Environment & Ecology · GS - III

Examine the role of ethanol blending in India's energy transition. Discuss the challenges associated with fuel quality regulation, vehicle compatibility and consumer protection under the E20 programme.

EXAM YEAR	PAPER	SUBJECT
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MARKS	WORD LIMIT
10	~150 words

Answer Hint

Energy security, crude oil import dependence, biofuel promotion, agricultural feedstocks, greenhouse gas emissions, fuel quality standards, vehicle compatibility, engine durability, quality monitoring, consumer awareness, regulatory accountability.

Model Answer

Introduction

Ethanol blending is an important component of India's biofuel strategy, aimed at reducing petroleum imports, diversifying energy sources and supporting domestic agriculture.

Benefits of Ethanol Blending

Ethanol can be produced from sugarcane, maize and other biomass feedstocks. Its use in petrol can reduce dependence on imported crude oil and support rural economic activity. Depending on feedstock and production methods, it can also reduce lifecycle greenhouse gas emissions.

Key Challenges

Higher ethanol blends require compatible vehicle technology and appropriate fuel specifications. Variations in blending levels can affect fuel quality and vehicle performance. Feedstock competition, water consumption and food security are additional concerns. Effective laboratory testing, quality control and transparent enforcement are therefore essential.

Way Forward

Authorities should strengthen fuel sampling, certification and monitoring at distribution points. Consumers must receive clear information about vehicle compatibility and fuel standards. Grievance redressal and accountability mechanisms should address verified cases of non-compliance.

Conclusion

Ethanol blending can contribute to energy security, but its success depends on reliable fuel quality, technological preparedness and effective consumer protection.

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