A Centre for Science and Environment Briefing Note

The Thermal Power Plant (TPP) Notification
A LICENSE TO POLLUTE

In 2015, the Ministry of Environment, Forest and Climate Change (MoEF&CC) had introduced a notification asking coal-based thermal power plants (TPPs) to comply with stringent emission norms. The TPPs were given a fixed deadline of December 2017 to mandatorily comply with the norms. However, once the 2017 deadline approached, the Union Ministry of Power submitted another phase-in plan to MoEF&CC and requested for further extension of another seven years -- till 2024 -- to meet the norms. After much deliberations, another five-year extension was given to power plants by the Supreme Court, to meet the deadlines in a phased manner till December 2022.

2021 is here, and only one-third of the plants have taken serious initiatives to meet the new norms. It was expected by various stakeholders that MoEF&CC will take a tough stance on the non-complying plants – instead, **the ministry on April 1, 2021 extended the timelines for a majority of coal-based power plants in India, which are now allowed to comply with the emission norms by another three to four years**.

This is the third amendment to the original 2015 notification. The new notification has been drafted shrewdly to showcase how serious is MoEF&CC about non-compliance, but a detailed analysis clearly shows how the MoEF&CC has given a license to coal-based TPPs to continue to pollute by paying a small penalty – the penalty amount is lower than what it would cost companies to invest in installing pollution control equipment and so, it virtually offers a license to pollute.

What does the New Notification say?

In the amendment, the power stations have been put into three categories.

- Category A comprises of plants within 10 km radius of the National Capital Region (NCR) or cities having a million-plus population – power plants falling in this category will have to meet the norms by next year (December 2022)
- Category B plants are within 10 km radius of Critically Polluted Areas or non-attainment cities - they have to meet the norms by 2023/2025
- Category C is made up of the rest of the plants, which have been given an extension till 2024/2025.

- The amendment also specifies a new category for retiring plants which can retire by 2022 if falling in Category A and by 2025 if falling in categories B or C.

The 2021 amendment has, for the first time, introduced a penalty mechanism termed as **environmental compensation**. The maximum fine for non-retiring plants in Category A that do not comply with the norms after the deadline has expired is 20 paisa per unit, 15 paisa per unit for plants in Category B, and 10 paisa per unit for those in Category C. The penalty for retiring plants has been set as 20 paise per unit.

A Critique of the Amended Notification

Delayed implementation – only 28 per cent of total capacity has to follow the 2022 deadline

CSE's assessment reveals that based on new categorisation given by the MoEF&CC in the amended notification, about 28 per cent of total capacity (58 GW) falls in Category A and has to meet the norms by 2022. Another 28 per cent (58 GW) falls in Category B, which has to meet the norms by 2023; a major capacity of 44 per cent – 89.5 GW -- comprising 82 plants falls in Category C which has been given an extended deadline till 2024/2025. Earlier, all power plants were supposed to meet the deadline by 2022, which was agreed to by all parties in the Supreme Court after over two years of hearing. But the new extension means about 72 per cent of the coal-based capacity will now continue to pollute for another two to three years, given the extension.

Table 1: The skewed categorisation

Most power stations given three years' extension

Category	Description	Deadline	Capacity	No. of plants
A	1. Within 10 km radius of National Capital Region or	2022	5.56 GW (2.7%)	4 plants
	2. Within 10 km radius of cities having million + population as per 2011 census		52 GW (25.3%)	45 plants

B	1. Within 10 km radius of critically polluted areas or 2. Within 10 km radius of Non-attainment cities	2023 (Non-retiring plants) / 2025 (Retiring plants)	58 GW (28.3%)	53 plants
C	Other than those included in category A and B	2024 (Non-retiring plants) / 2025 (Retiring plants)	89.5 GW (43.6%)	82 plants

***Source**: Centre for Science and Environment, 2021*
Note*: *To provide optimistic and more appropriate estimates, one million+ districts have been considered in the analysis for category A, the term radius remains ambiguous in Category A and B which can bring variations to the analysis

Skewed categorisation benefits just a few companies

It is to be noted that state GENCOs and many private companies have made very little progress since 2015. Now, irrationally, they have been given extended deadlines, a license to continue polluting. Companies that comprise a major share in Category C include Adani (5.6 GW), Damodar Valley Corporation (4 GW), Gujarat State Electricity Corporation Limited (5.2 GW), Jindal power (3.4 GW), KPCL (5 GW), Madhya Pradesh Power Generation Company Limited (4.7 GW), NTPC (15 GW), RRVUNL Rajasthan (2.95 GW), and TSGENCO Telangana (4.1 GW).

Table 2: Category C -- Who is benefiting from the two-year extension?
State and PSUs are in the most advantageous position

Sector	**Capacity in GW (%)**
State	35 (39%)
Centre	22 (24.6%)
Private	32.5 (36%)

Source: Centre for Science and Environment, 2021

Delhi's loss -- power plants within the Delhi airshed given a license to pollute

The 10-km radius around NCR, cities with one-million plus population, and critically polluted areas or non-attainment cities have been chosen arbitrarily. No explanation has been provided for the rationale behind selecting the 10-km radius as the impact zone.

According to experts, pollutants released by coal-fired thermal power plants can travel up to 250-300 kilometers. Along this journey, primary pollutants like sulphur dioxide also get converted to secondary particulate matter, which accumulates in the airshed, increasing the concentration of particulate matter in the ambient air.

Going by the current categorisation in the amended notification, there are only four coal-based power plants located in the 10-km radius of NCR region and one plant is located in million plus population region – these five plants will come in category A. The Delhi airshed required hard action to combat toxic air pollution. It is for this reason that the December 2017 notices issued by the CPCB, which extended the timelines for most plants by five years, had one notable exception – power plants in the 300 km vicinity of Delhi-NCR. These power plants were directed to ensure compliance early by December 2019 for PM, SO_2 and NOx emissions instead of a 2022 deadline. A radius of 300 km was decided upon back then, based on the 2016 report of IIT Kanpur on Delhi's air pollution which stated that power plants are a significant contributor to the capital's air pollution. In this radius, as identified by the CPCB, there were 11 coal-based plants operating, five of these were located in Haryana, four in Punjab and two in Uttar Pradesh.

The 2016 IIT Kanpur report also stated that nearly 52 per cent of NOx emissions and 90 percent of SO_2 emissions in Delhi can be attributed to industrial point sources (largely from power plants). SO_2 also contributes to secondary particles (sulfates). The report stated that thermal power plants (TPP) in the radius of 300 km of Delhi are expected to contribute to secondary particles. The precursor gases for sulfates are emitted from large power plants located in the vicinity of Delhi. The north-westerly wind transports SO_2 emitted from these power plants situated in the upwind of Delhi and transforms it into sulfates.

The 2019 deadline was decided for 11 such plants in the 300 km vicinity of NCR because of their pollution impact, location and health hazard they pose to the region, densely populated urban clusters, and critically polluted air-sheds. However, as per amended notification, six out of eleven plants will now fall in category C and will be given an extended deadline of 2024/2025.

Now MoEF&CC's retraction on the advanced deadline of 2019 to certain power stations that are not falling within 10 km radius NCR, sidelining and neglecting all the scientific reports on the secondary particulate risks posed by TPP' s and the purposeful restriction of 10 km indicates that the new amendment is drastically favoring the polluters.

CSE did an exercise to categorize 11 NCR plants according to the new 2021 categorization, all these plants were earlier given a target of 2019. Now with this amendment, their deadlines have been extended for the third time. Five plants comprising 18 units will now fall in category A and are needed to meet the norms by next year i.e. 2022. These plants include **NTPC Dadri, Aravali TPS, CLP Jhajjar, Panipat TPS and Harduaganj TPS.** Rest of the six plants comprising of 17 units are falling beyond 10 km radius boundary and will now be given a much extended deadline of 2024/2025 as these will be included in category C. The MoEFCC's latest notification gives a leeway to these six plants (with 17 units especially two older units) that are contributing to Delhi airshed. This will come at a huge health cost associated with it as these units will continue to pollute Delhi airshed with extended deadlines. Two units out of these 17 units are old polluting units which might retire by 2025, however these units are given an exemption to meet the norms and can run until 2025.

Table 3: NCR plants with previous 2019 deadline given further extension
MoEF&CC now loosens rope of 11 stations within 300 km radius of NCR which earlier had to comply with the norms by 2019; five NCR plants located in U.P. and Haryana likely to be given 2022 deadline whereas other six plants located beyond 10 km radius of NCR and within 300 km radius are likely to be given a much extended 2024/2025 deadline based on new categorization. Majority of these plants are in Punjab.

Plants	District	State	Capacity (MW)	Commissioning year	Previous Deadline	New deadline as per new notification
Plants likely to be included in Category A						
DADRI (NCTPP) - Unit 1, 2, 3, 4, 5 & 6	Gautam Buddh Nagar	Uttar Pradesh	210 x 4; 490 x 2	1991, 1992, 1993, 1994, 2010, 2010	2019	2022
Aravali (Indira Gandhi) TPS - Unit 1, 2 & 3	Jhajjar	Haryana	500 x 3	2010	2019	2022
Mahatma Gandhi TPS (CLP) - Unit 1 & 2	Jhajjar	Haryana	660 x 2	2012, 2012	2019	2022
Panipat TPS (Unit 5,6,7 & 8)	Panipat	Haryana	210 x 2, 250 x 2	2001, 2001, 2004,2005	2019	2022

Harduaganj TPS (Unit 7, 8 & 9)	Aligarh	Uttar Pradesh	110, 250 x 2	1978, 2011, 2012	2019	2022
Plants likely to be included in Category C						
GH TPS (LEH.MOH.)-Unit 1,2,3 & 4	Bathinda	Punjab	210 x 2; 250 x 2	1997, 1998, 2008, 2008	2019	2024
RAJIV GANDHI TPS (Unit 1 & 2)	Hisar	Haryana	600 x 2	2010	2019	2024
Talwandi Sabo TPP - Unit 1, 2 and 3	Mansa	Punjab	660 x 3	2014, 2015, 2016	2019	2024
Rajpura TPP Unit 1 and 2	Patiala	Punjab	700 x 2	2014	2019	2024
ROPAR TPS - Unit 3, 4, 5 and 6	Rupnagar	Punjab	210 x 4	1988, 1989, 1992, 1993	2019	2025 (Unit 3 & 4) 2024 (Unit 5 & 6)
YAMUNA NAGAR TPS Unit 1 and 2	Yamunanagar	Haryana	300 x 2	2007, 2008	2019	2024

***Source**: Centre for Science and Environment, 2021*

Weak deterrence mechanism, poor penalty regime

Since 2017, the EPCA had been advocating for better deterrence mechanisms and had highlighted how its absence is derailing the efforts towards meeting compliance. The EPCA in its Report No 81 to the Court had mentioned imposing a penalty regime for ensuring effective and expeditious compliance with the norms which would provide an incentive to the industry to make the transition at the earliest. This would be a deterrent and help push for compliance. However the MoEF&CC and MoP - organisations who are playing a pivotal role in getting the norms implemented did not respond to this issue. Later EPCA reinforced this issue in its Report no 84 about the silence of the regulators mentioning there has been no stance taken on this matter.

The 2021 amendment has for the first time introduced a penalty mechanism termed as environmental compensation. The maximum fine for non-retiring plants in Category A

that do not comply with the norms after the deadline has expired is 20 paisa per unit, 15 paisa per unit for plants in Category B, and 10 paisa per unit for those in Category C. The penalty for retiring plants is set as 20 paise per unit. The penalty for non-compliance in the first year is lower and can be considered a redemption period for defaulters. For instance a 500 MW plant operating on a 60 percent plant load factor in the first year of default will be charged Rs 32 Cr and this from the second year and onwards will be Rs 52 Cr (@20 paise per unit cost).

In terms of per MW cost, maximum penalty for any plant in category A comes out to be 11 lakh/MWif penalty of 20 paise unit is considered. Similarly for Category C plants for which the penalty is much lower, the cost for a 500 MW plants would be 26 crore at 60 plf. In terms of per unit cost, it would be only 5 lakh/MW.

Since the penalty is generation based, the fine for a smaller capacity non-complying plant operating at a lesser load also reduces considerably. For instance, a 250 MW plant in Category C operating at 40 percent plant load factor has to pay only Rs 8 Crores from year 2 and onwards. This shows by running plant at a lower plf, the environmental compensation is reduced substantially. Such poor framing of formulas to decide the compensation will defeat the whole purpose of deterrence.

Table 4: Maximum penalty that will be imposed on a 500-MW unit on non-compliance

Plant load factor	60%	40%	30%
Category A @20 paise per unit	52 crore/annum	35 crore/annum	26 crore/annum
Category B @15 paise per unit	39 crore/annum	26 crore/annum	20 crore/annum
Category C @10 paise per unit	26 crore/annum	18 crore/annum	13 crore/annum

***Source**: Centre for Science and Environment, 2021*

Compensation designed to favor the polluters: Those TPPs enjoying three year extension (Category C) are liable to pay the least compensation 5-10 paise a unit starting 2025, those with two year extension (Category B) have to pay 7-15 paise a unit starting 2024, and those stations that has to meet the norms by next year have to pay the highest penalty of 10-20 paise a unit starting 2023 on default.

There is no explanation on why category B and C which are given extensions are asked to pay less damages even after they have been allowed to pollute till 2023-2024 and have up to three long years to comply with the norms.

Table 5: Pollute and pay less penalty (penalty cost in lakhs/MW)
TPPs missing 2022 deadline to pay Rs 7 lakh/MW while 2024 defaulters will pay just Rs 4 lakh/MW

Category	Penalty @PLF - 40%	Penalty @PLF - 60%
A (Deadline:2022)	7	11
B (Deadline:2023)	5	8
C (Deadline:2024)	4	5

Source*: Centre for Science and Environment, 2021*
Note: *D is the deadline, maximum penalty levied in Cr/MW is estimated*

It is cheaper to pay and not comply, than to pay for pollution control and comply
The penalty imposed on non-compliant units after this relaxed deadline is a maximum of 20 paise per unit of electricity. But, the levelized cost of retrofit of pollution control equipment to meet the new norms for these plants are estimated between 30 and 70 paise a unit.

In terms of per MW cost, maximum penalty for any plant in category A comes out to be Rs. 11 lakh/MW if penalty of 20 paise unit is considered. Similarly for Category C plants for which the penalty is much lower, the cost for a 500 MW plant would be Rs. 26 crore at 60 plf. In terms of per unit cost, it would be only Rs. 5 lakh/MW (see Table on penalty). Instead of investing in costlier technologies like FGD which comes at a cost of Rs 45 lakh/MW, it would then be much easier for plants, especially in Category C, to pay a penalty as low as Rs 5 lakh/MW -- these plants will keep on polluting the environment by simply paying such low penalties.

Also, there is no cap to how long such compensation will be collected and is defined as an open-ended tax on defaulters. Such poor framing of formulas to decide the compensation will defeat the whole purpose of deterrence.

Table 6: Cost of non-compliance is cheaper than the cost of compliance
Penalty is significantly higher than fixed charges or investment required for pollution control equipment

Category	in Cr/MW	Fixed charges* in Cr/MW
Penalty @PLF - 40%	0.04 - 0.07	0.6

Penalty @PLF - 60%	0.05 - 0.11	
Total retrofit costs towards installing pollution control equipment	0.4-1	
PM	0.05-0.15	
SO_2	0.25-0.6	
NO_x	0.1-0.25	

***Source**: Centre for Science and Environment, 2021*

Clearly, with such a low penalty defined TPPs could rethink their strategy and nullify investing in pollution control rather choose to pay the compensation as it is a small fraction of the fixed cost they receive every year. Fixed cost is the charges paid to a power station even when it is not in operation on showing technical availability to generate electricity on need.

The current amendment doesn't differentiate between compliance with various norms - PM, SO_2, and NO_x. Non-compliance of either of the pollutants can be treated as a violation. This further encourages plants to default on all the pollutants rather stay at disincentive complying with one.

Retirement – old plants given the license to kill

The new amendment is highly favoring old inefficient polluting plants that are scheduled to retire. These plants are now exempted to meet the norms till 2025 and can even continue to operate further without meeting the norms merely by paying penalty cost. There is no mention of shutting down these plants even post 2025 deadline breach.

EPCA in its Report No 81 in 2017 had already pointed out that *a number of plants that do not meet the standards are old and therefore, are due for retirement or should be shut down.* However, the MoEF&CC along with the MoP had back then requested for an exception for such plants – "*Hon'ble Supreme Court is requested to allow plants above 25 years of age where FGD and emission control is not possible to continue functioning for a limited number of hours in a year".* EPCA in its Report no 84 had shown its discontent and recommended to the Court that this request must not be accepted as it could set a dangerous precedent. MoEF&CC and MoP have time and again deliberately not provided clarity on the list of plants planning retirement. The definition of what a

retirement plan includes still remains unknown. Currently, no such retirement plans are exclusively available in public domains.

In the current amendment, a new category for retiring plants has been created without specifying which are these plants. Older units that are planning to retire by 2025 have been exempted from meeting the norms by simply submitting an undertaking to CPCB and CEA for exemption on grounds of retirement. Such units can even continue to operate post 2025 by merely paying an environmental compensation post 2025 deadline.

This is completely against the previous Government stance for old polluting plants. In Budget 2020, the Union finance minister Nirmala Sitharaman had categorically mentioned that utilities that run old thermal power plants would be asked to shut them if such plants emitted more than the pre-set norms. Cut to the present day, forget about shutting down these plants, such plants are now exempted from even following and meeting these norms till 2025 and can continue to operate further as well by paying compensation. This clearly indicates that the current Government in power is hardly bothered about the health of its citizens.

According to the amendment, old and polluting plants which should have been retired are allowed to operate indefinitely by paying a nominal penalty. Old plants normally operate at low plf. These plants that operate at low plf are used during peak hour. Running of such old plants at low plf has huge environmental cost compared to efficient new plants operating at high plf. However the current legislation allows operation of them with a nominal fee, for example a 250MW plant which is about to retire in 2022 needs to pay Rs 17.52 crore per year (@17 lakh/MW) as environmental cost if operating at 40% plf. The amount becomes Rs 13 crore if it operates at 30% plf. This cost is calculated based on the penalty specified for retiring plants which is 20 paise per unit in the current notification. This means a plant which needs to spend 125 crore to 150 crore for SOx control measures can continue to pollute for another 10-15 years by paying a fine of Rs 13 crore per annum and running at 30% plf.

This relaxation by MoEF&CC reduces the cost of non-compliance for older plants and encourages them to continue their operations posing risk to health. This relaxation and petty compensation for old power stations is clearly an extension of their position contradicting the government policy to run old polluting plants.

By extending the deadline to 2024 and bringing in low penalty, such measures will encourage plants which are scheduled to retire in the next 10 to 15 years to not spend Rs 126 to 150 crores on pollution control equipment but to pay the penalties and pollute

the environment. Allowing inefficient and most polluting old coal plants to operate indefinitely is nothing short of a license to kill.

Why implementation of the 2015 emission norms is critical

Coal-based power plants in India are contributing significantly to the ambient air pollution levels. Estimates by CSE have showed that power plants accounted for over 60 per cent of total industrial emissions of particulate matter; 45 per cent of SO_2; 30 per cent of NOx; and more than 80 per cent of mercury emissions in the country. A 2017 study by the US-based University of Maryland had concluded that India's SO_2 emissions increased by 50 per cent since 2007, and the country would soon become the world's top emitter of SO_2. This scenario had arisen due to a lack of effective emission control measures in India, therefore, it was critical to have stringent emission norms in place.

The emission standards for power plants were notified after much delay in 2015. Implementation of these standards were critical to clean air, because the thermal power sector contributes massively to the pollution load in the country and the implementation of these emission norms was expected to bring down this load by 40-50 per cent. This was important for curbing local pollution in cities and more importantly, in the regions where these plants are located.

However, the implementation was already delayed to 2022. It is five years from 2015, it is now further extended to another 2-3 years with the new amendment. However, extension is not the only matter to be worried about, what makes this a fatally flawed notification that deterrence provided for non-compliance gives the polluters a license to pollute.

For any questions: Sukanya Nair of The CSE Media Resource Centre, sukanya.nair@cseindia.org, 8816818864