Promoting Coal Gasification in India

For Prelims: Promoting Coal Gasification in India, Coal Gasification**,** Goods and Services Tax**,** Input Tax Credit, Syngas**, Natural Gas**.

For Mains: Promoting Coal Gasification in India.

Source: PIB

Why in News?

The Ministry of Coal is considering a Comprehensive Scheme to promote **Coal Gasification**, aiming to achieve **100 Million Tonne (MT) coal Gasification by FY 2030.**

- The Ministry is also considering an incentive to reimburse the **Goods and Services Tax (GST) compensation cess** on coal utilized in gasification projects for a period of 10 years after the commercial operational date (COD), provided that the GST compensation cess is extended beyond FY27. This incentive aims to offset the **inability of entities to claim** Input Tax Credit **for the same.**

What are the Key Points of the Scheme?

- **About:**
  - The initiative incorporates a comprehensive set of **measures that capitalize on natural resources** and demonstrate financial and technical feasibility of **Coal Gasification.**
  - It aims to attract Government PSUs and the Private Sector, fostering innovation, investment, and sustainable development in the coal gasification sector.
- **Process:**
  - The selection of entities for the coal/lignite gasification scheme will be carried out through a competitive and transparent bidding process.
  - The government will provide **budgetary support to eligible Government PSUs,** and Private sector enabling them to undertake coal gasification projects.
- **Significance:**
  - This initiative holds the potential to alleviate the **environmental burden by reducing carbon emissions** and fostering sustainable practices, contributing to our global commitments towards a greener future.

What is Coal Gasification?

- **About:**
  - Coal gasification is a process in which **coal is partially oxidized with air, oxygen, steam or carbon dioxide** to form a fuel gas.
  - This gas is then used **instead of piped** Natural Gas**,** methane and others for deriving energy.
  - In-situ gasification of coal – or **Underground Coal Gasification (UCG)** – is the technique

of converting coal into gas while it is still in the seam and then extracting it through wells.

- **Production of Syngas:**
  - It produces **Syngas** which is a mixture consisting primarily of **methane (CH_4)**, **carbon monoxide (CO)**, **hydrogen (H_2), carbon dioxide (CO_2)** and water vapour (H_2O).
  - Syngas can be used to produce a **wide range of** Fertilizers**, Fuels,** solvents and synthetic materials.
- **Significance:**
  - Steel companies can **reduce costs by replacing expensive imported coking coal with syngas** from coal gasification plants in their manufacturing process.
  - It is primarily used for electricity generation, for the production of chemical feedstocks.
  - The hydrogen obtained from coal gasification can be used for various purposes such as making ammonia and powering a hydrogen economy.

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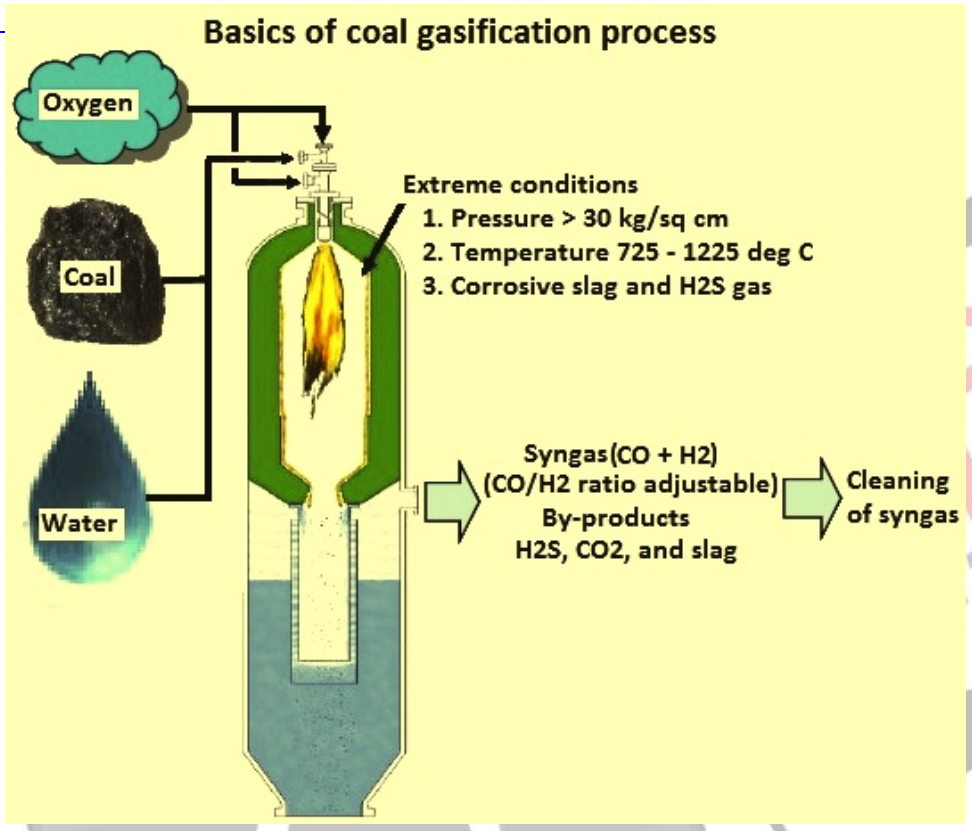

- **Concerns:**
  - The syngas process converts a **relatively high-quality energy source (coal) to a lower quality state (gas)** and consumes a lot of energy in doing so. Thus, the efficiency of conversion is also low.

What is the Need for Promoting Coal Gasification Projects in India?

- The adoption of gasification technology in India can **revolutionize the coal sector, reducing reliance on imports** of Natural Gas, Methanol, Ammonia and other essential products.
  - Currently, India **imports approximately 50% of its Natural Gas**, over 90% of its total Methanol consumption and around 13-15% of its total ammonia consumption to cater to the domestic demand.
- It can contribute to India's vision of becoming **Aatmanirbhar** and create a surge in employment opportunities.
- The implementation of **coal gasification is expected to make significant contributions** to the nation's development by reducing imports by 2030.

Way Forward

- The government should conduct a **comprehensive evaluation of the environmental, economic, and social implications** of coal gasification projects.
- Continued investment in research and development can **drive advancements in coal gasification technology,** making it more efficient and environmentally friendly.
- Emphasize the development of a **diversified energy mix that includes renewable energy sources**, energy efficiency measures, and sustainable alternatives to coal-based energy production.
- Learn from global experiences and best practices in coal gasification and hydrogen **economy implementation to ensure sustainable development.**