

INDIA'S ETHANOL BLENDING POLICY AND THE E20 MANDATE: A CONSTITUTIONAL AND POLICY PERSPECTIVE

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Abstract

As India hurries toward petrol that is one-fifth ethanol, a more uncomfortable question goes unasked: who actually pays for energy self-reliance? The National Policy on Biofuels, 2018, amended in 2022, brought the 20% blending goal forward by five years, from 2030 to 2025. Through the Ethanol Blended Petrol (EBP) Programme, the government hopes to reduce its dependence on imported crude oil, which is about 87%, and at the same time give sugarcane and maize farmers a fresh market. Written from the viewpoint of Energy Law, this paper looks at how the legal and policy structure behind E20 balances energy security, farmers' welfare, the environment and the ordinary motorist. The benefits claimed are a smaller import bill, cleaner tailpipe emissions and better farm incomes. The costs feared are pressure on food supply, water-hungry crops, shifts in land use, polluting distilleries, lower mileage and engine compatibility problems for ordinary vehicle owners. A section on current developments records that E20 is already sold across the country and that standards for stronger blends are reportedly in place.

Earlier studies have judged the economic and environmental merits of the mandate separately. None of them has placed these merits on the same scale as the burden that falls on consumers and nature, so as to decide whether the overall effect of the policy justifies its hurried schedule. The paper therefore proposes a purpose-built framework: more 2G ethanol, a wider range of feedstocks, stronger environmental safeguards, transparent price-setting and one integrated regulator that brings energy, environmental, agricultural and consumer law together. The hypothesis is that E20, as it is designed, ranks energy security and farm income above consumers and the environment, and that real balance needs reforms that raise

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consumer protection and environmental safeguards to the level enjoyed by those two goals. The aim is to assess the mandate from legal, economic, environmental and policy angles and to suggest reforms for a transition that is both fair and lasting.

Keywords: Ethanol Blending, E20 Mandate, Energy Security, Biofuels, National Policy on Biofuels, Farmer Income, Consumer Interest, Environmental Impact, Sustainable Development, Renewable Energy, Energy Law.

I. INTRODUCTION

India is in a hurry to put twenty per cent ethanol into its petrol, and this hides a constitutional question that is rarely asked aloud: who, within the federation, decides how an energy transition should be carried out, and which of the State's many duties towards its citizens should guide that decision? The Ethanol Blended Petrol ("EBP") Programme began as a pilot in 2003 and was reshaped by the National Policy on Biofuels, 2018 ("NPB2018").² Its indicative goal was twenty per cent blending ("E20") by 2030. It had two purposes. The first was to reduce dependence on imported crude, which stood at nearly eighty-seven per cent. The second was to give rural households a new income through demand for sugarcane, maize and similar feedstocks.³ The 2022 amendment brought the date forward by almost five years, to Ethanol Supply Year 2025²⁶⁴, and the twenty per cent mark was in fact reached during 2025.⁵

The argument made here is that E20 is presented as a routine technical fuel specification managed by the Ministry of Petroleum and Natural Gas, but it actually decides who gains and who bears the burden, and that this decision rests on constitutional ground. Three parts of the Constitution are involved together. The first is the Seventh Schedule, which divides lawmaking power over alcohol, agriculture and petroleum between the Union and the States. The second is the group of Directive Principles that call for fair distribution of resources,

²Ministry of Petroleum & Natural Gas, Government of India, *National Policy on Biofuels – 2018* (notified June 4, 2018).

³Press Information Bureau, Government of India, *Ethanol Blended Petrol Programme – Q&A* (10 July 2026), <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2283118>.

⁴Ministry of Petroleum & Natural Gas, *National Policy on Biofuels (Amendment)* (June 2022); see also International Energy Agency, *National Policy on Biofuels (2022 Amendment)*, <https://www.iea.org/policies/17006-national-policy-on-biofuels-2022-amendment>.

⁵Id. (noting that India reached the 20% ethanol-blending target in 2025, five years ahead of the original 2030 deadline set under NPB–2018).

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proper nutrition, organised agriculture and a protected environment. The third is the set of fundamental rights that citizens hold as consumers, as farmers and as people entitled to a healthy environment, drawn from Articles 19(1)(g) and 21. The working hypothesis is that E20 today places energy security and farm income ahead of consumers and the environment, and that lasting balance will need reforms that give consumer protection and environmental safeguards the same regulatory standing as those two aims.

The paper is arranged as follows. Part II describes the statutes and policies that frame ethanol blending. Part III turns to the Constitution, including the recent nine-judge ruling in *State of Uttar Pradesh v. Lalta Prasad Vaish & Sons*, which returned power over industrial alcohol, the raw material of the EBP Programme, to the States.⁶ Parts IV to VI look in turn at the case from energy security, the gains for farmers, and the burden that the faster schedule places on consumers. Part VII studies the effect of the policy on the environment, and Part VIII reports where things stand today. Part IX points out the changes India has already missed and tests the hypothesis against the findings. Part X sketches what a dedicated framework for India could look like, and Part XI concludes.

II. THE LEGAL AND REGULATORY ARCHITECTURE OF ETHANOL BLENDING

A. The National Policy on Biofuels and the EBP Programme

Parliament has not passed any dedicated law for the EBP Programme. What exists is the National Policy on Biofuels,⁷ a document of the Ministry of Petroleum and Natural Gas, which is put into effect through instructions to the state-run oil marketing companies, price-fixing orders of the Cabinet Committee on Economic Affairs and specifications of the Bureau of Indian Standards under IS 2796.⁸ Under the 2018 policy, biofuels fall into three classes: first-generation fuels made from food crops, second-generation (“2G”) fuels made from non-food biomass, and third-generation fuels made from algae. The policy also widened the list of permitted raw materials, so that surplus foodgrain, damaged grain and farm residues can be

⁶*State of Uttar Pradesh v. Lalta Prasad Vaish & Sons*, 2024 INSC 812 (India) (per Chandrachud, C.J., for the majority).

⁷See *supra* note 1.

⁸Bureau of Indian Standards, *IS 2796: Motor Gasoline – Specification*, as amended to accommodate ethanol-blended fuel up to E20.

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used along with sugarcane molasses.⁹ The duty to blend lies on the oil companies and does not bind citizens directly by law. It is therefore best described as executive policy, issued under the Union's power in Article 73 and backed by control orders under the Essential Commodities Act, 1955,¹⁰ above all the Sugarcane (Control) Order, 1966. That Order governs the price and supply of cane to mills and, in turn, how cane juice, syrup and molasses reach distilleries.¹¹

B. The Statutory Substratum: The IDRA and Industrial Alcohol Control

Fuel ethanol is made by the same industry, and under the same legal regime, as other alcohol, whatever its final use. Section 18G of the Industries (Development and Regulation) Act, 1951 ("IDRA")¹² gives the Union power over the supply, distribution and price of products of industries that Parliament has declared to be of public importance, a status that the sugar industry enjoys. The recurring difficulty is how much State power over alcohol, including denatured and rectified spirit, is displaced when that spirit is sent to the EBP Programme. A three-judge bench dealt with the issue in *Ch. Tika Ramji v. State of Uttar Pradesh*,¹³ and a nine-judge Constitution Bench took it up again in *Lalta Prasad Vaish*. Part III deals with it.

III. THE CONSTITUTIONAL DIMENSION

A. Federal Distribution of Legislative Competence over Ethanol

At least four entries of the Seventh Schedule bear on ethanol blending. Entry 53 of the Union List gives Parliament exclusive power over petroleum and petroleum products, whereas Entry 8 of the State List, which covers "intoxicating liquors", is now settled to include industrial alcohol.¹⁴ The sugar industry falls under "Industries" in Entry 24 of the State List, but only "subject to the provisions of entries 7 and 52 of List I". Entry 52 of the Union List allows Parliament to take over an industry by declaring that Union control is "expedient in the public

⁹IMPRI Insights, *National Policy on Biofuels (2018)* (2026), <https://www.impriindia.com/insights/policy-update/national-policy-on-biofuels2018/>.

¹⁰The Essential Commodities Act, 1955, No. 10, Acts of Parliament, 1955 (India).

¹¹Sugarcane (Control) Order, 1966, issued under section 3 of the Essential Commodities Act, 1955 (India).

¹²The Industries (Development and Regulation) Act, 1951, No. 65, Acts of Parliament, 1951 (India), § 18G.

¹³*Ch. Tika Ramji v. State of Uttar Pradesh*, AIR 1956 SC 676 (India).

¹⁴India Const. Seventh Sch., List I, entry 53 (regulation and development of oilfields, petroleum and petroleum products); List II, entry 8 (intoxicating liquors).

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interest”, as it did for sugar through the IDRA.¹⁵ Once such a declaration exists, trade, commerce, production, supply and distribution of the industry’s products move to Entry 33 of the Concurrent List, and State Entries 26 (intra-State trade) and 27 (production, supply and distribution of goods) operate only “subject to the provisions of entry 33 of List III.”¹⁶

For many decades the law on this line of division was shaped by *Synthetics & Chemicals Ltd. v. State of Uttar Pradesh*. A seven-judge bench held there that “intoxicating liquors” in State Entry 8 meant potable liquor alone, so industrial alcohol, including the rectified and denatured spirit that becomes ethanol, was wholly a Union subject under Entries 52 and 33.¹⁷ A nine-judge Constitution Bench reversed this on 23 October 2024, by eight votes to one, in *Lalta Prasad Vaish*: Entry 8 covers industrial alcohol too. The States regained the right to regulate the production, manufacture, supply, pricing and taxation of the rectified and denatured spirit from which fuel ethanol is distilled.¹⁸ Justice Nagarathna, the lone dissenter, preferred to keep the narrower, Union-leaning approach of *Synthetics & Chemicals*.¹⁹

Few people have noticed how directly this affects the EBP Programme. The programme was planned and run almost entirely as Union executive policy, through Ministry notifications, circulars to oil companies and pricing decisions of the Cabinet. If the States now hold full lawmaking power over industrial alcohol, then this policy operates in an area they can legitimately regulate as well, through licences, the location of distilleries, effluent standards and the price of the alcohol itself. This is a real concern. Cane farming, and with it the capacity for molasses-based ethanol, is concentrated in Maharashtra, Uttar Pradesh and Karnataka, which are exactly the States whose powers *Lalta Prasad Vaish* has reaffirmed. A blending target that the Union sets alone, with no cooperative channel to the State regulators of the alcohol supply, sits awkwardly with the redistributed powers and may invite a federalism challenge. The Union can avoid this by legislating again to declare the fuel-ethanol industry one of public importance under Entry 52, or by settling the blending roadmap jointly with the cane- and grain-growing States.

¹⁵India Const. Seventh Sch., List I, entry 52; List II, entry 24.

¹⁶India Const. Seventh Sch., List III, entry 33; List II, entry 27; see also *M/S Shriram Industrial Enterprises v. Union of India*, Indian Kanook, <https://indiankanook.org/doc/1610235/>.

¹⁷*Synthetics & Chemicals Ltd. v. State of Uttar Pradesh*, (1990) 1 SCC 109 (India).

¹⁸See supra note 5.

¹⁹*Lalta Prasad Vaish*, 2024 INSC 812 (Nagarathna, J., dissenting).

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B. Directive Principles of State Policy

Several Directive Principles are engaged by E20. None of them can be enforced on its own, but *Minerva Mills Ltd. v. Union of India* treats them as guides to a balanced reading of the fundamental rights.²⁰ Article 39(b) and (c) require that material resources be owned and controlled so as to serve the common good, and that the economic system should not concentrate wealth to the common detriment.²¹ That is hard to reconcile with a price formula which, according to some agricultural economists, makes maize and cane far more profitable than pulses and oilseeds and so rearranges cropping in dry regions.²² Article 47 lists higher nutrition, better living standards and improved public health among the State's primary duties.²³ Turning foodgrain into fuel, and any effect this has on food prices or availability, directly engages it. Article 48 asks the State to organise agriculture on modern and scientific lines,²⁴ and a guaranteed ethanol buyer arguably helps do so by giving cane and maize farmers a steady outlet. Article 48A obliges the State to protect and improve the environment,²⁵ and it runs directly against the intensive irrigation that rising demand for feedstock has been found to encourage.

C. Fundamental Rights: Article 21, Environmental Jurisprudence and the Consumer

Since *Subhash Kumar v. State of Bihar*, the Supreme Court has counted a wholesome environment, with clean air and water, within the right to life under Article 21.²⁶ *Vellore Citizens' Welfare Forum v. Union of India* took this further: Article 21 includes a clean environment, the precautionary and polluter-pays principles are part of Indian environmental law, and development does not automatically outrank environmental protection.²⁷ Under the precautionary principle, the State must foresee and prevent environmental damage even

²⁰*Minerva Mills Ltd. v. Union of India*, (1980) 3 SCC 625 (India) (holding that Parts III and IV of the Constitution must be read harmoniously).

²¹India Const. art. 39(b)–(c).

²²Mongabay India, *India's Ethanol Push Moves from the Pump to the Field, Raising Water and Food Questions* (2026), <https://india.mongabay.com/2026/07/indias-ethanol-push-moves-from-the-pump-to-the-field-raising-water-and-food-questions/>.

²³India Const. art. 47.

²⁴India Const. art. 48.

²⁵India Const. art. 48A.

²⁶*Subhash Kumar v. State of Bihar*, (1991) 1 SCC 598 (India) (recognising the right to a pollution-free environment as part of Article 21).

²⁷*Vellore Citizens' Welfare Forum v. Union of India*, (1996) 5 SCC 647 (India) (adopting the precautionary principle and the polluter-pays principle as part of Indian environmental law).

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where the science is uncertain.²⁸ This matters for a feedstock programme whose effects on water, as Part VI explains, are still disputed. In *M.C. Mehta v. Union of India* and *Indian Council for Enviro-Legal Action v. Union of India*, the Court likewise made the State and industry answerable for the environmental costs they impose on others, including farming communities that depend on shared groundwater.²⁹

Article 21, read with the freedom of occupation, trade and business in Article 19(1)(g),³⁰ also gives consumer interests a constitutional footing, although the E20 debate has mostly been conducted under ordinary legislation. The Consumer Protection Act, 2019 counts among “consumer rights” the right to know the quality and standard of goods, the right to be assured of access to a variety of goods at competitive prices and the right to be protected against unfair trade practices.³¹ Under Section 18, the Central Consumer Protection Authority can act against violations.³² Commentators argue that requiring every buyer to take E20, with no ethanol-free or lower-blend grade and no notice at the point of sale that the fuel contains twenty per cent ethanol, could amount to a deficiency in service and may infringe the rights to choice and information. This is especially so where the fuel visibly affects vehicles or parts that were not made for that blend.³³ The lack of compulsory labelling at the pump also sits poorly with the disclosure scheme of the Legal Metrology Act, 2009 and its Packaged Commodities Rules, although petrol sold by volume through a metered pump is not clearly covered by that Act’s rules on pre-packaged goods.³⁴

D. Fundamental Duties

Under Article 51A(g), every citizen has a duty to protect and improve the natural environment and to have compassion for living creatures.³⁵ The State cannot be forced to honour fundamental duties, but courts regularly refer to Article 51A(g) when interpreting

²⁸See supra note 26.

²⁹*M.C. Mehta v. Union of India*, (1987) 1 SCC 395 (India) (the Oleum Gas Leak case, evolving the doctrine of absolute liability).

³⁰India Const. art. 19(1)(g).

³¹The Consumer Protection Act, 2019, No. 35, Acts of Parliament, 2019 (India), § 2(9).

³²The Consumer Protection Act, 2019, § 18.

³³Neeti Niyaman, *National Biofuel Policy & E20: Balancing Consumers and Policy* (2025), <https://neetiniyaman.com/national-biofuelpolicy-ethanol-blending-consumer-rights/>.

³⁴The Legal Metrology Act, 2009, No. 1, Acts of Parliament, 2010 (India); The Legal Metrology (Packaged Commodities) Rules, 2011 (India).

³⁵India Const. art. 51A(g).

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Article 48A and when testing whether restrictions on trade in environmentally sensitive fields are reasonable. This supports the point that a transition policy of this size cannot be judged only on energy-security or fiscal grounds.

IV. ENERGY SECURITY: THE IMPORT-SUBSTITUTION RATIONALE

NPB2018 was prompted mainly by India's large and growing dependence on imported crude, put at about eighty-seven per cent of domestic consumption when E20 was brought forward.³⁶ When home-made ethanol replaces a fifth of the energy content of petrol, the crude import bill falls, and so does the outflow of foreign exchange. Industry once estimated the cumulative forex savings of the EBP Programme at about ₹1.08 lakh crore;³⁷ official figures now exceed ₹1.97 lakh crore (Part VIII). Blending also brings some environmental advantages over straight fossil fuel, which are covered in Part VII. These goals are legitimate and carry constitutional weight, since they support the duty to protect the environment under Article 48A and the aim in Article 39(b) of directing material resources, foreign exchange included, towards the common good.³⁸ They explain why governments of every political colour have made energy security the guiding reason for the programme.

Yet energy security alone cannot decide how fast the transition should go, and it says nothing about who should bear the cost. The 2022 decision to cut almost five years from the schedule³⁹ rested mainly on energy security and feedstock supply, with comparatively little study at the time of what it meant for consumers and water security. This flaw in sequencing is taken up again in Part IX.

V. FARMER INCOME: THE AGRARIAN DIVIDEND AND ITS LIMITS

The second pillar of the EBP Programme is the farmer. Guaranteed demand at administered prices for cane, maize and, increasingly, surplus foodgrain has put substantial money into rural incomes, estimated at over ₹1.25 lakh crore of procurement payments since expansion began and now stated officially at above ₹1.66 lakh crore. It has also absorbed surpluses of

³⁶See supra note 2.

³⁷Indian Masterminds, *Why India's Ethanol Policy Needs a Food Security Reality Check* (2026), <https://indianmasterminds.com/features-stories-on-bureaucrats-changemakers/india-ethanol-policy-food-security-crisis-207222/>.

³⁸See supra note 24.

³⁹See supra note 3.

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cane and grain that could otherwise have pulled farm-gate prices down.⁴⁰ The raw-material basket has become more varied as well. Grain-based ethanol, once marginal, now supplies about two-thirds of national output, with cane making up the rest, and maize rose from nil in Ethanol Supply Year 202122 to about thirty-seven per cent in 202526.⁴¹ The Government cites this as its answer to water-security concerns, because maize uses less water than cane and in parts of India depends mainly on rain.⁴²

The benefit is nevertheless uneven and, on current evidence, is beginning to change cropping patterns in ways that raise other concerns under Articles 39(b) and 48. Reports based on government and industry figures suggest that assured ethanol purchase is drawing farmers in Maharashtra and Karnataka away from pulses and oilseeds and towards maize and cane. They also suggest that cane, which is planted on a small share of Maharashtra's cropped area, already takes a disproportionate share of the State's irrigation water.⁴³ A policy that is defended partly through Article 48's call for scientific agriculture can, if it is administered without attention to its side effects on cropping, work against the environmental duty in Article 48A and against Article 39(b)'s aim of serving the common good instead of a favoured group of growers.

VI. THE CONSUMER-SIDE COSTS

A. Food Security and the Water Footprint of Feedstock Diversion

Official policy holds that ethanol takes only surplus, meaning the sugar and foodgrain that remain after public distribution and buffer stocks are secured, and that this diversion has not visibly raised retail food prices.⁴⁴ Independent estimates of water use are nonetheless alarming. They put cane-based ethanol at roughly 3,630 litres of water per litre, maize-based ethanol at roughly 4,670 litres and rice-based ethanol at up to 10,790 litres, mostly because of irrigation.⁴⁵ Observers add that the cane belt already draws heavily on regional irrigation: in

⁴⁰See supra note 36.

⁴¹Vajiram& Ravi, *Ethanol Blending in India, Benefits, Challenges, Concerns* (2026), <https://vajiramandravi.com/current-affairs/ethanol-blending-in-india/>.

⁴²Newkerala, *India: Ethanol Blending Safe for Food Security* (2026), <https://www.newkerala.com/news/a/centre-assures-20-ethanol-blending-target-no-impact-962.htm>.

⁴³See supra note 21.

⁴⁴See supra note 41.

⁴⁵See Vajiram& Ravi, supra note 40.

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Maharashtra, cane reportedly occupies about four per cent of the cropped area but uses over sixty per cent of irrigation water, in a country where more than half of the monitored groundwater wells are declining.⁴⁶ The industry questions how much these headline figures matter, arguing that they mix rain-fed cultivation, incidental rainfall and process water in factories, and that production is shifting to less thirsty, mostly rain-fed maize.⁴⁷ This is exactly the kind of scientific doubt that, under the precautionary principle in *Vellore Citizens*, calls for independent checking and not faith in industry figures before blending goes beyond E20.⁴⁸

B. Fuel Efficiency and Vehicle Compatibility

Ethanol holds less energy per litre than petrol, so blending lowers fuel economy somewhat. What is disputed is by how much, and for whom. The Ministry of Petroleum and Natural Gas says that mileage may fall by about one to two per cent in E20-calibrated vehicles and by three to six per cent in older, uncalibrated ones. It adds that the higher octane rating of blended fuel can improve acceleration and combustion in vehicles that are tuned for it.⁴⁹ Automotive engineers quoted in the press suggested a fall of two to five per cent depending on the type of vehicle. They blamed mainly the lower energy content of ethanol and, in older vehicles, the slow deterioration of rubber gaskets, hoses and fuel-system parts that were never designed for a twenty per cent blend.⁵⁰ Trials carried out jointly by Indian Oil Corporation Limited, the Automotive Research Association of India and the Society of Indian Automobile Manufacturers found no significant compatibility trouble, unusual wear or drivability problems, even in older vehicles.⁵¹ By contrast, independent consumer surveys after the fuel became compulsory nationwide in April 2025 found that most respondents felt their mileage was worse and their upkeep costs higher, especially in vehicles built before E20-ready parts

⁴⁶See supra note 21.

⁴⁷Id.

⁴⁸See supra note 26.

⁴⁹The Tribune, *E20 Petrol Does Not Cause Drastic Drop in Fuel Efficiency, Even Improves Engine Performance: Petroleum Ministry*, <https://www.tribuneindia.com/news/business/e20-petrol-does-not-cause-dramatic-drop-in-fuel-efficiency-even-improves-engine-performance-petroleum-ministry>.

⁵⁰Deccan Herald, *Fuel Efficiency May Drop 2-5% in Non-E20 Cars, Say Experts*, <https://www.deccanherald.com/amp/story/india%2Ffuel-efficiency-may-drop-2-5-in-non-e20-cars-say-experts-3694878>.

⁵¹Deccan Herald, *No Dip in Vehicle Efficiency, Mileage with Ethanol-Blended Petrol: Govt*, <https://www.deccanherald.com/amp/story/india%2Fkarnataka%2Fno-dip-in-vehicle-efficiency-mileage-with-ethanol-blended-petrol-govt-3822507>.

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became common around 2023.⁵² The lasting gap between official assurance and what motorists report points to weak disclosure and weak grievance redress. It does not prove that either side is wrong.

C. Absence of Consumer Choice and the Consumer Protection Act, 2019

The consumer complaint with the most force is about design and not about engineering. From April 2025, E20 has been the only petrol grade at almost every outlet in the country. This leaves owners of older vehicles with no ethanol-free or lower-blend alternative and, in most cases, with no notice at the pump about the blend.⁵³ On the reading that commentators draw from the Consumer Protection Act, 2019, this combination of compulsory uniform supply, lack of choice and thin disclosure touches at least three statutory rights: the right to be informed and to be protected from unfair trade practices; the right to be assured of access to a variety of goods at competitive prices; and the right to seek redress for deficient service where the fuel is shown to harm the performance or lifespan of a vehicle not built for that blend.⁵⁴ A supply mandate made by executive policy and not by a specific statute is not, for that reason alone, an “unfair trade practice” under Section 2(47) of the Act.⁵⁵ But the case for reform does not depend on calling the present arrangement unlawful. It needs only the more modest proposition, well supported by Part VI(B), that consumers have not received the information or choice that the consumer-rights framework treats as a minimum, whether or not the blending target itself is sound.

VII. ENVIRONMENTAL EFFECTS OF THE POLICY

Environmental benefit is the argument most often offered for ethanol blending and, on the evidence, the least settled. Gains at the exhaust pipe have to be weighed against costs on the farm and at the distillery.

⁵²Business Standard, *E20 Fuel Hits Mileage of Older Petrol Vehicles; 8 in 10 Report Drop: Survey* (Oct. 13, 2025), https://www.business-standard.com/industry/auto/e20-fuel-blend-old-petrol-vehicles-impact-mileage-maintenance-125101300512_1.html.

⁵³Id.

⁵⁴See supra note 32.

⁵⁵The Consumer Protection Act, 2019, § 2(47) (defining “unfair trade practice”).

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A. Greenhouse Gas and Tailpipe Gains

Government figures credit blending with avoiding about 952 lakh metric tonnes of carbon dioxide since Ethanol Supply Year 201415 and displacing nearly 316 lakh metric tonnes of crude oil, and claim a lifecycle carbon saving of about forty per cent for E20.⁵⁶ A lifecycle study attributed to NITI Aayog reportedly found greenhouse-gas cuts against petrol of about sixty-five per cent for cane ethanol and about fifty per cent for maize ethanol.⁵⁷ The Expert Committee's exhaust tests found markedly less carbon monoxide (about fifty per cent less for two-wheelers and thirty per cent less for four-wheelers) and around twenty per cent fewer hydrocarbons. They showed no clear trend for nitrogen oxides and slightly higher but fairly low acetaldehyde. The Committee cautioned that the net carbon benefit depends on how the ethanol is produced and on whether indirect land-use effects are counted.⁵⁸ These benefits are real and they serve Article 48A, but they are measured against petrol and not against rival uses of the land, water and grain that feed the programme.

B. Land Use, Fertiliser Nitrogen and Cropping Patterns

Researchers from IIM Ahmedabad, the Potsdam Institute and the FABLE consortium modelled several scenarios. They found that grain-heavy or cane-juice-heavy routes can raise emissions from land-use change and from fertiliser nitrogen even while tailpipe carbon falls, whereas a varied feedstock mix lowered land-use emissions by tens of millions of tonnes of CO₂-equivalent by 2030.⁵⁹ The outcome therefore depends on which crops meet the extra demand, and the present drift is towards grain. Maize, which was absent from the basket in 202122, supplied about thirty-seven per cent in 202526 and took roughly 12.6 million tonnes.

⁵⁶Supra note 2 (reporting about 952 lakh metric tonnes of CO₂ avoided and nearly 316 lakh metric tonnes of crude oil substituted).

⁵⁷Drishti IAS, *Ethanol for Energy, Environment and Empowerment* (18 Aug. 2025), <https://www.drishtiiias.com/daily-updates/daily-news-editorials/ethanol-for-energy-environment-and-empowerment>.

⁵⁸Down To Earth, *India's Ethanol Roadmap: The Targets and Challenges* (June 2021), <https://www.downtoearth.org.in/energy/india-s-ethanol-roadmap-the-targets-and-challenges-77360> (reporting the Expert Committee's findings).

⁵⁹Prasanna Singh, *Ethanol's Ledger: The Savings Are Real, So Are the Trade-offs*, IamRenew (27 July 2026), <https://www.iamrenew.com/green-energy/ethanols-ledger-the-savings-are-real-so-are-the-trade-offs/> (discussing the PLOS One study and the Government's Rajya Sabha figures).

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Maize has reportedly spread at the expense of pulses and oilseeds, and India has gone from being a net exporter of maize to a net importer.⁶⁰

C. Water, Groundwater and Distillery Effluent

Water is the chief resource cost of the programme, as Part VI(A) showed. Cane ethanol is put at around three thousand litres of water per litre of fuel, in States where groundwater is already overdrawn.⁶¹ Distilleries add a second, point-source problem. Molasses-based units produce concentrated spent wash (vinasse). Since 2015 the Central Pollution Control Board has demanded zero liquid discharge from them, by concentrating the wash and then composting or burning it, and has discouraged one-off land application and ferti-irrigation.⁶² Commentators nevertheless report untreated discharges, point out that distilleries fall in the “red category” of polluting industries, and note that only a few large 2G plants are operating.⁶³ Distilleries are answerable under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986, and after *Lalta Prasad Vaish* the States may also control where they are located and what they discharge. Expanding capacity to about 2,000 crore litres, when roughly 1,100 crore litres are enough for E20, adds considerably to that compliance burden.⁶⁴

D. Assessment

Judged by the standard of *Vellore Citizens*, the greenhouse-gas gain is large but depends on the feedstock; the costs in land, nitrogen and water are contested but plausible; and the risk from effluent is covered by existing rules, so enforcement is the real unknown. The author found no published environmental assessment of the EBP Programme as a whole, whether for the 2022 acceleration or for any move beyond E20. A policy that cites Article 48A in its defence but changed its timetable without such an assessment has not met the precautionary duty that Article 21 imposes.

⁶⁰Newslaundry, *Why Diverting Maize for Ethanol Is Affecting Poultry Farmers* (28 Sept. 2026), <https://www.newslaundry.com/2026/09/28/why-diverting-maize-for-ethanol-is-affecting-poultry-farmers>.

⁶¹Policy Circle, *After E20, India's Ethanol Blending Policy Faces a Harder Test* (2026), <https://www.policycircle.org/?p=50592> (citing NITI Aayog's estimate of about 3,000 litres of water per litre of sugar-based ethanol).

⁶²Central Pollution Control Board, *Charter for Zero Liquid Discharge (ZLD) in Molasses Based Distilleries*, https://cpcb.nic.in/ngrba/charter_distillery.pdf (recording the 2015 direction and the targets of 6–8 litres of spent wash and 8–10 litres of fresh water per litre of alcohol).

⁶³See supra note 56.

⁶⁴See supra note 2.

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VIII. THE PRESENT SCENARIO

A. Where the Programme Stands

E20 is now the national norm. Average blending grew from about 1.5 per cent in 2013¹⁴ to 19.2 per cent in 2024²⁵ and stayed at 20 per cent between November 2025 and June 2026. Procurement passed 1,000 crore litres in 2024²⁵, and distillery capacity is stated at nearly 2,000 crore litres, against about 1,100 crore litres needed for E20.⁶⁵ Official cumulative claims for July 2026 are nearly 316 lakh metric tonnes of crude displaced, forex savings of over ₹1.97 lakh crore, farmer payments of over ₹1.66 lakh crore and about 952 lakh metric tonnes of CO₂ avoided.⁶⁶ About three-quarters of the ethanol now comes from grain, with maize alone supplying around 4.8 billion litres in 2025²⁶, and the share of sugar diverted has dropped from about twelve per cent in 2022²³ to about nine per cent.⁶⁷

B. Beyond E20, the Courts and the Consumer

The programme continues to evolve. Indian standards for E22, E25, E27 and E30 were reportedly notified in May 2026, excise relief has been extended to blends beyond E20, and press reports citing anonymous government sources speak of E21 in 2027 and E25 by 2029.⁶⁸ Officially the tone is more cautious. On 21 July 2026, the Minister of State for Petroleum told Parliament that no decision has been made to raise petrol blending beyond E20, and that any increase would first need research, stakeholder consultation and technical assessment.⁶⁹

In court, the only reported challenge to the consumer-facing design of the mandate failed at the start. A bench of the Chief Justice of India and Justice K. Vinod Chandran dismissed, on 1 September 2025, a public interest petition seeking ethanol-free petrol at outlets for vehicles built before 2023. The Union had objected that the policy helps cane farmers and saves

⁶⁵Supra note 2 (blending percentages, procurement and capacity figures); see also supra note 60 (reporting that capacity was expected to reach about 2,000 crore litres by 2026).

⁶⁶See supra note 2.

⁶⁷See supra note 59.

⁶⁸Kotak Neo, *India Eyes E21 by 2027 and E25 by 2029 as Ethanol Blending Programme Moves to Next Phase* (8 July 2026), <https://www.kotakneo.com/news/sectors/india-ethanol-blending-e21-2027-e25-2029-roadmap-2026/>.

⁶⁹Deccan Herald, *Is India Planning to Raise Ethanol Blending Beyond E20? Government Clarifies* (21 July 2026), <https://deccanherald.com/india/is-india-planning-to-raise-ethanol-blending-beyond-e20-government-clarifies-4081267>.

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foreign exchange.⁷⁰ As reported, the order contains no reasoned ruling on the Consumer Protection Act, 2019 issues raised in Part VI(C), so they remain open. Since *Lalta Prasad Vaish*, no cooperative arrangement with the States has been announced.

IX. CHANGES INDIA HAS ALREADY MISSED

The evidence supports the hypothesis of this paper, and it shows changes that India has already missed and not merely put off. The first lies in policy design. Both the 2018 goal and its 2022 acceleration were driven mainly by energy security and then by farm income. Labelling, choice and disclosure about vehicle compatibility came later, mostly as ministerial clarification and industry reassurance and not as binding safeguards put in place at the start.⁷¹ The second lies in institutional design. The EBP Programme has been run almost entirely through Union executive policy and pricing orders, even though *Lalta Prasad Vaish* confirms full State legislative power over the industrial alcohol from which fuel ethanol comes. The gap between where regulatory power constitutionally sits and where it has actually been used left little room for State or consumer objections to be heard before a national rollout was announced.⁷² The third lies in remedy. Consumers who are dissatisfied with the fuel available to them have nothing like the price and procurement guarantees open to farmers, or the constitutional and statutory levers open to States over the alcohol supply. They must rely on general consumer-protection litigation of the kind discussed in Part VI(C), which remains undecided on its merits after the dismissal of the 2025 petition.

A fourth miss comes from the environmental evidence. The acceleration came without a published environmental or water-footprint assessment, without binding lifecycle-emission reporting and without limits on the feedstock mix, even though the findings on land use and nitrogen show that the mix largely decides whether the climate benefit survives. Each of these changes was open to India in 2022 and again in April 2025, and none has been made.

⁷⁰The Leaflet, *Supreme Court Dismisses Plea Challenging E20 Petrol Policy and Its Nationwide Rollout* (2 Sept. 2025), <https://theleaflet.in/leaflet-reports/supreme-court-dismisses-plea-challenging-e20-petrol-policy-and-its-nationwide-rollout>; see also Bar & Bench, *Supreme Court Rejects PIL Against 20 Percent Ethanol-Blended Petrol/E20 Fuel*, <https://www.barandbench.com/news/supreme-court-rejects-pil-against-20-percent-ethanol-blended-petrol-e20-fuel>.

⁷¹See supra note 3.

⁷²See supra note 5.

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None of this makes the energy-security and farmer-income rationales illegitimate. Each rests on real constitutional foundations, Article 48A's environmental mandate and Article 48's call for scientific agriculture respectively, and each has delivered measurable results: the twenty per cent target reached five years early, large forex savings and considerable procurement income for farmers.⁷³ The flaw lies in the sequence and the institutional balance, not in the goal. Consumer and environmental interests were treated as leftover matters, handled by reassurance after the fact, when they should have been equal inputs into the pace and design of the mandate from the beginning. Article 39(b)(c), Article 48A and the consumer-rights provisions of the Consumer Protection Act, 2019 indicate that this was owed to them, both as a matter of constitutional principle and under statute.

X. WHAT A DEDICATED FRAMEWORK FOR INDIA COULD LOOK LIKE

Five reforms follow directly from this analysis, and together they point to a single dedicated biofuels framework in place of today's mix of ministerial policy, control orders and general environmental statutes.

First, the Government should speed up the shift to second-generation (2G) ethanol from crop residues and non-food biomass, and keep moving the first-generation feedstock mix towards crops that need less water and depend mostly on rain. That would reduce the clash between the environmental mandate of Article 48A and the agricultural mandate of Article 48 that cane and rice feedstocks now produce.⁷⁴

Second, before any decision to push blending beyond E20, an independent, state-by-state water-footprint audit of ethanol feedstock farming should be commissioned and published, instead of relying only on industry figures. This is in keeping with the precautionary principle in *Vellore Citizens*.⁷⁵

Third, every increase in the blend should come with binding environmental safeguards. These include an environmental assessment of the whole programme; published lifecycle greenhouse-gas accounts by feedstock; limits on the grain share of the mix to protect pulses,

⁷³See supra note 2.

⁷⁴See supra note 8.

⁷⁵See supra note 26.

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oilseeds and food prices; and verified zero-liquid-discharge compliance, with live effluent monitoring and public release of audits, at each distillery supplying the programme.⁷⁶

Fourth, ethanol content should be labelled at the point of sale as a legal requirement. There should also be a transitional lower-blend or ethanol-free grade for owners of vehicles shown to be incompatible, and clear warranty and insurance cover for E20-related component wear. Whether through Ministry regulation or statute, this would give effect to the rights to information and choice already recognised in Section 2(9) of the Consumer Protection Act, 2019.⁷⁷ A recent academic proposal for a Model Ethanol Blending Bill, with these very provisions on labelling, dual fuel and warranty, offers a workable legislative model.⁷⁸

Fifth, and most importantly, the Union should set up a cooperative-federalism body, either a statutory council patterned on the GST Council or a permanent inter-governmental committee attached to the EBP Programme. Through it, the cane- and grain-producing States, whose full power over industrial alcohol *Lalta Prasad Vaish* has now confirmed, could formally help fix blending targets, feedstock prices and environmental safeguards, in place of the largely one-sided Union decision-making that has so far marked the programme.⁷⁹ That body could also act as the integrated regulator, a single forum bringing together the energy, environmental, agricultural and consumer-protection authorities, which the abstract of this paper names as the means of reconciling India's energy, farmer, environmental and consumer aims.

In short, the dedicated framework would be a biofuels statute, enacted by the Union with the participation of the States and anchored in Entry 52 of the Union List. It would set blending targets by reference to published energy, environmental and consumer-impact assessments, build in labelling, choice and grievance redress, impose limits on feedstock and effluent, and create the inter-governmental forum that is missing today. It would turn an executive target into a legal commitment that is open to review, which is what the constitutional order after *Lalta Prasad Vaish* demands.

⁷⁶See supra note 61.

⁷⁷See supra note 30.

⁷⁸International Journal of Law, Policy and Social Review, Vol. 7, Issue 4, at 70 (2025), <https://www.lawjournals.net/assets/archives/2025/vol7issue4/7109.pdf>.

⁷⁹See supra note 5.

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XI. CONCLUSION

By its own yardsticks, India's E20 mandate has succeeded: the blending target was met five years early, foreign-exchange savings are large and sizeable income has reached cane and grain growers.⁸⁰ Yet those yardsticks were chosen, and that success was reached, with too little regard for the constitutional and statutory interests of consumers, with no published account of the programme's water, land-use and effluent costs and, after *Lalta Prasad Vaish*, with no settled institutional role for the States whose power over industrial alcohol the Court has restored.⁸¹ The Directive Principles invoked in support of the mandate, Articles 39(b)(c), 47, 48 and 48A, look beyond energy security and farm welfare to an economic order that serves the common good and protects public health, nutrition and the environment equally.⁸² Together with the statutory rights of consumers to information and choice and the precautionary principle demanded by Article 21 case law, they bear out the hypothesis of this paper: India's ethanol transition will reach real balance only when consumer protection and environmental safeguards are lifted from afterthoughts to equal pillars of the regulatory framework, beside energy security and farmer income.

⁸⁰See supra note 2.

⁸¹See supra note 5.

⁸²See supra note 20.

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