



## Singareni Thermal Power Plant

**For Prelims:** Singareni Thermal Power Plant, Flu gas desulphurization (FGD), Central Pollution Control Board.

**For Mains:** Status of the Thermal Power Sector in India, Issues Associated with Thermal Power Plants.

### Why in News?

**Singareni Thermal Power Plant (STPP)** in Telangana is set to become the **first public sector coal-based power generating station** in the South and **first among the State PSUs** in the country to have a **flu gas desulphurization (FGD) plant**.

- With **100% utilisation of the fly ash generated**, the STPP has won the best fly ash utilisation award twice already

### What are the Key Facts Related to FGD Plant?

- **About:**
  - The **FGD plant would process the sulphur and other gases (nitrogen oxides)** generated in firing the coal for power generation.
    - The **FGD plant removes Sulphur Dioxide from the flue gas** before it is released into the atmosphere and hence reduces its impact on the environment.
- **Types of FGD Systems:**
  - FGD systems are characterized as either “wet” or “dry” corresponding to the phase in which the flue gas reactions take place. **Four types of FGD systems:**
    - **Wet FGD systems** use a liquid absorbent.
    - **Spray Dry Absorbers (SDA)** are semi-dry systems in which a small amount of water is mixed with the sorbent.
    - **Circulating Dry Scrubbers (CDS)** are either dry or semi-dry systems.
    - **Dry Sorbent Injection (DSI)** injects dry sorbent directly into the furnace or into the ductwork following the furnace.
- **Ministry Guidelines:**
  - **The Ministry of Environment, Forest and Climate Change (MoEF&CC)** has set the deadline for installation of FGD plants for coal-based power plants as **December-end of 2026** for non-retiring plants and as **December-end of 2027 for retiring plants**.
    - However, it is not made compulsory for the plants that are going to retire by **December-end of 2027**, provided they seek exemption from the **Central Pollution Control Board** and Central Electricity Authority.
- **Uses:**
  - The **gypsum generated by the FGD plant would be used in fertiliser, cement, paper, textile and construction industries**, and its sales are likely to contribute to the maintenance of the FGD plant.

### What is the Status of the Thermal Power Sector in India?

#### ▪ About:

- The **thermal power sector** has been a major source of electricity generation in India, accounting for around **75% of the country's total installed power capacity**.
- As of May 2022, India has a **total Thermal installed capacity of 236.1 GW** of which **58.6% of the thermal power is obtained from coal** and the rest from **Lignite, Diesel, and Gas**.

#### ▪ Issues Associated with Thermal Power Plants:

- **Environmental Impact:** Thermal power plants emit a large amount of **carbon dioxide, sulphur dioxide, nitrogen oxide, and other pollutants into the air**. This leads to air pollution, which has serious health implications for people living in the vicinity of the plants.
  - **Thermal power plants also consume a lot of water**, leading to water scarcity in some areas.
- **Coal Supply:** India's thermal power plants **rely heavily on coal**, which is mostly imported from other countries. This can lead to **supply disruptions and price volatility**.
  - In FY22, **India's coal import of 208.93 million tonne (MT)** was worth Rs 2,28,741.8 crore.
- **Financial Health:** Many of India's thermal power plants are owned by government entities and are facing **financial losses due to rising coal prices**, low demand, and other factors.
  - This has led to many plants being **shut down or operating at low capacity**.
- **Ageing Infrastructure:** Many of India's thermal power plants were built in the **1970s and 1980s and are in need of modernization**.
  - Upgrading these plants to meet current environmental standards can be costly.
- **Renewable Energy Competition:** As **renewable energy** becomes cheaper, thermal power plants are facing **increased competition**.
  - This has led to a **decrease in demand for thermal power** and has made it harder for some plants to operate profitably.

## Way Forward

- **Implement Pollution Control Measures:** As mentioned earlier, the installation of FGD plants is **one of the key steps in controlling air pollution in thermal power plants**.
  - The government should **make it mandatory for all thermal power plants to install FGD plants** and other pollution control measures to reduce emissions and protect the environment.
- **Improve Coal Quality:** The quality of coal used in thermal power plants in India is **relatively low, leading to higher emissions and lower efficiency**.
  - Therefore, the government should focus on improving the quality of coal supplied to thermal power plants by **investing in technologies such as coal washing and beneficiation**.
- **Modernise Existing Plants:** Many of India's thermal power plants are old and inefficient. The government should encourage plant owners **to modernise their facilities by investing in new technologies**, upgrading equipment, and adopting best practices to improve efficiency and reduce emissions.
- **Increase Efficiency:** Improving efficiency is a critical factor in reducing the cost of power generation and improving the competitiveness of the thermal power sector.
  - The government should **incentivize thermal power plants to adopt energy-efficient practices and technologies such as supercritical and ultra-supercritical technologies**.

## UPSC Civil Services Examination, Previous Year Question (PYQ)

### Q1. Consider the following statements: (2020)

1. Coal ash contains arsenic, lead and mercury.
2. Coal-fired power plants release sulphur dioxide and oxides of nitrogen into the environment.
3. High ash content is observed in Indian coal.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

**Ans: (d)**

**Q2. Which one among the following industries is the maximum consumer of water in India? (2013)**

- (a) Engineering
- (b) Paper and pulp
- (c) Textiles
- (d) Thermal power

**Ans: (d)**

**Source: TH**

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