All Gas Based Power Generation in India

written by iasexam.com | 17/04/2024

Context

The Central government has recently directed all gas-based power generating stations to operationalise their plants from May 1 to June 30.

About

- The **Central Electricity Authority** under the Ministry of Power, monitors 62 gas based power stations, with a capacity of 23,845 MW using gas as primary fuel.
- India's natural fuel demand is expected to rise by 6 percent in 2024 with a rise in consumption in fertiliser units, power generation and business sectors, as per International Energy Agency (IEA).
- India is the 4th largest importer of liquefied natural fuel (LNG).

Significance

- Gas-based power plants provide numerous services, including lower emissions and faster ramp-up time in comparison to coal-based plants.
- However, the share of gas-based power generation in India's general power mix remains enormously small as compared to coal and renewable energy sources.

Need for Gas Based Power Generation in India

- **Cleaner Energy Source:** Gas based power plant emits fewer pollution compared to coal-based power plant, making it a cleaner choice, specially in city areas in which air exceptional is a large challenge.
- **Flexibility and Efficiency:** Gas- based power plants are exceptionally efficient and offer more operational flexibility as compared to coal- based plants.
- **Reduced Dependence on Coal:** India closely relies on coal for power generation, but diversifying the energy mix with gas can reduce this dependence, improving energy security and lowering vulnerability to supply disruptions.
- **Rapid Deployment:** Gas-based power plants will be built quite quickly compared to large-scale coal or nuclear plants.
    - This speedy deployment capability makes them a feasible alternative for meeting short-term increases in energy demand.

Challenges Faced by the Sector

- **Import of Natural Gas:** India has constrained domestic natural gas reserves, and the bulk of its natural gas intake is met through imports.
    - Despite efforts to explore and make the most domestic reserves, India nonetheless relies heavily on imported natural gas, often from nations like Qatar, Australia, and the US.
- **Infrastructure Constraints:** The improvement of infrastructure, including pipelines, LNG terminals, and urban fuel distribution networks, is essential for the green transportation and distribution of natural fuel.
    - However, the growth of infrastructure in India has been hampered by elements consisting of land acquisition troubles, regulatory hurdles, and investment constraints.
- **Competitive Pricing:** Natural gasoline competes with other energy sources which include coal, renewable electricity, and imported liquefied petroleum gas (LPG) in India.
    - The pricing of natural fuel relative to these competing fuels has an effect on its elegance for numerous applications, such as power technology, business use, and transportation.
- **Environmental Concerns:** While natural gas is considered a cleaner alternative to coal and oil, its extraction, transportation, and combustion still produce greenhouse gas emissions.
    - Addressing environmental concerns associated with methane leakage, air pollution, and carbon emissions is crucial for the sustainable improvement of the fuel-based energy sector.

Government Initiatives to Increase Gas Based Energy

- **Infrastructure Development:** An overall of 23,391 km of the natural fuel pipeline is operational and about 4,125 km of the fuel pipeline is under construction as of Feb 2024.
    - Target to increase the pipeline insurance by ~54% to 34,500 km by 2024-25 and to attach all of the states with the trunk natural gas pipeline network by 2027.

- **Pradhan Mantri Urja Ganga (PMUG):** Launched in 2016, PMUG aims to increase the natural fuel pipeline infrastructure in japanese India, connecting gas assets and foremost call for facilities.
    - The assignment entails the development of a pipeline connecting Uttar Pradesh to West Bengal, passing through Bihar, Jharkhand, and Odisha.
- **City Gas Distribution (CGD) Network Expansion:** The government has been selling the growth of CGD networks throughout India to increase access to piped natural gas (PNG) for families, industries, and business institutions.
    - Under the CGD bidding rounds, licenses are provided to entities for developing CGD networks in geographical areas recognized with the aid of the **Petroleum and Natural Gas Regulatory Board (PNGRB)**.
- **Natural Gas Marketing Reforms:** The government has added reforms within the advertising of herbal gas to decorate transparency, promote opposition, and appeal to investment in the area.
- **Gas Price Rationalization:** Reforms which includes the New **Domestic Gas Pricing Guidelines (2014)** and the advent of the **Hydrocarbon Exploration and Licensing Policy (HELP)** have aimed to offer pricing incentives for home fuel producers at the same time as balancing the pursuits of purchasers.
- **Natural Gas Infrastructure Development Fund (NGIDF):** The government has formed the NGIDF to offer financial aid for the improvement of natural gas infrastructure in India.
- **Promotion of LNG Imports and Terminals:** The government has endorsed investment in LNG import terminals to diversify gas supply resources and decorate energy security.

Source: The Indian Express

UPSC Mains Practice Question

Q. ***India stands a better chance of reaching the destination of a predominantly clean system if it makes all natural gas based power generation as the "next stop" in its energy journey. Discuss. (250 Words)***