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THE LAW OF FUEL TRANSITION: INDIA'S JOURNEY TO E85

ABSTRACT

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India's journey of ethanol blending program from E5 to E85 signifies more than just a change in fuel, it represents a significant legal transformation. This article delves into how regulatory reforms, institutional collaboration, and governance strategies have influenced the country's shift towards biofuels, while also addressing the hurdles in creating a cohesive and sustainable legal framework.

Keywords: ethanol blending, E5 TO E85, biofuels

I. FUEL TRANSITION BEYOND TECHNOLOGY: THE LEGAL FOUNDATIONS OF INDIA'S ETHANOL ECONOMY

India's transformation to ethanol blended fuels is often viewed as a tech-driven solution to the growing energy demands and the pressing issue of climate change.[2] Yet the transition from traditional petrol to higher ethanol blends ranging from E5, E10 TO E20, E30, E85, and E100 represents a profound legal and institutional shift.[3] This transformation is fueled by a mix of

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[2] Ministry of Petroleum & Natural Gas, Notification, National Policy on Biofuels–2018 Amendment, 2022, F. No. P-13032(18)/7/2021-CC (E-39223), Gazette of India, Extraordinary, Part I, Section 1 (June 15, 2022), available at
[3] Rakesh Sarwal, Sunil Kumar, Amit Mehta, Amit Varadan, Subodh Kumar Singh, S.S.V. Ramakumar & Reji Mathai, Roadmap for Ethanol Blending in India 2020–25: Report of the Expert Committee (NITI Aayog & Ministry of Petroleum & Natural Gas, June 2021), ISBN 978-81-949510-9-4, https://www.niti.gov.in/sites/default/files/2021-06/EthanolBlendingInIndia_compressed.pdf

statutory notifications, executive policies, environmental regulations, fiscal incentives, technical standards, and inter-ministerial cooperation that together shape the biofuel landscape. In essence, India's ethanol initiative is a prime example of regulatory statecraft, where the law plays a crucial role in balancing energy security, agricultural progress, industrial expansion, and environmental sustainability.[4]

India's heavy reliance on imported crude oil has made ethanol even more strategically important. Acknowledging this, the National Policy on Biofuels, 2018, as amended in 2022, has set an ambitious goal of achieving 20% ethanol blending by the Ethanol Supply Year (ESY) 2025–26, transforming ethanol from an agricultural by-product into a vital energy resource.[5]

This article explores that India's transition from E5 to E85 is not merely an increase in blending percentages but the development of robust legal framework for renewable transport fuels.[6] It delves into regulatory reforms, institutional collaboration, and legal advancement that have driven this change, while also highlighting the governance challenges that need to be tackled to ensure its sustainability in the long run.[7]

II. FROM E5 TO E85: THE EVOLUTION OF INDIA'S ETHANOL BLENDING PROGRAM

India's ethanol blending program is a testament to over two decades of regulatory development, rather than a recent response to climate change.[8] Introduced in 2003 with the Ethanol Blended Petrol (EBP) Program, which aimed for a 5% blending target (E5) in certain sugar-producing

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[4] Rakesh Sarwal, Sunil Kumar, Amit Mehta, Amit Varadan, Subodh Kumar Singh, S.S.V. Ramakumar & Reji Mathai, Roadmap for Ethanol Blending in India 2020–25: Report of the Expert Committee (NITI Aayog & Ministry of Petroleum & Natural Gas, June 2021), ISBN 978-81-949510-9-4, https://www.niti.gov.in/sites/default/files/2021-06/EthanolBlendingInIndia_compressed.pdf

[5] Ministry of Petroleum & Natural Gas, Government of India, Rajya Sabha Unstarred Question No. 947: Ethanol Blended Petrol Programme Roadmap, answered on Dec. 8, 2025, Rajya Sabha, https://sansad.in/rs/questions/questions-and-answers.

[6] Int'l Energy Agency, National Policy on Biofuels (2022 Amendment) (last updated Feb. 1, 2023), https://www.iea.org/policies/17006-national-policy-on-biofuels-2022-amendment

[7] Vipin Kumar Azad, Krishnarti De & Suman Majumder, Ethanol Blending and Its Environmental Impacts: A Case Study of India, 79 Energy for Sustainable Development 101385 (2024), **https://doi.org/10.1016/j.esd.2024.101385;** Dharshan Siddarth Mohan, Aishwarya Joshi & Kushi Naidu, How Much Does India's Ethanol Blending Really Cost—and What Next?, Council on Energy, Environment and Water (July 3, 2026), https://www.ceew.in/blogs/after-e20-india-ethanol-blending-programme;

[8] P.R.S. Legislative Research, Report Summary: Report of NITI Aayog on Roadmap for Ethanol Blending in India 2020–25 (June 2021), https://prsindia.org/policy/report-summaries/report-of-niti-aayog-on-roadmap-for-ethanol-blending-in-india-2020-25.

states.[9] Since then, it has grown into one of the most ambitious biofuel initiatives globally.[10] The current direction of the policy is not just about rolling out E20 nationwide, it's also looking ahead to even higher blends like E22, E30, E85, and E100, all backed by necessary reforms in fuel standards, vehicle regulations, and industrial policies.[11]

In its early days, the program faced challenges like inconsistent ethanol procurement, variable sugar production, pricing disputes, and a lack of cohesive implementation. This highlighted the need for a comprehensive regulatory framework instead of piecemeal policy efforts. A significant turning point came with the National Policy on Biofuels in 2018 and its 2022 Amendment, which broadened the range of eligible feedstocks. It now includes not just C-heavy molasses but also sugarcane juice, B-heavy molasses, damaged food grains, surplus rice, and maize, while pushing the 20% blending target to the Ethanol Supply Year (ESY) 2025–26.[12] In addition of administered pricing, interest-subvention schemes, GST rationalization, and investment incentives, these reforms have greatly bolstered ethanol production and encouraged private sector involvement.

The results of this regulatory framework are clear. Public Sector Oil Marketing Companies hit the E10 target ahead of schedule, with average blending levels reaching 12.06% (ESY 2022–23), 14.60% (ESY 2023–24), and nearly 20% (ESY 2025–26).[13] At the same time, ethanol production capacity has grown significantly,[14] leading to a decrease in crude oil imports, lower foreign exchange spending, and reduced greenhouse gas emissions, all while boosting farmers incomes. Recent BIS specifications for E22–E30 blends and proposed changes to the Central

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[9] Press Information Bureau, Ministry of Information & Broadcasting, Government of India, Ethanol Blending in India: Policy Evolution, Key Milestones and Frequently Raised Concerns (July 5, 2026), https://static.pib.gov.in/WriteReadData/specificdocs/documents/2026/jul/doc202675912001.pdfPIB Ethanol Blending Report; Akriti Anand, India's Ethanol Blended Petrol Programme Dates Back to 2003: A Timeline from E5 to E85, Mint (July 4, 2026, 9:02 PM IST), https://www.livemint.com/news/india/indias-ethanol-blended-petrol-programme-dates-back-to-2003-a-timeline-from-e5-to-e85/amp-11783177816899.html; India's Ethanol Blended Petrol Programme Dates Back to 2003: A Timeline from E5 to E85, MENAFN (July 4, 2026), https://menafn.com/

[10] Int'l Energy Agency, Roadmap for Ethanol Blending in India 2020–25 (last updated July 9, 2024), https://www.iea.org/policies/17007-roadmap-for-ethanol-blending-in-india-2020-25

[11] Agrim Kumar Gautam, Ethanol Blending in India: Production, Policy, Automotive Impact and Environmental Future—From E10 to E20 Mandate and the Road to E30, 8 Int'l J. for Multidisciplinary Rsch., no. 3 (May–June 2026), https://www.ijfmr.com/papers/2026/3/Ethanol-Blending-In-India-Production-Policy-Automotive-Impact-and-Environmental-Future.pdf

[12] Supra note 4

[13] Tanmoy Mitra, India's Ethanol Blending Programme (EBP) Reaches 20% Milestone: Govt Report, ET Edge Insights (July 6, 2026), https://etedge-insights.com/industry/oil-gas/indias-ethanol-blending-programme-ebp-reaches-20-milestone-govt-report/; Supra note PIB report

[14] Infomerics Valuation & Rating Ltd., E20 and Beyond: The Expanding Role of Ethanol Blended Petrol (May 22, 2026), https://infomericstorage.blob.core.windows.net/uploads/ethanol_industry_may26_8a5642b087.pdf

Motor Vehicles Rules for E85 and E100 vehicles show that India is now shifting its focus from merely hitting blending targets to building a more sustainable future.[15]

III. THE LEGAL ARCHITECTURE GOVERNING INDIA'S FUEL TRANSITION

India's ethanol transition is shaped not by a single biofuel law but by a web of constitutional principles, different statutes, executive policies, and technical standards regulating production, procurement, fuel quality, and vehicle compatibility.[16]

A. BIOFUEL GOVERNANCE: FROM POLICY TO REGULATION

The National Policy on Biofuels, 2018, read with its 2022 Amendment, expanded eligible feedstocks and positioned ethanol as a strategic energy resource. It operates alongside the Petroleum Act, 1934,[17] Petroleum Rules, 2002, and the industries (Development and Regulation) Act, 1951[18], drawing constitutional support from Articles 39(b),[19] 48A,[20] and 51A(g)[21]. Together, these measures provide the regulatory foundation for India's ethanol economy.

B. ECONOMIC REGULATION: LAW AS A MARKET CREATOR

Administered procurement prices, long-term purchases by Oil Marketing Companies (OMCs), interest-subvention schemes, concessional GST, and investment incentives have created a stable ethanol market, demonstrating that regulatory certainty has been central to the success of the EBP Program.

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[15] Deepak Patel, BIS Lays Groundwork for New E22–E30 Fuel Blends Amid Ethanol Push, Bus. Standard (May 19, 2026), https://www.business-standard.com/industry/news/bis-lays-groundwork-for-new-e22-e30-fuel-blends-amid-ethanol-push-126051900; Ajith Athrady, Centre Proposes Amendments to Vehicle Emission Rules to Promote Higher Ethanol Blends, Alternative Fuel, Deccan Herald (Apr. 29, 2026), https://www.deccanherald.com/india/centre-proposes-amendments-to-vehicle-emission-rules-to-promote-higher-ethanol-blends-alternative-fuels-3985542; MoRTH Issues Draft Central Motor Vehicles (Amendment) Rules, 2026 on 27 April—Formally Adding E85, E100, and B100 Biodiesel for Vehicle Certification, After India Met E20 in 2025, PeakMocks (Apr. 30, 2026), https://peakmocks.com/current-affairs/morth-ethanol-e85-e100-b100-draft-cmvr-amendment-2026.

[16] Piyali Das, I. V. Rao & Sanjukta Subudhi, Enhancing India's Biofuels Program: Examining the Role of Oxyfuels in India's Clean Fuel Transition (The Energy & Resources Institute (TERI), Policy Brief, Nov. 28, 2023), https://teriin.org/policy-brief/enhancing-indias-biofuels-program-examining-role-oxyfuels-indias-clean-fuel-transition

[17] The Petroleum Act, No. 30 of 1934

[18] The industries (Development and Regulation) Act, No. 65 of 1951

[19] INDIA CONST. art. 39(b).

[20] INDIA CONST. art. 48A.

[21] INDIA CONST. art. 51A(g).

C. STANDARDISATION AND REGULATORY CERTAINTY

The Motor Vehicles Act, 1988,[22] Central Motor Vehicles Rules, 1989, proposed CMVR amendments, and BIS specifications for E22–E30 regulate fuel quality, emission standards, and flex-fuel vehicle compatibility, providing the legal certainty necessary for higher ethanol blends.

D. ENVIRONMENTAL GOVERNANCE BEYOND CARBON REDUCTION

The Environment (Protection) Act, 1986, Air Act, 1981,[23] Water Act, 1974,[24] and the EIA Notification, 2006 regulate ethanol production alongside environmental safeguards. However, groundwater use, feedstock diversification, and lifecycle emissions continue to require greater regulatory integration as India advances towards E85.

IV. ROADBLOCKS TO INDIA'S E85 TRANSITION

Achieving E85 isn't just about setting higher blending targets and it also calls for a more unified regulatory approach. Right now, India's framework is a bit all over the place, with energy, environmental, agricultural, and transport policies not quite aligning. This fragmentation leads to gaps in implementation, even when policies seem to be moving forward. Plus, relying heavily on sugarcane raises some serious issues around water stress, land use, and food security, which suggests that we can't pin our hopes for long-term sustainability on just one feedstock. On top of that, higher ethanol blends mean we need to ensure that vehicles are compatible, fuel infrastructure is up to par, and consumers are on board. If legal and institutional reforms don't keep pace with technological advancements, India's shift to E85 could outstrip the governance capacity needed to make it work effectively.

V. THE WAY FORWARD: TOWARDS A COHERENT BIOFUEL GOVERNANCE FRAMEWORK

India's transition to E85 requires a shift from target-based implementation to integrated governance. A solid biofuel framework bring together energy, environmental, transport, and

[22] The Motor Vehicles Act, No. 59 of 1988
[23] The Air (Prevention and Control of Pollution) Act, No. 14 of 1981
[24] The Water (Prevention and Control of Pollution) Act, No. 6 of 1974

agricultural regulations, ensuring that higher ethanol blends are supported by consistent legal and institutional mechanisms rather than fragmented policy interventions. Future reforms should focus on the commercialization of second-generation ethanol, strengthen sustainability standards based on lifecycle impacts, and speeding the development of flex-fuel infrastructure. Uniform technical standards and coordinated implementation will be essential to reduce regulatory uncertainty and improve consumer confidence.

VI. CONCLUSION

India's shift from E5 to the emerging E85 framework is about more than just changing fuel type and it marks a significant evolution in how we approach legal and regulatory governance. While we've seen policies and technological advancements speed up the adoption of ethanol, the real key to the program's long-term success lies in establishing a solid legal framework. This framework needs to bring together petroleum regulation, environmental sustainability, agricultural policy, and transport standards in a cohesive way. As India moves towards higher ethanol blends, we should focus less on just hitting blending targets and more on creating strong institutions and sustainable regulatory practices. In the end, the future of India's ethanol economy will hinge not only on technological breakthroughs but also on the robustness of its legal structure.