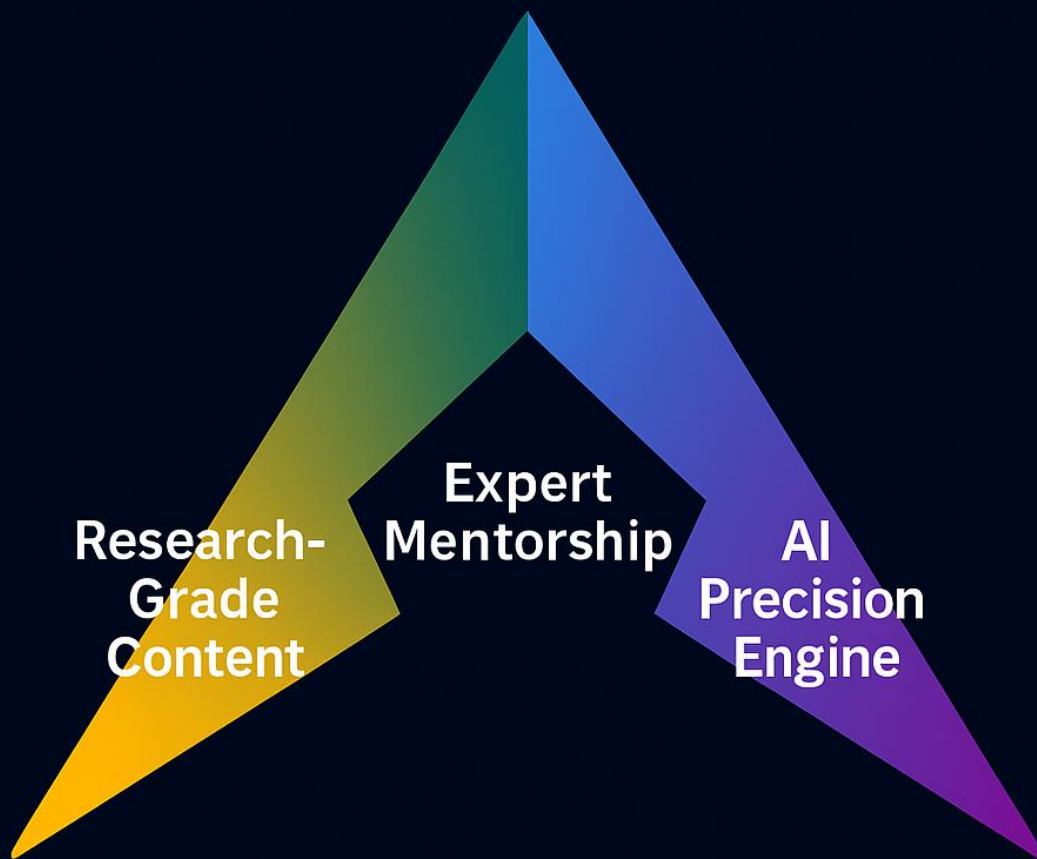


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DAILY CURRENT AFFAIRS DATED 14.05.2026

GS Paper II: Current Affairs

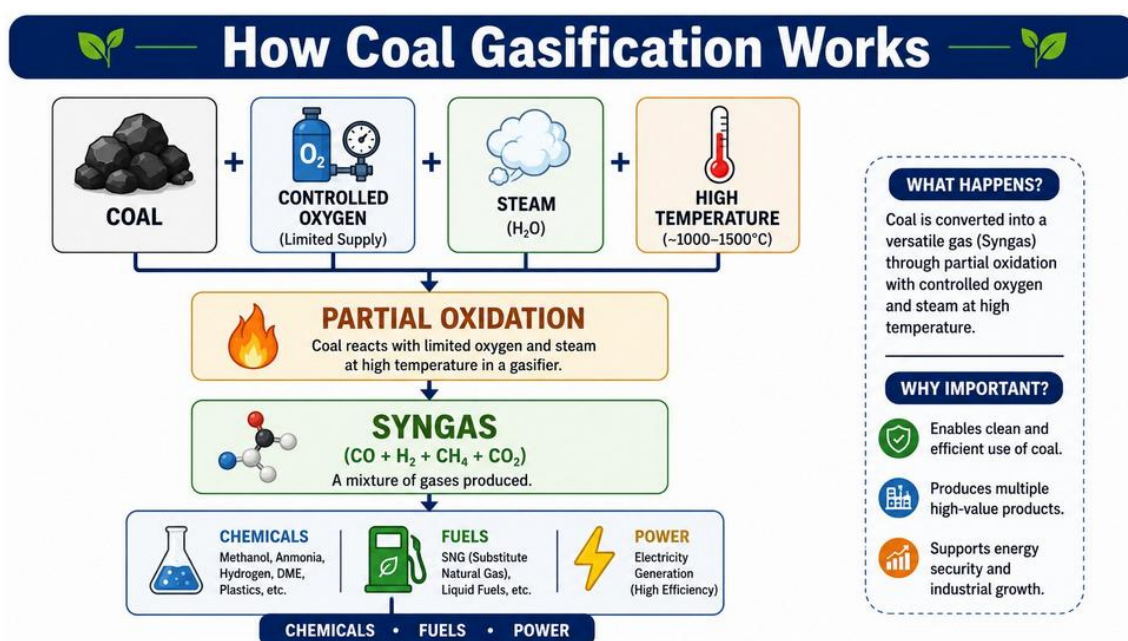
1. Coal Gasification Promotion Scheme, 2026

a. Introduction

The Union Cabinet has approved the Scheme for Promotion of New Surface Coal/Lignite Gasification Projects with a financial outlay of ₹37,500 crore. The scheme aims to accelerate the conversion of coal and lignite into synthesis gas (syngas) through the development of 25 gasification projects.

These projects are expected to gasify nearly 75 million tonnes of coal and lignite, reducing India's dependence on imports of liquefied natural gas (LNG), fertilisers, ammonia, methanol, and other industrial feedstocks.

The initiative marks a significant expansion of the earlier ₹8,500 crore Viability Gap Funding (VGF) Scheme approved in 2024 for promoting coal gasification.



b. Background and Strategic Context

India possesses the fourth-largest coal reserves in the world, estimated at nearly 389 billion tonnes. Despite this resource abundance, the country continues to depend heavily on imports of crude oil, natural gas, LNG, fertilisers, and petrochemical feedstocks.

This mismatch between domestic resource availability and import dependence has encouraged policymakers to explore technologies capable of converting coal into higher-value industrial products. Consequently, coal gasification is increasingly viewed as a strategic tool for strengthening energy security, supporting industrial development, and advancing the vision of Atmanirbhar Bharat.

The National Coal Gasification Mission has set a target of achieving 100 million tonnes of coal gasification by 2030, and the present scheme contributes substantially towards this objective.

Understanding the scheme requires an appreciation of the underlying technology. Coal gasification transforms coal from a conventional fuel into a versatile industrial feedstock, making it central to India's energy and industrial strategy.

c. Understanding Coal Gasification

Coal gasification is a thermochemical process in which coal reacts with a controlled quantity of oxygen, steam, and heat. Instead of complete combustion, coal undergoes partial oxidation, producing a combustible gas mixture known as syngas.

Composition of Syngas

Component	Significance
Carbon Monoxide	Industrial fuel and chemical feedstock
Hydrogen	Clean fuel and key industrial input
Methane	Source of energy
Carbon Dioxide	By-product of the process

The resulting syngas can subsequently be processed into a variety of fuels, chemicals, and industrial products.

d. Applications of Syngas

Syngas serves as a versatile intermediate product across multiple sectors:

Industrial and Energy Uses

- Production of Synthetic Natural Gas (SNG).
- Manufacturing of methanol and ethanol.
- Production of ammonia and fertilisers.
- Generation of electricity.
- Production of petrochemicals and industrial chemicals.
- Development of synthetic fuels and hydrogen-based energy systems.

Thus, coal gasification converts coal from a conventional energy source into a strategic industrial feedstock.

The wide-ranging applications of syngas explain why the government considers coal gasification a critical component of India's energy security and industrial growth strategy.

e. Salient Features of the Scheme

Component	Details
Scheme	Promotion of New Surface Coal/Lignite Gasification Projects
Financial Outlay	₹37,500 crore
Target Projects	25 projects
Coal/Lignite Gasification Target	75 million tonnes

Primary Objective	Promote coal and lignite gasification and reduce import dependence
Major Outputs	Syngas, methanol, ammonia, fertilisers, synthetic natural gas, and chemicals
Strategic Goal	Energy security and industrial self-reliance

The scheme's design reflects broader national objectives that extend beyond coal utilisation and encompass energy security, industrial competitiveness, and strategic autonomy.

f. Significance of the Scheme

- **Strengthening Energy Security:** India's dependence on imported crude oil, LNG, and fertiliser feedstocks exposes the economy to global price volatility and geopolitical disruptions. Coal gasification enables domestic coal resources to be converted into substitutes for these imports, thereby enhancing national energy security.
- **Promoting Import Substitution:** Large quantities of methanol, ammonia, urea, and LNG are currently imported. Domestic production through gasification can reduce foreign exchange outflows and improve the country's trade balance.
- **Enhancing Value Addition from Coal:** A significant proportion of India's coal reserves consists of low-grade coal. Gasification enables such resources to be converted into higher-value chemicals and fuels, thereby improving economic returns from domestic mineral resources.
- **Supporting Industrial Development:** Syngas is a critical input for industries such as fertilisers, petrochemicals, synthetic fuels, and hydrogen production. Expanded gasification capacity can strengthen industrial supply chains and reduce dependence on imported raw materials.
- **Enhancing Strategic Resilience:** Recent geopolitical tensions and energy market disruptions have highlighted vulnerabilities arising from excessive import dependence. Coal gasification contributes to greater strategic autonomy by diversifying sources of energy and industrial feedstocks.
- **Supporting the Emerging Hydrogen Economy:** Gasification can serve as an important source of hydrogen production. When integrated with cleaner technologies and carbon management systems, it can contribute to India's long-term hydrogen strategy.

Despite these advantages, coal gasification is not without challenges. Economic viability, environmental sustainability, and technological capability remain important concerns.

g. Challenges and Concerns

- **High Capital Requirements:** Coal gasification projects require substantial investments in infrastructure, technology, and associated facilities. Commercial viability often depends on government incentives and long-term policy certainty.
- **Carbon Emissions:** Although gasification offers greater control over emissions than conventional coal combustion, it still generates significant quantities of carbon dioxide. Without carbon capture technologies, large-scale deployment may conflict with climate commitments.
- **High Water Consumption:** Gasification is a water-intensive process. Establishing projects in water-stressed regions may create environmental and social concerns.
- **Technological Dependence:** India continues to rely on foreign technology and expertise for several advanced gasification systems. Achieving technological self-reliance remains a critical challenge.
- **Environmental Implications:** Continued dependence on coal extraction can contribute to ecological degradation, land disturbance, and waste management challenges. Strong environmental safeguards are therefore essential.

Experiences from other countries provide valuable insights into both the opportunities and limitations of coal gasification as a large-scale industrial strategy.

h. International Experience

- **China:** China possesses the world's largest coal gasification capacity and extensively uses the technology for producing chemicals, fertilisers, and synthetic fuels. Its experience demonstrates the potential for large-scale industrial integration.
- **United States:** The United States pioneered several advanced gasification technologies. However, commercial deployment remained limited because abundant and inexpensive shale gas reduced the economic attractiveness of coal-based alternatives.
- **South Africa:** South Africa has long utilised coal-to-liquid technologies through the company Sasol. Its experience illustrates how coal resources can be transformed into liquid fuels and industrial products at a commercial scale.

Drawing lessons from international experience, India must adopt a balanced approach that simultaneously advances energy security, industrial growth, and environmental sustainability.

i. Way Forward

- **Integrating Carbon Management:** Coal gasification projects should be integrated with Carbon Capture, Utilisation and Storage (CCUS) technologies to reduce their carbon footprint.
- **Promoting Indigenous Research and Development:** Greater emphasis should be placed on domestic innovation in advanced gasification systems, catalysts, and hydrogen production technologies.
- **Strengthening Institutional Collaboration:** Collaboration among public sector enterprises, private industry, and research institutions can accelerate technology development and commercial deployment.
- **Enhancing Water Efficiency:** Water-efficient technologies and recycling systems should be incorporated into project design to minimise pressure on local water resources.
- **Aligning with Energy Transition Goals:** Coal gasification should be integrated into India's broader energy transition framework and aligned with the national commitment to achieve net-zero emissions by 2070.

Conclusion

The Coal Gasification Promotion Scheme, 2026 represents a significant step towards transforming India's abundant coal resources into value-added fuels, chemicals, and industrial feedstocks. By promoting large-scale coal and lignite gasification, the scheme seeks to enhance energy security, reduce import dependence, strengthen industrial self-reliance, and support the objectives of Atmanirbhar Bharat.

However, its long-term success will depend on balancing economic and strategic benefits with environmental sustainability through measures such as carbon capture technologies, water-efficient operations, indigenous technological development, and integration with India's clean energy transition goals. If implemented effectively, coal gasification can emerge as a crucial bridge between India's current energy realities and its future aspirations for secure, resilient, and sustainable industrial growth.

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