

GOVERNMENT OF INDIA
MINISTRY OF PETROLEUM AND NATURAL GAS
RAJYA SABHA
UNSTARRED QUESTION NO - 2507
ANSWERED ON - 10/08/2026

**FEEDSTOCK DIVERSIFICATION AND ENVIRONMENTAL CONCERNS IN
ETHANOL PRODUCTION**

2507. SHRI MALLIKARJUN KHARGE:

Will the Minister of PETROLEUM AND NATURAL GAS be pleased to state:

- (a) whether Government has examined the potential food-versus-fuel trade-offs arising from the use of rice, maize, and other food grains for ethanol production, and if so, the details thereof;
- (b) whether any studies have been conducted on the environmental impact of large-scale ethanol production, including groundwater stress, crop displacement, and emissions balance; and
- (c) the roadmap for scaling up 2nd-Generation (2G) ethanol from agricultural residue and non-food biomass, including investment commitments, project timelines, and measures to ensure farmer income gains without increasing food inflation?

ANSWER

THE MINISTER OF STATE IN THE MINISTRY OF PETROLEUM & NATURAL GAS

(SHRI SURESH GOPI)

(a) & (b): The Government has adopted a balanced approach to the Ethanol Blended Petrol (EBP) Programme, ensuring that water sustainability, food security and farmers' interests remain paramount.

Under the National Policy on Biofuels, ethanol is produced from a diversified basket of feedstocks, including sugarcane-based feedstocks, maize, damaged foodgrains, broken rice, foodgrains unfit for human consumption, surplus foodgrains approved by the National Biofuel Coordination Committee (NBCC) and other approved agricultural feedstocks.

This diversified approach reduces dependence on any single crop while improving feedstock resilience.

The Government is promoting crop diversification towards comparatively less water-intensive feedstocks such as maize (contribution of maize towards ethanol blending has increased from 0% in ESY 21-22 to around 37% in ESY 25-26). An Expert Committee constituted by the Ministry of Agriculture & Farmers Welfare in 2024 examined the water requirement of various ethanol feedstock crops, and its recommendations are being considered while implementing the programme.

Water-use efficiency is also being enhanced through micro-irrigation, drip irrigation and other water conservation measures under the *Per Drop More Crop* component of the Pradhan Mantri Krishi Sinchayee Yojana. Many sugar mills are also encouraging farmers to adopt water-efficient cultivation practices.

Molasses-based distilleries with incineration boilers and grain-based distilleries are required to operate as Zero Liquid Discharge (ZLD) units, enabling recycling and reuse of process water while eliminating liquid effluent discharge. Modern ethanol plants typically consume about 3–5 litres of processed water for producing one litre of ethanol.

(c): The Government had notified the “Pradhan Mantri JI-VAN (Jaiv Indhan- Vatavaran Anukool fasal awashesh Nivaran) Yojana” 2019, amended in 2024, with the objectives to establish advanced biofuels projects in the country using lignocellulosic biomass and other renewable feedstocks, provide remunerative income to farmers for their otherwise waste agriculture residues, create rural and urban employment opportunities, address concerns of environmental pollution caused by burning of biomass/agriculture residue, reduce soil and water pollution from municipal solid waste, contribute to Swachh Bharat Mission, help in meeting the target envisaged in Ethanol Blended Petrol (EBP) programme, reduce dependence on crude oil import, etc. This scheme envisages setting up of commercial Advanced Biofuel Projects and demonstration scale Advanced Biofuel Projects for improving commercial viability as well as promoting R&D for development and adoption of technologies in the field of production of advanced biofuels.

Advance biofuel plants including 2G Ethanol production plants are primarily set up by entrepreneurs/companies/co-operative societies etc., depending upon the techno-economic viability of the project as per their investment plans. Under the PM JI-VAN Yojana, the maximum financial assistance of Rs.150 crore per project for commercial projects and Rs.15 crore per project for demonstration projects has been set for improving commercial viability as well as promoting R&D for development and adoption of technologies. The total financial outlay for PM JI-VAN is Rs. 1,969.50 crore. The revised scheme has been extended by five years i.e., from 2023-24 to 2028-29, expanding eligibility to cover “bolt-on” plants and “brownfield projects”, and replacing “2G ethanol” with advanced biofuels.

Till date, 2G ethanol project developers have made investments of more than ₹8,100 crore. Feedstocks for 2G ethanol, such as rice straw and bamboo, are procured by project developers at market rates, providing additional income across the entire supply chain, including farmers.
