



# Reducing Emissions from Coal-Based Power Sector

## Why in News

Recently, in a webinar by think-tank **Centre for Science and Environment (CSE)**, experts discussed the measures to **reduce carbon dioxide (CO<sub>2</sub>)** footprints of **India's coal-based power sector**.

- **Centre for Science and Environment (CSE)** is a public interest research and advocacy organisation based in New Delhi.
- CSE researches into, lobbies for and communicates **the urgency of development that is both sustainable and equitable**.

## Key Points

- **Power Generation in India:**
  - India mainly uses **three types** of thermal power plants- **Coal, Gas and Liquid-fuel based**.
  - The electricity generated by these plants adds up to **62.2%** of the total power generation in the country.

Fuel	MW	% of Total
<b>Total Thermal</b>	2,31,456	62.2%
Coal	1,99,595	53.7%
Lignite	6,360	1.7%
Gas	24,992	6.7%
Diesel	510	0.1%
<b>Hydro (Renewable)</b>	45,699	12.3%
<b>Nuclear</b>	6,780	1.8%
<b>RES* (MNRE)</b>	88,042	23.7%
<b>Total</b>	<b>371,977</b>	

- **Emissions from coal-based Power Sector:**

- India's coal-based thermal power sector is one of the **country's biggest emitters of**

## CO<sub>2</sub>.

- It emits **1.1 giga-tonne of CO<sub>2</sub> every year**; this is **2.5%** of global [GreenHouse Gas \(GHG\)](#) emissions, one-third of India's **GHG** emissions, and around **50%** of India's fuel-related CO<sub>2</sub> emissions.

### ▪ Policies Needed to Reduce Emissions:

- **Improving fleet technology and efficiency, renovating and modernising:**
  - India has one of the youngest coal-based thermal plants in the world, with around **64% of the capacity (132 GW) less than a decade old**.
  - The government's renovation and modernisation policies need to play a key role in maintaining the efficiency of this fleet.
- **Planning for the Old Capacity:**
  - In 2015, over **34 GW capacity** in India was more than 25 years old, and **60% of it was highly inefficient**.
  - **Increasing India's renewable electricity generation** can help further the cause to accelerate the retirement of old and inefficient plants.
- **Propagating Biomass Co-firing:**
  - **Biomass co-firing** stands for adding biomass as a partial substitute fuel in high efficiency coal boilers.
    - **Coal and biomass are combusted together in boilers** that have been designed to burn coal. For this purpose, the existing coal power plant has to be partly reconstructed and retrofitted.
    - Co-firing is an option to **convert biomass to electricity, in an efficient and clean way, and to reduce GHG emissions of the power plant**.
  - Biomass co-firing is a globally accepted **cost-effective method** for **decarbonising** a coal fleet.
    - **Decarbonising** means reducing carbon intensity, i.e. reducing the emissions per unit of electricity generated (often given in grams of carbon dioxide per kilowatt-hour).
  - India is a country where biomass is usually burnt on the field which reflects apathy towards resolving the problem of clean coal using a very simple solution that is readily available.
- **Investing in [Carbon Capture and Storage \(CCS\)](#):**
  - Globally, carbon capture and storage has struggled to pick up and India's prospects appear to be dim at least until 2030.
  - Businesses should invest in indigenous research and development to bring down the costs of CCS.
- **Coal Beneficiation:**
  - **Coal Beneficiation** is a process by which **the quality of raw coal is improved** by either reducing the extraneous matter that gets extracted along with the mined coal or reducing the associated ash or both.

### ▪ Other Initiatives to Reduce Emissions:

- India shifted from **[Bharat Stage-IV \(BS-IV\) to Bharat Stage-VI \(BS-VI\)](#)** emission norms from 1<sup>st</sup> April 2020 which was earlier to be adopted by 2024.
- It has distributed more **than 360 million LED bulbs under the [UJALA scheme](#)**, which has led to energy saving of about 47 billion units of electricity per year and reduction of 38 million tonnes of CO<sub>2</sub> per year.
- **[International Solar Alliance](#)**: It is an Indian initiative conceived as a **coalition of solar-resource-rich countries** (which lie either completely or partly between the tropic of Cancer and the tropic of Capricorn) to address their special energy needs.
- **[The National Action Plan on Climate Change \(NAPCC\)](#)** was launched in 2008 which

**aims at creating awareness among the representatives of the public**, different agencies of the government, scientists, industry and the communities on the threat posed by climate change and the steps to counter it.

## Way Forward

- **Renewable capacity** addition alone cannot be enough; ambitious plans to **reduce GHG emissions in the coal sector are equally needed** to meaningfully tackle climate change.
- We need an **energy transformation** through which we would **realise the co-benefits of local and global emission reduction**. We also need the **right to energy for all, as energy poverty and inequity is not acceptable**.
- Diversified **energy mix is what India needs to focus on**, no doubt solar and wind have a lot of potential, Hydrogen would also be a game changer in Indian energy transition space.

**Source:DTE**

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