these targets are implemented as a mandate, fuel suppliers and airlines would meet it at market prices, with any additional cost ultimately passed through to airlines and passengers. Domestic SAF costs still decline over time as technologies improve globally and some production capacity is added, but the pace is slow because the Indian market provides little additional support for investment, scale, or feedstock development.

- **Procurement depends on the cheapest compliant molecule:** If imported SAF or feedstock costs less than producing it in India, obligated companies will purchase it. The mandate is met, but domestic capacity does not grow.
- **Competition:** Without capital support, capacity is likely to remain concentrated in HEFA and co-processing. This may be adequate for 2027 and 2028 but could be strained by 2030 because waste oil is globally scarce and its price is set by competition with biodiesel and renewable diesel.
- **Investment remains concentrated in the public sector:** Public-sector refiners continue to invest in response to the mandate, while private investors are unlikely to participate without credible long-term offtake agreements and clear visibility on how long policy support will remain available.
- **Feedstock collection stays underdeveloped:** Without reliable demand and long-term supply contracts, there is limited commercial incentive to invest in collecting, storing, and transporting agricultural residues for SAF. As a result, much of the collectable feedstock remains unused.
- **The export opportunity could narrow:** As India prioritises meeting its domestic mandate, producers in other countries can secure certification and establish supply relationships in markets where domestic SAF supply is insufficient. India could then continue exporting feedstock instead of moving up the value chain and exporting higher-value certified fuel.

This broadly reflects India’s current position. The mandate and enabling regulations provide a starting framework, but there is no dedicated mechanism to narrow the SAF premium or attract private investment. Companies are likely to meet the required volumes in the most economical way through domestic production where it is competitive and through imports where it is not. Public-sector refiners may continue to add capacity, but the market is likely to remain centred on domestic compliance rather than developing a large, export-oriented industry.

Table 2: Comparison among the three scenarios

Parameter	Strong policy push	Revenue-neutral support	Policy-neutral/BAU
Who bears the price gap	Government budget	Offset by economy-wide revenue gains	Obligated entities and passengers
Relative pace of SAF cost reduction	Fastest	Moderate	Slowest
Length of the mandate-driven phase	Short	Medium	Long
Private-investment response	Strong	Selective	Weak
Likelihood of meeting the 2030 mandate	High	Moderate	Low

Table 2 indicates that stronger, more predictable support can lower SAF costs faster, attract broader private investment, and improve the likelihood of meeting future mandate requirements with domestic supply. The choice therefore extends beyond how to fund early volumes to the type of industry India wants to build. The next section converts these scenario insights into a phased roadmap, setting out the actions required to move from mandate-led deployment towards a larger, more competitive, and increasingly market-driven SAF ecosystem.

06 The roadmap: From mandate-led deployment to a market-driven SAF ecosystem

The scenario analysis carried out in the previous section provides a useful framework for the SAF transition. In the years before SAF reaches price parity with conventional ATF, demand is likely to remain largely mandate-driven. Once SAF becomes price-competitive with ATF, the basis for growth begins to shift from compliance to commercial adoption. Demand can increasingly respond to market economics, voluntary procurement, and export opportunities rather than regulatory obligations alone. The timing of this transition varies across the three scenarios, depending on how quickly the price gap narrows, as shown in Table 3. This distinction between mandate-driven and market-driven phases provides the basis for the roadmap below.

Table 3: Timeline for phases 1 and 2 under three policy scenarios

Scenarios	Phase 1: Mandate-driven build-out	Phase 2: Market-driven transition
Strong policy push	Up to 2039	Beyond 2039
Revenue-neutral support	Up to 2047	Beyond 2047
Policy-neutral/BAU	-	-

India’s SAF roadmap should follow a graduated two-phase approach. Phase 1 should focus on making SAF offtake and blending requirements work in practice. Phase 2 should focus on broadening SAF adoption while building a competitive ecosystem that can sustain growth. Under phase 1, the immediate task is to make the mandate work: create dependable demand, finance the first wave of plants, organise feedstock supply, and prove that certification, blending, and airport delivery operate end-to-end. Under phase 2, the focus should shift from meeting a compliance volume to building a competitive market in which lower costs, wider technology choices, and stronger offtake arrangements can support demand beyond the mandate. The second phase will only be possible if the first creates domestic capability rather than relying mainly on imported fuel or feedstock.

Phase 1: Mandate-driven build-out

- **Establish one accountable coordination mechanism:** Align petroleum, civil aviation, agriculture, food regulation, standards, and finance under a clear nodal arrangement able to resolve approvals, funding, and implementation issues.
- **Set clear and enforceable compliance rules:** Specify the obligated entities, designated airports, reporting method, and consequences of shortfall. The mandate can support investment only if producers and lenders are confident that demand will be enforced.
- **Establish a predictable support mechanism:** Define how the initial SAF premium will be shared, whether through viability gap funding, production incentives, temporary tax relief, a levy, or long-term price support, and state how long the mechanism will remain available.
- **Use the 2027 mandate to demonstrate the full delivery chain:** Early volumes should test domestic production, sustainability certification, blending, transport, airport uplift, and CORSIA reporting as one working system. The success measure is not only tonnes supplied, but whether each step can be replicated reliably.
- **Build feedstock collection ahead of demand growth:** Strengthen used cooking oil traceability and begin organised agricultural-residue collection around planned production plants, with aggregation hubs, quality standards, digital tracking, and long-term supply contracts.
- **Commit to the next wave of technologies now:** Co-processing and HEFA can meet early volumes, but ATJ and residue-based Fischer-Tropsch projects must progress during this phase because their development and construction timelines span several years.
- **Prepare only the infrastructure required by committed volumes.** Expand certification and testing capability, designate initial airports, and sequence blending, storage, and handling investments so that infrastructure neither delays the mandate nor sits underused.

Table 4: India's two-phase SAF roadmap

Phase	Primary objective	Priority actions	Outcome
Phase 1: 2026–2030 Mandate-driven build-out	Make compliance deliverable through domestic capability	Nodal governance; enforcement rules; support mechanism; initial supply; feedstock aggregation; ATJ/FT commitments; and initial airport infrastructure	Certified domestic supply, investable projects, and an operational end-to-end supply chain
Phase 2: Post-2030 Market-driven transition	Use falling costs and wider demand to scale beyond minimum compliance	Voluntary demand; diversified pathways; export certification and offtake; tapering support; refinery and ATF transition planning	A larger, more competitive SAF industry serving domestic and export markets

Phase 2: Market-driven transition

- **Expand demand beyond minimum compliance:** Enable airlines and corporate customers to procure SAF voluntarily through book-and-claim, corporate travel programmes, and multi-year airline commitments, while gradually extending the mandate as domestic supply expands.
- **Diversify the technology and feedstock mix:** Reduce reliance on scarce waste oils by scaling ethanol-to-jet and agricultural-residue routes while developing power-to-liquid where low-cost renewable electricity, green hydrogen, and captured carbon are available.
- **Convert domestic capability into an export business:** Build export capability through internationally accepted certification, verified feedstock traceability, export-terminal infrastructure, and long-term overseas offtake agreements to serve markets with binding mandates and insufficient domestic production.
- **Taper support as the market strengthens:** Phase out public support in line with market maturity rather than on a fixed timetable. Linking support to clear milestones such as lower costs, higher production volumes, and greater private-sector participation can protect early projects while limiting long-term dependence on subsidies.
- **Plan for fossil ATF's changing role:** Assess how higher SAF use affects refinery product planning, jet-fuel exports, and airport infrastructure, and help refiners shift from exporting conventional ATF to producing and exporting certified low-carbon aviation fuel.

The two phases remain interdependent. Decisions about technology, feedstock contracts, financing, certification, and infrastructure will determine whether India enters the next decade with a domestic SAF industry rather than merely a compliance-focused market. Imported SAF can help meet an annual obligation, but it does not build local capability. The roadmap should therefore assess early success not only by the blend achieved but also by the production capacity and supply chain created behind it.

India as a global SAF export hub

The domestic mandate represents only one part of the opportunity. India has the foundations to become a globally competitive SAF supplier in the same way it is positioning itself on green hydrogen and green ammonia with a large and diverse feedstock base, an existing world-scale refining and export system, competitive conversion costs, and one of the region's largest concentrations of international air traffic. If cost parity is achieved domestically, the same molecules become exportable into markets that are short of compliant supply.

- **Why India could compete:** Feedstock diversity and scale, refining infrastructure and expertise, competitive capital and operating costs, established fuel export logistics, and critical mass of international flight movements.
- **Where demand is emerging:** Europe (ReFuelEU obligations), the UK, Japan and South Korea, Singapore, and the wider Asia-Pacific; parallels the German and Japanese green ammonia/hydrogen tenders that have created early export offtake.
- **Refuelling hub potential:** Competitively priced SAF at Indian airports could encourage international carriers to uplift fuel in India, turning a fuel-cost advantage into greater aviation traffic and hub potential.
- **What is required:** Certification and sustainability compliance acceptable to importing jurisdictions, verified feedstock traceability, export-enabling port and tankage infrastructure, and long-term bilateral offtake arrangements.

The scale of this opportunity is clearest when viewed against jurisdictions that have already legislated SAF mandates. The EU's binding SAF requirement rises from 2% in 2025 to 6% in 2030, and only 0.6% of aviation fuel supplied at EU airports in 2024 was SAF.[56,57] The UK's mandate rises to 10% by 2030 and 22% by 2040,[58] Japan to 10% by 2030,[59] and Singapore from 1% in 2026 to 3–5% by 2030.[60] Each is a supplier obligation backed by financial consequences, and none of these jurisdictions has a feedstock base comparable in scale to India's.

European regulators report that 69% of the feedstock used for SAF supplied in the EU in 2024 originated outside the EU, with China supplying 38% and Malaysia 12%.[61] Almost all of that fuel was produced from used cooking oil, with a further share from waste animal fats. In other words, the world's largest mandated SAF market is already structurally dependent on imported feedstock from Asia, and that dependence is being met today by countries whose agricultural-residue base is a fraction of India's. For India, the question is not whether an export market exists. It is whether India participates in it as a supplier of feedstock or as a supplier of finished, certified fuel.

56 European Union, EUR-Lex, Access to European Law, Annex I, (last accessed on 26 September 2026)

57 EASA, 2025 Report, ReFuelEU Aviation Annual Technical Report, 2024 in review, (last accessed on 26 September 2026)

58 GOV.UK, Sustainable Aviation Fuel (SAF) Mandate (last accessed on 17 September 2026)

59 ICAO, Japan's Efforts to Introduce SAF (last accessed on 17 September 2026)

60 Civil Aviation Authority of Singapore (last accessed on 16 September 2026)

61 EASA, ReFuelEU Aviation Annual Technical Report 2025 (last accessed on 16 September 2026)

07 Impact of SAF growth: From emergence to dominance

India produces far more ATF than it consumes. In FY 2025–26, it produced around 16.43 million tonnes, against domestic consumption of 9.16 million tonnes, with 6.86 million tonnes exported to global markets.[62] As the share of SAF increases—first through blending mandates and eventually through broader adoption—the stakeholder ecosystem will undergo a transformation, requiring both new investment and the remodelling of existing business models. Some key implications are outlined below.

- **Infrastructure implications:** While much of the existing ATF storage, transportation, and airport-fuelling infrastructure can continue to be utilised, additional investments in blending, certification, storage, and handling systems will be required as SAF deployment expands.
- **Refining economics:** Rising SAF adoption could gradually reshape refinery production portfolios, requiring refiners to reconfigure assets, manage product-slate flexibility, and respond to shifts in refining margins, especially while ATF remains a premium product within the refining basket.
- **Airline operators:** With the rising penetration of SAF, airline operators may need to manage higher fuel procurement costs in the short term and invest in systems to track SAF availability across major airports.
- **Supply reliability of feedstock:** The growth of SAF will create an additional source of demand for feedstock. The HEFA process will create further pressure on the already fragmented UCO supply chain, which is also a competing feedstock for biodiesel. The FT process will require agricultural residue, which has competing uses for CBG production, and the ATJ process will place pressure on the ethanol supply chain. Therefore, sustainable growth in the SAF segment will require a structured approach towards ensuring a consistent and reliable supply of feedstock.

62 Petroleum Planning & Analysis Cell (ATF production, consumption and export) (last accessed on 17 September 2026)

About the SAF Association

Powering the SAF Transition Together

The SAF Association (SAFA) is an industry-led, not-for-profit organization dedicated to accelerating a credible, scalable and globally competitive Sustainable Aviation Fuel (SAF) ecosystem in India. As India moves towards implementing its SAF mandate, SAFA's focus extends beyond blending requirements to building the capabilities, value chains and partnerships needed for a long-term SAF industry across feedstocks, technologies, production, certification, infrastructure, investment, offtake and global markets.

India can build a diversified and resilient SAF ecosystem by drawing on its agricultural and waste resources, ethanol and refining capabilities, renewable energy potential, industrial infrastructure and growing aviation market. SAFA brings together policymakers, producers, refiners, airlines, airports, technology providers, feedstock stakeholders, investors, researchers and international partners to help develop this domestic capability alongside mandate implementation.

Connecting the SAF ecosystem

SAFA creates platforms and partnerships through which industry knowledge can inform policy, technology can connect with investment, feedstock opportunities can connect with producers, and emerging projects can connect with markets. Its focus is to support investment confidence, sustainable feedstock systems, technology deployment, certified production, infrastructure, long-term offtake and coordinated implementation needed to move projects from concept to investment, production and domestic and international demand.

SAFA supports this journey through:

- Policy & Regulatory Engagement
- Industry Collaboration & Stakeholder Platforms
- SAF Intelligence & Knowledge Sharing
- Technology, Research & Capacity Building
- Investment & Project Facilitation
- Feedstock & Sustainability Development
- Global & Regional Partnerships

Building India's SAF leadership

SAFA works alongside industry and government to strengthen dialogue, enable collaboration, support informed policymaking and create platforms for investment, innovation and implementation. Our ambition is to help India build an SAF ecosystem that is commercially viable, environmentally credible, innovation-led and globally connected - going beyond compliance to develop domestic capability and, over time, participate in international SAF markets as a competitive supplier.

SAF ASSOCIATION

Powering the SAF Transition Together

Policy & Regulatory Leadership | SAF Intelligence | Technology & Innovation | Investment & Project Facilitation | Industry Collaboration | Feedstock & Sustainability | Global Partnerships

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pwc.in

Data Classification: DC0 (Public)

SG/September 2026 - M&C 55169