



Environment Clearances

of Coal-Fired Power Plants in India 2019-2020

Environmental Clearances granted to coal-based power plants are a useful indicator to study power generation trends in India. This is in view of the fact that grant of prior Environmental Clearance is prerequisite for commissioning construction activities.

The coal-fired thermal power plants are appraised under activity 1(d) of the Environmental Impact Assessment (EIA) Notification, 2006 for the Environmental Clearance. Environmental Clearance is the foremost requirement for establishment of new as well as expansion of existing coal power projects. This is followed by several other clearances and permissions such as consent under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974, among others. Projects that involve forest land are also mandated to obtain Forest Clearances under Forest (Conservation) Act, 1980.

All other required clearances/permissions are processed only on the basis of grant or rejection of the Environmental Clearance to a proposed project. Thus, tracking the number and capacity of projects granted clearances gives an accurate picture of upcoming changes in power generation at the planning stage.

Previous analysis of Environmental Clearances to coal-fired power plants of more than 500 MW capacity for the years 2014 to 2018 shows decline in count and individual capacities of upcoming projects (LIFE, 2018). The present report is part of our series tracking the Environmental Clearances granted for coal-fired thermal power plants¹.

The report uses information about project locations (e.g., proximity to critically and severally polluted areas), plant capacity, plant load factor (PLF) and ongoing litigations (if any) of the projects granted Environmental Clearances by the Ministry of Environment, Forest & Climate Change (MoEFCC) from January 2019 to December 2020.

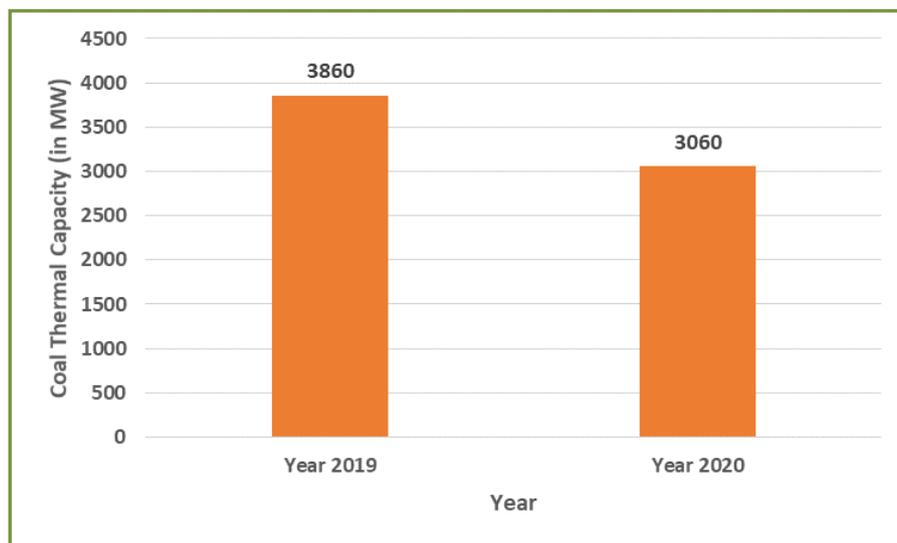
Environmental Clearance granted in terms of capacity

In the current study period (January 2019 to December 2020), six coal-fired power plants of more than 500 MW capacity each were granted Environmental Clearance.

Projects granted clearance in year 2019

In 2019, three projects with total capacity of 3,860 MW capacity were granted clearance. Among these, one was a “Greenfield project”² (2,400 MW) and the other two were expansion (1,460 MW) of existing plants (Table 1).

Graph 1: Coal generation capacities added in 2019 and 2020



¹ The report has not accounted the Captive Thermal Power Plants for calculating the total projects granted environmental clearance. Captive Thermal Power Plants- Captive generating plant means a power plant set up by any person to generate electricity primarily for its own use and includes a power plant set up by any cooperative society or association of persons for generating electricity primarily for use of members of such cooperative society or association (Electricity Act, 2003 (the Act) (<http://www.cercind.gov.in/2015/orders/SO126MP2013.pdf>)

² Greenfield project- “A greenfield project is one which is not constrained by prior work. It is constructing on unused land where there is no need to remodel or demolish any existing structure.” (http://timesofindia.indiatimes.com/articleshow/1717233.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst, accessed on 06.04.2021)

Greenfield Site: Sites that have not been built on before. (https://www.geography.org.uk/write/MediaUploads/download/GA_PRICIDea161s-suesActivity.pdf)

“If the proposed project is a new one in a location, then it is called a Greenfield project. Such a project demands baseline study of the project area and the expected change after its operation with impact assessment and required mitigation measures.”-Thermal Watch (<https://www.thermalwatch.org.in/sites/default/files/CAG%20TTP%20Info%20%28Inner%29%20%28English%29.pdf>, accessed on 06.04.2021)

Table 1: Coal-fired power projects granted Environmental Clearances (EC) in 2019

Project	Sector	Project Type	Proposed Capacity as per EC letter (MW)	Existing Capacities (MW)	Capacity Decommissioned (MW)	Net increase (MW)
1. Dhenkanal TPP by Odisha Thermal Power Corporation Ltd. at Dhenkanal, Odisha	State	New	2400 (3x800)	Nil	Not applicable	2400
2. Singareni TPP by The Singareni Collieries Co. Ltd. at Adilabad, Telangana	Central	Expansion	800 (1x800)	1,200 (2x600)	Not applicable	800
3. Ennore TPP by Tamil Nadu Generation and Distribution Corp. at Tiruvallur, Tamil Nadu	State	Expansion	660 (1x660)	Nil	Not applicable	660
Total Capacity granted EC in year 2019			3,860 MW			

➤ The Greenfield project **Dhenkanal Thermal Power Plant** of 2,400 (3x800) MW capacity coming up in Dhenkanal district of Odisha was granted clearance in 2019. The proponent later applied for amendment in the clearance letter regarding three attributes: reduction in land area on account of land utilization guidelines of Central Electricity Authority (CEA); reduction in allocation of funds for environmental protection control measures (EPC); and the greenbelt development.

Table 2: Changes in project attributes of Dhenkanal TPP after Environmental Clearance amendment

Component	Original	Revised	Reason
Land	1902.53 acres	1833.927 acres	No reason given
EPC measures	11854.673 Cr.	1522.4673 Cr.	Wrongly mentioned earlier
Greenbelt	250 Cr.	25 Cr.	Wrongly mentioned earlier

The Expert Appraisal Committee (EAC) while appraising the amendment has noted that the reduction in land area is a good step by the proponent. However, it is not clear as to why was environmental clearance granted to the project without maximum optimization of land at the time of fresh appraisal by the EAC.

➤ **The Ennore Thermal Power Plant (Expansion)** by TANGEDCO, Tamil Nadu was granted clearance for a 1x600 MW unit on December 11, 2019. The project was initially proposed as expansion of the 450 MW (2x60 MW & 3x110 MW) units in the power station complex. However, these units were later decommissioned and a separate project was proposed as its replacement. The expansion project at present faces litigation on several environmental grounds in the National Green Tribunal.³

One of the key concerns is the public hearing process for the project. It was originally granted clearance in June 2009 based on a public hearing conducted in 2008. Public hearing warrants that concerns of locals and other stakeholders are taken into account while designing the project. In 2019, the MoEFCC directed the proponent to reinstate the Environmental Clearance de novo with fresh environment impact assessment and public hearing as clearance was about to expire before project could have been commissioned. The project was later exempted by the EAC from public hearing. Though fresh EIA was to be placed in public domain for receiving comments from the relevant stakeholders, the proponent has failed to comply. The proponent has however taken the stand that the public hearing had already been conducted for the same project back in 2008.

➤ **The Singareni Thermal Power Plant** was granted clearance in 2019 to expand the existing coal plant from 1200 MW to 2000 MW. The proposed expansion is to be on an additional land of 127.31 ha.

Projects granted clearance in 2020

In 2020, total three projects with a cumulative capacity of 3060 MW were granted Environmental Clearance. Of these, two projects are replacements of decommissioned units while one is for expansion of an existing thermal power plant (Table 3). Two of these projects, the Sagardighi Supercritical Thermal Power Plant and the Singrauli Thermal Power Plant, are discussed in detail below.

Table 3: Coal-fired power projects granted Environmental Clearances (EC) in 2020

Project	Sector	Project Type	Proposed Capacity as per EC letter (MW)	Existing Capacities (MW)	Capacity Decommissioned (MW)	Net increase (MW)
1. Sagardighi Supercritical TPP by West Bengal Power Development Corporation Ltd. at Murshidabad, West Bengal	State	Expansion	660 (1x660)	1,600 (2x300 MW; 2x500 MW)	Not applicable	660

³ R.L. Srinivasan Vs, Union of India & another, Appeal 06 of 2020 before the National Green Tribunal, Southern Zone, Chennai.

Project	Sector	Project Type	Proposed Capacity as per EC letter(MW)	Existing Capacities (MW)	Capacity Decommissioned (MW)	Net increase (MW)
2. Singrauli Super TPP by NTPC Ltd. at Sonbhadra, Uttar Pradesh	Central	Replacement	1,600 (2 x800)	2,000 (5x200 MW; 2x500 MW)	1000 (5x200 MW)	600
3. Ukai TPP by Gujarat State Electricity Corporation Ltd. at Tapi, Gujarat	State	Replacement	800 (1x800)	1,110 (2x200 MW; 1x210 MW; 1x500 MW)	2x120	560
Total Capacity granted EC in year 2020			3,060 MW			

➤ **The Sagardighi Thermal Power Plant** of 1x660 MW capacity was granted clearance in 2020. It is currently under litigation before the National Green Tribunal⁴. One of the major grounds for the appeal against the proponent is submission of false and misleading ambient air quality statistics in the EIA report. This means it is futile to use this baseline to predict the long-term impacts of the project on ambient air. Further, no detailed studies have been undertaken by the proponent to assess impacts of the power plant on ecology or human health. As per the appeal, the EIA has not elaborated on the region's hydrology or on its water balance—details essential to understand the impact of the project on water resources.

➤ **The Singrauli Thermal Power Plant** has been granted clearance for installing an additional capacity of 1600 MW (2x800 MW). This will replace older units of 1000 MW (5x200 MW) capacity. With this replacement, the effective capacity of Singrauli Thermal Power Plant will be 2600 MW.

❑ The project is located in a severally polluted area (SPAs) with an overall Comprehensive Environment Pollution Index (CEPI)ⁱⁱ of 62.59 as per the last assessment by the Central Pollution Control Board, carried out in 2017-18 based on the 2016 revised criteria⁵. With this CEPI score, the region is one of the worst affected among all polluted areas. Singrauli was notified as critically polluted for almost three decades, and has been re-notified as severally polluted only recently (post-2017). Latest information about the status of pollution in SPAs is not available in the public domain to verify the claims of the project proponents.

❑ The Singrauli TPP has only utilized 40% of fly ash generated by the plant in 2019-2020 (CEA, 2020). The thermal power plants are mandated to utilize 100% of the fly ash generated by them as per the Fly Ash Utilization Notification (1999 & amendments thereof).

4 Tushar Kanti Dubey Vs. Union of India and others, Appeal no. 03/2020/EZ before National Green Tribunal, Principal Bench, New Delhi.

5. Order dated 10.07.2019 for Original Application No. 1038/2018, before Principal Bench, National Green Tribunal, New Delhi.

- ❑ The thermal power plants are mandated to utilize 100% of the fly ash generated by them as per the Fly Ash Utilization Notification (1999 & amendments thereof). The Environment Clearance letter for the Singrauli expansion project states that full utilization of the fly ash will be done by the plant once an abandoned mine is given to National Thermal Power Corporation Limited (NTPC) for disposalⁱⁱⁱ. However, the timeline or working targets have not been specified for this activity. This implies that there is no plan in place for disposal of the additional 2.85 million tonnes per annum (MTPA) of fly ash that will be generated by the newly commissioned units.
- ❑ Additionally, NTPC has proposed to operate the plant at 90% Plant Load Factor (PLF)^v when the performance statistics given on its website show that the PLF for its coal stations has only seen a decline from 80.23% in year 2014 to 77.90% in 2018. In fact, the overall PLF for India's coal-based power was recorded as only 61.14% in year 2018 to 2019 and is expected to decline further as reliance on renewables increases. Therefore, the proposed PLF of 90% seems unrealistic.

Future Trends

Other than the projects granted Environmental Clearances, it is important to also look at the number of projects that have been granted Terms of Reference (ToR) addressing all environmental concerns for preparation of the Environment Impact Assessment report. While these projects may or may not be approved by the Ministry, keeping tally of the grant of ToR helps us reckon future trends.

Three projects were granted ToR in 2019: one of these projects (Sagardighi Thermal Power Plant) obtained its Environmental Clearance in 2020 while the other two projects of 660 MW each are yet to be appraised for Environmental Clearance. In 2020, only one project of 1,320 MW was granted ToR. All the projects granted ToR during the study period are for expansion of existing facilities and have been proposed in place of the decommissioned units (Table 4).

Table 4: Projects granted Terms of Reference in 2019-2020 by MoEFCC

Project	Sector	Project Type (New/Expansion/Modification)	Proposed Capacity as per ToR Letter (MW)	Existing Capacity (MW)	Dismantled Capacity (MW)	Net Enhancement
Year 2019						
1. Satpura TPP by Madhya Pradesh Power Generation Company Ltd. at Betul, Madhya Pradesh	State	Expansion	660 (1x660)	Nil	312.5 (5x62.5)	347.5
2. Amarkantak TPP by Madhya Pradesh Power Generation Company Ltd at Auppur, Madhya Pradesh	State	Expansion	660 (1x660)	210 (1x210)	290 (1x30 MW; 1x20 MW; 2x210 MW)	370
Year 2020						
3. Koradi TPP by Maharashtra State Power Generation Co. Ltd at Nagpur, Maharashtra	State	Expansion	1320	2400	680	640
Total Capacity			2640 MW			

The number and capacity of coal-fired power plants granted environmental clearance has dropped in the last few years, however, a closer look at these projects leads to some important findings. New projects or expansions in severally and critically polluted areas have been granted clearances by the Ministry despite the government's own assessment that these areas already do not meet the environmental standards. Moreover, grant of Environmental Clearance for expansion or modernization to projects that failed to fully utilize 100% of their fly ash is mockery of the existing systems that intends to ensure environmental protection. Further, analysis of the minutes of the meeting of the EAC clearly shows that the narrative on reduction in emission intensity targets under Paris Agreement is completely missing from the deliberations on coal power project appraisals. The EAC has evidently distanced itself from India's Nationally Determined Contributions (INDCs) by recommending projects whose proponents bear a long history of non-compliance with environmental norms.

References:

1. CPCB (2017): Comprehensive Environmental Pollution Index (CEPI), Central Pollution Control Board, New Delhi:
2. Parivesh (MoEF&CC): Thermal EAC Minutes of Meeting dated 21st February, 2020:
3. LIFE (2018): Environmental Clearances of Coal Fired Power Plants in India- 2014to 2018
4. CEA (2020): Report on Fly ash generation at Coal/lignite based Thermal Power Stations and its utilization in the country for the year 2019-2020
5. NTPC: Performance Statistics- 2005 to 2018 (accessed on 24.02.2021)
6. National Electricity Plan, CEA, 2018
7. Business Standard (2020): "India sees year in year decline in coal funding: Report"

Endnotes:

ⁱ **Para 8 (vi) of the EIA Notification (2006):** "Deliberate concealment and/or submission of false or misleading information or data which is material to screening, scoping or appraisal or decision on the application shall make the application liable for rejection, and cancellation of prior environmental clearance granted on that basis. Rejection of an application or cancellation of a prior environmental clearance already granted, on such ground, shall be decided by the regulatory authority, after giving a personal hearing to the applicant, and following the principles of natural justice.

ⁱⁱ **CEPI** is a rational indicator to characterize the environmental quality of an industrial cluster following an algorithm of source-receptor-pathway framework. Industrial clusters having aggregated CEPI score of 70 and above is considered as a critically polluted cluster. Polluting industries with CEPI pollution index score of 60 and above are categorised as red, those with 41-59 as orange, 21-40 as green and upto 20 as white.

CPCB in 2009-2010 developed the criteria to rank industrial areas based on the CEPI score and notified 88 industrial clusters as Polluted Industrial Areas (PIA). The calculations for ranking was further revised in 2016. Based on the revised criteria, in 2017-18, CPCB found that the number of polluted areas had gone up from 88 to 100 with 38 critically polluted areas, 31 severally polluted areas and 31 other polluted clusters.

iii The thermal power plants were earlier prohibited to use fly ash for backfilling of abandoned coal mines/low lying areas/agricultural fields. In an office memorandum dated 28th August, 2019, Ministry removed these prohibitions that were otherwise stipulated as conditions in the environmental clearance. The proponents with valid environmental clearance can be granted permission to backfill abandoned mines and quarries after due permission from Directorate General of Mines Safety (DGMS).

iv **Plant Load Factor (PLF)** is a measure of the output of a power plant compared to the maximum output it could produce. Higher load factor usually means more output and a lower cost per unit of electricity generation (NEP, 2018)

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