

ETHANOL SECTOR IN INDIA

India's ethanol sector after E20: utilisation, feedstock economics and credit outlook to FY31



September 2026

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Executive summary

Scale now makes ethanol a banking-system-relevant sector, not a niche one.

The 1.7x tender oversubscription is the first hard evidence that supply now exceeds policy-capped demand.

Utilisation and monetisation, not capacity build-out, are now the credit swing factors.

India's ethanol sector has moved, within a decade, from a marginal sugar-mill by-product into one of the country's most consequential energy-and-agriculture programmes. Ethanol blended into petrol rose from a token 1.5% in ESY14 to close to 20% during CY2025, with the E20 milestone reached roughly five years ahead of the 2030 deadline. Annual installed distillation capacity has grown more than two-and-a-half-fold since FY21, to approximately 18.25 billion litres across 499 distilleries as of June 2025, anchored by over INR 420 billion of sanctioned bank loans.

The programme's economics are now large enough to matter to the banking system. Oil Marketing Companies supplied 10.03 billion litres of ethanol in ESY25 alone, more than triple the volume three years earlier, and the EBP Programme has cumulatively channelled an estimated INR 1.96 trillion to distillers and INR 1.18-1.58 trillion to farmers. Yet ESY26 also produced the first credible signal of supply outrunning policy-capped demand: Cycle-1 tenders for 10.50 billion litres attracted offers of 17.76 billion litres, a 1.7-times oversubscription. Feedstock-wise price misalignments are meanwhile compressing margins for cane-based producers even as grain-based, chiefly maize, producers ride a capacity build-out of their own.

For lenders, NBFCs and rating agencies, the next phase of the EBP Programme is no longer about capacity creation. It is about utilisation discipline, feedstock-price rationalisation, and monetising sanctioned capacity through new outlets such as E20 vehicle-fleet replacement, E85/E100 flex-fuel rollout and Sustainable Aviation Fuel (SAF). Brickwork Research expects this monetisation phase to play out over FY27-FY30, with aggregate blending ranging from a stagnant approximately 20% (Bear case) to 30% (Bull case) by FY31, and 25% under the Base case, depending on flex-fuel and SAF adoption and feedstock conditions; full assumptions are in the "Scenario analysis" chapter. This report sets out the sector's demand-supply architecture, pricing and feedstock economics, regional concentration, policy framework, competitive landscape and credit outlook.

Blending achieved

Close to 20% ethanol-in-petrol reached in 2025, five years ahead of the original 2030 target; ESY26 is the formal E20 deadline year.

Capacity built

About 18.25 billion litres/year installed capacity (499 distilleries, Jun-2025), against approximately 17 billion litres/year required for sustaining E20.

Banking exposure

Over INR 420 billion of bank/FI loans sanctioned for distillery capacity as of 31 October 2025 (Lok Sabha disclosure).

Oversupply signal

ESY26 Cycle-1 tender: about 10.50 billion litres sought versus 17.76 billion litres offered - a 1.7-times oversubscription.

Feedstock shift

Grain-based feedstock (chiefly maize) allocated 72% of ESY26 supply versus sugar-based feedstock's 28%, reversing the original 55:45 sugar-led roadmap.

Credit outlook

Stable, with rising bifurcation: grain-based distilleries and diversified sugar-ethanol majors are better placed than pure cane-juice and B-heavy molasses producers.

Executive summary

A navigation aid mapping each headline finding to its supporting section.

Key findings

The table below distils the report's core findings across the value chain, from blending achievement and installed capacity through to feedstock rebalancing, pricing misalignment and credit outlook, with each row pointing to the section carrying the full analysis.

Table 1:
Key findings across the ethanol value chain

Theme	Key finding
Blending trajectory	Ethanol blending rose from 1.53% (ESY14) to 8.17% (ESY21), 12.06% (ESY23), 14.60% (ESY24) and approximately 19-20% through ESY25/ESY26, achieving the E20 target roughly five years ahead of the original 2030 schedule.
Capacity and supply	Installed ethanol distillation capacity reached about 18.25 billion litres/year (499 distilleries) by June 2025, up from 6.84 billion litres in early 2021. OMC offtake reached 10.03 billion litres in ESY25 (final), of which 6.87 billion litres were grain-based and 3.16 billion litres sugar-based.
Investment and banking exposure	Cumulative investment commitments in distillery capacity exceed INR 400 billion (industry estimate, ISMA) against bank/financial institution loan sanctions of over INR 420 billion as of 31 October 2025 (Government of India, Lok Sabha reply).
Feedstock rebalancing	ESY26 allocation shifted decisively to grain (72%, about 7.60 billion litres, chiefly maize and surplus rice from the Food Corporation of India) against sugar-based feedstock (28%, about 2.89 billion litres), reversing NITI Aayog's 2021 roadmap, which envisaged sugar at 55% of E20 volumes.
Pricing misalignment	Ethanol procurement prices for sugarcane juice (INR 65.61/litre) and B-heavy molasses (INR 60.73/litre) have been frozen since November 2022 even as sugarcane FRP rose 16.5% over the same period, leaving an estimated INR 5/litre cost-price gap for cane-based producers (ISMA, October 2025).
Oversupply risk	ESY26 Cycle-1 tenders attracted offers of about 17.76 billion litres against a requirement of about 10.50 billion litres (1.7-times oversubscription), signalling that installed capacity is beginning to outrun the policy-capped 20% blending ceiling.
Policy and vehicle ecosystem	E20 was mandated nationwide from 1 April 2026; E85 launched at 48 retail outlets in June 2026 (scaling to about 500 by December 2026 and approximately 5,000 by end-2027); E100 vehicle-testing norms were notified, and flex-fuel vehicle launches (Maruti WagonR, two-wheelers from Hero/Suzuki) are underway.
Credit outlook	Stable, with growing bifurcation between diversified, multi-feedstock operators with strong OMC offtake relationships and balance sheets, and smaller single-feedstock (particularly pure cane-juice) distilleries facing margin compression and utilisation risk.

Source: Government of India (Press Information Bureau; Ministry of Petroleum and Natural Gas; Ministry of Consumer Affairs, Food and Public Distribution; Lok Sabha replies); Indian Sugar and Bio-Energy Manufacturers Association (ISMA); ChiniMandi/BioEnergy Times; company disclosures. Note on date conventions: ESY is the Ethanol Supply Year used by the Government of India for ethanol production, procurement and blending, currently 1 November to 31 October (ESY25 = 1 November 2024 to 31 October 2025). Years up to about ESY19 ran 1 December to 30 November (CCEA notification, January 2025; Ministry of Petroleum and Natural Gas). FY is the Indian fiscal year (1 April to 31 March; FY26 = 1 April 2025 to 31 March 2026) and CY the calendar year. Every figure in this report is labelled with the convention that applies.

Key takeaways

The ethanol credit story in nine figures

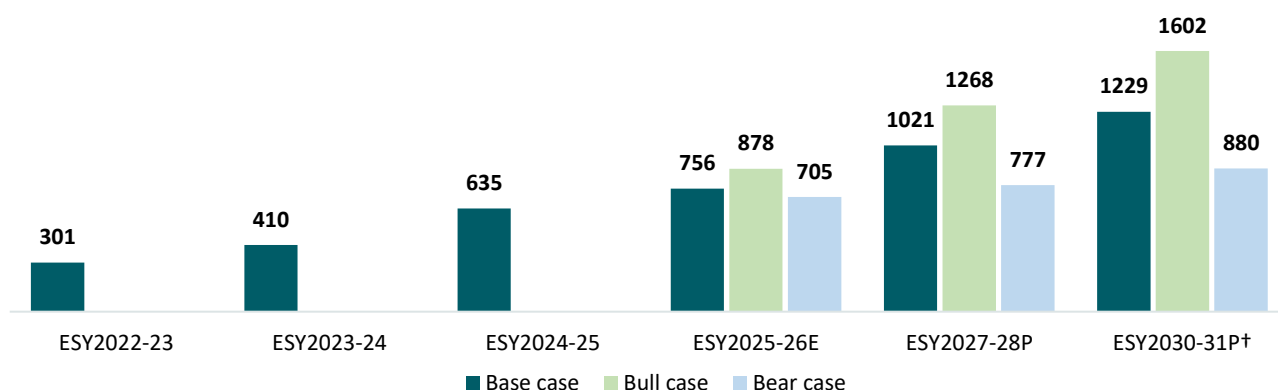
 ~20% BLENDING TRAJECTORY E20 reached in ESY25/26, five years ahead of the original 2030 schedule (from 1.53% in ESY14).	 18.25 Bn litres/year CAPACITY & SUPPLY Installed distillation capacity (499 distilleries, Jun-2025); OMC offtake 10.03 Bn litres in ESY25.	 INR 756 Bn -> 1,229 Bn MARKET SIZE (BASE CASE) ESY2025-26 to ESY2030-31, ~10.2% CAGR; Bull INR 1,602 Bn, Bear INR 880 Bn (Figure 1).
 > INR 420 Bn BANKING EXPOSURE Bank/FI loans sanctioned for distillery capacity as of 31-Oct-2025; investment commitments exceed INR 400 Bn.	 72% grain FEEDSTOCK REBALANCING ESY26 allocation: grain (chiefly maize) 72% vs sugar 28%, inverting NITI Aayog's 55%-sugar roadmap.	 ~INR 5/litre gap PRICING MISALIGNMENT Cane-based procurement prices frozen since Nov-2022 even as sugarcane FRP rose 16.5%.
 1.7x oversubscribed OVERSUPPLY RISK ESY26 Cycle-1: 17.76 Bn litres offered against 10.50 Bn litres required.	 E20 nationwide POLICY & VEHICLE ECOSYSTEM Mandated 1-Apr-2026; E85 scaling toward ~5,000 outlets by end-2027; flex-fuel launches underway.	 Stable, bifurcating CREDIT OUTLOOK Diversified multi-feedstock operators vs. smaller single-feedstock distilleries facing margin/utilisation risk.

Sector overview: scale, market size and forecast

Growth from here is capital-light rather than capex-heavy.

A near-2x Bull-Bear revenue range shows policy execution drives most valuation upside.

Figure 1:
Ethanol market size, actual and forecast (INR billion)



Source: Brickwork Research analysis, built on CMIE petroleum-consumption and company-financial data (the Demand and supply dynamics and Sector outlook: proprietary demand and scenario analysis chapters).

Note: ESY23 to ESY25 are actuals, each year's OMC offtake volume (the capacity build-out section) at that year's average ex-mill realisation. ESY26 onward is Brickwork Research's Base case, not an official government or industry projection, converted from the underlying FY scenario model as a weighted average of the two straddling fiscal years ($5/12 \times \text{Nov-Mar FY} + 7/12 \times \text{Apr-Oct FY}$); the "Scenario analysis" chapter gives the Bull and Bear range. In the chart, E = Estimate, P = Projection, and † denotes ESY2030-31, which relies on an extrapolated FY32 base beyond the FY26–FY31 forecast horizon.

Sector at a glance: scale, growth and the next five years

India's ethanol sector has grown from a marginal sugar-mill by-product industry into a policy-anchored, bank-financed segment of the energy and agriculture economy. This section brings together the sector's current scale, growth trajectory and Brickwork Research's illustrative market-size outlook to FY31, before the rest of this report develops each theme in detail.

Market size: actual and illustrative forecast

Brickwork Research estimates India's ethanol market value (volume $\times$ realisation) at approximately INR 756 billion in ESY2025-26, rising to an illustrative INR 1,229 billion by ESY2030-31 under the Base case - approximately 10.2% CAGR. The Bull case reaches approximately INR 1,602 billion by ESY2030-31; the Bear case yields approximately INR 880 billion. Full assumptions are in the demand-scenario section.

The sector in one table

Risk and catalyst side by side: the outlook is genuinely two-sided.

The snapshot below condenses the sector's scale, growth trajectory, feedstock mix, financing and principal risk/catalyst into a single reference table, ahead of the section-by-section detail that follows.

Table 2:
Sector snapshot: scale, growth trajectory, feedstock mix, financing and risk

Dimension	Current position
Scale	About 18.25 billion litres/year (September 2025) installed distillation capacity (499 distilleries as of June 2025); 10.03 billion litres supplied to OMCs in ESY25.
Growth (5-year CAGR, capacity)	Installed capacity grew from 6.84 billion litres (Jan-2021) to 18.25 billion litres (Sep-2025), a compound annual growth rate of approximately 22% over that period.

Sector overview: scale, market size and forecast

Dimension	Current position
Growth (illustrative market value CAGR, forward)	Approximately 11.6% per year, FY26 to FY31 (Brickwork Research Base case; Bull case approximately 15.4%, Bear case approximately 4.6%, see the “Scenario analysis” chapter).
Feedstock mix (ESY26)	72% grain-based (chiefly maize and surplus rice), 28% sugar-based (cane juice and molasses), a reversal of the original 2021 roadmap's sugar-led design.
Financing	Over INR 420 billion of bank/financial-institution loans sanctioned, predominantly under the Ethanol Interest Subvention Scheme.
Credit outlook	Stable, with rising bifurcation between diversified multi-feedstock operators and narrower cane-led distilleries (see the “Credit outlook” chapter).
Principal near-term risk	Capacity now structurally exceeds the policy-capped 20% blending ceiling; ESY26 Cycle-1 tenders were oversubscribed 1.7 times (see the “Risks and challenges” chapter).
Principal forward catalyst	New demand vectors beyond E20 - flex-fuel vehicles, E85/E100 retail rollout, and Sustainable Aviation Fuel (see the “Emerging trends and new demand channels” chapter).

Source: Brickwork Research synthesis of data presented throughout this report

Demand and supply dynamics

Core tension: demand is policy-capped while supply follows market incentives.

Capacity has outrun the policy-capped demand it was built to serve

India's ethanol market is structured around a single, dominant demand channel, the Ethanol Blended Petrol (EBP) Programme, under which three public-sector Oil Marketing Companies (Indian Oil, Bharat Petroleum, Hindustan Petroleum) procure ethanol at administered, feedstock-differentiated prices. Unlike data-centre or renewable-power sectors, demand here is policy-capped: total offtake is bounded by the blending percentage applied to national petrol consumption, so supply and demand growth do not automatically move in lockstep, a structural feature now shaping the sector's credit profile (see the "Credit outlook" chapter and the "Risks and challenges" chapter).

Capacity build-out and supply trajectory

Installed capacity already exceeds the steady-state requirement, even before pipeline capacity is commissioned.

Installed distillation capacity has grown from approximately 6.84 billion litres a year in January 2021 to approximately 18.25 billion by June 2025 across 499 distilleries, per data placed before Parliament and the Ministry of Consumer Affairs, Food and Public Distribution. The Ministry of Petroleum and Natural Gas separately indicates 18.25 billion litres installed, with a further 2.5 billion in the pipeline, against an estimated 17 billion needed to sustain a 20% blend at steady state. The system is therefore structurally over-built against the policy ceiling even before pipeline capacity is commissioned.

Table 3:
Evolution of India's installed ethanol distillation capacity, 2021-2025

Reference point	Installed capacity (billion litres/year)	Distilleries	Source / commentary
Jan 2021	6.84	Not reported in the MCA's Parliament reply	Pre-interest-subsidy-scheme baseline
Dec 2023	13.80 (8.75 molasses + 5.05 grain)	Not reported in the MCA's Parliament reply	Lok Sabha reply, Department of Food and Public Distribution
Sep 2024	16.23	Not reported in the MCA's Parliament reply	Press Information Bureau; cumulative subsidy-driven build-out
Jan 2025	17.13 (enhanced)	Not reported in the MCA's Parliament reply	CCEA ethanol-price notification, January 2025
Jun 2025	18.25	499	Ministry of Consumer Affairs, Food and Public Distribution (via Parliament)
Sep 2025	18.25 (plus 2.5 billion litres pipeline)	Not reported in the MCA's Parliament reply	Food Secretary statement, reported in Down To Earth

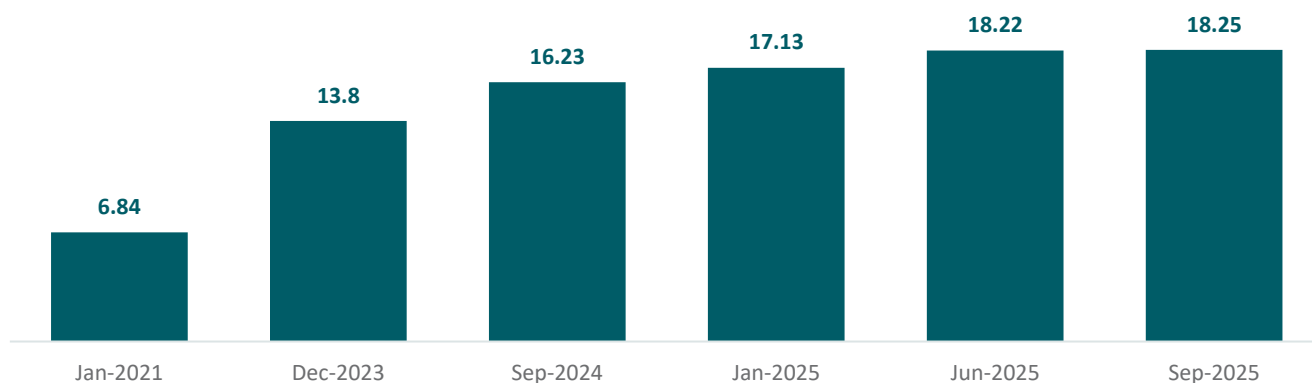
Source: Government of India (Lok Sabha replies, Press Information Bureau, Cabinet Committee on Economic Affairs notifications); Ministry of Consumer Affairs (MCA), Food and Public Distribution

Capacity nearly tripled in five years, now outpacing demand

India's ethanol distillation capacity has scaled rapidly, rising from 6.84 billion litres/year in January 2021 to 18.25 billion litres by September 2025, nearly 2.7 times, added in successive jumps to support the blending mandate. This build-out has run ahead of demand: installed capacity now exceeds the volume needed to sustain the current 20% blending rate, so the near-term growth case rests more on how far the mandate is raised beyond 20% than on further capacity addition.

Demand and supply dynamics

Figure 2:
Ethanol production capacity build-out
(billion litres/year)



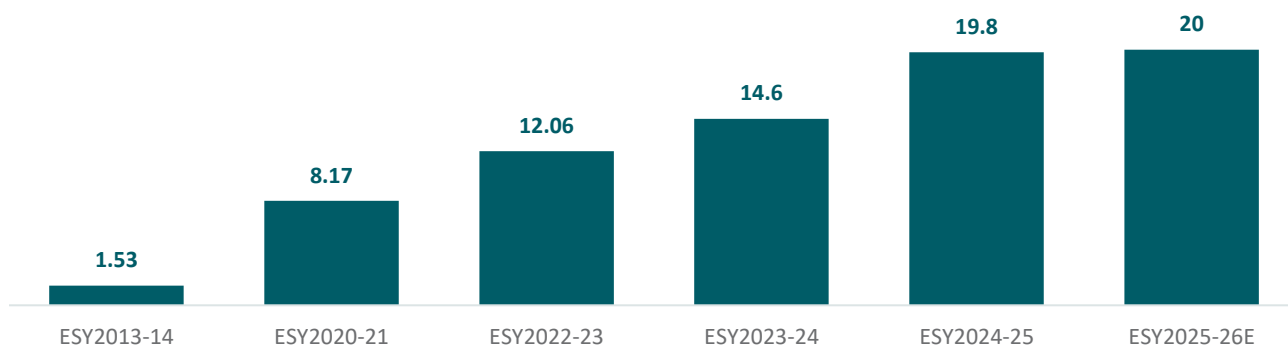
Source: Government of India (Press Information Bureau/Lok Sabha replies); Ministry of Consumer Affairs, Food and Public Distribution.

Blending trajectory

Early E20 removes execution risk, but also the principal growth catalyst.

The EBP Programme's headline metric, the average percentage of ethanol blended into petrol sold nationally, has risen steeply since the National Policy on Biofuels 2018 (amended 2022) advanced the 20% target from 2030 to ESY26. OMCs crossed 10% in June 2022, five months ahead of schedule, and the Ministry of Petroleum and Natural Gas has stated that blending close to 20% was achieved during calendar year 2025, five years ahead of the original deadline. ESY26 (1 November 2025 to 31 October 2026) remains the formal benchmark year against which the mandate is measured.

Figure 3:
Ethanol blending percentage in petrol,
ESY14 to ESY26



Source: Ministry of Petroleum and Natural Gas; Press Information Bureau; Government of India statements (Jul-Dec 2025).

Note: ESY25 and ESY26 are point-in-time readings from government statements up to the editorial cut-off. ESY25 blending ranged from about 19.05% (July 2025) to about 19.97% (December 2025) across successive statements. In the chart, E = Estimate, a current-year reading not yet finalised.

Forward demand: what closes the capacity-utilisation gap

Near-term growth depends on the mandate rising; only the Bull case needs new capacity.

With installed capacity already ahead of the volume needed to sustain a 20% blend, the near-term growth case rests on how far the mandate moves beyond 20%, not on further capacity creation. Brickwork Research's scenario framework converts CMIE petrol-consumption projections into ethanol demand under three trajectories: a Base case tracking the planned E20 to E25 step-up by FY28; a Bull case accelerating to E30; and a Bear case in which blending stagnates near 20% on feedstock and water-stress constraints. The full proprietary model, the Base/Bull/Bear volume projections, the underlying vehicle-registration signal and the detailed methodology notes are consolidated in the demand-scenario section rather than repeated across the report. In short, only the Bull case requires capacity beyond what is already installed.

Demand and supply dynamics

INFOGRAPHIC 1

The capacity India built, against the demand policy allows

Billion litres a year. Installed capacity and pipeline as of June 2025; tender volumes are ESY26 Cycle 1.



1.7 times oversubscribed. Producers offered 17.76 billion litres against 10.50 billion sought. The system is built for a blend the mandate does not yet require, so the binding constraint on revenue is policy, not plant.

Source: Ministry of Consumer Affairs, Food and Public Distribution; Ministry of Petroleum and Natural Gas; Oil Marketing Company tender data for ESY26 Cycle 1, Brickwork Research.

Feedstock and product segmentation

Feedstock composition is an active policy lever, not a market outcome.

Ethanol in India is produced from three broad feedstock families, each with distinct capital intensity, yield economics and policy treatment. The feedstock mix is itself an active policy lever, government has progressively widened approved feedstocks (sugarcane juice, B-heavy and C-heavy molasses, damaged grains, surplus FCI rice, maize) and periodically lifted or reimposed caps on sugar diversion, most recently removing all restrictions on cane-based ethanol for ESY26.

Table 4:
Ethanol feedstock routes, indicative pricing and policy treatment, ESY26

Feedstock route	Typical yield / economics	ESY26 ex-mill price	Policy treatment
Sugarcane juice / syrup	Highest-yield cane route; directly competes with sugar production, mills swing allocation between sugar and ethanol based on relative realisations.	INR 65.61/litre	Unrestricted for ESY26; price frozen since Nov-2022
B-heavy molasses	By-product route from partial sugar extraction; intermediate yield and capital intensity.	INR 60.73/litre	Unrestricted for ESY26; price frozen since Nov-2022
C-heavy molasses	Lowest-yield, most traditional route; uses residual molasses after maximal sugar extraction.	INR 57.97/litre	Long-standing route; price revised annually by the Cabinet Committee on Economic Affairs
Maize (grain-based)	Fastest-growing route; competes directly with poultry feed and starch industry demand for maize.	INR 71.86/litre	Price revised upward sharply since 2023 to incentivise grain capacity
Surplus rice (grain-based)	Uses rice released from central food-grain stocks; capped by annual government allocation (5.2 million tonnes for ESY25 and ESY26).	INR 60,320/kilolitre, equivalent to about INR 60.32/litre	Allocation-capped; price revised up from INR 58.50/litre

Demand and supply dynamics

Feedstock route	Typical yield / economics	ESY26 ex-mill price	Policy treatment
Damaged food grains	Uses grain unfit for human consumption; smaller volume route.	INR 64/litre	Standing route since 2018 policy
Second-generation / advanced (lignocellulosic)	Converts rice straw, bagasse and other agri-residue; nascent, high-capex, government-subsidised demonstration scale.	Project-specific	Supported via the Pradhan Mantri JI-VAN Yojana (amended 2024)

Source: Cabinet Committee on Economic Affairs notifications; ISMA; Ministry of Consumer Affairs, Food and Public Distribution

Note: Sugarcane juice/syrup and B-heavy molasses prices unchanged since November 2022 despite a 16.5% rise in sugarcane FRP over the same period (see the “Feedstock economics and growth drivers” chapter).

Demand by end-use segment

Ethanol demand fragments across diverse, policy-shaped end-use segments.

Ethanol demand is not a single homogeneous pool but splits across several end-use channels, each with its own growth pace and policy dependence; the table below sets out how each segment currently contributes to offtake.

Table 5
India's ethanol end-use segmentation

End-use segment	Role in demand
Fuel ethanol (EBP Programme)	By far the largest and fastest-growing segment; OMCs offtake under the administered-price, tender-based EBP mechanism. 10.03 billion litres procured in ESY25 (final); ESY26 Cycle-1 allocation approximately 10.48 billion litres.
Potable alcohol (Indian Made Foreign Liquor/beer)	Traditional, mature demand from the liquor industry; competes with fuel ethanol for molasses-based feedstock in some states, occasionally creating local supply tension.
Industrial / chemical use	Ethanol as a chemical feedstock (for example, acetic acid, ethyl acetate) and sanitiser/pharma-grade alcohol; smaller but stable volume base.
Exports	India is a modest net exporter of ethyl alcohol to African and West Asian markets (Tanzania, Angola, Kenya, the Democratic Republic of the Congo and Iraq among the largest by value); average export price approximately USD 842 per thousand litres in 2024, broadly flat year-on-year.
Emerging: SAF, second-generation ethanol and green chemicals	Alcohol-to-Jet pathway for Sustainable Aviation Fuel, second-generation ethanol from agri-residue, and bio-based chemicals are nascent but policy-prioritised growth avenues.

Source: Ministry of Consumer Affairs, Food and Public Distribution; ChiniMandi; IndexBox trade data; Brickwork Research.

Vehicle-fleet readiness: the registration data behind the demand story

Registration data confirms flex-fuel-vehicle demand is materialising, not merely a forward-looking assumption.

The Demand-side: ethanol requirement under blending scenarios section treated flex-fuel-vehicle and high-blend demand as a forward-looking scenario. Vehicle-registration data from CMIE/VAHAN shows this transition is no longer purely prospective: registrations under the “Petrol/Ethanol” fuel category grew from a negligible base to 9,620.0 thousand units nationally in FY26, up from 690.0 thousand in FY25 and just 13.0 thousand in FY23.

Demand and supply dynamics

Table 6

Category-wise registration of Petrol/
Ethanol vehicles in India, FY23 to FY26

Vehicle category	FY23 (in thousand)	FY24 (in thousand)	FY25 (in thousand)	FY26 (in thousand)
Non-transport two-wheeler	11.0	520.0	650.0	8,260.0
Non-transport light motor vehicle (cars)	0.0	5.0	36.0	1,290.0
Transport light goods vehicle	0.0	1.0	0.1	21.0
Transport light passenger vehicle	0.0	0.0	0.0	25.0
Transport two-wheeler	2.0	3.0	2.0	4.0
Transport three-wheeler	0.0	0.0	0.0	3.0
All other categories (combined)	—	1.0	0.3	21.0
Total registrations	13.0	530.0	690.0	9,620.0

Source: CMIE, “Category-wise Registration of Petrol/Ethanol Vehicles in India”, sourced from the Ministry of Road Transport and Highways’ VAHAN database.

Note: Counts are vehicles registered under the Petrol/Ethanol fuel-type category. This is a fuel-type classification rather than E85/E100 flex-fuel certification, and should be read as an indicator of E20-compatible fleet registration, not a count of dedicated flex-fuel vehicles.

The compressed timing of the registration jump suggests mandate-driven reclassification rather than organic consumer adoption.

Two features matter for the demand scenario in the “Scenario analysis” chapter. First, the FY26 jump, roughly fourteen-fold over FY25, lines up with the nationwide E20 mandate effective 1 April 2026 (the flex-fuel roadmap section), suggesting OEMs and RTOs moved to the new fuel-category tagging in a compressed window around the mandate date rather than gradually. Second, the mix is overwhelmingly two-wheeler (85.8% of the FY26 total) and light motor vehicle or car (13.4%), with negligible commercial-vehicle registration so far, consistent with two-wheelers and private cars leading India’s fuel-transition curve as they did with BS-VI.

Feedstock economics and growth drivers

With prices administered, margins reflect policy timing, not operating efficiency.

Administered pricing, not the market, decides who wins the feedstock race

Feedstock economics are the single most important determinant of distillery profitability and, by extension, debt-servicing capacity. Because ex-mill prices are administered, fixed annually by the Cabinet Committee on Economic Affairs for molasses and cane routes and by Oil Marketing Companies for grain routes, the gap between input cost and procurement price is the key swing factor in distillery cash flows and the main differentiator between routes and producers.

Prices cross-checked against government notifications, lending credibility to the feedstock analysis.

Eight-year price history by feedstock route

The table below reconstructs the full administered ex-mill price history for each feedstock route from ESY18 to ESY26, with Cabinet Committee on Economic Affairs notifications and Press Information Bureau releases for the most recent three years, where the two sources have been cross-checked against each other.

Table 7:
Administered ex-mill ethanol prices by feedstock route, ESY18 to ESY26 (INR/litre)

Ethanol Supply Year	Sugarcane juice/syrup	B-heavy molasses	C-heavy molasses	Damaged grains	Rice from FCI	Maize
ESY18	47.13	47.13	40.85	NA	NA	NA
ESY19	59.19	52.43	43.46	NA	NA	NA
ESY20	59.48	54.27	43.75	NA	NA	NA
ESY21	62.65	57.61	45.69	NA	NA	NA
ESY22	63.45	59.08	46.66	52.92	56.87	52.92
ESY23	65.61	60.73	49.41	55.54	58.50	56.40
ESY24	65.61	60.73	56.58	64.00	58.50	66.07
ESY25	65.61	60.73	57.97	64.00	58.50	66.07
ESY26	65.61*	60.73*	Not yet notified at editorial cut-off	64.00*	60.32	71.86

Source: CMIE (“Domestic Ethanol Prices, INR/litre: 2017-18 to 2024-25”) for ESY18 to ESY22; Cabinet Committee on Economic Affairs notifications and Press Information Bureau releases (Jan-2025, and subsequent ESY26 reporting) for ESY23 onward

Note: ESY26 sugarcane-juice, B-heavy-molasses and damaged-grain prices are carried forward at ESY25 levels pending formal CCEA notification, consistent with ISMA's October 2025 statement that these prices are unrevised since the ESY23 settlement. Treat this as an assumption, not a confirmed notified price. “NA” = Not Available. Grain-based procurement route not yet introduced; administered pricing for damaged grains, FCI rice and maize routes began in ESY22.

A three-year cane price freeze alongside repeated C-heavy increases reveals the policy tilt.

Reading the eight-year trend

Sugarcane-juice and B-heavy-molasses prices rose steadily through ESY18 to ESY23 (juice: INR 47.13 to INR 65.61, a 39% increase over five years) but have not been revised since the ESY23 settlement, effectively three consecutive supply years of unchanged cane-route pricing even as sugarcane's Fair and Remunerative Price continued to rise (the ESY26 allocation section). C-heavy molasses, by contrast, has been revised upward in every one of the last three notified years, ESY23 (INR 49.41), ESY24 (INR 56.58) and ESY25 (INR 57.97), a cumulative 17% increase over two years and the fastest of any feedstock route, as government has signalled a preference for steering cane-based distilleries towards the lowest-sugar-content molasses in order to protect sugar output (see the “Government policies and initiatives” chapter).

Maize's 36% rise and rice's capped pricing explain the grain-route build-out.

Maize moved from an ESY22 base of INR 52.92/litre, priced essentially on par with damaged grains and FCI rice at the time, to INR 71.86/litre by ESY26, a 36% increase,

Feedstock economics and growth drivers

decisively the largest move of any feedstock and the clearest price signal behind the grain-route capacity build-out documented in the cost-price gap section. FCI rice, by contrast, has been the most stable-priced route, moving only from INR 56.87 (ESY22) to INR 58.50 (ESY23 through ESY25) and then to INR 60.32 for ESY26, a deliberately modest, allocation-capped route rather than a price-driven one.

ESY26 feedstock allocation: the grain pivot

The 72:28 grain-sugar split inverts the original 55:45 policy roadmap.

NITI Aayog's 2021 Roadmap envisaged sugar-based feedstock contributing approximately 55% (5.50 billion litres) of the 10.16 billion litres required for E20 by ESY26, with grain-based routes contributing the balance. Actual allocation has moved sharply in the opposite direction: of the roughly 10.48-10.50 billion litres allocated/tendered in Cycle 1, only 2.89 billion litres (28%) went to sugar-based feedstock, with grain routes, led by maize, taking approximately 7.60 billion litres (72%).

INFOGRAPHIC 2

The roadmap said sugar would lead. Grain did.

Share of ethanol volume by feedstock route, in %. NITI Aayog roadmap (2021) against Oil Marketing Company allocation for ESY26 Cycle 1.

NITI Aayog roadmap, 2021

What E20 was planned to run on



ESY26 Cycle 1 allocation

What it actually runs on



Cane was to carry the majority of E20 volume.

Maize alone is 45.7% of total allocation.

The split inverted in four years. Grain took 7.60 billion litres of the ESY26 allocation against 2.89 billion for sugar-based routes. Cane-juice and B-heavy prices have been frozen since November 2022 while maize-route pricing rose 36%. Distilleries built on the 2021 roadmap now face a feedstock mix they did not underwrite.

Source: Roadmap for Ethanol Blending in India 2020-25, NITI Aayog, 2021; Oil Marketing Company allocation for ESY26 Cycle 1; Brickwork Research.

Table 8:
ESY26 Cycle-1 ethanol allocation by feedstock
(about 10.48 billion litres total)

Maize		4.79 billion litres (45.7%)
Surplus rice		2.33 billion litres (22.3%)
Sugarcane juice		1.66 billion litres (15.8%)
B-heavy molasses		1.11 billion litres (10.5%)
Damaged food grains		0.48 billion litres (4.5%)
C-heavy molasses		0.12 billion litres (1.2%)

Source: ChiniMandi, citing Ministry of Consumer Affairs, Food and Public Distribution data (Nov-2025).

Feedstock economics and growth drivers

Frozen prices against rising input costs make this a policy-driven margin squeeze.

The cost-price gap for cane-based ethanol

The Indian Sugar and Bio-Energy Manufacturers Association (ISMA) has flagged a widening cost-price gap for cane-based ethanol: the Fair and Remunerative Price (FRP) of sugarcane rose 16.5%, from INR 305/quintal (sugar season 2022-23) to INR 355/quintal (sugar season 2025-26), while ex-mill ethanol prices for sugarcane juice and B-heavy molasses have remained unchanged across the same three notified years (the eight-year trend section). ISMA estimated the cost of production at INR 70.7/litre for sugarcane-juice-based ethanol and INR 66.09/litre for B-heavy-molasses-based ethanol as of October 2025, against procurement prices of INR 65.61/litre and INR 60.73/litre respectively, a gap of approximately INR 5/litre on each route.

Table 9:
Estimated cost-price gap for cane-based ethanol, ESY26

Feedstock route	Estimated cost of production (INR/litre)	Procurement price (INR/litre)	Implied gap
Sugarcane juice / syrup	70.70	65.61	– INR 5.09
B-heavy molasses	66.09	60.73	– INR 5.36
Maize (grain-based)	Not separately disclosed - ISMA estimates grain margins turned favourable through FY26 as maize mandi prices corrected from 2024 peaks	71.86	Variable; improved through FY26

Source: ISMA statement reported in The Tribune (Oct-2025) and ChiniMandi; company disclosures.

State-level SAP, not central FRP, is the binding cost constraint for UP issuers.

The C-heavy-molasses route alone has avoided this margin compression, its two consecutive price increases (the eight-year trend section) outpacing cost inflation and confirming government's preference for steering distilleries toward C-heavy molasses and grain routes, away from sugarcane juice and B-heavy molasses. Beyond the central FRP, cane states also set their own State Advised Price (SAP), which mills must pay when higher, as is typical, Uttar Pradesh's 2025-26 SAP of INR 390-400/quintal (against a central FRP of INR 355/quintal) is the more binding cost constraint for its distilleries, since UP is this report's second-largest ethanol-capacity state.

DSCR sensitivity: what the gap means for a lender

Lenders underwrite on debt-service coverage, not PBDITA margin — scaling up does not fix a negative per-litre economics.

To translate the cost-price gap into a credit-appraisal metric, the table below models debt-service coverage for a representative 100 KLPD cane-based (sugarcane-juice route) plant at 60%, 75% and 90% utilisation, using Table 9 realisation and cost-of-production figures. Assumptions: 100 KLPD capacity operating 300 days/year (3 crore litres at full utilisation); INR 100 crore capex; 70:30 Debt:Equity (INR 70 crore debt); 8-year tenor with 1-year moratorium and 7-year equal-principal repayment; 9.5% annual interest — a standard, non-subsidy rate, as this report separately flagged subsidy-plus-moratorium expiry over FY26-FY28 as a refinancing event. These assumptions are Brickwork Research estimates, not company- or transaction-specific data.

Table 9A:
DSCR sensitivity for a representative 100 KLPD cane-based plant, sugarcane-juice route, ESY26

Utilisation	Volume (billion litres)	Revenue (INR billion)	Cost of production (INR billion)	Cash accruals before debt service (INR billion)	Average annual debt service (INR billion)	DSCR
60%	0.018	1.18	1.27	(0.092)	0.133	(0.69x)
70%	0.0225	1.48	1.59	(0.115)	0.133	(0.86x)
80%	0.027	1.77	1.91	(0.137)	0.133	(1.03x)

Source: Brickwork Research illustrative construction, built on Table 9 (ISMA cost-of-production and CCEA/PIB procurement-price data) with representative capex, financing and operating-day assumptions.

Feedstock economics and growth drivers

At current frozen prices, higher distillery utilization increases losses, requiring price revisions or alternative feedstocks.

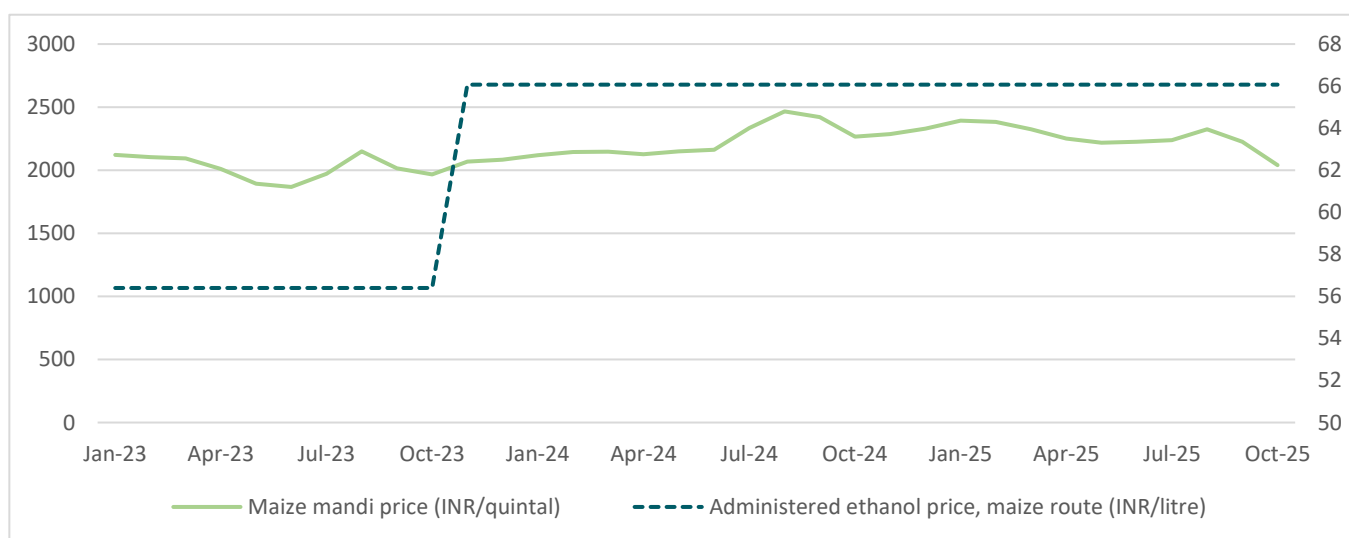
At the current administered-price freeze, DSCR is negative at every utilisation level, and deteriorates as utilisation rises, since each additional litre is sold below its fully loaded cost. This inverts the usual scale argument lenders apply to distillery expansion: for a plant running purely on the sugarcane-juice/B-heavy-molasses route at these prices, higher throughput widens the shortfall rather than curing it. Debt service on this route currently depends on blending with C-heavy-molasses output, which this section has shown has avoided the compression, or on an administered-price revision, not on utilisation alone.

Maize: the contested feedstock

Maize is both feedstock and food, and the steepest price riser of all routes.

Maize has emerged as the single largest ethanol feedstock by volume (45.7% of ESY26 Cycle-1 allocation) and the sector's most contested input. Ethanol-linked maize demand surged roughly fifteen-fold in three years, from approximately 0.8 million tonnes in ESY23 to 12.7 million tonnes in ESY25, and a joint FICCI-YES Bank study projects industry maize consumption of 20-25 million tonnes by FY31, within national maize demand rising from approximately 50 to approximately 72 million tonnes over the same period. Its administered ethanol price rose from INR 52.92/litre (ESY22) to INR 71.86/litre (ESY26), a 36% increase over four years and the steepest of any feedstock route (the eight-year trend section), which is the clearest single explanation for grain capacity's rapid build-out.

Figure 4:
Maize Mandi Price vs Administered Ethanol Price, Maize Route, FY23 to Date (INR/litre)



Source: CMIE, agmarknet.ceda.ashoka.edu.in

Maize prices rose sharply, pulled in imports, then corrected within one crop cycle.

Maize mandi prices rose to an estimated INR 26-30/kg through FY25, from a more typical INR 14,500-18,000/tonne base, squeezing the poultry industry, which takes approximately 60% of India's maize for feed, and the starch-processing industry. Industry sources reported a shortfall against ethanol-sector demand of an estimated 17 million tonnes through ESY25, pushing India from historical net exporter towards selective imports. Pricing has since partly corrected, with mandi prices in parts of Madhya Pradesh falling an estimated 21% in September 2025, showing how exposed grain-ethanol economics are to a single crop cycle and to the pace of OMC allocation.

Acreage shifts and recurring price volatility argue for a wider stress-test band.

Soyabean and pulses acreage has reportedly contracted at the margin as farmers shift to maize, an unintended cropping-pattern effect that policymakers and agri-value-chain lenders should monitor. Brickwork Research expects the maize-ethanol demand pool to keep widening the gap with non-ethanol maize uses through FY28-FY31 on the FICCI-YES Bank trajectory above. That argues for continued volatility around each crop cycle rather

Feedstock economics and growth drivers

Growth drivers remain structurally sound, but do not resolve the current oversupply.

Table 10:
Structural growth drivers for India's ethanol sector

Driver	Detail
Energy-security imperative	India imports approximately 85-88% of its crude oil requirement, so every percentage point of blending displaces petrol demand and import dependence. Cumulative forex savings attributed to the EBP Programme are estimated at INR 1.36-1.44 trillion since inception (Ministry of Petroleum and Natural Gas, 2025).
Policy ratchet and price certainty	Successive advancement of the blending deadline (2030 to ESY26), administered ex-mill pricing, a concessional 5% GST rate on EBP ethanol, and multiple Ethanol Interest Subvention Schemes (FY18-FY22, plus a dedicated cooperative-sector scheme from March 2025) have de-risked capacity creation for lenders and sponsors.
Farmer income and rural-economy support	Assured, government-administered offtake for sugarcane, maize and surplus rice gives farmers a price floor independent of global commodity cycles; the programme has reportedly generated over INR 1.18-1.58 trillion in direct farmer income since inception.
Geopolitical risk premium on crude	Episodic Middle East tensions and crude-price volatility have repeatedly sharpened policymaker urgency around ethanol, accelerating recent decisions such as the E100 vehicle-testing notification and the nationwide E20 mandate from 1 April 2026.
Vehicle-ecosystem build-out	Automakers (Maruti Suzuki, Tata Motors, Toyota, Hyundai) and two-wheeler manufacturers (Hero MotoCorp, Suzuki, TVS, Bajaj) are launching flex-fuel-capable models while OMCs build out E85/E100 dispensing infrastructure, creating a second demand vector beyond the E20 ceiling (see the “Emerging trends and new demand channels” chapter).
Co-product economics	Grain-based distilleries increasingly monetise co-products, Distillers' Dried Grains with Solubles and Distillers Corn Oil, as animal-feed ingredients, improving unit economics against a pure-ethanol revenue model.

Source: Ministry of Petroleum and Natural Gas; Press Information Bureau; company disclosures; Brickwork Research synthesis.

The vehicle ecosystem strengthens most as EBP policy levers near exhaustion.

than a one-off correction, and for lenders to stress-test grain-route cash flows against a wider maize-price band than cane routes require.

Why the growth case still holds even as the policy ceiling tightens

India's ethanol expansion rests on a convergence of structural, regulatory and macro-economic drivers that are unlikely to reverse over the medium term, even as the sector navigates its current oversupply phase.

Forward view: which drivers strengthen, and which fade

Brickwork Research expects the relative weight of these drivers to shift over FY27-FY30. Energy-security and farmer-income drivers should stay broadly constant in nominal terms, scaling with offtake volume rather than requiring new policy action. The policy-ratchet driver is largely spent at the EBP level, with the 20% mandate achieved and the next decision pending, so its forward contribution will increasingly come from adjacent policy: SAF targets and flex-fuel infrastructure funding. The vehicle-ecosystem driver should strengthen most, as the FFV parc moves from near-zero in 2026 towards meaningful scale by FY30, consistent with the E85/E100 rollout (see the “Government policies and initiatives” chapter).

Regional concentration and state-level risk

Concentration is easing gradually, but legacy cane states still dominate exposure.

Two states dominate, so a localised shock carries sector-wide implications.

Table 11
State-wise installed ethanol production capacity as of 30 June 2025 (about 18.25 billion litres/year across 499 distilleries)

Maharashtra		3.96 billion litres
Uttar Pradesh		3.31 billion litres
Karnataka		2.70 billion litres
Other states*		About 8.25 billion litres

Source: Ministry of Consumer Affairs, Food and Public Distribution, via ChiniMandi/BioEnergy Times (Aug-2025).
Note: Other states include Bihar, Tamil Nadu, Gujarat, Andhra Pradesh, Punjab, Haryana and the remaining producing states.

Two states hold roughly 40% of capacity, a material concentration risk.

Grain capacity's location flexibility should diversify the map without displacing incumbents.

An 18% to minus 4.4% swing in eight months shows real weather exposure.

Falling diversion estimates track the cane-route pricing squeeze, not sugar scarcity.

A cane heartland map that grain capacity is slowly redrawing

Ethanol distillation capacity in India remains heavily concentrated in the traditional sugarcane belt of western and northern India, though grain-based capacity is gradually de-concentrating the map toward states with strong maize and rice surpluses.

State-wise installed capacity

Installed distillation capacity remains heavily concentrated in a handful of cane- and grain-surplus states. The table below sets out the state-wise position as of 30 June 2025, ahead of the monsoon and investment-risk discussion that follows; the degree of concentration means a localised weather or policy shock in one or two states would carry outsized implications for the sector as a whole.

Maharashtra and Uttar Pradesh hold roughly 40% of installed capacity, reflecting their sugarcane dominance and large integrated sugar-cum-distillery complexes: Balrampur Chini, Triveni Engineering, Dwarikesh and Dhampur in UP; Shree Renuka, cooperatives and standalone distilleries in Maharashtra. Karnataka combines cane capacity (EID Parry, Bannari Amman) with a growing grain base. Bihar has emerged as a grain hub on maize and rice surpluses, while Tamil Nadu and Gujarat carry both.

Brickwork Research expects this regional map to shift gradually rather than dramatically: grain-based capacity is more location-flexible than cane-based capacity (tethered to sugar-mill catchment areas), so states with maize/rice surpluses but limited sugarcane footprint, Bihar, parts of Madhya Pradesh, eastern Uttar Pradesh, are likely to gain a disproportionate share of incremental capacity through FY30, even as Maharashtra and UP retain the absolute lead.

Sugar season 2025-26: a live illustration of monsoon risk

The 2025-26 sugar season (October-September) shows how exposed cane-route economics are to a single monsoon. All figures here are gross sugar production, that is, before sucrose is diverted to ethanol, which is the basis on which both ISMA and AISTA publish their season estimates. ISMA's first preliminary estimate in July 2025 put gross output at 34.90 million tonnes, up 18.3% on the 29.5 million tonnes of 2024-25 (Maharashtra 13.26, Uttar Pradesh 10.25, Karnataka 6.61). By March 2026 AISTA had put gross output at 28.3 million tonnes, a 4.4% decline on 2024-25 rather than the 18% rise first projected, and had cut its own Maharashtra estimate from 10.81 to 9.97 million, citing extraordinary climatic disruption across Maharashtra and Karnataka at the vegetative and maturation stages. A swing from plus 18% to minus 4.4% in eight months is a useful proxy for the volatility lenders should underwrite into cane-route cash-flow models.

The diversion estimate moved in the same direction, and for a different reason. Alongside its July 2025 projection ISMA said it hoped to divert 5.0 million tonnes of sucrose to ethanol in 2025-26, against 3.4 million actually diverted in 2024-25, but attached an explicit condition: that ethanol procurement prices be revised. They were not. By its February 2026 estimate ISMA had cut expected diversion to 3.1 million

Regional concentration and state-level risk

Feedstock-availability risk is additive to pricing risk, and treated as weather-specific.

tonnes. That sequence, a 38% reduction in expected cane-to-ethanol volume within a single season, is the clearest available evidence that the frozen sugarcane-juice and B-heavy-molasses prices analysed in the “Feedstock economics and growth drivers” chapter are already suppressing cane-route diversion in practice, not merely compressing margins on paper.

Lower-than-expected cane output directly reduces the molasses and juice available for ethanol diversion, even where OMC allocation and pricing remain favourable, a feedstock-availability risk that is distinct from, and additive to, the pricing risk discussed in the “Feedstock economics and growth drivers” chapter. Brickwork Research's working assumption is that this season's shortfall is weather-specific rather than a trend break, and it expects Maharashtra and Karnataka cane output to normalise towards the July-2025 trajectory by sugar season 2026-27, subject to monsoon performance; a repeat shortfall would be a stronger signal of a structural, climate-driven shift that lenders should price into multi-year cane-route distillery cash flows.

A narrower multi-year forecast band suggests cyclical, not structural, volatility.

State-wise sugar production and price outlook to 2029-30

CMIE's multi-year, state-wise model offers a structural counterpoint to the single-season crop estimates discussed above. All-India sugar production is projected to recover to 29.3 million tonnes in 2025-26 before settling into a 28.6-31.4 million tonne range through 2029-30, a materially narrower band than the 28.3 to 34.9 million tonne spread across ISMA's and AISTA's single-season gross estimates in the 2025-26 sugar season section, precisely because it is a structural multi-year model rather than a single-season crop forecast.

Table 12:
State-wise sugar production, actual and forecast, sugar seasons FY21 to FY30 ('000 tonnes)

Sugar season	All-India	Maharashtra	Uttar Pradesh	Karnataka	Tamil Nadu	Gujarat
FY21	31,200	10,700	11,100	4,500	900	1,000
FY22	35,760	13,720	10,199	6,038	1,247	1,208
FY23	32,815	10,590	10,484	5,657	1,482	998
FY24	31,964	11,096	10,414	5,189	1,074	928
FY25 (estimate)	26,120	8,076	9,229	4,150	625	780
FY26 (estimate)	29,349	10,607	9,749	5,300	825	765
FY27 (forecast)	28,566	9,771	9,684	5,235	851	1,009
FY28 (forecast)	30,800	10,758	10,244	5,985	879	702
FY29 (forecast)	31,450	11,413	10,204	6,346	873	904
FY30 (forecast)	30,732	11,600	10,107	6,282	835	895

Source: CMIE.

Note: Annual figures are for the October-September sugar season. Forecast years from 2025-26 are CMIE model projections, not official government or industry figures; the 2025-26 sugar season section gives ISMA's and AISTA's more recent single-season estimates, which differ on cut-off date and methodology.

Regional concentration and state-level risk

Limited price downside despite higher output shows diversion is tightening the sugar market.

The domestic sugar price forecast, INR 3,913.8/quintal for 2025-26, easing only modestly from a record INR 3,945.4 in 2024-25, then drifting to INR 3,995.0 (2026-27) and INR 4,022.7 by 2029-30, is itself a function of the diversion dynamic central to this report. Limited price downside despite higher output is attributed to government permitting continued diversion of sugarcane juice and B-heavy molasses to ethanol. Note that CMIE's model assumes 4.5 to 5.0 million tonnes of sugar-equivalent diversion in 2025-26 against 3.5 million in 2024-25, which is the trajectory the industry projected in mid-2025; ISMA's February 2026 estimate of 3.1 million tonnes (the 2025-26 sugar season section) is materially lower, so the price support from diversion is likely weaker than this forecast assumes.

Investment trends by state and ownership, 2025-26

Dropped projects far exceeding completions corroborates a genuine capital-expenditure slowdown.

On sugar-industry capex including co-generation and distillery components, INR 38.88 billion of new projects were announced in 2025-26 (11 projects), against INR 12.50 billion completed (5 projects) and INR 31.71 billion dropped (6 projects), leaving INR 242.68 billion outstanding across 78 projects. Ownership is overwhelmingly private: Indian private-sector projects account for INR 229.81 billion (94.7%), with a small foreign slice (INR 6.27 billion) and negligible central-government component (INR 6.60 billion).

Table 13:
Sugar-industry investment outstanding by state, FY26 (INR billion)

Karnataka		INR 131.66 billion (32 projects)
Maharashtra		INR 65.55 billion (28 projects)
Punjab		INR 10.99 billion (4 projects)
Odisha		INR 11.60 billion (2 projects)
Uttar Pradesh		INR 9.19 billion (7 projects)
Bihar		INR 9.08 billion (3 projects)
Haryana		INR 4.61 billion (2 projects)

Source: CMIE.

Note: Figures cover total sugar-industry project cost (including co-generation and distillery components of integrated complexes), not ethanol-distillery capital expenditure alone, and so are broader in scope than the bank/financial-institution loan-sanction figure (the Funding environment section) which is ethanol-specific.

Karnataka leads the next capacity wave, even as dropped projects outpace completions.

Karnataka's INR 131.66 billion of outstanding project cost, more than double Maharashtra's, stands out because Karnataka ranks only third in installed ethanol capacity. Investment there is running well ahead of its capacity share, suggesting a disproportionate part of the next capacity wave is being built there, consistent with its growing grain-based distillery base. The INR 31.71 billion of projects dropped in 2025-26, against just INR 12.50 billion completed, corroborates the capacity-slowdown thesis in the "Scenario analysis" chapter: more capital is being withdrawn from announced sugar and ethanol projects than commissioned this year.

Cane-crushing capacity: a parallel signal of the capex slowdown

An independent sugar-side metric corroborates the same capex-slowdown thesis.

India's cane-crushing capacity, broader and longer-running than the ethanol-specific distillation capacity in the capacity build-out section, but relevant since it bounds molasses/juice availability, has grown only marginally and is forecast to plateau from 2026-27. Capacity rose from 2.70 million tonnes/day (2020-21) to 2.89 (2025-26), but CMIE projects zero further addition in 2026-27 and 2027-28, independently corroborating the capacity-creation-phase-is-ending thesis developed for distillation capacity in the "Scenario analysis" chapter.

Government policies and initiatives

Growth is policy-engineered, making policy continuity the central credit variable.

From volume mandates to vehicle-led demand creation

India's ethanol sector is a product of deliberate, continuously recalibrated government policy. Unlike the demand-pull dynamics seen in, for instance, India's data-centre sector, ethanol demand growth has been almost entirely policy-engineered, through blending mandates, administered pricing, capital subsidy schemes and feedstock-allocation orders, making policy continuity itself the central credit variable for the sector.

Table 14:
Key government policies and initiatives shaping India's ethanol sector

Policy / initiative	Key provisions and impact
National Policy on Biofuels 2018 (amended 2022)	Foundational framework; advanced the 20% ethanol-blending target from 2030 to ESY26 and progressively widened approved feedstocks to include sugarcane juice/syrup, B- and C-heavy molasses, damaged food grains, surplus rice from the Food Corporation of India and maize.
Ethanol Blended Petrol (EBP) Programme	Operational mechanism: OMCs tender for ethanol in cycles each Ethanol Supply Year at administered, feedstock-differentiated prices, under Long-Term Offtake Agreements with Dedicated Ethanol Plants in deficit states.
Ethanol Interest Subvention Schemes, FY18-FY22	Interest subvention (five years, including a one-year moratorium) at 6% per annum or 50% of the bank rate, whichever is lower, for new distilleries, capacity expansion, or conversion to dual/multi-feed, the principal driver of the INR 420 billion-plus of bank/financial-institution lending to the sector.
Cooperative-sector distillery conversion scheme (6 March 2025)	Dedicated subvention scheme to help cooperative sugar mills convert sugarcane-only distilleries into multi-feedstock plants, broadening the lender-financeable base beyond private integrated players.
GST concession	Ethanol for the EBP Programme attracts a concessional 5% GST rate, versus materially higher rates on many comparable industrial inputs.
Unrestricted cane-based production order (Sep 2025)	Government lifted quantitative restrictions on ethanol production from sugarcane juice, syrup and all molasses grades for ESY26, shifting the policy lever from volume caps to price/allocation signalling.
Pradhan Mantri JI-VAN Yojana (2019, amended 2024)	Supports Advanced Biofuel (second-generation ethanol, SAF) projects using lignocellulosic feedstock; financial assistance up to INR 1.5 billion per commercial project and INR 150 million per demonstration project; timeline extended to 2028-29 under the 2024 amendment.
Surplus rice and sugar-diversion allocations	5.2 million tonnes of surplus rice from the Food Corporation of India allocated for ethanol in both ESY25 and ESY26 (up to 30 June 2026); sugar diversion of approximately 3.4-5.0 million tonnes permitted depending on season.
Union Budget 2026-27	No dedicated big-ticket ethanol announcement, unlike the tax holiday extended to data centres through 2047. Continuity measures include a full excise-duty exemption on the biogas component of biogas-blended CNG and a modest increase in bioenergy allocations. Industry bodies (AISTA) had sought a dedicated INR 25 billion SAF and green-hydrogen allocation plus a further INR 25 billion for distressed-mill bio-energy hubs; neither was separately granted.

Source: Press Information Bureau; Cabinet Committee on Economic Affairs notifications; Ministry of Consumer Affairs, Food and Public Distribution; PRS Legislative Research (Union Budget 2026-27 analysis).

Government policies and initiatives

New policy creates demand without requiring a fresh capacity-creation cycle.

Beyond E20: the flex-fuel and high-blend roadmap

With the E20 ceiling now broadly achieved, government policy focus has shifted to creating new, higher-blend demand outlets that do not require a fresh round of capacity creation, a deliberate response to the capacity overhang discussed in the “Demand and supply dynamics” chapter, the “Feedstock economics and growth drivers” chapter and the “Risks and challenges” chapter.

Table 15:
India's post-E20 flex-fuel and high-blend roadmap

Milestone	Status / timeline
Nationwide E20 mandate	In force from 1 April 2026 across regular petrol pumps.
E100 vehicle-testing and certification norms	Notified by the Ministry of Road Transport and Highways (April 2026), enabling flex-fuel vehicle homologation up to 100% ethanol.
E85 retail rollout	Launched in June 2026 at an initial 48 OMC outlets (Delhi-NCR and Mumbai-Pune-Nagpur corridor); targeted to scale to about 500 outlets by December 2026 and approximately 5,000 outlets by end-2027. E85 is priced at an approximate INR 20/litre discount to E20 petrol.
Flex-fuel vehicle launches	Maruti Suzuki WagonR Flex Fuel (India's first mass-market flex-fuel vehicle, commercial-segment launch); Hero MotoCorp and Suzuki flex-fuel two-wheelers; Tata Motors, Toyota (Innova Hycross) and Hyundai (Creta) prototypes/near-term launches signalled for 2026-27.
Aggregate blending ambition beyond E20	Government officials have referenced an aspirational 26% aggregate blending level by 2030-31, contingent on flex-fuel-vehicle penetration and E85/E100 infrastructure scale-up; no formal mandate yet legislated beyond E20.

Source: Business Today; DriveSpark; Argus Media; AutoRadar; Press Information Bureau (2025-26 reporting).

Brazil, the US, and India pursue ethanol blending, but India’s government-fixed pricing makes it an outlier.

International benchmark: how unusual is India's administered-price model?

Brazil and the United States, the world's two largest ethanol producers, both rely on tradable-credit market mechanisms rather than a government-fixed procurement price. Placing India's Ethanol Blended Petrol (EBP) programme alongside Brazil's RenovaBio and the US Renewable Fuel Standard (RFS) gives lenders and regulators a reference point this report has not yet made explicit: India's core price-setting mechanism, not its blending ambition, is the outlier.

Table 16:
International benchmark: EBP, RenovaBio and the Renewable Fuel Standard

Dimension	India (EBP)	Brazil (RenovaBio + blend mandate)	United States (RFS)
Mandate design	Physical blending target (E20 achieved ahead of the original 2025 target); OMCs procure fixed annual volumes from distilleries via centrally allocated tenders	Two-layer design: a physical blend mandate (anhydrous ethanol in gasoline, temporarily raised to 32% from August 2026, within a legislated 22-35% band) plus RenovaBio's separate annual decarbonisation target for fuel distributors	Renewable Volume Obligations (RVOs) set annually by the EPA in RIN-equivalent gallons; implied conventional (mostly corn) ethanol volume held at 15 billion gallons for 2026 and 2027, with total RFS volume at 26.81 billion gallons for 2026

Government policies and initiatives

Dimension	India (EBP)	Brazil (RenovaBio + blend mandate)	United States (RFS)
Price mechanism	Administered: CCEA fixes route-specific ex-mill procurement prices, revised infrequently (the “eight-year trend” and “cost-price gap” sections of this report); producers sell at the fixed price regardless of cost movements	Market-based: distributors must acquire tradable Decarbonisation Credits (CBIOS), each representing 1 tonne of CO2 avoided, issued by certified producers and traded on the stock exchange; price floats with credit supply and demand, not administered	Market-based: obligated refiners/importers meet their RVO either by physically blending fuel or by acquiring tradable Renewable Identification Numbers (RINs); RIN prices float and have risen toward record levels in 2026 on higher blending mandates
Feedstock mix	Grain-led and inverting from design: NITI Aayog's 2021 roadmap envisaged a 55:45 sugar-to-grain split; actual ESY26 allocation was 72% grain-based against 28% sugar-based	Sugarcane-dominant but shifting: sugarcane still accounts for roughly 70% of ethanol output, with corn-based ethanol rising toward 30% of the 2026-27 crop as Centre-West processing capacity expands	Corn-dominant and structurally stable: corn has historically supplied over 90% of US ethanol feedstock, with cellulosic and advanced biofuels a small, EPA-mandated minority of total RFS volume

Source: Ministry of Petroleum and Natural Gas and PIB (EBP); Brazil's National Energy Policy Council (CNPE), National Agency of Petroleum, Natural Gas and Biofuels (ANP) and UNICA (RenovaBio and blend mandate); US Environmental Protection Agency RFS Standards for 2026-2027 and US Department of Agriculture (RFS and corn-ethanol feedstock share); reporting as of 2025-26.

Note: RenovaBio and the RFS are structurally different instruments from EBP even though this table places them side by side for comparison — both are credit-trading systems layered on top of (or instead of) a fixed blend percentage, whereas EBP couples the blend mandate directly to an administered price. That structural difference, not the blending percentages themselves, is why India's cost-price gap (discussed earlier in this chapter's preceding section) has no direct parallel in either benchmark market: a C BIO or RIN price can rise to absorb a feedstock-cost increase, whereas an administered ex-mill price cannot adjust until the next CCEA notification.

India's fixed price revisions, not market mechanisms, dictate ethanol margin risk and lender returns.

For lenders, the implication is that India's route-level margin risk is a policy-design feature, not a temporary mispricing that a market mechanism will correct on its own; the CCEA price-revision cycle referenced in the “cost-price gap” section is functionally the only lever RenovaBio's or the RFS's tradable-credit markets would otherwise supply automatically.

Forward view: the next policy decision points

The Bull case depends on policy follow-through, not physical or financial limits.

Brickwork Research sees three policy decision points that will determine how much of the demand scenario in the “Scenario analysis” chapter is realised. First, a formal mandate beyond E20 would be the single largest capacity-utilisation catalyst; the Bull case (30% by FY31) shows this is achievable within existing feedstock and fleet constraints, not merely aspirational. Second, a CCEA revision of the frozen sugarcane-juice and B-heavy-molasses prices (the eight-year trend section) is the most direct lever to rebalance the cane-versus-grain tilt without new legislation. Third, a national SAF blending policy and Alcohol-to-Jet pathway (see the “Emerging trends and new demand channels” chapter) would open a higher-value offtake channel, still at the target-setting stage. The Base case assumes gradual progress on the first and third through FY27-FY29, with the second remaining an annual ISMA-government negotiation; faster progress on all three separates the Bull case from the Base case.

Emerging trends and new demand channels

The narrative is shifting from capacity creation to monetisation and diversification.

Beyond E20: aviation fuel, advanced biofuels and the next demand curve

With the headline E20 target effectively achieved, the sector's growth narrative is shifting from capacity creation to capacity monetisation and diversification. Four trends stand out for lenders and investors tracking the next credit cycle.

Table 17:
Emerging trends in the ethanol industry

Trend	Detail
Sustainable Aviation Fuel via Alcohol-to-Jet	India has approved SAF blending targets of 1% by 2027, 2% by 2028 and 5% by 2030 for international flights (per ICAO's CORSIA mandate), with demand rising from approximately 0.062 million tonnes (2027) to approximately 0.38 million tonnes (2030). Indian Oil's Panipat and Bharat Petroleum's Mumbai refineries are commissioning SAF capacity through 2026; Alcohol-to-Jet is one of several pathways under evaluation and would create a new, higher-value offtake for surplus ethanol capacity. A national SAF policy and techno-commercial roadmap to 2050 is under preparation by the Ministries of Petroleum and Natural Gas and Civil Aviation. Brickwork Research views SAF as the highest-value forward catalyst here, since it draws on distillation infrastructure already built for EBP rather than requiring a separate capital cycle.
Second-generation ethanol	Converts non-food agri-residue (rice and wheat straw, bagasse, corn cobs) into ethanol, sidestepping the food-versus-fuel tension affecting maize and sugar routes. India's first commercial second-generation plant (Indian Oil, Panipat; Praj Industries technology) has faced sustained ramp-up problems, operating at 62% of design capacity as of December 2025 against an approved capital cost of INR 9.09 billion (plus or minus 10%) and cumulative spend of INR 9.84 billion, illustrating the technology-risk premium still attached to second-generation routes relative to mature molasses and grain routes. Further plants are under execution at Numaligarh (Assam, bamboo-based, inaugurated September 2025), Bargarh (Odisha) and Bathinda (Punjab).
Compressed Biogas diversification	Many EPC players and some distillery operators are diversifying into Compressed Biogas under the SATAT scheme (120 projects commissioned as of December 2024 against an ambition of 5,000) and the proposed Compressed Biogas Blending Obligation (1% in PNG/CNG from FY26, rising to 5% by FY29), a parallel gas-grade avenue drawing on overlapping agri-residue and distillery-waste feedstock.
Multi-feed conversion and oversupply management	Operators are converting single-feedstock distilleries to dual and multi-feed configurations (molasses plus grain) to hedge feedstock-price and availability risk and to flex towards whichever route is more remunerative in a given tender cycle, a direct response to the ESY26 oversubscription and price misalignment discussed in the "Feedstock economics and growth drivers" chapter and the "Risks and challenges" chapter. The Grain Ethanol Manufacturers Association has also called for a temporary freeze on fresh grain-based capacity approvals to protect utilisation levels.

Source: Press Information Bureau; ICAO CORSIA framework; company/Lok Sabha disclosures on the Panipat second-generation plant; Praj Industries investor disclosures; Advanced BioFuels USA; GKTodday; Argus Media (2025-26).

Forward trajectory: which trends scale fastest

Near-term diversification revenue will come from proven technologies, not SAF or 2G.

Sequencing matters for credit analysis. Brickwork Research expects Compressed Biogas and multi-feed conversion, using largely proven technology, to scale fastest over FY28, followed by SAF offtake as mandates step up through 2030, with second-generation ethanol slowest given the Panipat plant's multi-year ramp-up. For lenders, near-term diversification revenue is more likely from Compressed Biogas and flexible-feedstock operations than from second-generation or SAF-linked capex, which still carries meaningful execution risk.

Competitive landscape and leading producers

Pure-play ethanol credit risk is hard to isolate within diversified producers.

A sugar and engineering business first, an ethanol business second

India's ethanol-producer landscape spans large, listed, integrated sugar-cum-distillery companies; standalone grain-based distilleries; cooperative sugar mills; and the technology/EPC layer that builds and equips distillery and biofuel capacity for all of the above. The competitive set differs meaningfully from globally comparable markets in that almost no large pure-play ethanol company exists in isolation, ethanol is almost always one segment of a diversified sugar, agri-processing or engineering business.

Leading producers

The producer table anchors the capital-deployment and market-share discussion.

The table below maps the sector's principal producers against their primary feedstock route and technology/EPC partner, providing the company-level anchor for the capital-deployment and market-share discussion that follows.

Table 18:
Leading Indian ethanol producers and the principal technology/EPC provider

Company	Ethanol/distillery capacity	Feedstock mix	Notes
Indian Potash Ltd.	Not a direct ethanol producer — large-scale sugar/molasses trading and marketing entity with growing distillery-linked exposure	Trading and marketing across feedstock routes	Rose from a near-zero historical market share to 7.95% of industry sugar revenue in 2024-25, the sharpest gain of any entity in the dataset (the capital deployment section).
Shree Renuka Sugars	About 1,250 kilolitres per day	Sugarcane juice-led; direct-juice fermentation route	India's largest single-operator distillery capacity by most industry rankings; higher financial leverage and beta than peers
Balrampur Chini Mills	1,050 kilolitres per day across five distilleries (Balrampur, Babhnan, Mankapur, Gularia, Maizapur); targeting over 1,050 kilolitres per day	Multi-feed - cane juice, B-/C-heavy molasses and grains	FY26 standalone revenue INR 63.08 billion (up 15.8% year-on-year); distillery segment about 25-26% of revenue; targeting approximately 40% of revenue from distillery by FY27; raising INR 4.5 billion via preferential issue
Triveni Engineering and Industries	520 kilolitres per day, expanding toward 660 kilolitres per day	52% grain-based (rice/maize), 48% sugarcane-based (FY25)	Q3 FY26 distillery segment turnaround (profit after tax up 82.7% year-on-year) on lower maize procurement costs; diversified into power-transmission gears and water solutions
EID Parry (Murugappa Group)	120 kilolitres per day (FY25, post 45 kilolitres-per-day expansion)	B-/C-heavy molasses, syrup and grains	Q3 FY26 consolidated revenue INR 103.16 billion (up 18.3% year-on-year, largely Coromandel International-driven); distillery realisation about INR 67.75/litre year-to-date December 2025 (up 5% year-on-year); standalone sugar/distillery business narrowing losses

Competitive landscape and leading producers

Company	Ethanol/distillery capacity	Feedstock mix	Notes
Bajaj Hindusthan Sugar	Large Uttar Pradesh-based cane distillery capacity (company-specific figure not separately disclosed in public filings reviewed)	Cane juice and molasses-based	One of India's largest sugar-crushing groups; significant ethanol supplier to OMCs
Dalmia Bharat Sugar and Industries, Dhampur Sugar, Dwarikesh Sugar, Bannari Amman Sugars	Mid-sized integrated capacity (company-specific)	Predominantly cane-based, Uttar Pradesh/Maharashtra/Tamil Nadu	Mid-cap integrated sugar-ethanol producers with growing distillery contribution to revenue mix
Praj Industries	Not applicable — technology/EPC provider, not a producer	Multi-feed plant design; second-generation, Compressed Biogas, SAF and biopolymer platforms	Q3 FY26 order book about INR 45 billion; bioenergy about 77% of revenue; FY25 return on capital employed about 23%; revenue/EBITDA compound annual growth rate about 11%/16% (FY23-FY25); annual revenue about INR 34 billion; global clients include Indian Oil Corporation, Bharat Petroleum and Brazil's Petrobras

Source: Company investor presentations and exchange filings; Equitymaster; Businesses Estate; Whalesbook (2025-26).

Note: Capacity and financial figures as publicly disclosed through Q3/FY26 results and industry trade press; figures for unlisted/cooperative-sector capacity are not separately disclosed and are excluded.

Capital deployment and capacity expansion

Interest subvention, not organic capital, catalysed private investment this cycle.

Capital intensity in the ethanol sector is materially lower per unit of revenue than capital-heavy infrastructure plays such as data centres, but the financing model is comparable in one respect: government-backed interest subvention (see the “Government policies and initiatives” chapter) has been the principal catalyst for private capital deployment, with banks and financial institutions sanctioning over INR 420 billion against an industry-estimated INR 400 billion-plus of actual investment since 2018.

Company plans show the pivot from distillation capacity towards adjacent bioeconomy revenue.

Company plans show the same pattern. Balrampur Chini Mills targets over 1,050 kilolitres-per-day distillery capacity by FY27 and approximately 40% of revenue from the distillery segment, alongside pilot investments in bio-CNG and green methanol. Triveni Engineering is expanding from 520 to 660 kilolitres per day, using multi-feed flexibility to switch between molasses and grain as relative economics shift. EID Parry is deploying INR 28.5 billion on India's first industrial-scale Polylactic Acid bioplastics plant in Uttar Pradesh (commissioning targeted October 2026), monetising the sugar and starch chains beyond ethanol. Praj Industries is investing in the Mangalore GenX equipment facility and in SAF, marine-biofuel, biopolymer and green-hydrogen platforms, repositioning from first-generation EPC towards a bioeconomy platform.

Capex is rotating from greenfield distillation to debottlenecking, a maturity signal.

Forward view: Brickwork Research expects capital expenditure announcements over FY27-FY29 to skew toward debottlenecking, co-product monetisation (DDGS, bio-CNG, bioplastics) and SAF-readiness rather than headline distillation-capacity expansion, consistent with the sector's shift from capacity creation to capacity monetisation flagged throughout this report.

Market share evolution: a notable new entrant

One trading entity's share gain disrupts two decades of market stability.

Company-wise market share by sugar-industry revenue was stable for two decades before a sharp recent disruption. Indian Potash Ltd., historically a fertiliser-import and marketing entity with a small sugar-trading presence, held under 1% share as recently as FY16 and reached 7.95% in FY25, the largest one-year gain of any entity. Shree Renuka Sugars shows the more typical pattern of gradual erosion, from a FY10 peak of 9.36% to 5.06% in FY25.

Competitive landscape and leading producers

Table 19:

Market share of selected companies in the Indian sugar industry, by revenue (per cent)

Company	FY21	FY22	FY23	FY24	FY25
Indian Potash Ltd.	-	0.91	1.06	0.96	-
Bajaj Hindusthan Sugar Ltd.	4.63	3.42	3.23	3.22	3.13
Shree Renuka Sugars Ltd.	3.42	3.71	4.65	6.13	5.87
Parry Sugars Refinery India Pvt. Ltd.	1.73	1.51	1.84	2.8	2.83
Balrampur Chini Mills Ltd.	2.83	2.73	2.12	2.31	2.48
Triveni Engineering and Inds. Ltd.	2.70	2.25	2.43	2.11	2.35
E I D-Parry (India) Ltd.	1.17	1.41	1.32	1.2	0.72
Dalmia Bharat Sugar and Inds. Ltd.	1.49	1.58	1.36	1.07	1.63
Dhampur Sugar Mills Ltd.	2.37	0.82	0.88	0.62	0.72
Bannari Amman Sugars Ltd.	0.87	1.18	1.22	1.05	0.83
Dwarikesh Sugar Inds. Ltd.	1.24	1.20	0.96	0.66	0.61

Source: CMIE.

Note: CMIE computes market share on aggregate sugar-industry sales across its full company sample, not on ethanol revenue. CMIE reports E I D-Parry (India) Ltd. and its dedicated sugar and distillery subsidiary Parry Sugars Refinery India Pvt. Ltd. separately; the two should not be added together.

Rising productivity partly reflects a favourable pricing cycle, not durable efficiency.

Industry structure: scale and labour intensity

Annual Survey of Industries data for sugar manufacturing, the broader universe rather than the ethanol sub-segment, shows a large, labour-intensive industry: 802 registered factories employing 0.25 million people (0.18 million production workers) and deploying INR 1.84 trillion of invested capital as of FY24, up from 737 factories and 0.23 million employees in FY22. Net value added per employee roughly tripled over the decade, from INR 0.23 million to INR 0.70 million.

Company-level financial benchmarking

A standing thirteen-company panel enables genuine year-over-year comparability.

Panel construction and coverage

This chapter sets out the company-level evidence base that the credit judgements in the chapters that follow rest on. Brickwork Research has built a multi-year, multi-company financial panel from the standalone financials for thirteen listed sugar, ethanol and agri-processing companies, tracked consistently across FY22 to FY25. No listed company in India reports distillery operations as a standalone segment, so these are corporate financials that embed distillery results within a larger sugar-and-engineering business (see the “Competitive landscape and leading producers” chapter). This Tracked Panel of thirteen companies will be refreshed and carried forward in subsequent editions of this report.

Net margin and operating margin, FY22 to FY25

Thin net margins despite better operating margins point to non-operating cost burdens.

The four-year run below shows how unevenly profitability has tracked the capacity build-out, with net margins for most companies in the mid-single digits even as operating margins moved into the low teens for stronger integrated players. Indian Potash's divergence between thin net margins and deeply negative operating margins reflects its trading-led business rather than distillery economics; Triveni Engineering's FY23 spike is a one-off gain, not a trend.

Table 20

Net margin and operating profit margin by company, FY22 to FY25 (per cent)

Company	Metric	FY22	FY23	FY24	FY25
Indian Potash Ltd.	Net margin	2.95	2.01	2.92	5.85
	Operating margin	-48.25	-72.69	3.33	5.39
Bajaj Hindusthan Sugar Ltd.	Net margin	-3.89	-2.35	-1.47	0.08
	Operating margin	4.18	4.04	5.71	5.36
Shree Renuka Sugars Ltd.	Net margin	-2.08	-1.93	-4.38	-2.27
	Operating margin	7.05	7.77	6.36	3.20
Balrampur Chini Mills Ltd.	Net margin	9.41	5.84	7.06	6.18
	Operating margin	14.84	11.91	14.43	13.36
Triveni Engineering and Inds. Ltd.	Net margin	8.23	23.92†	6.15	3.54
	Operating margin	11.69	9.41	10.31	7.27
Dalmia Bharat Sugar and Inds. Ltd.	Net margin	8.23	6.81	7.17	9.60
	Operating margin	15.01	13.95	14.90	13.20
E I D-Parry (India) Ltd.	Net margin	10.36	9.66	2.80	-0.86
	Operating margin	10.19	10.22	5.55	-0.08
Bannari Amman Sugars Ltd.	Net margin	4.12	5.60	6.93	4.54
	Operating margin	10.22	13.48	14.26	12.62
Dhampur Sugar Mills Ltd.	Net margin	6.60	5.09	4.32	1.82
	Operating margin	13.79	10.69	10.06	6.30
Dwarikesh Sugar Inds. Ltd.	Net margin	7.82	4.80	4.82	1.70
	Operating margin	14.63	10.16	11.92	8.35
D C M Shriram Inds. Ltd.	Net margin	2.71	2.40	5.28	4.36
	Operating margin	6.73	6.12	10.81	9.73
Avadh Sugar and Energy Ltd.	Net margin	4.48	3.34	4.68	3.27
	Operating margin	11.04	9.09	11.37	9.59

Company-level financial benchmarking

Company	Metric	FY22	FY23	FY24	FY25
Uttam Sugar Mills Ltd.	Net margin	6.43	5.97	6.44	5.05
	Operating margin	13.35	11.89	12.99	12.00

Source: CMIE.

Note: FY26 is excluded as not yet fully reported for most companies at the editorial cut-off, except Dalmia Bharat Sugar and Inds. Ltd., which CMIE shows at 6.37% net and 12.18% operating margin on a partial year. Indian Potash Ltd.'s sharply negative FY22 and FY23 operating margins, alongside small positive net margins, reflect its trading-led cost structure (the FY25 cost structure section) rather than core distillery economics.

†Triveni Engineering's FY23 net margin (23.92%) includes a large one-off gain and is not representative.

Liquidity, gearing and return ratios, FY25

Half the sample carries thin liquidity buffers despite improving aggregate ratios.

The cross-sectional snapshot below, all ratios at financial year-end March 2025, shows the wide dispersion in balance-sheet strength beneath the industry-aggregate figures. Quick ratios below 0.4 for half the sample point to thin short-term liquidity across much of the sector even in a year of improving aggregate ratios, while return on capital employed ranges from minus 7.10% (Shree Renuka Sugars) to 9.57% (Dalmia Bharat Sugar and Industries).

Table 21:

Company-wise liquidity, gearing and return ratios, financial year ended March 2025

Company	Quick ratio	Current ratio	Debt/equity	Interest cover	PBDITA margin (%)	Return on capital employed (%)
Indian Potash Ltd.	0.74	1.13	0.71	5.88	5.39	11.14
Bajaj Hindusthan Sugar Ltd.	0.24	0.66	1.30	1.05	5.36	0.07
Shree Renuka Sugars Ltd.	0.09	0.68	NM*	0.57	3.20	-7.10
Balrampur Chini Mills Ltd.	0.09	1.27	0.73	5.11	13.36	5.86
Triveni Engineering and Inds. Ltd.	0.36	1.56	0.55	5.12	7.27	5.26
Dalmia Bharat Sugar and Inds. Ltd.	0.56	2.55	0.39	6.45	13.20	9.57
Parry Sugars Refinery India Pvt. Ltd.	0.19	0.54	NM*	NM*	-0.38	NM*
Bannari Amman Sugars Ltd.	0.38	3.16	0.08	9.99	12.62	3.99
Dhampur Sugar Mills Ltd.	0.32	1.25	0.82	2.32	6.30	2.34
Dwarikesh Sugar Inds. Ltd.	0.32	1.87	0.63	3.15	8.35	1.80
D C M Shriram Inds. Ltd.	0.54	1.21	0.59	5.06	9.73	6.62
Avadh Sugar and Energy Ltd.	0.09	1.16	1.34	2.53	9.59	3.73
Uttam Sugar Mills Ltd.	0.10	1.13	1.03	3.29	12.00	5.96

Source: CMIE.

* NM = not meaningful/not disclosed in the source extract, typically reflecting a negative or near-zero net-worth or capital-employed denominator for that company in the period.

Company-level financial benchmarking

Bannari Amman and Dalmia Bharat anchor the strong end of the panel.

Cane-route operators sit weakest; Indian Potash's trading model is not comparable.

With 60-85% of cost in raw material, there is little room to absorb shocks.

Bannari Amman Sugars combines the sector's lowest gearing (debt/equity 0.08) with its highest interest cover (9.99 times), the strongest standalone balance-sheet profile in the panel, consistent with its conservative, predominantly cane-based but well-capitalised operating model. Dalmia Bharat Sugar and Industries pairs low gearing (0.39) with the panel's best current ratio (2.55) and return on capital employed (9.57%), the most balanced combination of liquidity, leverage and returns in the sample.

Shree Renuka Sugars and Parry Sugars Refinery India sit at the weaker end of the panel on most metrics, with quick ratios below 0.2 and negative or not-meaningful profitability and return figures, both being primarily cane and molasses-route operators exposed to the cost-price gap. Indian Potash sits apart again: relatively strong return on capital employed (11.14%) despite volatile and sometimes sharply negative operating margins (the margin-trend section) is consistent with a trading and marketing-led model rather than a distillery-asset-heavy one. That is a different risk profile from the integrated producers here, and the reason Brickwork Research treats its ratios as not directly comparable.

Cost structure, financial year ended March 2025

Raw-material cost is structurally the largest operating expenses line item for every integrated producer, typically 60-85%, reflecting the commodity-intensive nature of cane/molasses/grain procurement relative to conversion costs. Power-and-fuel cost, by contrast, is consistently small (generally under 1% of operating expenses for cane/grain-led producers, since most complexes generate their own power via bagasse co-generation), except for a few companies with a higher purchased-power or chemicals-linked cost base.

Table 22:

Company-wise cost distribution, financial year ended March 2025 (per cent)

Company	Total opex / sales	Raw material cost (% of opex)	Power and fuel cost (% of opex)	Employee cost (% of opex)
Indian Potash Ltd.	94.82	6.67	0.11	0.60
Bajaj Hindusthan Sugar Ltd.	94.61	80.91	0.26	7.32
Shree Renuka Sugars Ltd.	96.58	84.15	3.83	1.97
Balrampur Chini Mills Ltd.	87.24	73.23	0.06	7.12
Triveni Engineering and Inds. Ltd.	92.84	61.50	0.58	6.14
Dalmia Bharat Sugar and Inds. Ltd.	86.70	73.82	0.42	5.76
Parry Sugars Refinery India Pvt. Ltd.	100.43	95.19	0.12	0.54
Bannari Amman Sugars Ltd.	86.44	64.57	4.01	8.87
Dhampur Sugar Mills Ltd.	93.72	58.48	0.11	3.02
Dwarikesh Sugar Inds. Ltd.	91.69	74.69	0.13	8.21
D C M Shriram Inds. Ltd.	90.40	65.03	5.90	9.74
Avadh Sugar and Energy Ltd.	90.03	77.24	0.09	4.49
Uttam Sugar Mills Ltd.	89.22	76.47	0.25	5.58

Source: CMIE.

Note: opex = operating expenses

Company-level financial benchmarking

Operating expenses exceeding sales is a clear red flag, consistent with disclosed losses.

Cost-share outliers reflect diversification and trading models, not operating inefficiency.

Parry Sugars Refinery India's total operating expenses/sales ratio of 100.43%, the only figure in the panel above 100%, means the company's operating expenditure alone exceeded its sales in financial year 2024-25, consistent with the standalone net losses at the EID Parry sugar/distillery business referenced in the Leading producers section.

D C M Shriram and Bannari Amman carry the panel's highest power-and-fuel cost shares (5.9% and 4%) alongside its highest employee-cost shares (9.7% and 8.9%), consistent with both companies' more diversified, less purely agro-commodity models. At the other extreme, Indian Potash's raw-material cost share (6.67% of operating expenses) is an outlier low against every distillery-owning peer (58-95%), confirming a trading and marketing cost structure rather than feedstock-intensive manufacturing, and reinforcing the caution flagged in the FY25 liquidity and gearing section against comparing its ratios directly with the integrated producers.

Credit outlook

Aggregate stability now masks a widening gap between strong and weak issuers.

Stable on the surface, increasingly two-tier underneath

Brickwork Research's outlook for the ethanol sector is stable, but the aggregate view increasingly conceals a two-tier market. Diversified, multi-feedstock producers with established Oil Marketing Company relationships continue to enjoy assured offtake, improving leverage and adequate liquidity, while smaller single-feedstock distilleries, particularly pure cane-juice operators, face margin compression, allocation-share risk and utilisation running below debt-service break-even. The summary below sets out that outlook before the section-by-section credit analysis that follows.

Brickwork Ratings - sector credit outlook: Stable, with rising bifurcation

India's ethanol sector carries a Stable credit outlook, underpinned by government-administered offtake and pricing, a fully achieved blending mandate and a large sanctioned lending base. Brickwork Research expects the bifurcation described above to widen through FY28, before policy intervention (the policy decision points section) potentially compresses it again.

Policy assures volume, not allocation: risk shifts to tender-share retention.

Revenue and offtake visibility

Ethanol revenue visibility is high in volume terms, with OMC offtake running through tendered, government-administered allocation under Long-Term Offtake Agreements, but is now showing early signs of allocation-share rather than price volatility. The ESY26 Cycle-1 oversubscription (1.7 times) means individual producers face execution and allocation risk even where aggregate demand is policy-assured. Producers with established OMC relationships, multi-feed flexibility and consistent compliance records are better placed to retain share.

Leverage looks moderate at steady state but hides risks unseen at sanction.

Leverage and capital structure

Distillery capacity creation has been financed predominantly through bank/financial-institution term debt under the Ethanol Interest Subvention Scheme (approximately 6% per annum or 50% of the bank rate, whichever is lower, for five years including a one-year moratorium). Reported sanctions exceed INR 420 billion as of 31 October 2025. Leverage at the standalone-distillery level is typically moderate once a plant reaches steady-state utilisation but is sensitive to two factors not fully visible at sanction stage: feedstock-price gaps compressing margins below appraisal-stage assumptions (see the "Feedstock economics and growth drivers" chapter), and allocation-share risk in an oversubscribed tender market that can leave a plant below its debt-service break-even utilisation rate.

Aggregate leverage and interest cover corroborate the deleveraging thesis.

The industry-aggregate ratio model below, which covers the broader sugar industry rather than ethanol distilleries alone, is the most complete sector-wide credit-ratio series available and corroborates the deleveraging trajectory Brickwork Research expects qualitatively. Debt-to-equity nearly halved from 1.56 (FY24) to 0.91 (FY25) and is projected to fall to 0.59 by 2030-31, while interest cover improves from 2.40 to a projected 3.04-3.32 over 2025-27 before stabilising at approximately 3.2 times.

Table 23

Sugar-industry aggregate leverage, liquidity and return ratios, actual and CMIE-forecast, FY23 to FY31

Financial year	Debt/equity (times)	Interest cover (times)	Current ratio (times)	Return on net worth (%)	Return on capital employed (%)
FY23	1.68	1.85	0.98	7.83	2.78
FY24	1.56	1.91	1.00	6.94	2.72
FY25	0.91	2.40	1.12	7.20	3.71

Credit outlook

Financial year	Debt/equity (times)	Interest cover (times)	Current ratio (times)	Return on net worth (%)	Return on capital employed (%)
FY26 (forecast)	0.84	3.04	1.02	8.83	4.68
FY27 (forecast)	0.77	3.32	1.06	9.11	5.05
FY28 (forecast)	0.71	3.21	1.08	8.30	4.77
FY29 (forecast)	0.67	3.21	1.09	7.62	4.51
FY30 (forecast)	0.63	3.17	1.11	6.91	4.20
FY31 (forecast)	0.59	3.19	1.12	6.53	4.07

Source: CMIE.

Note: Figures are industry-aggregate (broader sugar-industry sample, not ethanol distilleries in isolation) and forecast years are CMIE's model projections, not official or company guidance.

Sharp single-year deleveraging likely reflects equity infusions, not repayment alone.

Three features are worth flagging. Projected return on capital employed and return on net worth peak in FY27 (5.05% and 9.11%) before declining through FY31, consistent with this report's thesis that the easiest EBP build-out gains are being realised now, with returns normalising as competition for allocation share intensifies (the revenue and offtake visibility section). The current ratio dips slightly in FY26 (1.02, from 1.12) before recovering, a small liquidity wobble matching the ESY26 oversubscription and cost-price-gap pressures. And the pace of deleveraging, debt/equity nearly halving between FY24 and FY25, is steep enough that Brickwork Research would expect part of it to reflect equity infusions and project-finance structuring, such as Balrampur Chini's preferential issue, rather than debt repayment alone.

Funding environment

Lenders now underwrite on feedstock mix and allocation record, not capacity alone.

The funding environment remains supportive in policy terms: priority-sector-adjacent treatment, interest subvention and the March 2025 cooperative-conversion scheme all continue channelling credit to the sector. But lenders increasingly differentiate on feedstock mix and OMC-allocation record rather than treating ethanol capacity as a homogeneous asset class. ISMA's warning that sub-50% utilisation could threaten viability, loan repayment and operational stability for cane-based distilleries, and the Grain Ethanol Manufacturers Association's call for a freeze on new grain capacity, both amount to asking lenders and policymakers to recognise that the financeable capacity base is now larger than the policy-capped revenue pool servicing it.

Subvention and moratorium expiry over FY26-FY28 is a distinct refinancing event.

Most distillery capacity has been financed under the Ethanol Interest Subvention Scheme via NABARD: 6% per annum interest subvention, or 50% of the applicable rate if lower, for five years including a one-year moratorium. Eligibility is tied to environmental compliance, since new or expanded molasses-based distilleries must install CPCB-approved Zero Liquid Discharge to qualify, linking financing directly to that compliance risk. INR 15.35 billion had been released to NABARD as of the last disclosed tranche. The five-year clock started on the bulk of the FY21-FY23 build-out, so a meaningful share of this financing approaches moratorium-plus-subvention expiry over FY26-FY28. Lenders should model that refinancing and interest-cost step-up as a distinct near-term event, separate from the feedstock-price and blending-policy risks treated as primary here.

Unit economics: cost structure and break-even sensitivity for grain-route distilleries

Absent plant-level disclosure, the framework uses two companies' actual cost data.

Grain-route distilleries do not disclose plant-level operating costs at the granularity a bottom-up unit-economics model needs, and this report does not present precision it cannot source. This sub-section instead builds a break-even and sensitivity framework from the disclosed cost structure of the two grain-route companies in the tracked panel, Bajaj Hindusthan Sugar and Triveni Engineering, using their reported raw-material cost share (the FY25 cost structure section) and interest cover (the FY25 liquidity and gearing section) as the base case.

Credit outlook

Identical feedstock exposure, very different cost-inflation tolerance by degree of diversification.

Break-even framework

Raw material (feedstock) cost dominates the operating expenses base for both companies, but to very different degrees: approximately 76.6% of sales for Bajaj Hindusthan against 57.1% for Triveni Engineering, reflecting Triveni's more diversified integrated operations against Bajaj Hindusthan's greater exposure to a single grain-route model. Given each company's current PBDITA margin, this implies a materially different tolerance for feedstock-cost inflation before profitability turns negative.

Table 24:
Break-even feedstock-cost tolerance, grain-route companies, FY25

Company	PBDITA margin, base case	Raw material cost (% of sales)	Feedstock-cost increase that would erase PBDITA margin
Bajaj Hindusthan Sugar Ltd.	5.36%	76.6%	approx. 7.0%
Triveni Engineering and Inds. Ltd.	7.27%	57.1%	approx. 12.7%

Source: Brickwork Research.

Note: Break-even threshold = PBDITA margin ÷ raw-material cost as a share of sales; assumes no offsetting cost reduction or realisation pass-through. This is a Brickwork Research analytical construction, not a company disclosure or forecast.

Sensitivity to a 10% feedstock-cost shock

A plausible 10% feedstock shock turns the more exposed company's margin negative.

A 10% increase in feedstock cost, plausible given the maize-price volatility this report has flagged (the maize feedstock section) and administered ethanol procurement prices that do not adjust in real time (see the "Feedstock economics and growth drivers" chapter), would compress margins sharply, and for the more feedstock-exposed of the two companies, would turn PBDITA negative.

Table 25:
Sensitivity of PBDITA margin and interest cover to a 10% feedstock-cost increase

Company	PBDITA margin: base case	PBDITA margin: +10% feedstock cost	Interest cover: base case	Interest cover: +10% feedstock cost
Bajaj Hindusthan Sugar Ltd.	5.36%	(2.29%)	1.05x	Negative — PBDITA insufficient to cover interest
Triveni Engineering and Inds. Ltd.	7.27%	1.56%	5.12x	approx. 1.10x

Source: Brickwork Research.

Note: Assumes feedstock-cost inflation is not offset by higher ex-mill realisation in the short term- consistent with this report's finding that ethanol procurement prices are administered and revised infrequently (see the "Feedstock economics and growth drivers" chapter) and holds revenue and interest expense constant to isolate the margin effect. This is a sensitivity illustration, not a forecast.

Thin interest cover leaves no buffer: diversification, not scale, makes the difference.

The asymmetry is the analytically important point for lenders: Bajaj Hindusthan's already-thin FY25 interest cover of 1.05x leaves almost no buffer against feedstock-cost inflation, while Triveni Engineering's more diversified cost base and stronger starting interest cover (5.12x) provide meaningfully more headroom, even though both are grain-route distilleries operating under the same administered-pricing regime.

Co-product revenue: a secondary margin buffer for maize-route distilleries

Undisclosed co-product revenue means public financials understate grain-route resilience.

Maize-route distilleries generate three co-products alongside ethanol, DDGS (Distillers Dried Grains with Solubles), distillers corn oil and captured carbon dioxide, that provide a secondary revenue stream and partially offset the feedstock-cost pressure quantified above. Illustrative yields and secondary-market pricing for a standard 100 KLPD maize-based plant are set out below.

Credit outlook

Table 26

Co-product revenue contribution for a standard 100 KLPD maize distillery

Co-product	Yield per tonne of maize	Benchmark price (secondary market)	End-use market and growth driver
DDGS (26-30% protein)	280-300 kg	INR 28,000-32,000/tonne	Poultry and cattle feed: sought after given rising soybean meal costs; concentrates the protein left after starch fermentation, a critical animal feed ingredient.
Distillers corn oil (DCO)	18-20 kg	INR 105-130/litre	Biodiesel and animal feed: extracted from thin stillage; demand scaling with domestic biodiesel blending mandates and premium feed formulations.
Carbon dioxide (CO₂)	280-300 kg	INR 2,500-3,000/tonne	Beverage and industrial use: captured during fermentation; requires additional capital expenditure for liquefaction and storage, but provides a steady, high-margin revenue stream.

Source: Brickwork Research compilation from secondary-market and industry-benchmark estimates for maize-route distilleries. Company-specific co-product revenue is not separately disclosed by listed grain-route distilleries in this report's tracked panel, so these figures should be read as industry-representative rather than issuer-specific; actual realisation will vary by plant configuration, regional market access and whether CO₂ liquefaction capacity has been installed.

Strengths and risks side by side, for quick credit reference.

The table below draws the chapter together, setting the sector's principal credit strengths against the risks that offset them. It consolidates the utilisation, feedstock-pricing, allocation-share and refinancing themes developed above into a single reference view for lenders and investors.

Table 27

Strengths and risks

Key credit strengths	Key credit risks
▶ Government-administered, tender-based offtake with Long-Term Offtake Agreements reduces volume/counterparty risk versus open-market commodity sales	▶ ESY26 tender oversubscription (1.7 times) signals capacity now exceeds the policy-capped demand pool, raising utilisation and allocation-share risk
▶ Concessional, subvention-backed financing (effective about 6% per annum) materially lowers debt-service cost relative to comparable agri-processing capital expenditure ▶ 20% blending mandate now achieved, removing policy-execution risk that weighed on the sector through FY18-FY24 ▶ Multiple new demand vectors (E85/E100, flex-fuel vehicles, SAF, Compressed Biogas) create medium-term capacity-utilisation upside beyond the E20 ceiling	▶ Cost-price gap of about INR 5/litre for cane-juice and B-heavy-molasses routes, frozen since November 2022, compresses margins for sugar-led distilleries ▶ Single-crop-cycle exposure: the 2025-26 sugar output estimate was cut 4.4% within eight months on adverse Maharashtra/Karnataka weather ▶ Maize-price volatility (an approximately 21% single-month mandi correction in one state in September 2025) creates earnings swings for grain-based distilleries
▶ Diversified players (sugar plus ethanol plus co-generation plus chemicals/bioplastics) have structurally lower earnings volatility than pure-sugar peers	▶ No formal mandate yet exists beyond E20; monetisation of new capacity depends on flex-fuel-vehicle penetration, E85/E100 infrastructure and SAF policy execution, all still nascent

Risks and challenges

Most high-severity risks now stem from the sector's own success, not external shocks.

The risks that follow a sector from scarcity into surplus

India's ethanol sector's structural growth case is well established, but a set of operational, market-structure and policy risks now warrant close attention from lenders, investors and regulators, several of which have only become visible over the past 12-18 months as the sector has crossed from a capacity-deficit to a capacity-surplus phase.

Table 28:

Key risks and challenges in India's ethanol sector, with Brickwork Research's forward view on each

Risk	Level	Detail	Forward view (FY27-FY30)
Capacity-demand mismatch / oversupply	High	Installed capacity (approximately 18.25 billion litres) now structurally exceeds the approximately 17 billion-litre requirements to sustain a 20% blend; ESY26 Cycle-1 tenders attracted 1.7-times oversubscription.	Eases only if a higher mandate or new demand vectors (SAF, E85/E100) scale on the timeline in the demand-scenario section. Brickwork Research's Base case is gradual easing from FY28, not near-term resolution.
Feedstock-price misalignment (cane route)	High	Sugarcane-juice and B-heavy-molasses ethanol prices frozen since November 2022 against a 16.5% FRP increase have opened an estimated INR 5/litre cost-price gap, per ISMA.	A CCEA price revision is the most direct fix and is plausible within the next one to two pricing cycles (the policy decision points section); absent that, expect continued margin pressure on cane-led distilleries.
Monsoon / crop-cycle dependency	High	Sugar output estimates for sugar season 2025-26 were revised down 4.4% within eight months on adverse Maharashtra/Karnataka weather.	Inherently recurring and not resolvable by policy; Brickwork Research expects this to remain a permanent feature of cane-route credit analysis, best managed through feedstock diversification rather than mitigation.
Maize/grain price volatility and food-versus-fuel competition	High	Maize demand for ethanol rose about fifteen-fold in three years, competing with poultry feed (about 60% of national maize use) and starch industries.	FICCI-YES Bank data point to a widening demand pool through FY31 (the ESY26 allocation section); Brickwork Research expects continued, not diminishing, price volatility around each crop cycle.
Policy ceiling / no mandate beyond E20	Medium	No formal blending mandate exists beyond 20%; monetisation of surplus capacity depends on flex-fuel-vehicle penetration, E85/E100 infrastructure and SAF policy finalisation.	Brickwork Research's Bull case (see the "Scenario analysis" chapter) shows this risk easing if blending progresses towards 30% by FY31, but only if flex-fuel-vehicle and SAF execution stays on its current early-stage timeline. Under the Bear case the ceiling risk persists unresolved.
Second-generation / advanced-biofuel technology risk	Medium	India's flagship second-generation plant (Indian Oil, Panipat) has operated below design capacity (62% as of December 2025) since 2023 commissioning.	Brickwork Research expects this to remain the slowest-resolving risk in this table; second-generation technology risk is unlikely to fully normalise before FY29-FY30 given the multi-year ramp-up already observed.
Water intensity and sustainability scrutiny	Medium	Sugarcane and, to a lesser extent, maize and rice are water-intensive crops; rising ESG and water-stress scrutiny could over time affect state-level land/water allocation decisions.	A slow-moving, multi-year risk; Brickwork Research does not expect material near-term impact but flags it as a structural watch-item for cane-belt expansion decisions through 2030.

Risks and challenges

Risk	Level	Detail	Forward view (FY27-FY30)
Environmental compliance (spent-wash disposal)	Medium	Distilleries are CPCB “Red category” polluters given spent-wash (vinasse) volumes of 8-15 litres per litre of ethanol produced; CPCB mandates Zero Liquid Discharge, requiring biomethanation followed by composting or incineration, and ZLD compliance is a precondition for environmental clearance on new or expanded capacity.	This risk scales directly with the Bull case capacity-expansion path (see the “Scenario analysis” chapter): every incremental litre of Bull case volume carries an embedded ZLD capex requirement not priced into this report's realisation and margin assumptions. Lenders underwriting Bull case expansion should treat ZLD cost as additive to these projections.
Flex-fuel/electric-vehicle substitution risk (long-term)	Low	Accelerating electric-vehicle penetration in two-wheelers and passenger vehicles is a multi-decade structural risk to petrol (and hence blended-ethanol) demand growth.	Immaterial within this report's FY31 projection horizon (the demand-scenario section); a longer-horizon consideration for any analysis extending into the 2030s.
Cooperative and smaller-mill financial fragility	Medium	Many cooperative sugar mills, particularly in Maharashtra, Uttar Pradesh and Punjab, lack distillery capacity altogether and remain dependent on sugar/molasses sales.	The March-2025 conversion subvention scheme partially addresses this; Brickwork Research expects uneven take-up across cooperatives through FY28, given varying absorption capacity.

Source: ISMA statements (The Tribune, ChiniMandi, AgrilInsite); AISTA crop estimates; FICCI-YES Bank maize report; Lok Sabha disclosures on the Indian Oil Panipat second-generation plant; Brickwork Research synthesis and forward-view analysis.

Economic impact of ethanol sector growth

Macro benefits lag past policy success; they are not a forward growth driver.

Eleven years of quantifiable gains for farmers and the exchequer

Beyond its direct contribution to distillery and sugar-mill revenues, the EBP Programme has generated a measurable macro and rural-economy dividend over its eleven-year history, as quantified periodically by the Ministry of Petroleum and Natural Gas and the Ministry of Consumer Affairs, Food and Public Distribution.

Table 29:
Cumulative economic impact of India's Ethanol Blended Petrol Programme

Impact area	Quantum
Foreign-exchange savings	INR 1.36-1.44 trillion cumulative (through CY2025), from reduced crude-oil/petrol import volumes.
Crude-oil substitution	Approximately 24.5 million tonnes of crude oil substituted cumulatively, per government disclosures (2025).
Payments to distilleries	INR 1.96 trillion cumulative disbursed by OMCs to ethanol distillers/producers since ESY15.
Farmer income	INR 1.18-1.58 trillion in direct income attributed to the programme across various government statements (range reflects different cumulative cut-off dates cited in FY25 disclosures).
Greenhouse-gas / carbon-dioxide reduction	Approximately 69.8 million tonnes of carbon-dioxide-equivalent emissions reduced cumulatively, per Ministry of Petroleum and Natural Gas disclosures (2025).
Investment and bank financing	Over INR 400 billion of industry investment (ISMA estimate) financed in part by over INR 420 billion of bank/financial-institution loan sanctions (Government of India, as of 31 October 2025).
Employment	Direct and indirect employment across distillery construction/commissioning, plant operations, and adjacent sectors (logistics, agri-input supply, equipment manufacturing); no single authoritative aggregate figure is published, but the programme supports an estimated 500-distillery operating base plus the agricultural workforce engaged in sugarcane, maize and rice cultivation for ethanol feedstock.

Source: Ministry of Petroleum and Natural Gas; Press Information Bureau; Ministry of Consumer Affairs, Food and Public Distribution statements, 2024-2025 (figures as variously disclosed; cumulative cut-off dates differ across releases and are presented as published).

Forward trajectory

Every downstream benefit tracks the same blending trajectory, so exposure compounds.

These benefits compound mechanically with offtake volume even without new policy action, since they scale with litres supplied rather than blending percentage. Applying the Base case FY31 offtake of approximately 17.9 billion litres to current per-litre relationships implies cumulative forex savings approaching INR 2.5-2.6 trillion and farmer income approaching INR 2.3-2.7 trillion by FY31. This is a Brickwork Research extrapolation, illustrative rather than an official projection, but directionally indicative. The Bull case scales it larger and the Bear case smaller, reinforcing that the blending-policy trajectory is the single biggest swing factor behind these downstream benefits too.

The mirror image: sugar supply-demand balance

Diversion and sugar output are linked by definition; read the two together.

Every litre of ethanol diverted from sugarcane juice or B-heavy molasses is, definitionally, sugar not produced, so the economic-impact picture above is incomplete without its mirror image: India's sugar supply-demand balance, which has tightened over the past four sugar seasons even as production volatility (the Sugar season 2025-26: a live illustration of monsoon risk and State-wise sugar production and price outlook to 2029-30 sections) has dominated headlines.

Economic impact of ethanol sector growth

Table 30:

India sugar supply-demand balance, sugar seasons 2016-17 to 2024-25 ('000 tonnes)

Sugar season	Opening stock	Production	Total supply	Consumption	Exports	Closing stock
2016-17	8,198	20,285	28,483	24,561	46	3,876
2018-19	10,716	33,162	43,878	25,499	3,800	14,579
2020-21	10,740	31,192	41,932	26,555	7,191	8,186
2021-22	8,186	35,760	43,946	27,330	11,070	5,546
2022-23	7,000	32,815	39,815	27,850	6,400	5,565
2023-24	5,565	31,964	37,529	29,000	50	8,479
2024-25 (estimate)	8,000	29,300	37,300	Not yet disclosed	0	8,300

Source: CMIE.

Note: Annual figures are for the October-September sugar season; India recorded negligible sugar imports throughout this period, so total supply is effectively opening stock plus production.

Ethanol policy now functions as de facto sugar-market management.

Three features stand out. Exports collapsed from 11.07 million tonnes (FY22) to 0.05 million (FY24) and an estimated zero (FY25), the clearest evidence of government prioritising domestic price and availability over export earnings as cane diversion rose. Closing stock was rebuilt from a FY22 low of 5.55 million tonnes to an estimated 8.3 million by 2024-25, so the trade-off has been managed without running down buffer stock despite three consecutive years of falling production (the 2025-26 sugar season section). Consumption grew steadily (24.56 to an estimated 29.0-plus million tonnes) even as production swung sharply, confirming that domestic sugar demand is structurally inelastic and that the diversion lever operates almost entirely on the supply side. That is why feedstock-price decisions (see the “Feedstock economics and growth drivers” chapter) double as de facto sugar-market-management decisions.

Comfortable buffer stocks let government keep favouring diversion over sugar exports.

Beyond diversion caps, government manages the sugar-ethanol trade-off through an annual export quota and sugar's Minimum Selling Price (MSP). For ESY26 it permitted 1.5 million tonnes of exports, though shipments are running at approximately 0.75-0.8 million as weak global price parity discourages sales. The industry has pressed for an MSP revision, unchanged for over six years even as production costs reach an estimated INR 41.70/kg for 2025-26. An unrevised MSP alongside rising SAP and FRP obligations (the ESY26 allocation section) compresses mill cash margins and tightens funds for timely cane payment. Low export-quota utilisation, conversely, signals comfortable buffer stocks and gives government room to keep leaning on diversion rather than exports, mildly supportive for feedstock availability under the Base and the Bull case provided MSP is eventually revised.

Scenario analysis

Three cases, one FY26 anchor of INR 60.0/litre, so outcomes stay comparable.

Scenarios replace trend extrapolation because EBP demand is policy-capped, not organic.

Chapter framing: three scenarios anchored to a common FY26 baseline.

Consolidating scenario content in one place improves internal consistency.

Table 31:
Brickwork Research ethanol-demand scenario, FY26-FY31

Year	Petrol demand (billion litres)	Base case (E25, billion litres)	Bull case (E30, billion litres)	Bear case (E20, billion litres)	Gap: Bull vs Bear
FY26	57.0	11.4	12.5	11.4	1.1
FY27	60.0	13.2	15.6	12.0	3.6
FY28	62.8	15.7	18.8	12.6	6.2
FY29	65.8	16.5	19.7	13.2	6.5
FY30	68.7	17.2	20.6	13.7	6.9
FY31	71.6	17.9	21.5	14.3	7.2

India's ethanol sector enters its next phase having achieved its founding policy goal (E20) and built a financeable, bank-funded capacity base of approximately 18.25 billion litres/year. Growth from here is less about adding distillation capacity and more about rationalising feedstock pricing to keep cane-based capacity viable, building the flex-fuel-vehicle parc and E85/E100 network, and scaling Sustainable Aviation Fuel (SAF) and second-generation/Compressed Biogas offtake as new channels. Execution discipline on utilisation and feedstock-price management, not fresh capital deployment, will be the principal credit differentiator through FY30.

To evaluate this transition, Brickwork Research applies a scenario-based forecasting framework rather than a mechanical trend extrapolation, reflecting the policy-capped nature of EBP demand. Three scenarios, Base, Bull and Bear, combine blending trajectories with revenue and margin models anchored to an estimated FY26 baseline realisation of INR 60.0/litre.

The next leg of growth is policy-gated, not capacity-gated

This section sets out Brickwork Research's proprietary demand and financial scenario analysis for sector to FY31. The summary below frames the three scenarios, Base, Bull and Bear, that structure the rest of the chapter, each combining a blending trajectory with volume, realisation and margin assumptions anchored to a common FY26 baseline.

Close to 20%
Current E20 blending level, achieved five years ahead of the original 2030 deadline.

1.7-times
Oversubscription on ESY26 Cycle-1 ethanol tenders, the sector's first capacity-surplus signal.

5% by 2030
India's SAF blending target for international flights, a new, higher-value demand channel for ethanol-linked capacity.

Proprietary analysis: This section, the demand-side and financial scenario analysis, the underlying company-level segment financials, and the Base/Bull/Bear projections that follow, is Brickwork Ratings' proprietary demand-and-scenario analysis. It combines CMIE-sourced petrol-consumption, vehicle-registration, and company-financial data with Brickwork Research's own blending-trajectory, realisation, and margin assumptions.

Demand-side: ethanol requirement under blending scenarios

This section sets out Brickwork Research's proprietary demand-and-scenario analysis, consolidating content referenced elsewhere in this report. Petrol-consumption volumes are converted into ethanol demand using each scenario's blending trajectory: the Base case follows the planned E20 to E25 step-up by FY28; the Bull case accelerates to E30; the Bear case assumes blending stagnates near 20% on feedstock and water-stress constraints.

Scenario analysis

Source: Brickwork Research analysis, built on CMIE petroleum-consumption data (motor spirit, converted at 1,340 litres/tonne); blending-rate paths (E20/E25/E30) are Brickwork Research scenario assumptions.

Only the Bull case exceeds installed capacity, a different capital-allocation signal.

The Base and Bear cases both stay within the approximately 18.25 billion litres of capacity already installed through FY31, consistent with the view that the medium-term credit story is about monetising existing assets and managing feedstock-price economics (see the “Feedstock economics and growth drivers” chapter), not financing fresh capacity. The Bull case is the exception: at 21.5 billion litres by FY31, it would exceed current capacity, implying a genuine E30 trajectory would require a fresh expansion cycle, worth monitoring if flex-fuel-vehicle adoption (the policy decision points section) accelerates faster than expected.

Vehicle fleet signal

A twelvefold registration jump likely reflects reclassification, not confirmed organic demand.

Vehicle-registration data compiled by CMIE shows a sharp FY26 inflection: ethanol-capable registrations (Petrol/Ethanol and dedicated Ethanol categories combined, as a share of all new registrations) jumped from 2.55% in FY25 to 31.20% in FY26, consistent with E20-compliant vehicle mandates taking hold, and supportive of sustained pull-through demand.

Table 31:
Vehicle-fleet registration signal, FY22 to FY26

Year	Total vehicles registered	Petrol/Ethanol + Ethanol units	Ethanol-capable share of total	YoY growth
FY22	19.26 million	120.0 thousand	0.64%	+14%
FY23	23.25 million	13.0 thousand	0.06%	-89%
FY24	25.62 million	530.0 thousand	2.06%	+3,824%
FY25	27.25 million	690.0 thousand	2.55%	+31%
FY26	30.84 million	9,620.0 thousand	31.20%	+1,286%

Source: Brickwork Research proprietary analysis, based on CMIE-compiled Ministry of Road Transport and Highways (VAHAN) registration data.

Note: Figures represent aggregate ethanol-capable registrations (Petrol/Ethanol and dedicated Ethanol fuel-type categories combined) as a share of all new vehicle registrations nationally; see Table 6 in the vehicle-fleet readiness section for the underlying category-wise breakdown.

Full sourcing transparency strengthens confidence in the proprietary scenario outputs.

Methodology and data-coverage notes

This demand-and-scenario analysis, the demand-side projections above, the supply-side segment financials, and the Base/Bull/Bear financial projections that follow, is Brickwork Ratings' proprietary work product. Petrol-consumption, vehicle-registration and company-financial data are combined with Brickwork Research's own blending-trajectory, realisation and margin assumptions.

Excluding equipment vendors avoids distorting the economics of distillery operators.

Company categorisation into grain-based, sugar-based and OMC segments (immediately below, and in the Company-level financial section) is based on each company's primary business description; ethanol-plant equipment suppliers (for example, Praj Industries and Isgec Heavy Engineering) are excluded from segment financials as they are capital-goods vendors rather than ethanol producers.

Supply-side segment financials

Grain-route margin erosion despite fast revenue growth underpins the Bear case.

Standalone financials (FY21-FY25) are aggregated into three segments to anchor the scenario margins below. Grain-based distilleries show the fastest top-line growth but still shed a quarter of their margin (9.2% to 6.7%), the fingerprint of rising maize costs the Bear case is built around, while sugar-based distillery margins nearly halved, from 16.7% to 9.1%, over the same period. Equipment suppliers (Praj, Isgec) are excluded as capital-goods vendors rather than producers.

Scenario analysis

Table 32:

Distillery segment financials by feedstock route, FY21-FY25

Segment	Sales FY21 (INR billion)	Sales FY25 (INR billion)	Sales CAGR (FY21-25)	EBITDA margin FY21	EBITDA margin FY25
Grain-based distilleries	50.1	87.4	14.9%	9.2%	6.7%
Sugar-based distilleries	324.4	399.9	5.4%	16.7%	9.1%
OMCs (blending off-take)	10,890.9	18,069.9	13.5%	8.7%	5.0%

Source: Brickwork Research analysis of CMIE Prowess company-level financial data (standalone, FY21-FY25).

Note: Margins are aggregate PBDITA over aggregate sales of goods per segment. Capital work-in-progress, reviewed as a capacity-expansion proxy, shows grain-segment CWIP peaking at INR 7.8 billion in FY23 before tapering to INR 2.7 billion in FY25, and sugar-segment CWIP falling from INR 6.3 billion (FY22) to INR 1.4 billion (FY25), indicating most of the current capex cycle is already capitalised and a fresh wave is needed for Bull case volumes. Margins reflect blended corporate profitability including cyclical sugar operations, so pure-play distillery margins are structurally higher and Bull case EBITDA potential is likely conservative.

Scenario-based financial projections

Volume and price both trace to the blending trajectory, making this a policy bet.

Revenue is modelled as ethanol volume multiplied by realisation rate, with realisation growth and margin trajectories differentiated by scenario and anchored to the fixed FY26 baseline realisation (INR 60.0/litre) and the historical segment margin trend above.

Base case - E25 transition

The Base case is a no-surprises path, with costs and prices moving in step.

Steady capacity utilisation, stable feedstock prices, gradual administered-price increases (approximately 2% per year). Margins hold near the FY25 level as blending and cost pressures move in step.

Table 33:

Base case financial projection, FY26-FY31

Year	Ethanol volume (billion litres)	Realisation (INR/Litre)	Revenue (INR billion)	EBITDA margin	EBITDA (INR billion)
FY26	11.4	60.0	684	8.7%	60
FY27	13.2	61.2	808	9.0%	73
FY28	15.7	62.4	980	8.8%	86
FY29	16.5	63.7	1,051	8.8%	92
FY30	17.2	65.0	1,117	8.8%	98
FY31	17.9	66.2	1,186	8.8%	104

Source: Brickwork Research analysis, built on CMIE petroleum-consumption and company-financial data. This is Brickwork Research's central/Base case scenario.

Bull case - rapid E30 and advanced biofuels

The Bull case alone requires capacity investment beyond the installed base.

A faster blending ramp, favourable OMC offtake agreements and premium pricing for second- and third-generation output support both higher realisation (approximately 3.5% per year) and margin expansion to 12.5% by FY31. This is the only scenario in which FY31 demand exceeds the capacity already installed.

Scenario analysis

Table 34:

Bull case financial projection, FY26-FY31

Year	Ethanol volume (billion litres)	Realisation (INR/Litre)	Revenue (INR billion)	EBITDA margin	EBITDA (INR billion)
FY26	12.5	60.0	750	8.7%	65
FY27	15.6	62.1	969	10.0%	97
FY28	18.8	64.3	1,209	11.0%	133
FY29	19.7	66.5	1,310	11.5%	151
FY30	20.6	68.9	1,419	12.0%	170
FY31	21.5	71.3	1,533	12.5%	192

Source: Brickwork Research analysis, built on CMIE petroleum-consumption and company-financial data. Illustrative upside scenario would require capacity expansion beyond the currently installed base (the demand-scenario section).

Bear case - feedstock squeeze and water stress

Bear case risk is policy inaction rather than operational mismanagement.

Blending stagnates near 20% as feedstock availability and water-stress constraints bind. Frozen administered realisation and continued maize-cost pressure compress margins to 6% by FY28, where they are assumed to hold through FY31, leaving volume growth to track petrol consumption alone.

Table 35:

Bear case financial projection, FY26-FY31

Year	Ethanol volume (billion litres)	Realisation (INR/Litre)	Revenue (INR billion)	EBITDA margin	EBITDA (INR billion)
FY26	11.4	60.0	684	8.7%	60
FY27	12.0	60.0	720	8.0%	58
FY28	12.6	60.0	756	6.5%	49
FY29	13.2	60.0	792	6.0%	48
FY30	13.7	60.0	822	6.0%	49
FY31	14.3	60.0	858	6.0%	51

Source: Brickwork Research analysis, built on CMIE petroleum-consumption and company-financial data.

Scenario summary: FY31 outlook

Blending-policy direction, not capacity, drives the FY31 outcome spread.

Brickwork Research's FY31 scenario analysis shows a wide spread in outcomes, driven almost entirely by how far the mandate is pushed beyond 20%. The Base case (25% blending) puts sector revenue at INR 1,186 billion on an 8.8% EBITDA margin; the Bull case (30% plus advanced biofuels) at INR 1,533 billion on 12.5%; the Bear case (stagnation near 20%) at INR 858 billion on a compressed 6.0%. The resulting EBITDA gap, INR 192 billion against INR 51 billion, roughly 3.8 times, is unusually wide for a mature, policy-anchored sector, about two-thirds of it from volume and the rest from realisation and margin.

Scenario analysis

One policy decision, a 3.8-times spread in sector earnings

Brickwork Research scenarios for FY31. Bar length shows sector EBITDA against the Bull case.

Bear case

Blending stagnant near 20%

51

INR billion sector EBITDA, FY31

Volume **14.3 billion litres**

Revenue **INR 858 billion**

EBITDA margin **6.0%**

Feedstock squeeze and water stress. Volume tracks petrol demand alone.

Base case

E25 by FY28

104

INR billion sector EBITDA, FY31

Volume **17.9 billion litres**

Revenue **INR 1,186 billion**

EBITDA margin **8.8%**

Costs and administered prices move roughly in step. Stays within installed capacity.

Bull case

E30 plus advanced biofuels

192

INR billion sector EBITDA, FY31

Volume **21.5 billion litres**

Revenue **INR 1,533 billion**

EBITDA margin **12.5%**

The only case needing capacity beyond the 18.25 billion litres already built.

Roughly two-thirds of the gap is volume. The rest comes from realisation growth and margin. Since volume is set by the blending mandate rather than by demand, the single largest determinant of sector earnings in FY31 is a policy decision that has not yet been taken.

Source: Brickwork Research analysis. Sector EBITDA is modelled on segment-level revenue and margin assumptions set out earlier in this chapter; volume follows CMIE petrol-consumption projections under each blending trajectory.

Note: The swing is driven roughly two-thirds by volume and one-third by realisation and margin, underscoring that blending-policy follow-through is the single largest value driver in this sector.

Outlook: what the scenarios imply for credit

Growth is policy-gated, and the Bull-Bear EBITDA spread is unusually wide.

Volume growth from here is policy-gated, not capacity-gated: the Base and Bear cases both stay within currently installed capacity through FY31, while only the Bull case, meaning genuine progress towards E30, would require fresh capacity investment. That makes the blending-policy trajectory the central swing factor for both revenue growth and capital expenditure, and it is why the FY31 EBITDA spread set out above runs to roughly 3.8 times between Bull and Bear, about two-thirds of it from volume. Blending-policy follow-through, not feedstock or operational execution alone, is the single largest value driver lenders should track.

A CCEA price revision is the most direct lever against cane and grain margin erosion.

Feedstock-price rationalisation for cane routes remains the near-term catalyst to watch: a CCEA revision of sugarcane-juice and B-heavy-molasses prices, frozen since November 2022, would materially ease the margin compression built into the Bear case and support convergence towards the Base case. On the grain side, distilleries combine the sector's fastest revenue growth with a loss of roughly a quarter of their margin (FY21 9.2% to FY25 6.7% EBITDA margin), the financial fingerprint of rising maize costs that anchors the Bear case, making this a segment to monitor closely for covenant and refinancing risk. Sugar-route margins have compressed further in percentage-point terms (16.7% to 9.1%), though on slower-growing revenue.

Credit bifurcation between diversified and single-feedstock producers persists through FY28.

On Brickwork Research's Base case, the sector's credit profile through FY31 improves gradually rather than sharply: utilisation recovers only as fast as the blending mandate expands, so lenders should expect the current bifurcation between diversified and single-feedstock producers (see the "Credit outlook" chapter) to persist through at least FY28 before narrowing.

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