COMPLIANCE STATUS OF COAL-BASED POWER PLANTS

Tracking installation of SOx control measures

Research direction: Nivit Kumar Yadav

Author: Anubha Aggarwal

Editor: Akshat jain

Cover and design: Ajit Bajaj

Graphics: Tarun Sehgal

Production: Rakesh Shrivastava and Gundhar Das

The Centre for Science and Environment is grateful to the Swedish International Development Cooperation Agency (Sida) for their institutional support

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Citation: Anubha Aggarwal 2023. *Compliance status of coal-based power plants: Tracking installation of SOx control measures*, Centre for Science and Environment, New Delhi

Published by
Centre for Science and Environment
41, Tughlakabad Institutional Area
New Delhi 110 062
Phones: 91-11-40616000
Fax: 91-11-29955879
E-mail: sales@cseindia.org
Website: www.cseindia.org

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Tracking installation of SOx control measures

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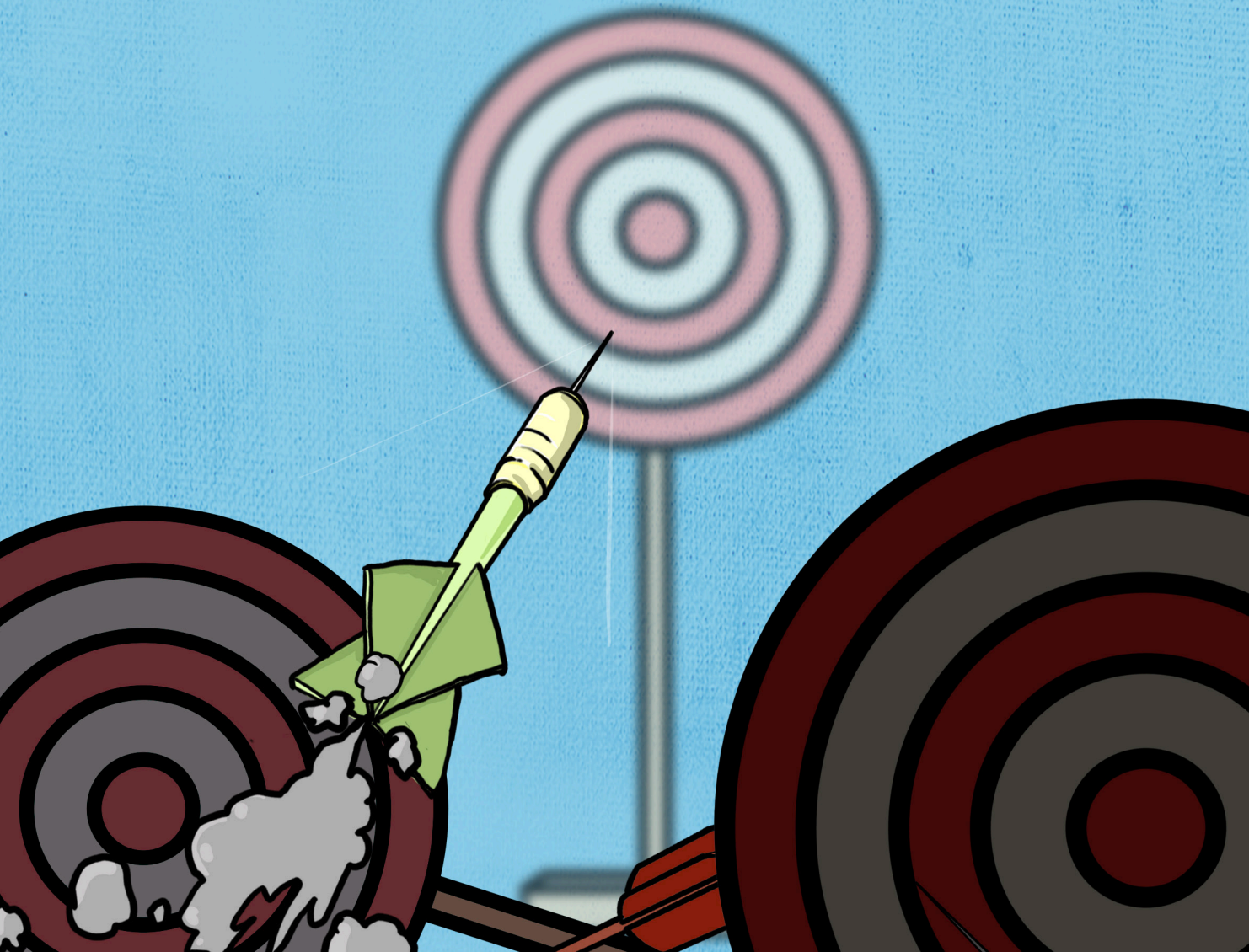
1

BACKGROUND: SHIFTING DEADLINES

The deadlines for compliance with emission norms have been revised thrice already to accommodate coal-based power plants

Only 5 per cent of the coal power capacity has complied with emission norms so far

A state-wise comparison shows that Maharashtra has the highest capacity complying with the norms, followed by Gujarat, Uttar Pradesh, Haryana and Tamil Nadu



In 2015, the Ministry of Environment, Forest and Climate Change (MoEFCC) introduced emission norms for coal-fired thermal power plants (TPPs) with 2017 as the deadline for compliance.[1] But, as the 2017 deadline drew nearer, a blanket extension of five years was given to all coal-fired TPPs.

In March 2021, coal-fired TPPs were disaggregated intro three categories, each with a different deadline for compliance with the new emission norms (*see Table 1*).[2,3,4] This was done in consensus by MoEFCC, the Ministry of Power (MoP), state pollution control boards (SPCBs) and pollution control committees (PCCs), and power generator companies (Gencos).

However, when it became evident that 58 per cent of the coal-fired TPPs in Category A will miss the December 2022 deadline, MoEFCC decided to extend the deadlines for all three categories by another two years (*see Table 2*).[5]

Table 1: Classification of coal-fired thermal power plants

TPP category	Criteria
Category A	Within 10 km radius of the National Capital Region (NCR) or cities with million plus population
Category B	Within 10 km radius of critically polluted areas or non-attainment cities
Category C	Remaining plants

Source: MoEFCC, 2022

Table 2: Chain of events

Year of notification of e mission norms	Deadline for meeting SOx norms
December 2015	December 2017
February 2018	December 2019 for power plants in Delhi-NCR and December 2022 for remaining plants
March 2021	December 2022 for Category A; December 2023 for Category B; December 2024 for Category C
September 2022	December 2024 for Category A; December 2025 for Category B; December 2026 for Category C

Source: Compiled by CSE, 2023

The Centre for Science and Environment (CSE) assessed the status of compliance of coal-fired TPPs with sulphur dioxide (SOx) norms on the basis of data reported till April 2023 by the Central Electricity Authority (CEA) under the Ministry of Power.[6] This assessment was done based upon the five stages of Flue Gas Desulphurization (FGD) installation procedure—1) feasibility stage; 2) tender specification made; 3) tender issued; 4) tender awarded; and, finally, 5) commissioning of FGD.

CSE found that, till April 2023, only 5 per cent of the coal power capacity (i.e., 10,710 MW) had complied with SOx emission norms; while 17 per cent of overall coal power capacity was still at very initial stages of compliance.

Installation of emission control equipment in a unit, like FGD for SO_2 control, takes about two years, followed by shutdown of the unit for making necessary connections. CSE estimated the likelihood of a coal-fired TPP meeting emission norms depending on the stage of compliance it is at and the duration in which the power plant must meet the deadline.

For example, a power plant that has only completed the feasibility study by April 2023 and has to comply with the emission norms by 2024, will most likely miss the deadline. Similarly, a power plant that is reported to have issued a tender in 2023 and has to meet the emission norms by 2025, is likely to comply with the norms, provided that the plant is in the process of finalizing the bid.

Depending on their ownership, coal-based power plants are of the following three types—centre-, state- and private-owned. Installed centre-owned coal-fired power capacity stands at 66,570 MW, state-owned capacity at 67,932.5 MW and private-owned capacity at 76,003 MW.

It is interesting to note that none of the plants that have installed FGDs or are reported to be complying with SOx norms are state-owned (*see Table 3*). A majority of the capacity that is complying with SOx norms is owned by private power generating companies.

Table 3: Plants that have installed FGDs or claim to be SO_2 compliant

	Plants that have installed FGDs	Plants that claim to be SO_2 compliant*
PRIVATE	• Trombay Thermal Power Station of TATA Power (750 MW) • Dahanu Thermal Power Station of Adani Power Ltd. (500 MW) • Ratnagiri Thermal Power Plant of JSW (1,200 MW) • Vindyachal TPS of NTPC (500 MW) • Mundra TPP of Adani Power Ltd. (1,980 MW) • ITPCL TPP of ITPCL (1,200 MW) • Mahatma Gandhi TPP of CLP (1,320 MW)	• Torangallu TPS of JSWEL (260 MW) • Bandakhar TPP of MCCPL (300 MW) • Nawapara TPP of TRNE (600 MW) • Bela TPS of IEPL (270 MW)
CENTRE-OWNED	• Unchhar TPP of NTPC (500 MW) • Dadri TPP of NTPC (1,330 MW)	
TOTAL	**9,280 MW**	**1,430 MW**

*The CEA report has not clarified what 'claim to be SO_2 compliant' means. It is not clear if these claims have been verified by the pollution control boards on the ground.

A state-wise comparison shows that Maharashtra has the highest capacity complying with the norms, followed by Gujarat, Uttar Pradesh, Haryana and Tamil Nadu (*see Table 4*).

Table 4: Capacity that is complying with emission norms as of April 2023

State	Central (MW)	Private (MW)	% of total capacity complying
Maharashtra	-	2,720	10.99
Gujarat	-	1,980	12.30
Uttar Pradesh	1,830	-	7.82
Haryana	-	1,320	24.77
Tamil Nadu	-	1,200	8.77
Chhattisgarh	-	900	3.80
Madhya Pradesh	500	-	2.28
Karnataka	-	260	2.74
Total	**2,330**	**8,380**	

2

CATEGORY-WISE COMPLIANCE STATUS WITH SOx NORMS

Approximately 13 GW coal-based power capacity is now likely to comply because of the extension in deadlines.

Despite extension in deadlines by five to eight years, 43 per cent capacity in Category A, 11 per cent capacity in Category B and 1 per cent capacity in Category C is still unlikely to meet the norms.

In this section, FGD compliance status of coal-fired TPPs is analysed category-wise. The tremendous shift in the number of coal-fired TPPs likely to comply with SOx norms can be attributed to an extension in deadlines by another two years, combined with increased clarity for another 34 GW capacity, about which CEA had not been reporting until December 2021 (*see Table 5*).[7]

- 5,390 MW is likely to comply because of progress made by plants
- 12,720 MW is likely to comply because of extension in deadlines
- The status of 33,927 MW has only recently become known: 870 MW 'claims to be SO_2 compliant'; 28,690 MW is likely to comply (of which 5,690 MW is at feasibility stage and is likely to comply because of the extended deadline); 3,155 MW is still unlikely to comply; and 1,212 MW is identified 'to be decommissioned'.

Table 5: Progress made by coal-fired TPPs in complying with the norms and change in status of compliance

Capacity (MW)	Stage of compliance as of December 2021	Stage of compliance as of April 2023	Change in status of compliance
36,300 MW	18,800 MW opened bids	Bid awarded	No change
	630 MW at feasibility stage		630 MW is now likely to comply due to progress made by this capacity
	600 MW finalized tender specifications		Change in status to 'likely to comply' from 'unlikely to comply'
	16,190 MW—status unknown		Status was not reported by CEA for this capacity earlier
990 MW	Bid awarded	FGD installed	Change in status to 'complying' from 'likely to comply'
1,430 MW	630 MW at feasibility stage	Claims to be SO_2 compliant	Status changed to 'complying' from 'unlikely to comply'
	870 MW—status unknown		
14,670 MW	4,790 MW at feasibility stage	Bid opened	2,960 MW is now likely to comply
	4,420 MW had specified tender details		Change in status of compliance for only 1,200 MW capacity
	5,460 MW—status unknown		Status was not reported by CEA for this capacity earlier
2,580 MW	1,230 MW at feasibility stage	Tender specification made	Likely to comply due to extension in deadline
	1,350 MW—status unknown		Status was not reported by CEA for this capacity earlier
11,490 MW	Feasibility study completed	Feasibility study completed	Likely to comply due to extension in deadline
1,785 MW	Status unknown	Feasibility study completed	No change
5,960 MW			Likely to comply because of extension in deadline

In certain cases, a reverse trend was observed in the progress with respect to commissioning of FGD units (*see Table 6*). This implies that coal-fired TPPs that are at later stages of compliance and seem likely to comply with the norms by their respective deadlines, may also falter and miss the deadlines. It is therefore important to not only track the final stages of compliance but also keep a check on the intermediary stages. This will help authorities understand if implementation is proceeding at the expected pace or if it is getting delayed.

Table 6: Reverse growth in compliance with SOx norms

Capacity	Stage of compliance as of December 2021	Stage of compliance as of April 2023
1,980 MW	Bid awarded	Tender specification made
600 MW	Bid opened	Feasibility study completed

Category A | 43 per cent of the capacity in Category A is unlikely to meet the deadline—26 per cent has opened bids and 17 per cent is at the feasibility stage of compliance.

Seven per cent of this capacity is to be decommissioned, although there is no clarity on the decommissioning plan. These plants can continue to operate without the required air pollution control device (APCD) and without paying any penalty or environmental compensation for the next five years i.e., until December 2027 as per the latest notification by MoEFCC on emission norms.

Only 17 per cent of the capacity in Category A has so far met the SOx norms after almost eight years of the standard being enforced, and 33 per cent capacity is likely to meet the norms as these plants have awarded bids.

Graph 1: Compliance status of coal-based power capacity under Category A

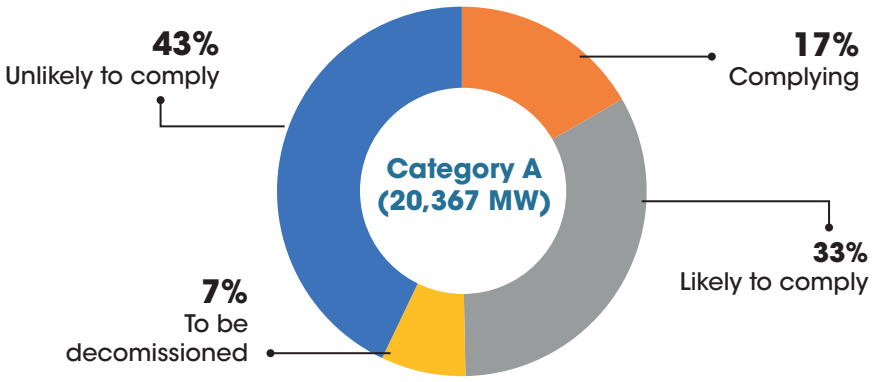


Table 7: Before and after scenario for Category A coal-based power capacity

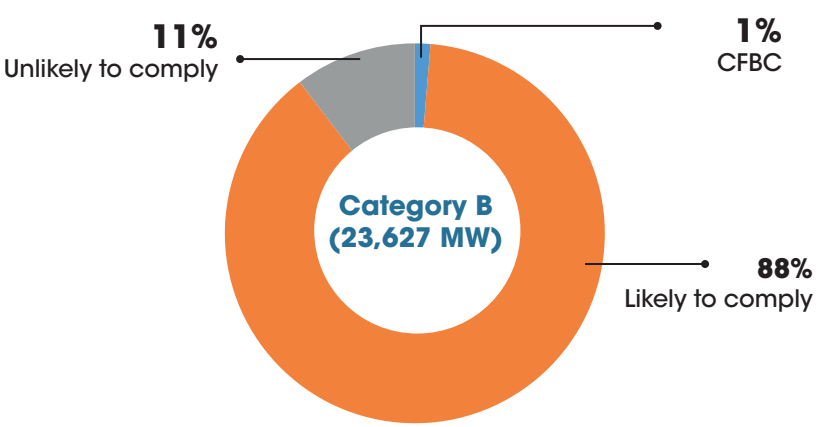
Deadline 2022 (As per March 2021 notification)—Analysis based on FGD status in December 2021	**Deadline 2024** (As per September 2022 notification)—Analysis based on FGD status in April 2023
56% capacity unlikely to meet the deadline—status unknown for 11%, 25% at feasibility stage, 3% tender specification made, and 17% has floated tenders	43% capacity unlikely to meet the deadline—26% floated tenders and 17% at feasibility stage
30% capacity has awarded tenders and is likely to comply	33% capacity has awarded tenders and is likely to comply
14% capacity is complying	17% capacity is complying
-	7% capacity is to be decommissioned

Category B | The picture is less grim for plants in category B only because the deadline for them has been extended by two years. A substantial 88 per cent of capacity is likely to comply with the norms by the deadline—of these, 54 per cent has issued tenders, while only 34 per cent has awarded work orders for FGD installation.

Despite the extension in deadline, 11 per cent of the capacity is still unlikely to comply with the norms in time.

For coal-fired TPPs with circulating fluidized bed combustion (CFBC) boilers—constituting 1 per cent of the capacity in Category B—it is not clear whether they have to install FGD to comply with the norms.

Graph 2: Compliance status of coal-based power capacity under Category B



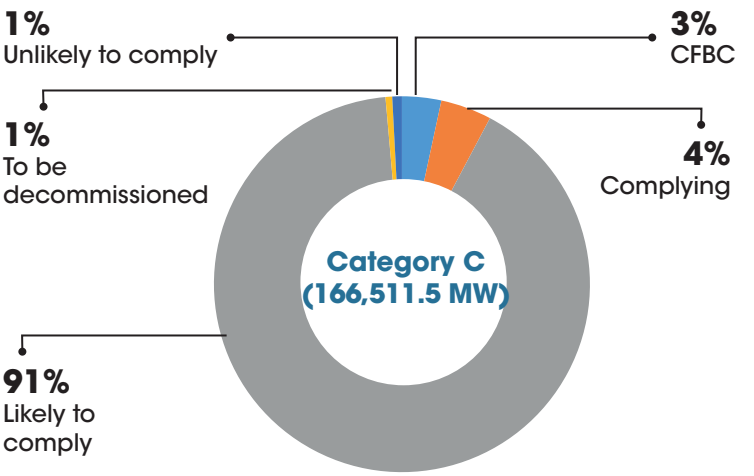
Experts are of the opinion that coal-fired TPPs with CFBC boilers also need to install FGDs. In that scenario, these plants too may miss the deadline for compliance with SOx norms.

Table 8: Before and after scenario for Category B coal-based power capacity

Deadline 2023 (As per March 2021 notification)—Analysis based on FGD status in December 2021	**Deadline 2025** (As per September 2022 notification)—Analysis based on FGD status in April 2023
32% capacity unlikely to meet the deadline—status unknown for 19%, 8% at feasibility stage, 5% tender specification made	11% capacity unlikely to meet the deadline as it is still at feasibility stage of compliance
67% capacity likely to comply—31% awarded tenders and 36% floated tenders	88% capacity likely to comply—54% has issued tenders and 34% has awarded tenders
1% capacity comprises of CFBC plants—status not clear	1% capacity comprises of CFBC plants—status not clear

Category C | Coal-fired TPPs in Category C have almost four more years to comply with emission norms. Due to the extra time available, 91 per cent of the capacity in Category C is likely to comply with the norms. Of this, 51 per cent has awarded bids, 23 per cent has opened tenders, 6 per cent has completed tender specifications, while remaining 11 per cent is at the feasibility stage of compliance.

Graph 3: Compliance status of coal-based power capacity under Category C



Raikheda TPP (1,370 MW) in Chhattisgarh constitutes 1 per cent of the capacity in Category C—the plant has not started feasibility study and is, therefore, unlikely to meet the deadline.

Table 9: Before and after scenario for Category C coal-based power capacity

Deadline 2024 (As per March 2021 notification)—Analysis based on FGD status in December 2021	**Deadline 2026** (As per September 2022 notification)—Analysis based on FGD status in April 2023
27% capacity unlikely to meet the deadline—status unknown for 17% and 10% at feasibility stage	1% capacity unlikely to meet the deadline as the plant has not started feasibility study
67% capacity likely to meet the deadline—32% awarded tenders, 30% floated tenders and 5% finalized tender specifications	91% capacity likely to comply with the norms—51% awarded tenders, 23% floated tenders, 6% finalized tender specifications, and the remaining 11% is at feasibility stage
3% capacity comprises of CFBC plants—status not clear	3% capacity comprises of CFBC plants—status not clear
3% capacity complying with the norms	4% capacity complying with the norms
-	Approximately 1% capacity is identified to be decommissioned

3

PERFORMANCE OF STATES

Approximately 23 GW coal-based power capacity is still exploring the feasibility of commissioning FGD in its premises

Only 0.81 GW from newly commissioned 32.63 GW capacity is complying with the emission norms

Approximately 2.47 GW is identified to be decommissioned but the retirement plans for these plants are not clear

States with coal-based power capacity complying with SOx norms

In Andhra Pradesh, Rajasthan, Odisha, Bihar, Telangana, Punjab, West Bengal, Jharkhand and Assam, no coal-based power plants meet the emission norms. This accounts for 34 per cent of the total coal-based power capacity identified for FGD installation.

Maharashtra has the highest coal-based power capacity but only 11 per cent of this capacity is currently complying with the norms. Whereas, Haryana has the highest percentage capacity that is meeting the norms.

Table 10: State-wise coal-based power capacity complying with emission norms

States	Total capacity (MW)	Complying as of December 2021 (%)	Complying as of April 2023 (%)
Maharashtra	24,756	10	11
Chhattisgarh	23,688	0	4
Uttar Pradesh	23,415	4	8
Madhya Pradesh	21,950	2	2
Gujarat	16,092	12	12
Tamil Nadu	13,685	9	9
Karnataka	9,480	0	3
Haryana	5,330	25	25
Total	**1,38,396**		

Since December 2021, the capacity complying with norms in Uttar Pradesh has substantially increased. In Chhattisgarh and Karnataka—which had reported zero compliance with emission norms in the December 2021 CEA status report—some plants now 'claim to be SO_2 compliant'. However, as stated earlier, these claims have possibly not been verified by state pollution control boards on the ground.

States with coal-based power capacity lagging behind compliance with norms

Andhra Pradesh, Chhattisgarh and Madhya Pradesh have the highest capacity that is still exploring the feasibility of installing FGD or has only completed the feasibility study. 7,475 MW capacity, for which the status was unknown in December 2021, has reported to have either started or completed feasibility studies for commissioning of FGD.

Almost 8,470 MW capacity that was reported to be at feasibility stage in December 2021, is now at various other stages of compliance (*see Table 12*). However, there has been no progress made in another 15,505 MW capacity as it has remained at the feasibility stage for at least the last one year.

Table 11: State-wise coal-based power capacity at feasibility stage of compliance

State	Feasibility stage (MW)
Andhra Pradesh	4,820
Madhya Pradesh	3,970
Chhattisgarh	2,775
Maharashtra	2,190
Telangana	2,100
Odisha	1,970
Tamil Nadu	1,725
Gujarat	1,010
Jharkhand	960
Punjab	920
Karnataka	600
West Bengal	435
Uttar Pradesh	105
Total	**23,580**

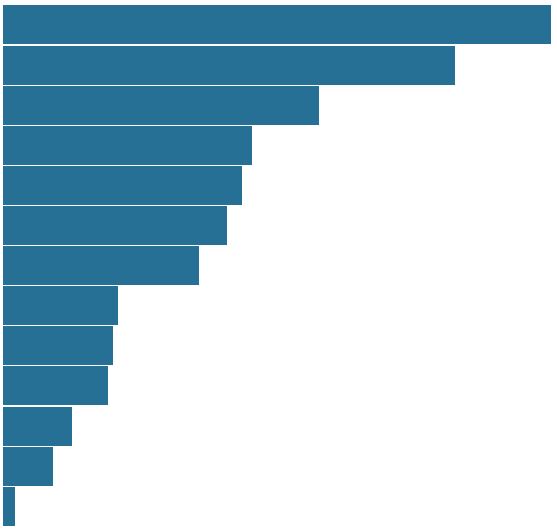


Table 12: Change in status of coal-based power plants which were at feasibility stage in December 2021

State	Capacity (MW) at feasibility stage in December 2021	Compliance status in April 2023	Capacity (MW) in April 2023
Andhra Pradesh	4,790	Tender specification made	1,230
Chhattisgarh	1,980	Claims to be SO_2 compliant	300
Karnataka	260	Claims to be SO_2 compliant	260
Madhya Pradesh	3,250	Bid opened	1,210
Maharashtra	4,290	Bid awarded	630
		Bid opened	750
		To be decommissioned	840
Tamil Nadu	3,030	Bid opened	1,830
Uttar Pradesh	1,000	Bid opened	1,000
West Bengal	855	To be decommissioned	420
Total	**19,455**		**8,470**

States with coal-based power capacity unlikely to meet the deadlines

Seven states have coal-fired TPPs that will miss deadlines—Tamil Nadu, Maharashtra, Andhra Pradesh, Chhattisgarh, Haryana, West Bengal and Gujarat. In almost all these states, there is substantial decline in the percentage of capacity unlikely to meet the norms.

Table 13: State-wise coal-based power capacity unlikely to meet emission norms by the deadline

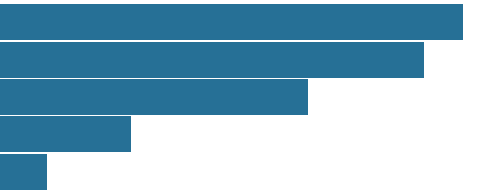
State	Total capacity (MW)	Unlikely to comply (%) by December 2021	Unlikely to comply (%) by April 2023
Tamil Nadu	13,685	51	26
Andhra Pradesh	11,590	64	24
Maharashtra	24,756	39	13
Haryana	5,330	13	13
Chhattisgarh	23,688	28	6
West Bengal	13,907	10	3
Gujarat	16,092	9	2
Bihar	7,740	35	0
Jharkhand	4,250	23	0
Karnataka	9,480	9	0
Madhya Pradesh	21,950	34	0
Odisha	10,140	48	0
Punjab	5,680	16	0
Rajasthan	10,480	31	0
Telangana	7,572.5	50	0
Uttar Pradesh	23,415	18	0
Assam	750	0	0
Total	**210,505.5**	**30**	**6**

States with coal-based power capacity above 25 years of age and unlikely to meet the deadline

Andhra Pradesh has the highest coal-based power capacity which is unlikely to comply and that has completed its most efficient operational life of 25 years, followed by Tamil Nadu, Maharashtra, Gujarat and West Bengal. It is important to take note of the age-wise compliance status of coal-fired TPPs as their efficiency decreases post their operational life of 25 years and only renovation and modernization of these power plants can help maintain their efficiency.

Table 14: State-wise coal-based power capacity that is unlikely to meet the norms and is more than 25 years of age

State	>25 years and unlikely to comply (MW)
Andhra Pradesh	1,260
Tamil Nadu	1,155
Maharashtra	840
Gujarat	362
West Bengal	135
Total	**3,752**



Coal-based power capacity that is reported to be retired or decommissioned

The Central Electricity Authority (CEA) reports that 1,014 MW capacity has been retired (*see Table 15*) and 2,472 MW is identified to be decommissioned (*see Table 16*). The capacity that is identified to be decommissioned has been in operation for 30 to 60 years (*see Table 17*).

However, on 1 January 2023, the government issued an advisory to all the power utilities not to decommission or retire any old coal-fired TPPs until 2030.[9] The 'Renovation and Modernisation' division of CEA is designated with the task of improving the performance of these units to extend the life of these plants by another 15–20 years.

Table 15: Coal-fired TPPs that are reported to be retired

Coal thermal power plant	State	Developer	Capacity (MW)
MUZAFFARPUR TPS unit 1	Bihar	NTPC	110
MUZAFFARPUR TPS unit 2	Bihar	NTPC	110
DURGAPUR TPS unit 4	West Bengal	DVC	210
BANDEL TPS unit 1	West Bengal	WBPDC	60
KORADI TPS unit 7	Maharashtra	MAHAGENCO	210
ORBA TPS unit 7	Uttar Pradesh	UPRVUNL	94
PARICHHA TPS unit 1	Uttar Pradesh	UPRVUNL	110
PARICHHA TPS unit 2	Uttar Pradesh	UPRVUNL	110
Total			1,014

It is important to track the implementation plans for these units as they use obsolete technology for power generation and their emissions are much higher compared to the younger coal fleet that is based on supercritical and ultra-supercritical technologies. Life extension will improve efficiency of the plant but it is not clear how these plants would be able to meet the stricter emission norms without commissioning a FGD unit.

If achieving the desired emission limits is not possible without an FGD, then the question arises—how economically feasible is it to install an FGD for a mere 15–20 years? If it is not economically feasible to install an FGD in these plants, then they will continue to flout the norms till their closure. Considering the conundrum and lack of clarification by CEA or the power utilities on this, the status of compliance for these plants remains ambiguous.

Table 16: Coal-fired TPPs identified for decommissioning

Name of project	State	Developer	Capacity (MW)
KOTA TPS	Rajasthan	RRVUNL	**640**
NASIK TPS	Maharashtra	MAHAGENCO	**630**
KOLAGHAT TPS	West Bengal	WBPDC	**420**
TITAGARH TPS	West Bengal	CESC	**240**
BARAUNI TPS	Bihar	NTPC	**210**
BHUSAWAL TPS	Maharashtra	MAHAGENCO	**210**
RAMAGUNDEM - B TPS	Telangana	TSGENCO	**62.5**
BANDEL TPS	West Bengal	WBPDC	**60**
Total			**2,472.5**

Table 17: Age-wise distribution of coal-fired TPPs that are identified to be decommissioned

Age range (years)	Capacity (MW)	Name of the plant
30–40	1,720	Barauni TPS, Titagarh TPS, Kolaghat TPS, Kota TPS, Bhusawal TPS
40–50	692.5	Nasik TPS
50–60	60	Bandel TPS, Ramagundem-B TPS

Units commissioned after 1 January 2017

An age-wise analysis of the FGD status report by CEA for April 2023, shows that 32,637 MW capacity was commissioned after 1 January 2017. All these units were granted environmental clearances on the condition that they will comply with the emission norms notified by MoEFCC in 2015, from the time they begin operating. Yet, in April 2023, only 812 MW of this newly commissioned capacity was found

to be complying with the emission norms. These plants are Dhishergarh TPP, Unchahar TPS and Nawapara TPP.

The rest of the plants, except Hiranmaye TPP (300 MW) owned by a private player in West Bengal, are likely to meet the norms by the deadlines for their respective categories. It is not clear how these units were allowed to be commissioned and how no action has been taken on these units when these are in direct violation of the environment clearance condition.

Table 18: Status of compliance of coal-based power capacity commissioned post-2017 (in MW)

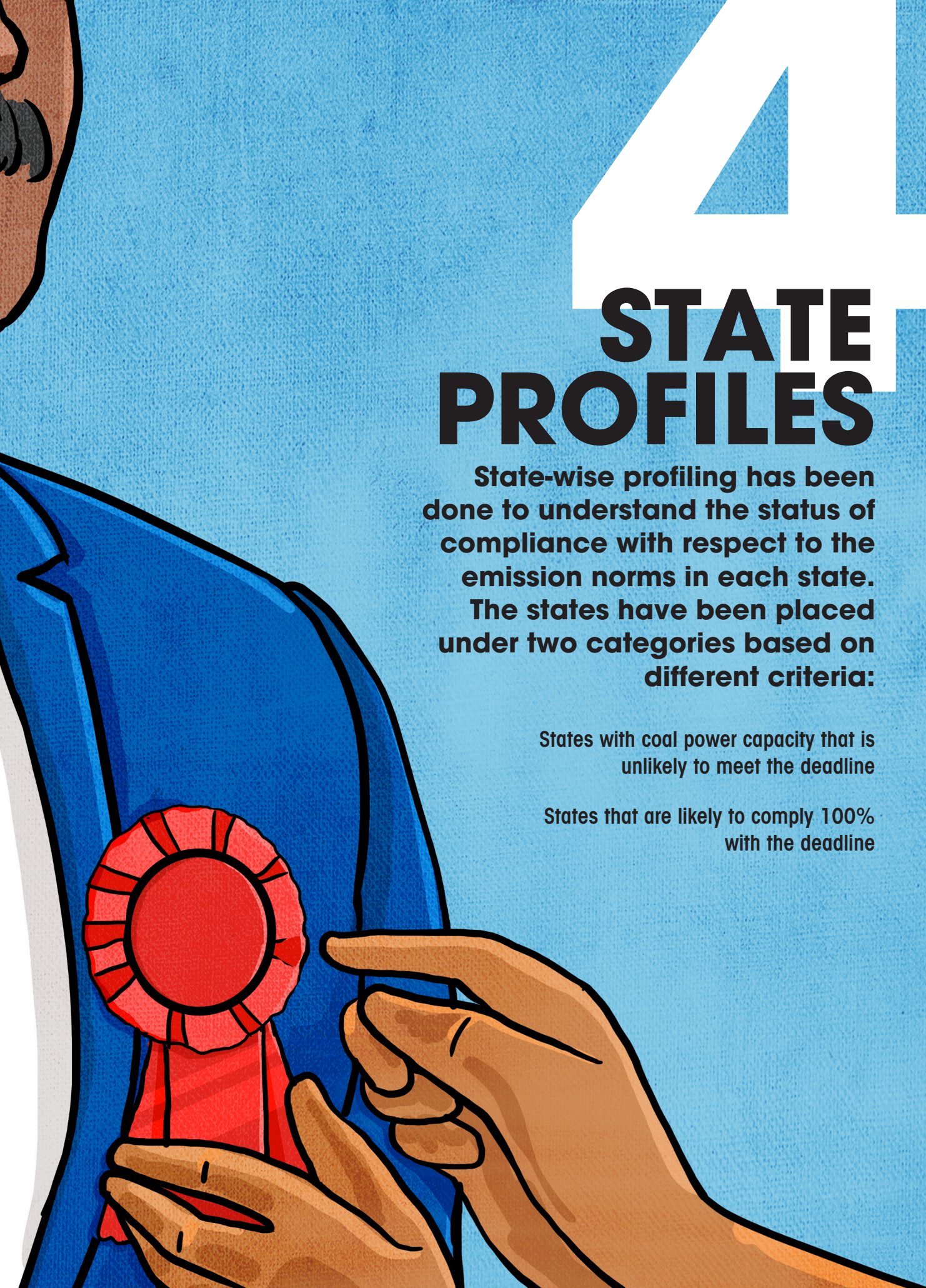
Category	CFBC	Complying	Likely to comply	Unlikely to comply
B	12		1,320	300
C	295	800	29,910	
Total	**307**	**800**	**31,230**	**300**

Table 19: Coal-based power capacity commissioned post-2017

Sr. no.	Name of plant	State	Sector	Developer	Capacity (MW)	Category
1	SGPL TPP	Andhra Pradesh	Private	SEIL	660	C
2	RAYALASEEMA TPS		State	APGENCO	600	C
3	BONGAIGAON TPP	Assam	Central	NTPC	500	C
4	NABI NAGAR TPP	Bihar	Central	NTPC	2,070	C
5	BARAUNI TPS		Central	NTPC	500	C
6	BARH I		Central	NTPC	660	C
7	LARA TPP	Chhattisgarh	Central	NTPC	1,600	C
8	UCHPINDA TPP		Private	RKMPPL	720	C
9	BINJKOTE TPP		Private	SKS	600	C
10	NAWAPARA TPP		Private	TRNE	300	C
11	AKALTARA TPS		Private	WPCL	600	C
12	WANAKBORI TPS	Gujarat	State	GSECL	800	C
13	BHAVNAGAR CFBC TPP		State	BECL	250	C
14	KUDGI STPP	Karnataka	Central	NTPC	1,600	C
15	YERMARUS TPP		State	KPCL	800	C
16	GADARWARA TPP	Madhya Pradesh	Central	NTPC	1,600	C
17	KHARGONE STPP		Central	NTPC	1,320	C
18	MAHAN TPP		Private	APL	600	C
19	SHREE SINGAJI TPP		State	MPPGCL	1,320	C
20	NIWARI TPP		Private	BLAPPL	45	C

TPP COMPLIANCE STATUS WITH SOx NORMS

Sr. no.	Name of plant	State	Sector	Developer	Capacity (MW)	Category
21	MAUDA TPS	Maharashtra	Central	NTPC	660	C
22	SOLAPUR STPS		Central	NTPC	1,320	B
23	NASIK (P) TPS		Private	RATTAN INDIA	1,080	C
24	SHIRPUR TPP		Private	SPPL	150	C
25	DARLIPALI STPS	Odisha	Central	NTPC	1,600	C
26	IB VALLEY TPS		State	OPGC	1,320	C
27	CHHABRA TPP	Rajasthan	State	RRVUNL	1,320	C
28	SURATGARH SCTPP		State	RRVUNL	1,320	C
29	NEYVELI NEW TPP	Tamil Nadu	Central	NEYVELI LIGNITE	1,000	C
30	BHADRADRI TPP	Telangana	State	TSGENCO	810	C
31	KOTHAGUDEM TPS (STAGE VII)		State	TSGENCO	800	C
32	MEJA STPP	Uttar Pradesh	Central	NTPC	1,320	C
33	TANDA TPS		Central	NTPC	1,320	C
34	UNCHAHAR TPS		Central	NTPC	500	C
35	PRAYAGRAJ TPP		Private	PPGCL (Tata)	660	C
36	Hiranmaye TPP	West Bengal	Private	HMEL	300	B
37	DISHERGARH TPP		Private	DPSCLTD	12	B
	Total				**32,637**	



4

STATE PROFILES

State-wise profiling has been done to understand the status of compliance with respect to the emission norms in each state. The states have been placed under two categories based on different criteria:

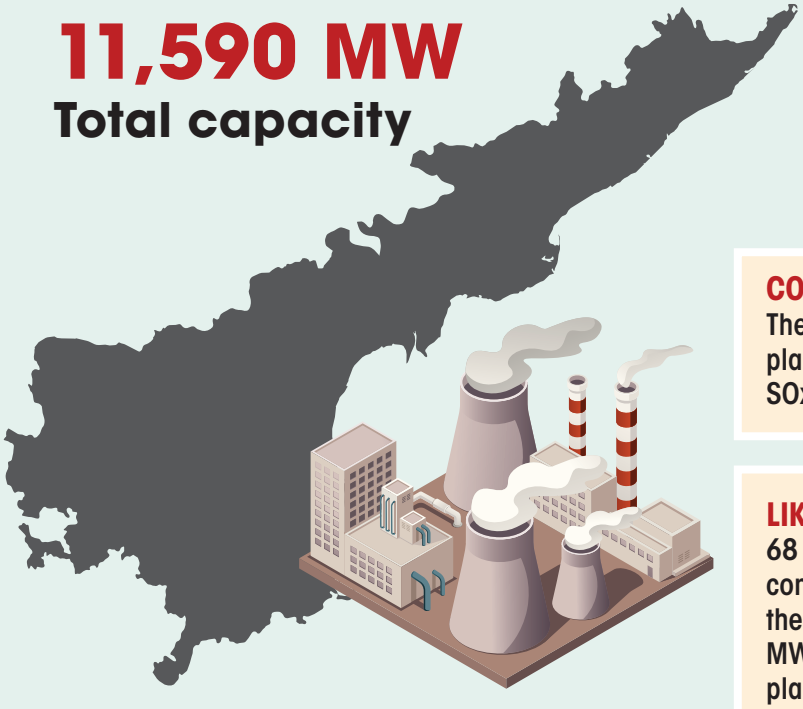
States with coal power capacity that is unlikely to meet the deadline

States that are likely to comply 100% with the deadline

TPP COMPLIANCE STATUS WITH SOx NORMS

Andhra Pradesh

11,590 MW
Total capacity



STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	2,000 MW Bid Awarded
STAGE 3	2,640 MW Bid opened
STAGE 2	1,230 MW Tender specification made
STAGE 1	4,820 MW Feasibility study

CFBC: 900 MW

Category-wise status of compliance for coal-based power capacity in Andhra Pradesh (in MW)

Category	Capacity	Likely to comply	Unlikely to comply	CFBC
Category A	4,800	2,000	2,800	-
Category B	-	-	-	-
Category C	6,790	5,890	-	900
Total	11,590	7,890	2,800	900

COMPLYING »
There is not a single coal-fired power plant in the state that is complying with SOx norms at present.

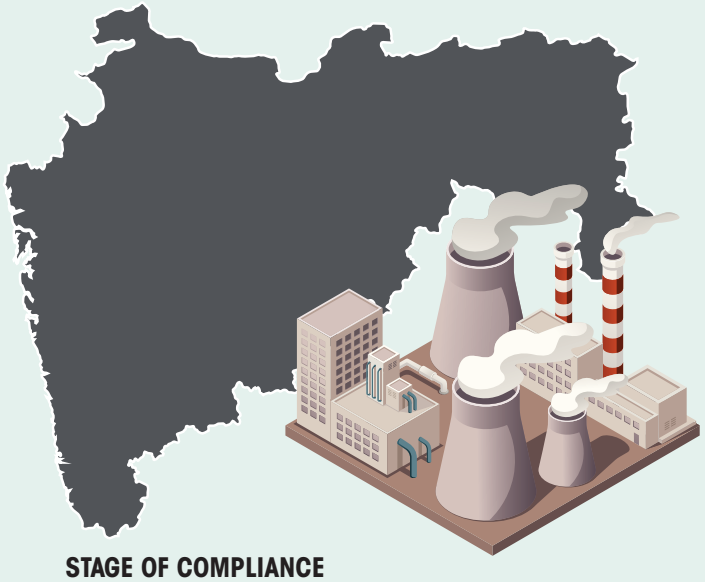
LIKELY TO COMPLY »
68 per cent of the capacity is likely to comply with the norms in time. Of this, the highest share is state-owned (3,250 MW), followed by privately owned plants (2,640 MW) and central sector units (2,000 MW). Although, 2,020 MW (state-owned) is still at feasibility stage of compliance.

UNLIKELY TO COMPLY »
Dr. Narla Tata Rao TPS (1,760 MW) and Vizag TPP (1,040 MW) are unlikely to meet the deadline and comprise 24 per cent of the coal-based power capacity in the state. Dr. Narla Tata Rao TPS is the only plant in the state that has completed 25 years operational life and is unlikely to meet the norms.

Both the coal power plants have their deadlines in December 2023. The former is owned by Andhra Pradesh Power Generation Corporation (APGENCO) and the latter is run by a private player—Hinduja National Power Corporation Ltd. (HNPCL).

Maharashtra

24,756 MW
Total capacity



COMPLYING »
Bela TPS, JSW Ratnagiri TPP, Dhanau TPS and Trombay TPP constitute 11 per cent of the total coal capacity in Maharashtra that is complying with SOx norms.

LIKELY TO COMPLY »
71 per cent of the capacity in Maharashtra is likely to comply with the emission norms in time. Of this, the highest share is privately owned (8,610 MW), followed by state sector plants (5,380 MW) and then central sector units (3,640 MW). A unit of 1,350 MW capacity (privately owned) that is likely to comply with the deadlines has only started the feasibility study.

TO BE DECOMMISSIONED »
Bhusawal TPS (Unit 3) and Nasik TPS—both owned by Maharashtra State Power Generation Company (MAHAGENCO)—are to be decommissioned. Both these plants have been in operation for over 40 years now.

UNLIKELY TO COMPLY »
Approximately 13 per cent of the capacity is unlikely to meet the emission norms by the stipulated deadline. These plants include Chandrapur TPS, Khaperkehda TPS and Koradi TPS—all owned by MAHAGENCO. Of this, Chandrapur TPS and Khaperkheda TPS (units 1 and 2), which have been in operation for over 30 years, have only completed feasibility study. Whereas, Khaperkheda TPS (Unit 5) and Koradi TPS have opened bids. All these plants have to meet the deadline by the end of 2024 or 2025.

STAGE OF COMPLIANCE

STAGE 5	2450+270* FGD installed
STAGE 4	8,070 MW Bid Awarded
STAGE 3	9,340 MW Bid opened
STAGE 2	1,350 MW Tender specification made
STAGE 1	2,190 MW Feasibility study

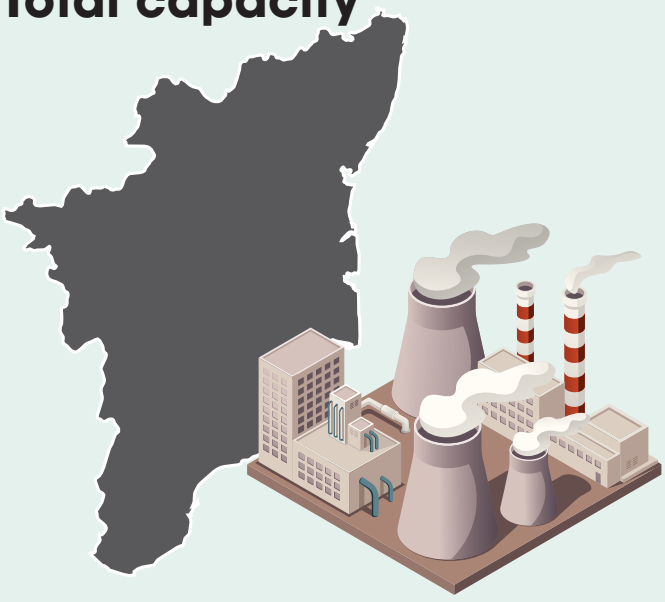
CFBC: 246 MW; To be decommissioned: 840 MW
(*) Claims to be SO_2 compliant

Category-wise status of compliance for coal-based power capacity in Maharashtra (in MW)

Category	Capacity	CFBC	Complying	Likely to comply	To be decommissioned	Unlikely to comply
Category A	4,910	-	750	630	630	2,900
Category B	4,840	-	-	4,420	-	420
Category C	15,006	246	1,970	12,580	210	-
Total	**24,756**	**246**	**2,720**	**17,630**	**840**	**3,320**

Tamil Nadu

13,685 MW
Total capacity



COMPLYING »
ILFS Energy and Tamil Nadu Power Company (ITPCL) TPP of 1,200 MW capacity is the only plant that is complying with SOx norms at present.

LIKELY TO COMPLY »
59 per cent of the capacity is likely to comply with the norms. Of the capacity that is likely to comply, highest share is of central sector (5,390 MW), followed by state sector plants (2,490 MW) and then privately-owned units (250 MW). Of the total capacity that is likely to meet the deadlines, 27 per cent have awarded bids for FGD installation and the other 32 per cent have opened bids.

UNLIKELY TO COMPLY »
26 per cent of the capacity is unlikely to comply with the norms. Muthiara TPP, North Chennai TPS and Thoothukudi Station-IV TPS are the three plants that will miss the deadline for complying with SOx norms. Of this, 1,155 MW has almost completed 30 years of operational life. These plants are owned by Tamil Nadu Generation and Distribution Corporation (TANGEDCO).

STAGE OF COMPLIANCE

STAGE 5	1,200 MW	FGD installed
STAGE 4	3,750 MW	Bid Awarded
STAGE 3	6,210 MW	Bid opened
STAGE 2	-	Tender specification made
STAGE 1	1,725 MW	Feasibility study

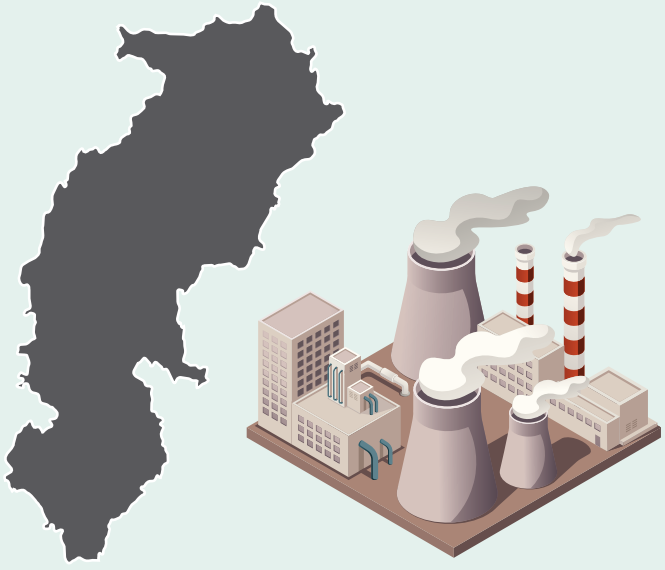
CFBC: 800 MW

Category-wise status of compliance for coal-based power capacity in Tamil Nadu (in MW)

Category	Capacity	CFBC	Complying	Likely to comply	Unlikely to comply
Category A	3,330	-	-	1,500	1,830
Category B	5,515	300	-	3,490	1,725
Category C	4,840	500	1,200	3,140	-
Total	**13,685**	**800**	**1,200**	**8,130**	**3,555**

Chhattisgarh

23,688 MW
Total capacity



STAGE OF COMPLIANCE

STAGE 5	**900* MW** FGD installed
STAGE 4	**9,480 MW** Bid Awarded
STAGE 3	**7,440 MW** Bid opened
STAGE 2	**1,200 MW** Tender specification made
STAGE 1	**2,775 MW** Feasibility study

CFBC: 523 MW

(*) Claims to be SO_2 compliant

COMPLYING »
Bandakhar TPP (300 MW) and Nawapara TPP (600 MW) are the only plants that claim to be SO_2 compliant.

LIKELY TO COMPLY »
88 per cent of the capacity is likely to comply with the norms. The highest share is of the private sector (10,375 MW), followed by central sector plants (7,680 MW) and then state-owned units (2,840 MW). However, 2,775 MW of this capacity which is all owned by private players, is still at feasibility stage.

UNLIKELY TO COMPLY »
Owned by GMR Chhattisgarh Energy Ltd., Raikheda TPP with 1,370 MW capacity is the only plant that is unlikely to meet emission norms in time as the plant is yet to start the feasibility study.

Category-wise status of compliance for coal-based power capacity in Chhattisgarh (in MW)

Category	Capacity	CFBC	Complying	Likely to comply	Unlikely to comply
Category B	5,540	-	-	5,540	-
Category C	18,148	523	900	15,355	1,370
Total	**23,688**	**523**	**900**	**20,895**	**1,370**

West Bengal

13,907 MW
Total capacity

COMPLYING »
There is no coal-fired TPP that is complying with the norms.

LIKELY TO COMPLY »
Approximately 92 per cent of the capacity is likely to comply with the norms. The highest share is of the central sector (6,640 MW), followed by state-owned plants (4,750 MW) and then privately-owned units (1,350 MW). Of these, 54 per cent have awarded bids for FGD installation and the other 38 per cent have opened bids.

STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	7,480 MW Bid Awarded
STAGE 3	5,260 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	435 MW Feasibility study

CFBC: 12 MW; To be decommissioned: 720 MW

UNLIKELY TO COMPLY »
3 per cent of the capacity is unlikely to comply with the norms. Of these, Southern REPL and Hiramaye TPP are still at feasibility stage of compliance. Budge Budge TPS and Southern REPL TPP, owned by Calcutta Electric Supply Corporation (CESC), have completed operational life of 25 years and are unlikely to comply with the norms in time.

Category-wise status of compliance for coal-based power capacity in West Bengal (in MW)

Category	Capacity	CFBC	Likely to comply	Unlikely to comply	To be decommissioned
Category A	375	-	-	135	240
Category B	2,462	12	2,150	300	-
Category C	11,070	-	10,590	-	480
Total	**13,907**	**12**	**12,740**	**435**	**720**

Gujarat

16,092 MW
Total capacity

COMPLYING »
Mundra TPP of 1,980 MW capacity is the only plant in Gujarat that is complying with the emission norms.

LIKELY TO COMPLY »
Almost 77 per cent of the capacity in the state is likely to comply with the deadlines. However, state-owned Wanakbori TPP of 1,010 MW is still at the feasibility stage of compliance.

UNLIKELY TO COMPLY »
Another coal-fired TPP, Sabarmati D-F Power Station of 362 MW has been in operation for more than 40 years and will miss the 2024 deadline as the plant has not awarded the work order for FGD commissioning to any of the vendors as of yet.

STAGE OF COMPLIANCE

STAGE 5	1,980 MW	FGD installed
STAGE 4	6,640 MW	Bid Awarded
STAGE 3	3,937 MW	Bid opened
STAGE 2	1,200 MW	Tender specification made
STAGE 1	1,010 MW	Feasibility study

CFBC: 1,325 MW

Category-wise status of compliance for coal-based power capacity in Gujarat (in MW)

Category	Capacity	CFBC	Complying	Likely to comply	Unlikely to comply
Category A	362	-	-	-	362
Category C	15,730	1,325	1,980	12,425	-
Total	**16,092**	**1,325**	**1,980**	**12,425**	**362**

Haryana

5,330 MW
Total capacity

COMPLYING »
Mahatma Gandhi TPP of capacity 1,320 MW is the only plant that has commissioned FGD.

LIKELY TO COMPLY »
62 per cent of the capacity is likely to comply with the deadlines. All these units that are likely to comply are either central (1,500 MW) or state-owned (1,800 MW).

UNLIKELY TO COMPLY »
Panipat TPS of 710 MW, owned by Haryana Power Generation Corporation Ltd. (HPGCL), will miss the 2024 deadline as the plant is yet to award a work order for commissioning of FGD.

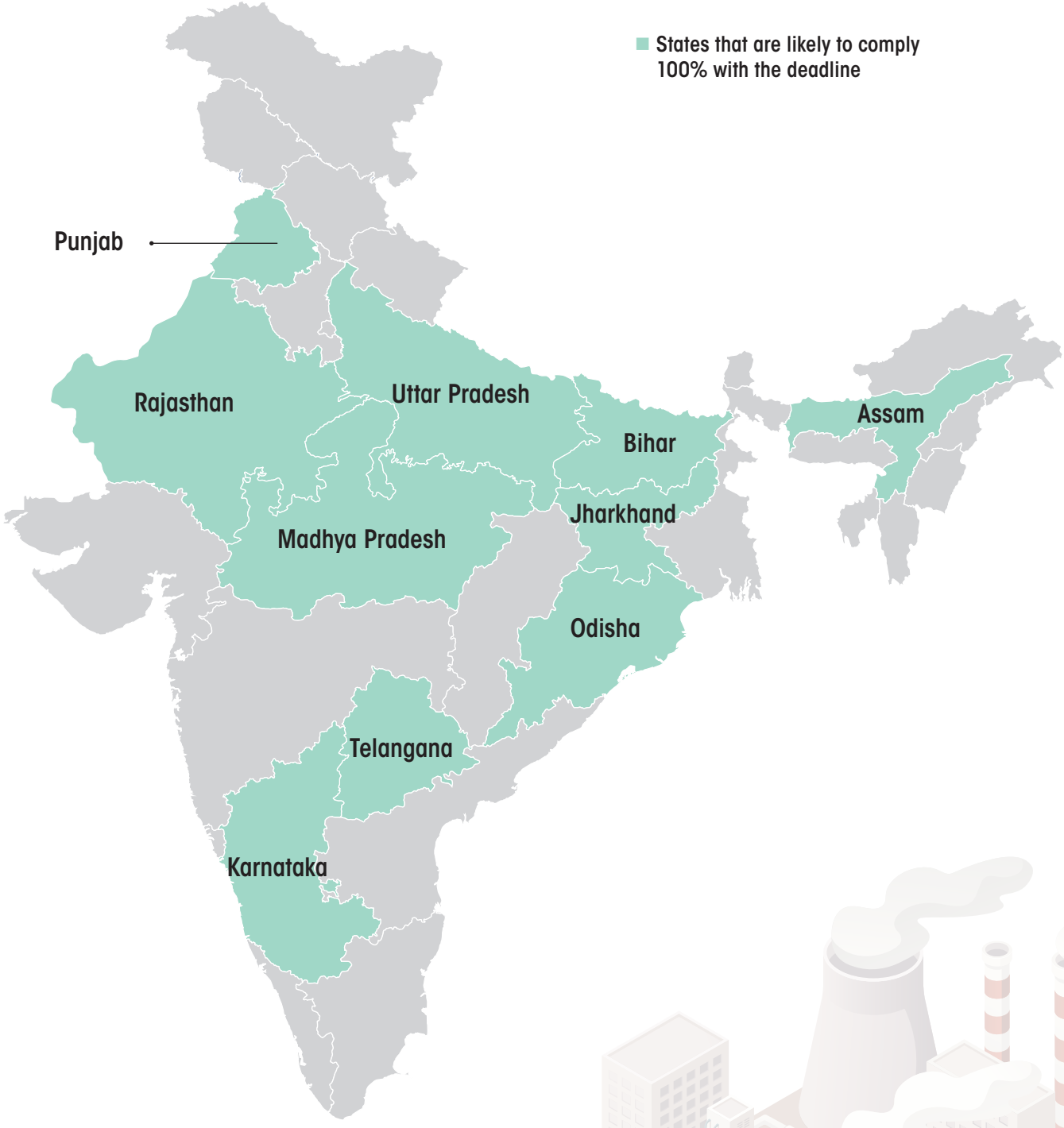
STAGE OF COMPLIANCE

STAGE 5	1,320 MW FGD installed
STAGE 4	1,500 MW Bid Awarded
STAGE 3	2,510 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	- Feasibility study

Category-wise status of compliance for coal-based power capacity in Haryana (in MW)

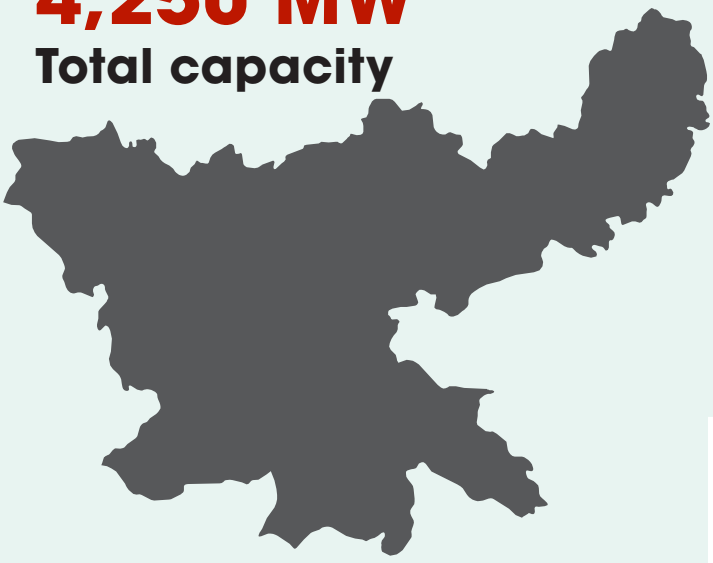
Category	Capacity	Complying	Likely to comply	Unlikely to comply
Category A	3,530	1,320	1,500	710
Category C	1,800	-	1,800	-
Total	**5,330**	**1,320**	**3,300**	**710**

TPP COMPLIANCE STATUS WITH SOx NORMS



Jharkhand

4,250 MW
Total capacity



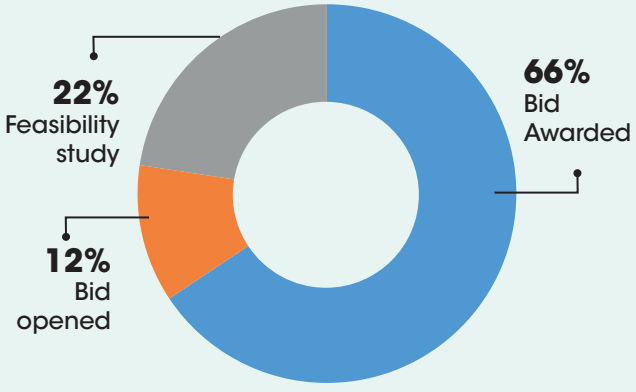
COMPLYING »
No plant is complying with emission norms at present

LIKELY TO COMPLY »
66 per cent capacity that is likely to comply has awarded bids and 12 per cent has floated tenders. Tenughat TPP of 960 MW, which constitutes 22 per cent of the coal-based power capacity in the state, is still at the feasibility stage of compliance.

STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	2,790 MW Bid Awarded
STAGE 3	500 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	960 MW Feasibility study

Status of compliance of coal-based power capacity in Jharkhand that is likely to comply



Category-wise status of compliance for coal-based power capacity in Jharkhand (in MW)

Category	Capacity	Likely to comply
Category C	4,250	4,250
Total	4,250	4,250

Uttar Pradesh

23,415 MW
Total capacity

COMPLYING »
Dadri TPP (1,330 MW) and Unchhar TPS - Unit 6 (500 MW) are the only two plants that are complying with the emission norms at present.

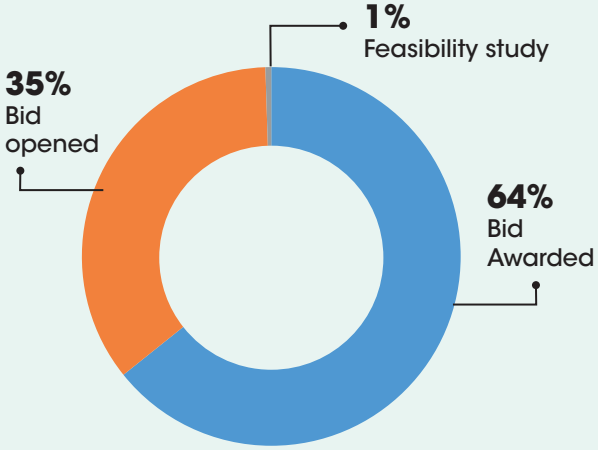
LIKELY TO COMPLY »
64 per cent of the capacity that is likely to meet emission norms in time has awarded work orders to vendors for commissioning FGDs, and 35 per cent has opened bids. However, Harduaganj TPP - Unit 7 of 105 MW is still at the feasibility stage of compliance.

STAGE OF COMPLIANCE

STAGE 5	1,830 MW FGD installed
STAGE 4	13,580 MW Bid Awarded
STAGE 3	7,450 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	105 MW Feasibility study

CFBC: 450 MW

Status of compliance of coal-based power capacity in Uttar Pradesh that is likely to comply



Category-wise status of compliance for coal-based power capacity in Uttar Pradesh (in MW)

Category	Capacity	CFBC	Complying	Likely to comply
Category A	1,820	-	1,330	490
Category B	3,830	-	-	3,830
Category C	17,765	450	500	16,815
Total	**23,415**	**450**	**1,830**	**21,135**

Madhya Pradesh

21,950 MW
Total capacity

COMPLYING »
Vindhyachal supercritical TPS - Unit 13 of 500 MW capacity is the only plant complying with the emission norms at present.

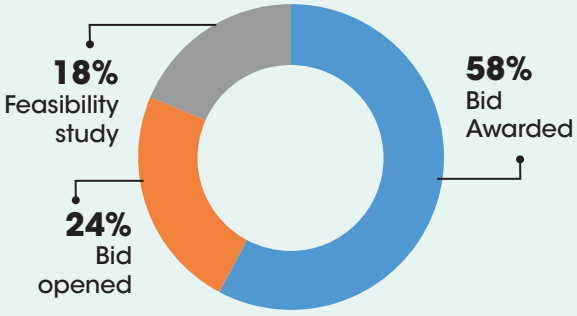
LIKELY TO COMPLY »
Apart from CFBC plants, all of the capacity is likely to meet the emission norms in time. This high likelihood of compliance is also because all the coal-fired TPPs in the state are placed under Category C and have almost another four years to comply. Of the capacity that is likely to meet the norms, 58 per cent has already awarded work orders to the vendors for commissioning FGDs and 24 per cent have opened bids. However, 18 per cent of the capacity, comprising of Mahan TPP, Bina TPS, Seioni TPP, Sanjay Gandhi TPP and Satpura TPS, is still at the feasibility stage of compliance.

STAGE OF COMPLIANCE

STAGE 5	500 MW	FGD installed
STAGE 4	12,340 MW	Bid Awarded
STAGE 3	5,050 MW	Bid opened
STAGE 2	-	Tender specification made
STAGE 1	3,970 MW	Feasibility study

CFBC: 90 MW

Status of compliance of coal-based power capacity in Madhya Pradesh that is likely to comply



Category-wise status of compliance for coal-based power capacity in Madhya Pradesh (in MW)

Category	Capacity	CFBC	Complying	Likely to comply
Category C	21,950	90	500	21,360
Total	**21,950**	**90**	**500**	**21,360**

Odisha

10,140 MW
Total capacity

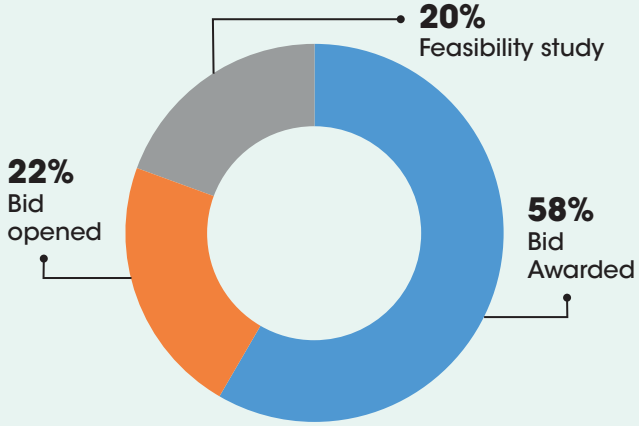
COMPLYING »
None of the coal-fired power plants are complying with the norms yet.

LIKELY TO COMPLY »
All the power plants in the state are likely to comply with the emission norms. This high likelihood of compliance is also because almost 90 per cent of the capacity in the state is placed under Category C and has almost another four years to comply. Of the capacity that is likely to meet the norms, 58 per cent has already awarded work orders to vendors for commissioning FGDs and 22 per cent has opened bids. However, 20 per cent of the capacity, comprising of Utkal TPP, Sterilite TPP and IB Valley TPS, is still at the feasibility stage of compliance.

STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	5,920 MW Bid Awarded
STAGE 3	2,250 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	1,970 MW Feasibility study

Status of compliance of coal-based power capacity in Odisha that is likely to comply



Category-wise status of compliance for coal-based power capacity in Odisha (in MW)

Category	Capacity	Likely to comply
Category B	1,050	1,050
Category C	9,090	9,090
Total	10,140	10,140

Karnataka

9,480 MW
Total capacity

COMPLYING »
Torangallu TPS - Units 1 and 2, of 260 MW capacity, are the only coal power plants that 'claims to be SO_2 compliant'.

LIKELY TO COMPLY »
All the power plants are likely to comply with the emission norms in time. This high likelihood of compliance is also because all the coal-fired TPPs in the state are placed under Category C and have almost another four years to comply. Of the capacity that is likely to meet the norms, 75 per cent has already awarded work orders to vendors for commissioning FGDs and 18 per cent has opened bids. However, Torangallu TPS (extension) of 600 MW is still at feasibility stage of compliance.

STAGE OF COMPLIANCE

STAGE 5	260* MW FGD installed
STAGE 4	6,920 MW Bid Awarded
STAGE 3	1,700MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	600 MW Feasibility study

(*) Claims to be SO_2 compliant

Status of compliance of coal-based power capacity in Karnataka that is likely to comply

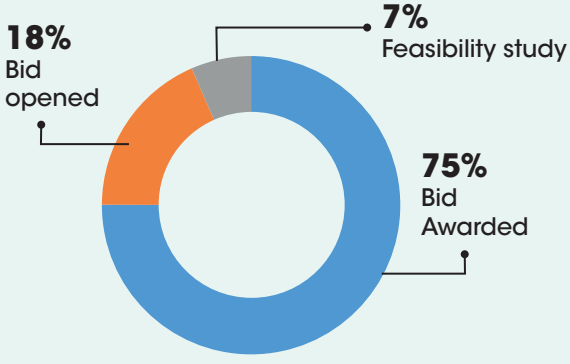


Table 30: Category-wise status of compliance for coal thermal power plants in Karnataka (in MW)

Category	Capacity	Complying	Likely to comply
Category C	9,480	260	9,220
Total	**9,480**	**260**	**9,220**

Rajasthan

10,480 MW
Total capacity

COMPLYING »
No plants in the state are complying with the emission norms at present.

TO BE DECOMMISSIONED »
Kota TPS (640 MW) of RRVUNL has been in operation for close to 35 years and is identified to be decommissioned.

LIKELY TO COMPLY »
Apart from CFBC plants and the ones being decommissioned, all of the capacity in the state is likely to comply with the emission norms in time. This high likelihood of compliance is also because 73 per cent of the coal-based capacity in the state is placed under Category C and has almost another four years to comply. Of the capacity that is likely to meet the norms, 70 per cent has already awarded work orders to vendors for commissioning FGDs and 30 per cent has finalized tenders.

STAGE OF COMPLIANCE

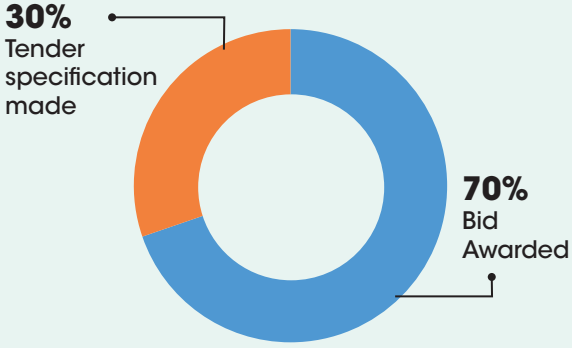
STAGE 5	- FGD installed
STAGE 4	5,760 MW Bid Awarded
STAGE 3	- Bid opened
STAGE 2	2,500 MW Tender specification made
STAGE 1	- Feasibility study

CFBC: 1,580 MW; To be decommissioned: 640 MW

Category-wise status of compliance for coal-based power capacity in Rajasthan (in MW)

Category	Capacity	CFBC	Likely to comply	To be decommissioned
Category A	1,240	-	600	640
Category C	9,240	1,580	7,660	-
Total	10,480	1,580	8,260	640

Status of compliance of coal-based power capacity in Rajasthan that is likely to comply



Bihar

7,740 MW
Total capacity

COMPLYING »
No plants in the state are complying with the emission norms at present.

TO BE DECOMMISSIONED »
Barauni TPS (210 MW) of NTPC, which has been in operation for close to 38 years, is identified to be decommissioned.

LIKELY TO COMPLY »
All of the capacity that is not being decommissioned is likely to meet the norms in time. This high likelihood of compliance is also because almost 92 per cent of the coal-based power capacity in the state is placed under Category C and has almost another four years to comply. Of the capacity that is likely to meet the norms, 88 per cent has already awarded work orders to vendors for commissioning FGDs and 12 per cent capacity has opened bids.

STAGE OF COMPLIANCE

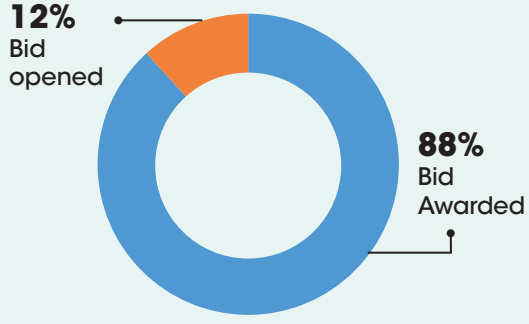
STAGE 5	- FGD installed
STAGE 4	6,640 MW Bid Awarded
STAGE 3	890 MW Bid opened
STAGE 2	- Tender specification made
STAGE 1	- Feasibility study

To be decommissioned: 210 MW

Category-wise status of compliance for coal-based power capacity in Bihar (in MW)

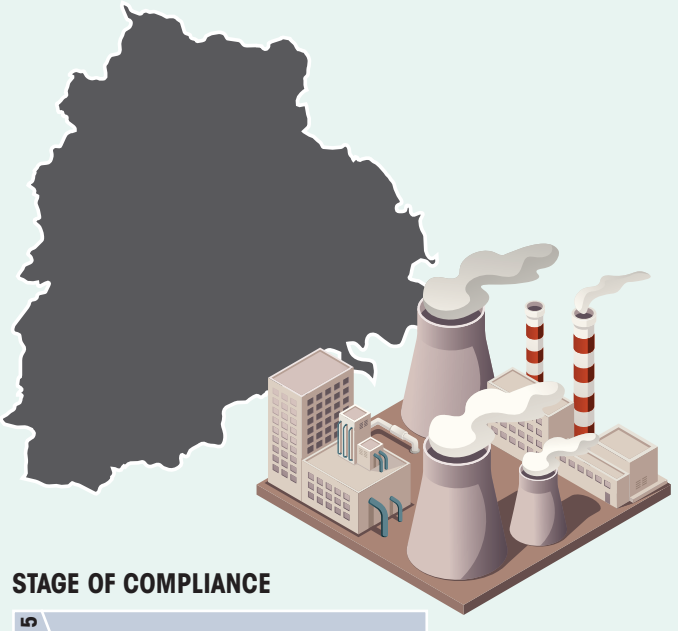
Category	Capacity	Likely to comply	To be decommissioned
Category B	390	390	-
Category C	7,350	7,140	210
Total	**7,740**	**7,530**	**210**

Status of compliance of coal-based power capacity in Bihar that is likely to comply



Telangana

7,572 MW
Total capacity



COMPLYING »
No plants in the state are complying with the emission norms.

TO BE DECOMMISSIONED »
Ramagundem B TPS (63 MW) of TSGENCO has been in operation for 51 years and is identified to be decommissioned.

LIKELY TO COMPLY »
All of the capacity that is not being decommissioned is likely to meet the norms in time. This high likelihood of compliance is also because all the coal power plants in the state are placed under Category C and have almost another four years to comply. Of the capacity that is likely to meet the norms, 72 per cent has already awarded work orders to vendors for commissioning FGDs. However, 28 per cent of the capacity is still at the feasibility stage—this comprises of Kakatiya TPS and Kothagundem TPS (Units 9, 10 and 11), both owned by Telangana State Power Generation Corporation Ltd. (TSGENCO).

STAGE OF COMPLIANCE

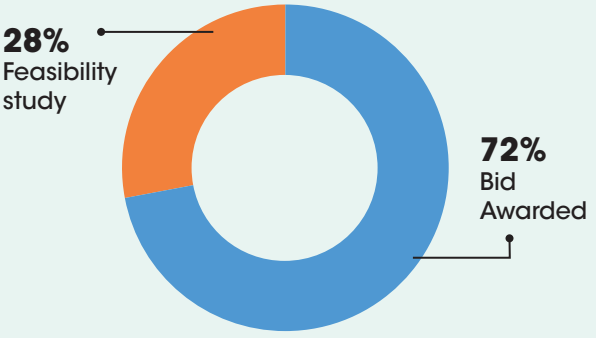
STAGE 5	- FGD installed
STAGE 4	5,410 MW Bid Awarded
STAGE 3	- Bid opened
STAGE 2	- Tender specification made
STAGE 1	2,100 MW Feasibility study

To be decommissioned: 63 MW

Category-wise status of compliance for coal-based power capacity in Telangana (in MW)

Category	Capacity	Likely to comply	To be decommissioned
Category C	7,573	7,510	63
Total	**7,573**	**7,510**	**63**

Status of compliance of coal-based power capacity in Telangana that is likely to comply



Punjab

5,680 MW
Total capacity

COMPLYING »
No plants in the state are complying with the emission norms at present.

LIKELY TO COMPLY »
All the power plants in the state are likely to meet the norms in time. This high likelihood of compliance is also because all of them are placed under Category C and have almost another four years to comply. 25 per cent of the capacity has already awarded work orders to vendors for commissioning FGDs, 35 per cent has finalized the tender documents and 24 per cent has opened bids. However, Guru Hargobind Singh TPS of 920 MW capacity is at the feasibility stage and accounts for 16 per cent of the coal-based power capacity in Punjab.

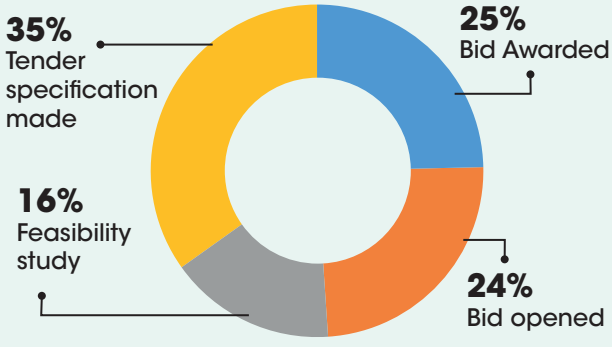
STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	1,400 MW Bid Awarded
STAGE 3	1,380 MW Bid opened
STAGE 2	1,980 MW Tender specification made
STAGE 1	920 MW Feasibility study

Category-wise status of compliance for coal-based power capacity in Punjab (in MW)

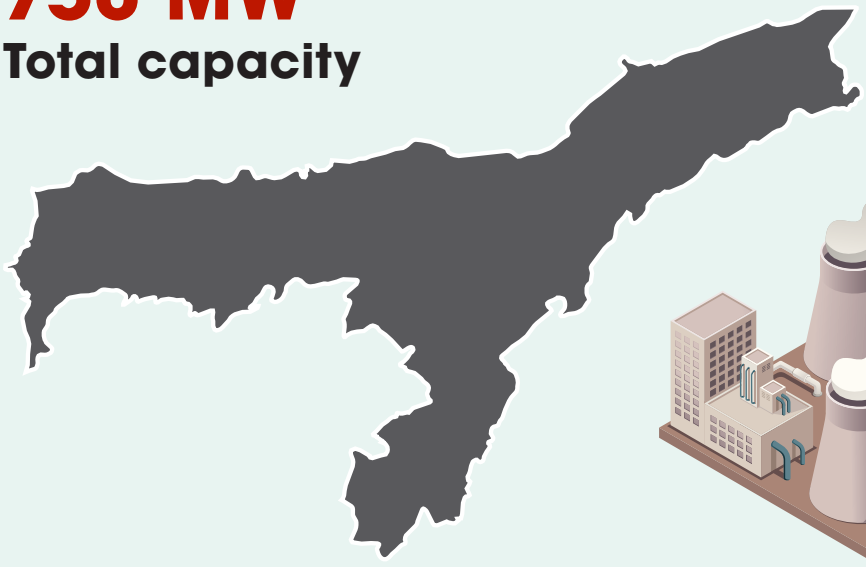
Category	Capacity	Likely to comply
Category C	5,680	5,680
Total	5,680	5,680

Status of compliance of coal-based power capacity in Punjab that is likely to comply



Assam

750 MW
Total capacity



STAGE OF COMPLIANCE

STAGE 5	- FGD installed
STAGE 4	750 MW Bid Awarded
STAGE 3	- Bid opened
STAGE 2	- Tender specification made
STAGE 1	- Feasibility study

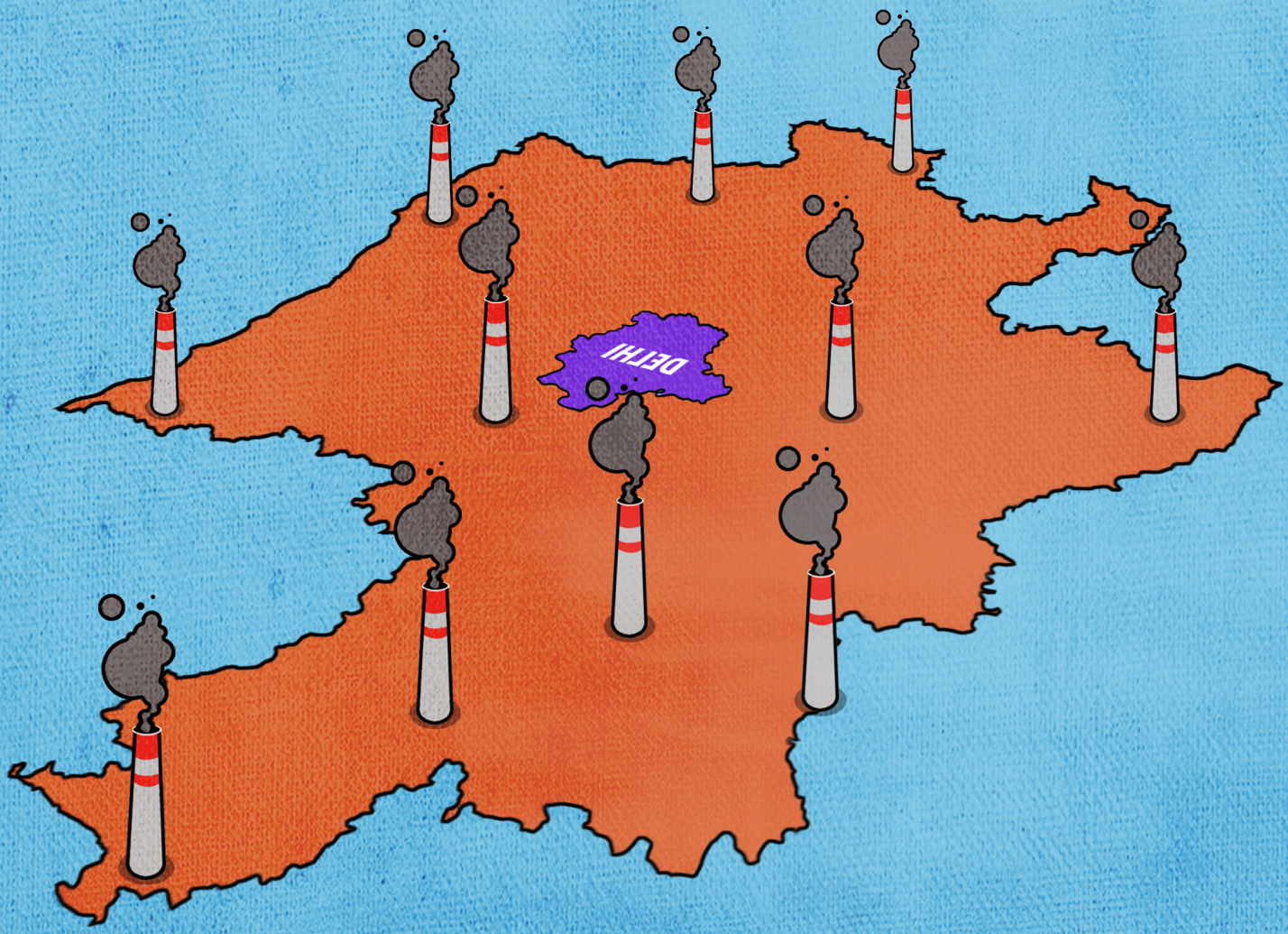
The state has only one power plant—Boingaigaon TPP (750 MW) of NTPC. The plant falls in Category C. Bids have been awarded for all three units of the power plant and they are likely to meet the emission norms before the deadline.

5

COMPLIANCE STATUS OF COAL-BASED POWER PLANTS IN THE NCR

There are 11 coal-based power plants within 300 km radius of Delhi

Only two of the 11 power plants—Dadri TPP and Mahatma Gandhi TPP—had complied with the norms by the 2019 deadline



There are 11 coal-fired TPPs within 300 km radius of Delhi—Indira Gandhi STPP, Mahatma Gandhi TPS, Panipat TPS, Rajiv Gandhi TPS, Yamuna Nagar TPS, Rajpura TPP, Talwandi Sabo TPP, Guru Hargobind TPS, Ropar TPS, Dadri TPS and Harduaganj TPS.

Due to the high levels of air pollution in the region, in February 2018, MoEFCC fast-tracked the compliance deadline for coal-based TPPs in the National Capital Region (NCR) to 2019 from 2022. However, only two of the 11 power plants—Dadri TPP and Mahatma Gandhi TPP—had complied with the norms by the 2019 deadline.

In all the subsequent amendments in deadlines for meeting emission norms, there was no longer any discussion of prioritizing the coal-fired TPPs in NCR. Through the latest amendment, the deadline has been shifted to 2026 for approximately 59 per cent of the coal-based power capacity in NCR; while the remaining 41 per cent has to comply by 2024.

Table 20: Status of compliance for the NCR coal based thermal power plants (in MW)

Category	Capacity	Complying	Likely to comply	Unlikely to comply
A	5,350	2,650	1,990	710
C	7,545		7,545	
Total	12,895	2,650	9,535	710

Panipat TPS (710 MW), owned by the state-run HPGCL, is unlikely to meet the 2024 deadline. Despite flouting previous deadlines, Panipat TPS is yet to award the work order for commissioning of FGD.

Remaining 9,535 MW capacity is likely to comply with the norms. Of this, 3,390 MW has awarded bids, 2,640 MW has floated tenders, 2,480 MW has finalized tender documents and 1,025 MW is still at feasibility stage.

Annexure 1

Summary sheet for state-wise compliance status with SOx norms

States	Total capacity (MW)	CFBC (% capacity)	Complying (% capacity)	Likely to comply (% capacity)	To be decommissioned (% capacity)	Unlikely to comply (% capacity)
Maharashtra	24,756	1	11	71	3	13
Chhattisgarh	23,688	2	4	88	0	6
Uttar Pradesh	23,415	2	8	90	0	0
Madhya Pradesh	21,950	0	2	97	0	0
Gujarat	16,092	8	12	77	0	2
West Bengal	13,907	0	0	92	5	3
Tamil Nadu	13,685	6	9	59	0	26
Andhra Pradesh	11,590	8	0	68	0	24
Rajasthan	10,480	15	0	79	6	0
Odisha	10,140	0	0	100	0	0
Karnataka	9,480	0	3	97	0	0
Bihar	7,740	0	0	97	3	0
Telangana	7,572.5	0	0	99	1	0
Punjab	5,680	0	0	100	0	0
Haryana	5,330	0	25	62	0	13
Jharkhand	4,250	0	0	100	0	0
Assam	750	0	0	100	0	0

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2. Anon 2021. *Environment (Protection) Amendment Rules, 2021, vide Notification no. G.S.R. 243 (E)*, Ministry of Environment, Forest and Climate Change.

3. Anon 2021. Minutes of the 4th Meeting of the Task Force for categorization of power plants held under the chairmanship of Central Pollution Control Board (CPCB) vide letter no. B-33014/7/2021/IPC-II/TPP dated 13 December, 2021.

4. Anon 2022. Minutes of the 5th & 6th Meeting of the Task Force for categorization of power plants held under the chairmanship of Central Pollution Control Board (CPCB) vide letter no. B-33014/7/2021/IPC-II/TPP dated 23 June 2022.

5. Anon 2022. *Environment (Protection) Second Amendment Rules, 2022, vide Notification no. G.S.R. 682 (E)*, Ministry of Environment, Forest and Climate Change.

6. Anon 2023. *Unit-wise FGD implementation status and summary sheet, April 2023*, Central Electricity Authority.

7. Ibid.

8. Anon 2021. *Unit-wise FGD implementation status and summary sheet, December 2021*, Central Electricity Authority.

9. Anon 2023. *Direction no. CEA-TH-14-24/5/2022-TRM Division /235-335*, Central Electricity Authority, Ministry of Power.

In this report, the Centre for Science and Environment (CSE) assesses the status of compliance of coal-fired thermal power plants with SOx emission norms on the basis of data reported by the Central Electricity Authority (CEA) till April 2023.

Even though deadlines have been extended multiple times, only 5 per cent of the total coal-based power capacity has managed to comply with SOx emission norms; while 17 per cent is still at very initial stages of compliance. Majority of the capacity is likely to comply, but only because so much more time has been given to them.

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062
Phones: 91-11-40616000 Fax: 91-11-29955879
E-mail: cseindia@cseindia.org
Website: www.cseindia.org