GOVERNMENT OF INDIA
MINISTRY OF PETROLEUM AND NATURAL GAS
RAJYA SABHA
UNSTARRED QUESTION NO-1887
ANSWERED ON- 09/03/2026

REFINERY MODERNISATION AND PETROCHEMICAL HUB DEVELOPMENT

1887# SHRI PRADIP KUMAR VARMA:

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

(a) the progress achieved in fuel quality, value addition, and industrial competitiveness through refinery capacity expansion, BS-VI upgradation, and petrochemical integration;
(b) the achievements made in regional development, employment generation, and strategic location utilisation from West Cost, North-East, and coastal refinery projects;
(c) the improvements in operational efficiency, safety, and environmental compliance resulting from technological upgradation, digitisation, and Industry 4.0 initiatives; and
(d) the success achieved in value-chain integration, economic multiplier effects, and manufacturing growth through petrochemical parks, downstream industries, and plastic processing hubs?

ANSWER

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

(SHRI SURESH GOPI)

(a) Refinery capacity of India has expanded from about 215 MMTPA in 2014 to over 258.1 MMTPA in 2025. India has also successfully implemented Bharat Stage VI (BS-VI) emission standards nationwide in April, 2020 which has reduced sulphur content in fuels from 50 PPM to 10 PPM, significantly lowering vehicular emissions and contributed to improvement in air quality. Refinery capacity expansion and residue upgradation units have improved distillate yield and value addition. Integration with petrochemicals has enhanced Gross Refining Margins (GRMs) and reduced vulnerability to fuel demand fluctuations. Oil and Gas Public Sector Undertakings (PSUs) are increasing the share of petrochemical products by either integrating petrochemical units within refineries or expanding capacity in standalone petrochemical complexes.

(b) Refinery expansion projects on the West Coast have leveraged proximity to crude import routes and export markets, strengthening India’s position as a refining hub. Projects in the North-East have promoted regional economic development, infrastructure growth and local

employment. Coastal refinery projects have improved logistics efficiency, reduced transportation costs, and enabled development of port-based industrial corridors. These projects generate large-scale direct and indirect employment during construction and operation phases.

(c) Technological upgrades such as Advanced Process Control (APC), real-time optimisation, and digital monitoring systems have enhanced energy efficiency and throughput. Industry 4.0 initiatives which, *inter-alia*, include predictive maintenance, IoT-based monitoring and data analytics have reduced downtime and improved asset reliability. Environment compliance has improved through sulphur recovery units, zero liquid discharge systems, flare gas recovery and energy efficiency measures lower carbon intensity. Improvements in safety as a result of technological upgradation *inter alia* include AI-enabled video analytics for PPE compliance and safety violation monitoring, AI cameras for capturing unsafe acts and conditions during turnarounds, virtual reality training for immersive and practical safety learning and GPS enabled fire tenders improving emergency response readiness.

(d) Success in value-chain integration is being achieved through integrating traditional refining with petrochemical production to enhance efficiency and profitability. The Department of Chemicals and Petrochemicals has conceptualised cluster-based model of development with common infrastructure and support services and has notified three Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs) in Gujarat, Andhra Pradesh and Odisha.

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