



INDIA'S COAL SECTOR-HOW IT IS GOING TO REDUCE ITS EMISSIONS WHILE ALSO LOOKING FORWARD FOR "JUST ENERGY TRANSITION"?

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Coal

*Coal is a readily combustible, black or brownish-black **sedimentary rock**, predominantly made of **carbon**.*

*oThe precursor to coal is **peat**. Peat is a soft, organic material consisting of partly decayed plant and mineral matter.*

Key information about India's Coal Sector

*India holds **5th largest** coal reserves globally and is **2nd largest** consumer of coal.*

***Total estimated reserves of coal:** 361.41 billion tonne (as on 2022).*

***Top three states with highest coal reserves in India:** Odisha, Jharkhand, Chhattisgarh (accounting for **~69%** of India's total coal reserves)*

***Coal Mines (Nationalization) Act of 1973** serves as the central legislation governing the eligibility for coal mining in India.*

*o**The auction-based regime introduced in 2014** permitted private sector participation, but it was restricted to captive use in their own end-use plants.*

*o**In 2020**, the sector was further liberalized with the opening up of commercial coal mining to private players.*

Types of coal found in India

*o**Anthracite:** Highest grade of coal containing a high percentage of fixed carbon*

*o**Bituminous:** Medium grade of coal having high heating capacity, most commonly used for electricity generation in India*

*o**Subbituminous:** Black in colour, dull (not shiny) and has a higher heating value than lignite.*

*o**Lignite:** Lowest grade coal with the least carbon content*



Significance of Coal in India's Development

Meet growing energy demand: India's electricity consumption is expected to triple by 2050 [International Energy Agency (IEA)] driven by economic growth, rising incomes, and increasing electrification.

Development of coal producing region: The coal sector contributes over ₹70,000 crore annually through royalties, GST, District Mineral Foundation (DMF) contributions etc

o These funds play a crucial role in fostering socio-economic development and infrastructure enhancement in coal-producing regions.

Job creation: Coal sector has a workforce of around 5 lakh mine workers across more than 350 coal mines.

Primary Energy Source for Power Generation: Coal is responsible for 46.88% (as of November 2024) of India's total installed capacity for power generation (Power Ministry).

o Key industries, including steel (8%) and cement (5%), also rely heavily on coal for energy.

Reduction in import dependency: Coal Imports decreased by 8.4% in April-December 2024 in comparison to the same period of FY 2023-24, leading to substantial foreign exchange savings and a reduction in import dependency.

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Initiatives in Coal Sector which helped decrease imports:

Enactment of Coal Mines (Special Provisions) CMSP Act- 2015: The Act permitted auction of coal mines for commercial mining by private entities.

oIn 2020, first commercial coal mining auctions were launched.

Mines and Minerals (Development and Regulation) Amendment Act, 2021: It emphasized on enhancing transparency and efficiency in the allocation of mining licenses. Allowed **Composite Prospecting Licence-cum-Mining Lease (PL-cum-ML)** specifically for coal.

o**Composite PL-cum-ML** is a two-stage concession granted for the purpose of undertaking prospecting operations followed by mining operations in a seamless manner

oAlso, it relaxed the end use restriction of coal by the captive miners

National Coal Index (NCI): NCI is a price index combining the prices of coal from all the sales channels- Notified Prices, Auction Prices and Import Prices. It serves as a reliable indicator of market dynamics, providing valuable insights of price fluctuation.

FDI and Technological Advancement: Allowing 100% FDI in coal mining has attracted global expertise and advanced technologies

Recent Initiatives which will Further promote domestic production

Integrated Coal Logistic Policy and Plan, 2024: Formulated by the Ministry of Coal with the objective of developing resilient and cost -effective coal evacuation logistic system.

Investment in Coal Gasification: Cabinet approved a comprehensive scheme with a Rs.8,500 crore outlay, promoting Coal/Lignite Gasification Projects.

PM Gati Shati-National Master Plan in coal sector.

Persistent Issues/Challenges in Coal Sector:

Lack of Upgradation: Technological obsolescence in mining techniques resulting in lower productivity, higher costs, and safety hazards.

Logistics Issue: Higher coal logistics costs owing to limited multi-modal transport approach.

Environment Issues: The damage from **open-cast mining** is irreparable, rendering the land useless.

Developing new coal mines: Land acquisition is key issue in it. Also, some times, requires displacement of the people

Coking coal produced in the country has ash between 28 to 42%. On the other hand, ash percentage in **imported coking coal** is less than 10%.

High Import Dependence: It is mainly because there is **less availability of high gross calorific value (GCV) coal** in India. This type of coal has low ash and sulphur content.

o Major source countries for India's coal imports include – Australia, Russia, South Africa, the US, etc.

o Sectors like Iron and steel are major importer of coking coal.

Way Forward

Promoting Sustainable Practices: **Miyawaki plantation** method can be used on large scale to promote green cover near mines

Encouraging Private players: It will reduce burden on Coal India Limited (CIL). Also, they will promote technological upgradation in mining

For Import Substitution, the **Inter-Ministerial Committee** in its report has suggested-

o Promotion of **Rationalization of coal linkage** policy

§ **Rationalization of coal linkages** aims to reduce the distance in transportation of coal from the coal mines to the consumer.

o Early operationalization of **Captive/Commercial coal blocks**.

o Ministry of Power may need to mandate the **Domestic based coal power plants** for using domestic coal instead of imported coal. For this, Coal Ministry needs to adequate supply and no logistic constraint of domestic coal

o Enhance **coal gasification** in country to produce synthetic gas for steel sector which is mainly depended on imported coal.