

Research and Development for Replacement of Coal

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After studies, it has been established that 5% to 10% of biomass can be safely co-fired with coal in Thermal Power Plants (TPPs) without any adverse impact on the thermal power plant.

Ministry of New and Renewable Energy is implementing a “Renewable Energy Research and Technology Development Programme (RE-RTD)” through various research institutions and industry to develop indigenous technologies and manufacturing for widespread applications of new and renewable energy in efficient and cost-effective manner. It provides up to 100% financial support to government/non-profit research organizations and up to 70% to industry, startups, private institutes, entrepreneurs, and manufacturing units.

The following efforts are being made to check the adverse effect caused by coal being used as a source of energy to the environment:

Efforts being made by Coal Companies -

- Coal companies are deploying modern equipment having environment friendly features, like Surface Miners, Rippers for blast-less overburden removal, Continuous miner in Underground mines, High Wall mining for blast less coal mining, etc.
- Coal companies have taken steps to upgrade the mechanized coal transportation and loading system under 'First Mile Connectivity' projects to minimize road transportation.
- The dust is controlled at source by installation of fixed sprinklers and plantation in the mine lease area.
- Controlled blasting techniques for reduction of dust generation and ground vibration during blasting operations.
- Roads are concrete/ black-topped, coal carrying trucks are optimally loaded and covered with tarpaulin. Dedicated coal corridors have been developed for coal transportation.
- Solar and Wind Power plants are being established with a view to achieve Net Zero target and replace use of coal for generating power.

Efforts being made by Thermal Power Plants -

- **Biomass Co-firing-** Ministry of Power has issued a policy on utilization of Biomass for Power generation through co-firing in coal based power plants. The policy mandates 5-7% co-firing of Biomass primarily of agro residue with coal, after assessing the technical feasibility. This has helped in reducing reliance of TPPs on coal and mitigate air pollution caused due to stubble burning, to some extent. As of June 2024, 8.14 lakh tonnes of cumulative Biomass have been co-fired pan India resulting in reduction of about 0.97 Million Tonnes of CO₂ emissions from Thermal Power Plants.

- **Reduction of Stack Emissions-** MoEF&CC vide notification dated 07.12.2015 and its subsequent amendments has notified norms in respect of reducing stack emissions such as Suspended Particulate Matter (SPM), SO_x & NO_x from coal based Thermal Power Plants. To meet these standards, Thermal Power Plants are using techniques like Electro Static Precipitator (ESP), Flue Gas Desulfurization (FGD), NO_x Combustion Modification etc.
- **Installation of efficient Ultra Supercritical/Supercritical Units-** Promotion of installation of

efficient Ultra Supercritical/Supercritical units over Subcritical Thermal Units as these units are more efficient and their emission per unit of electricity generation is less than subcritical units. A total capacity of Supercritical/ Ultra-supercritical units of 65,290 MW (94 Units) and 4,240 MW (06 units) have been commissioned respectively till 30.06.2024.

- The inefficient and old thermal power plants having capacity of about 18,802.24 MW comprising 267 units have already been retired till 30.06.2024.
- NTPC Ltd. has commissioned 20 Tonnes Per Day (TPD) capacity Pilot Carbon Capture Project at Vindhyachal.

Efforts being made by Department of Science and Technology (DST) -

- To reduce the emission intensity and enhance the efficiency of the coal based thermal power plants, development of Advanced Ultra Super Critical (AUSC) Technology has been undertaken and its development is underway. Department of Science and Technology (DST) has established two National Centres for Development of Advanced Materials and Manufacturing Processes for Clean Coal Technologies for Thermal Power Plant applications in a consortium mode involving academic and research institutes. The main direction of research & development is to improve the life of critical components used in thermal power plants as well as efficient fabrication methods of components using advanced coating and manufacturing technologies.

This information was given by Union Minister of Coal and Mines Shri G. Kishan Reddy in a written reply in Lok Sabha today.

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