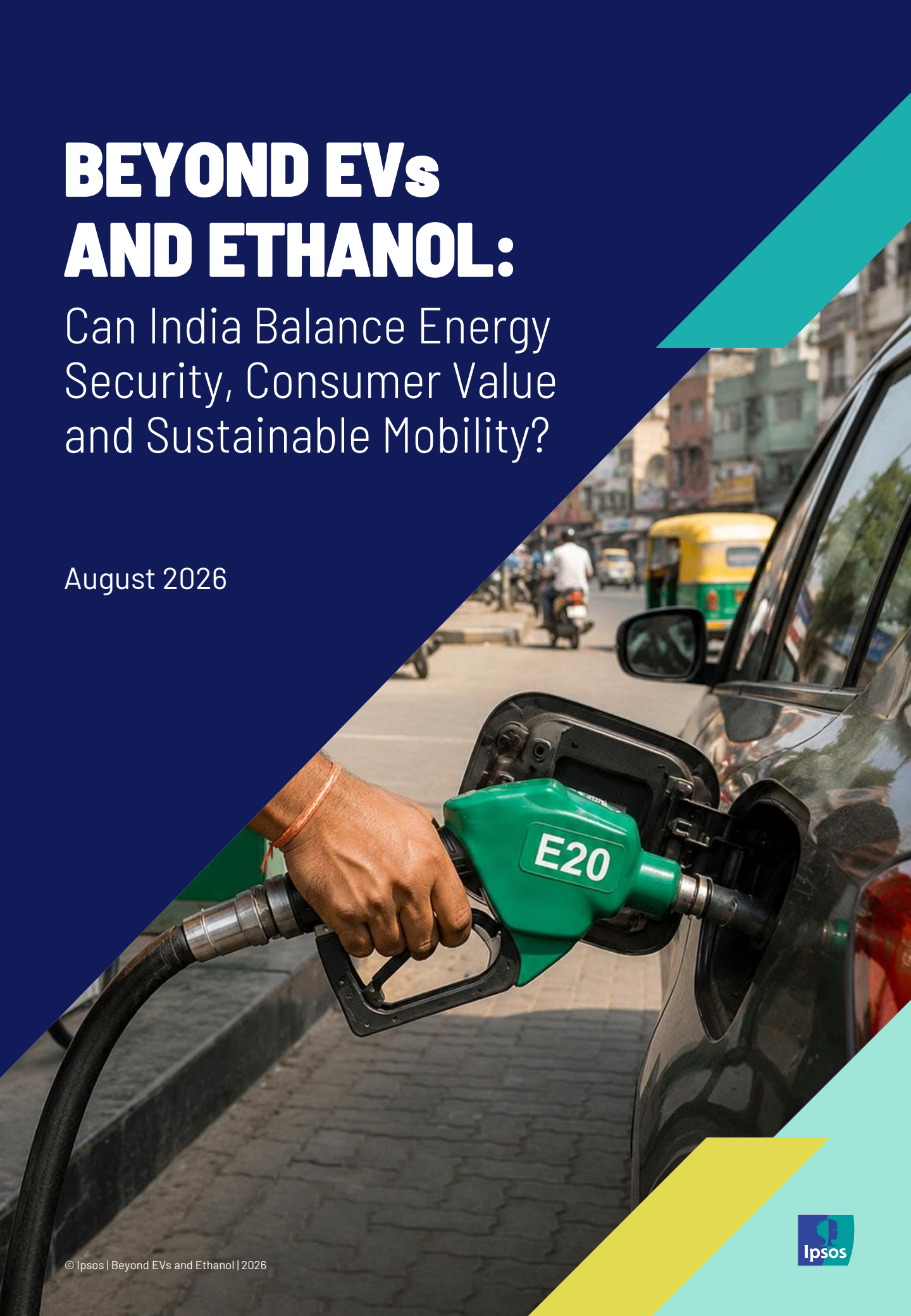


BEYOND EVs AND ETHANOL:

Can India Balance Energy
Security, Consumer Value
and Sustainable Mobility?

August 2026





Source: Google Image

Beyond the EV buzz, India's ethanol revolution is quietly transforming the transportation landscape. The article examines the opportunities, trade-offs, and consumer impact of higher ethanol blending as the country pursues energy security and sustainable mobility. Ultimately, it asks whether national benefits can translate into meaningful value at the pump for everyday consumers

India's mobility transition is frequently discussed through the lens of electric vehicles, battery technology, and charging infrastructure. Yet one of the country's most significant transportation transformations may already be happening at fuel stations across India.

Over the last decade, ethanol blending has evolved from a niche energy-security initiative into a major national program influencing fuel policy, agriculture, vehicle engineering, and energy economics. Having achieved the rollout of E20 petrol ahead of schedule, India is now entering the next phase of the debate—not whether ethanol blending should continue, but how far it should go.

More importantly, as policymakers target higher levels of blending and automakers introduce flex-fuel vehicles, an important question emerges:

Can ethanol deliver benefits for the country while also creating tangible value for consumers?



Source: Google Image

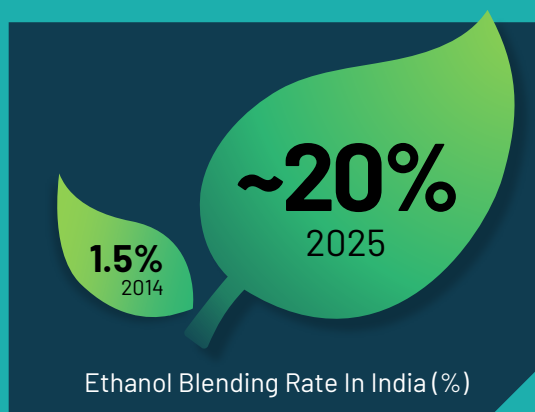
India's Ethanol Journey: A Strategic Shift

The ethanol blending program was designed to serve multiple objectives: **reduce crude oil imports, strengthen farmer incomes, improve energy security, and lower the carbon intensity of transportation.**

The progress has been remarkable.

India's ethanol blending rate has increased from around 1.5% in 2014 to nearly 20% in 2025,

achieving the E20 target years ahead of the original roadmap.



Production capacity has expanded significantly, creating the foundation for future growth.

With E20 now largely established, the challenge is shifting from producing ethanol to creating sufficient demand for it. Future growth may depend on expanding the use of higher blends such as E25 and E85, supported by compatible vehicles and fuel distribution infrastructure.

From a policy perspective, ethanol represents more than an alternative fuel. It is also a mechanism for reducing dependence on imported oil and retaining more energy expenditure within the domestic economy.

The Debate Is No Longer About Blending – It's About Value

Despite the policy success of E20, public discussion around ethanol has become increasingly nuanced.

Supporters view ethanol as a strategic national asset that improves energy security, supports rural economies, and reduces exposure to volatile global crude oil markets. Critics argue that while the national benefits are clear, the value proposition for consumers remains less obvious.

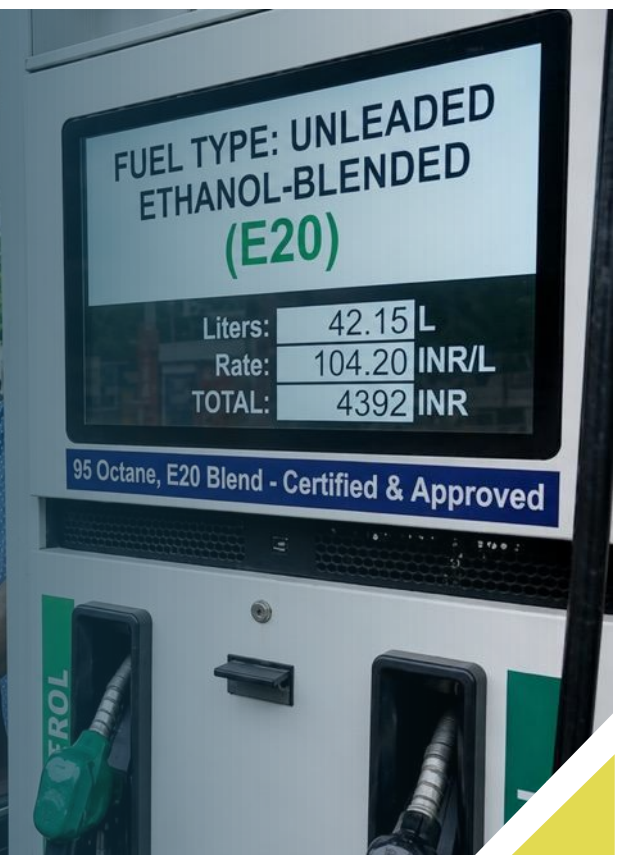
At the centre of the debate is a simple question:

If consumers experience lower fuel efficiency,
where is the visible benefit for them?

Unlike many technology transitions where users directly experience improved performance or lower costs, ethanol blending is often perceived as delivering societal and economic benefits that are not immediately visible at the individual level.

This gap between national objectives and consumer perception could become one of the defining challenges in the next phase of India's ethanol journey.

Source: Google Image



How Automakers Are Responding

For much of the automotive industry, E20 appears to be only the beginning of a broader flex-fuel roadmap.

Manufacturers have increasingly started introducing vehicles capable of operating on higher ethanol blends. Hero MotoCorp has showcased flex-fuel versions of popular commuter motorcycles such as the Splendor and HF Deluxe, while Maruti Suzuki has demonstrated a flex-fuel version of the WagonR.

The appeal is understandable.

Unlike EV programs, which require substantial investment across vehicle architecture, batteries, charging ecosystems, and supply chains, flex-fuel vehicles can often be developed through modifications to existing internal-combustion platforms. Fuel-system components, engine calibration, and material compatibility require updates, but the underlying vehicle architecture largely remains unchanged.

As a result, flex-fuel technology offers manufacturers a relatively low-risk pathway to participate in India's alternative-fuel transition while leveraging existing manufacturing capabilities.



What Does It Mean for Consumers?

For most vehicle owners, the transition to E20 has been nearly invisible. Fuel stations, refuelling habits, and day-to-day vehicle usage have remained largely unchanged.

However, higher ethanol blends bring trade-offs that are becoming increasingly important within the public debate.

The most frequently cited concern is fuel efficiency. Since ethanol contains less energy per litre than petrol, higher blends such as E85 can result in lower mileage compared to conventional petrol fuels. Estimates vary depending on vehicle design and operating conditions, but reductions in fuel efficiency are widely acknowledged as part of the flex-fuel equation.

There are also technical considerations. Ethanol is more hygroscopic and can be more corrosive than petrol, requiring engines, seals, fuel lines, and related components to be specifically engineered for higher ethanol blends. Modern flex-fuel vehicles are designed to accommodate these characteristics, but concerns regarding long-term durability and maintenance costs continue to be discussed among consumers and industry observers.

Ultimately, consumers evaluate fuel through practical measures:

	Cost per litre
	Cost per kilometre
	Vehicle reliability
	Maintenance costs
	Resale value

From that perspective, lower fuel efficiency becomes acceptable only if it is offset by a meaningful reduction in running costs.

This is where the debate intensifies. Many consumers have not witnessed a proportionate reduction in fuel prices during the transition to E20, leading some to question the direct economic benefits of higher ethanol blends.

Supporters counter that the benefits are broader and longer-term. Reduced dependence on imported crude, lower vulnerability to geopolitical disruptions, and stronger domestic economic activity ultimately contribute to national economic resilience that benefits consumers indirectly.

The reality may lie somewhere in between.

The Sustainability Question

Another dimension of the discussion concerns sustainability.

While ethanol is widely promoted as a lower-carbon alternative to conventional fuels, concerns remain around feedstock production, water consumption, and land-use patterns associated with certain crops.

Critics argue that a large-scale expansion of ethanol production must carefully balance fuel requirements with agricultural sustainability. Supporters point to the growing use of multiple feedstocks, including grains, agricultural by-products, and damaged food stocks, which can broaden supply sources and reduce dependence on any single crop.

As India explores higher blending levels, the sustainability of feedstock production will likely become as important as ethanol production volumes themselves.

Fuel Retailers: An Often-Overlooked Stakeholder

The ethanol discussion often focuses on farmers, automakers, and consumers. Yet fuel retailers represent another critical part of the ecosystem.

Petrol pump operators have highlighted concerns around storage infrastructure, inventory management, dispensing systems, and investment requirements as the industry moves toward multiple fuel grades.

For larger urban outlets, accommodating higher blends may be manageable. Smaller stations, particularly in rural and semi-urban regions, may face a more complex business case.

At the same time, proponents argue that infrastructure investment is a normal part of any large-scale energy transition and can be implemented gradually as demand grows.

The long-term success of higher ethanol blends will therefore depend not only on production capacity and vehicle availability, but also on the ability of the fuel-distribution network to support the transition economically.



Conclusion:

A Transition That Must Work for Everyone

India's ethanol story is no longer simply about achieving blending targets.

The next phase will be defined by more difficult questions involving consumer economics, infrastructure readiness, sustainability, vehicle durability, and alignment with broader decarbonization goals.

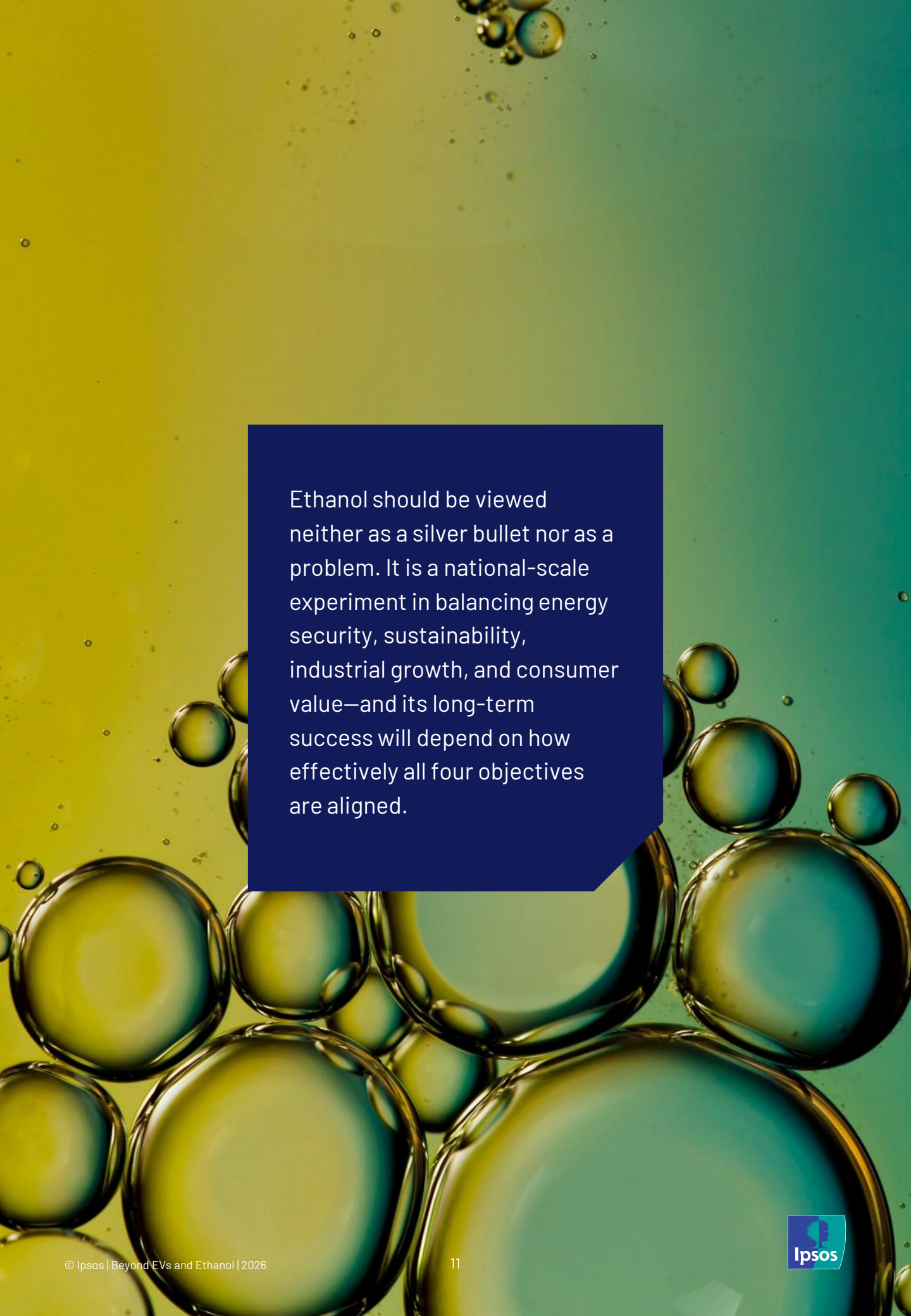
 For Policymakers Ethanol strengthens energy security	 For Farmers It creates new demand opportunities	 For Automakers It offers a practical and scalable transition pathway	 For Fuel Retailers It introduces operational and investment challenges	 For Consumers It remains a proposition that must demonstrate clear value at the pump
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None of these perspectives are entirely right or entirely wrong.

The ultimate success of ethanol will depend not on how many litres can be produced, but on whether the ecosystem **can align national priorities with consumer interests.**

If that balance can be achieved, ethanol could become one of India's most significant mobility transitions. If not, the debate around blending levels, fuel economics, and technology priorities will only intensify as the country moves beyond E20.



The background of the slide features a close-up, macro photograph of numerous oil droplets of varying sizes suspended in water. The droplets are highly reflective, showing iridescent colors of blue, green, and yellow. A solid blue rectangular box with a diagonal cut-off on its bottom right corner is positioned in the center of the slide, containing white text.

Ethanol should be viewed neither as a silver bullet nor as a problem. It is a national-scale experiment in balancing energy security, sustainability, industrial growth, and consumer value—and its long-term success will depend on how effectively all four objectives are aligned.

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