Science & Technology · GS - III

Examine the potential of ethanol blending in petrol to strengthen India's energy security and promote environmental sustainability. Discuss the associated challenges.

EXAM YEAR	PAPER	SUBJECT
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MARKS	WORD LIMIT
10	~ 150 words

Answer Hint

Ethanol Blended Petrol Programme, E20, crude oil import dependence, renewable fuel, sugarcane and biomass, agricultural diversification, vehicle compatibility, food-versus-fuel debate, water consumption, fuel quality standards.

Model Answer

Introduction

India's Ethanol Blended Petrol Programme seeks to promote renewable fuels, reduce crude oil imports and lower the environmental impact of conventional transportation fuels.

Potential Benefits

- **Energy security:** Domestic ethanol production can reduce dependence on imported petroleum.
- **Environmental gains:** Ethanol blending can reduce certain tailpipe emissions compared with unblended petrol.
- **Agricultural opportunities:** It creates additional markets for sugarcane, grains and agricultural residues.
- **Rural economy:** Distillery investments can generate employment and support farmers.

Major Challenges

High water consumption in sugarcane cultivation, food-versus-fuel concerns, feedstock availability and regional production disparities require attention. Older vehicles may also face compatibility and performance issues. Strict fuel-quality monitoring is necessary to prevent deviations from prescribed blending standards.

Way Forward

India should diversify feedstocks, promote second-generation ethanol from agricultural waste, improve water efficiency and enforce quality standards across the distribution network.

Conclusion

Ethanol blending can contribute to cleaner and more secure energy, provided its implementation balances energy needs, environmental sustainability and agricultural interests.

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