



ANIL AGARWAL DIALOGUE 2022

Challenges Facing The Thermal Power Sector

Coal Based TPP: Will **Not Grow** Much

Coal and gas power plants, which are 80% of the generation in 2019 will go down to 56% in 2030

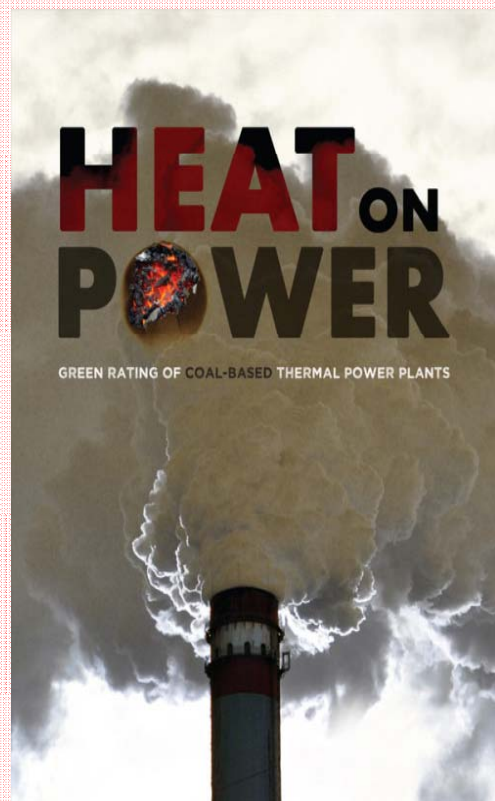
| | | Installed capacity (GW) 2019 | generation % of | Generation (Billion Units) 2019 | % of generation 2019 | Installed capacity (GW) 2030 | % of installed capacity 2030 | Generatio n (billion units) 2030 | generation 2030 % of |
|---|--------------|---------------------------------------|--------------------|--|----------------------------|---------------------------------------|---------------------------------------|---|----------------------------|
| 1 | Coal and gas | 228 | 63 | 1072 | 80 | 282 | 36 | 1393 | 56 |
| 2 | Hydro | 45 | 12.5 | 139 | 10.1* | 61 | 7.5 | 206 | 8 |
| 3 | Renewable | 82.5 | 22.7 | 126 | 9.2 | 455 | 54.5 | 805 | 32 |
| 4 | Nuclear | 6.7 | 1.9 | 378 | 2.7 | 19 | 2.3 | 113 | 5 |
| | | 362 | | 1376 | | 817 | | 2518 | |

Coal Not Disappearing Anytime Soon

| Year | 2011-12 | 2019-20 | 2029-30* |
|------------------------|---------|---------|----------|
| Coal Consumption in MT | 638.73 | 955.92 | 1192 |

- Coal consumption will flat: Need of the hour is **decarbonization**
- Reducing coal consumption: co-benefits agenda
 - 1) GHG reduction
 - 2) local air pollution reduction

Coal TPP: **Major** Contributor to Air Pollution



AIR POLLUTION: Power sector share in all industrial sector emissions

45% of SO₂ emissions

30% of NO_x emissions

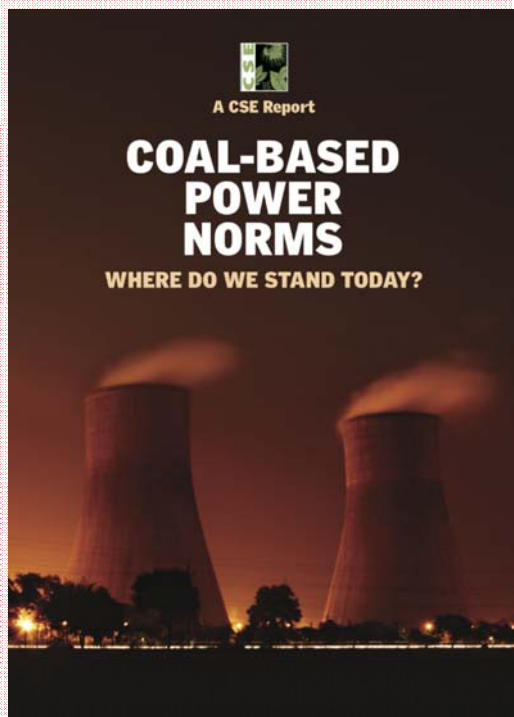
80% of Hg emissions

WATER USE: 24 BCM - about half of India's total domestic needs, located in water stressed areas Nagpur, Raichur, Korba, West medinipur

WASTE: Fly Ash is the second largest waste stream; major contributor to fugitive emissions in cities

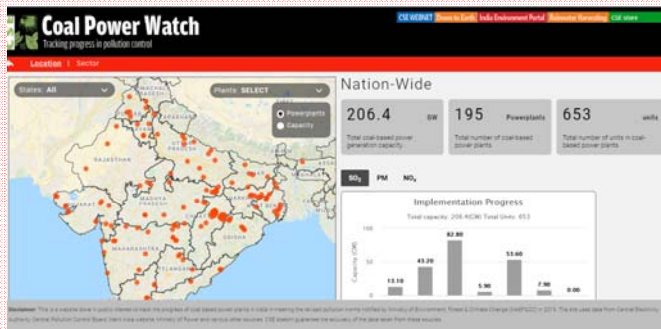


Clean TPP Roadmap: **Non-Compliance**



- 2015 standard issued by MOEF&CC for emissions and water discharge
- But power companies have **delayed** implementation
- Finally Supreme Court set **2022** as deadline
- But not happening still

Current Status : Slight Improvement, But Still **Grim**



- CSE publishes interim reports – maintains web portal
- **Current Status:**
 - Particulate matter: Two-thirds would meet norms
 - **SO₂: 93% will not meet the new emission norms by 2022 (only 14,170 MW will meet the 2022 deadline)**
 - Oxides of Nitrogen: May meet based on revision/data weak
 - Water, mercury – no data



TPP: Given **License to Pollute**

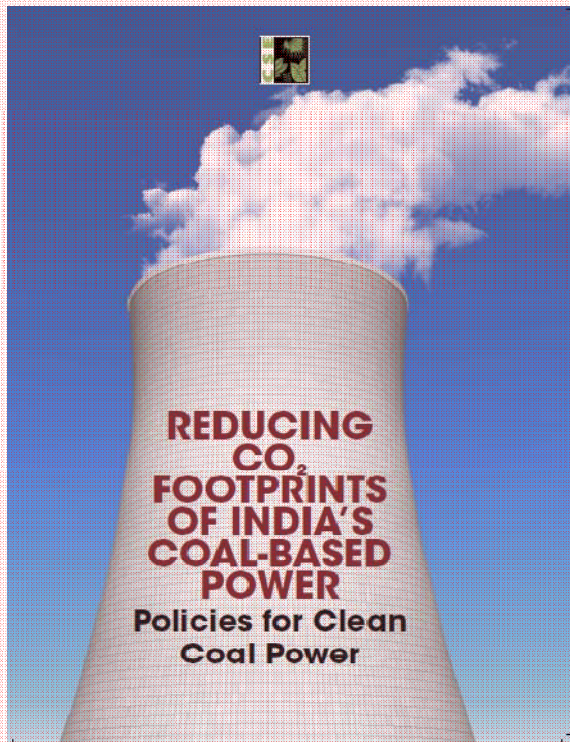
- April 2021 deadline extension – favoring the polluters; weak deterrence
- Penalty amount for non-compliance **insignificant** when compared to cost of installing pollution control equipment
 - FGD cost - 45 lakh/MW; Maximum penalty in Category A (Deadline: 2022) – 11 lakh/MW and in Category C (Deadline: 2024) – 5 lakh/MW
- Old retiring plants given **license to pollute** – exempted from meeting the norms till 2025 simply by submitting an undertaking for exemption on grounds of retirement, can continue to operate post 2025 as well by paying nominal penalty

Deterrence is **Ineffective**

| Unit Size in MW | Fixed cost collected in a year, Rs Cr | Penalty imposed a year by CPCB, Rs Cr |
|-----------------|---------------------------------------|---------------------------------------|
| 500 | 298 | 1.5 |
| 250 | 149 | 0.75 |
| 210 | 125 | 0.63 |

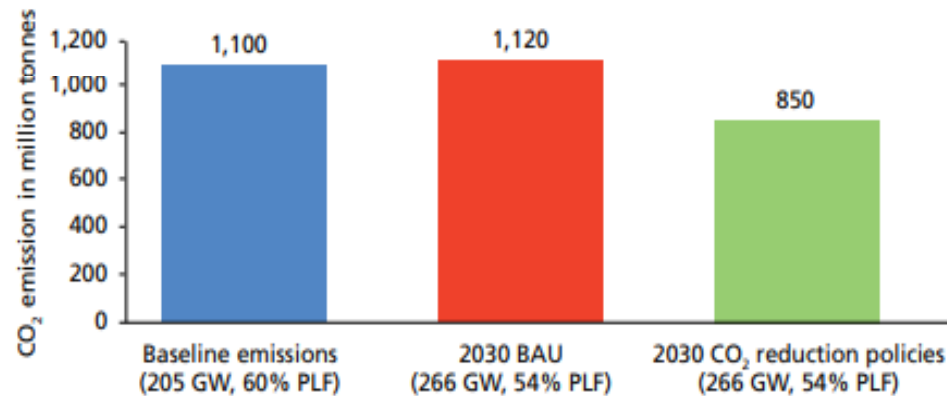
- **Fixed charges for old power station:** Rs 100- 300 Crore per annum even when not in operation
- **CPCB penalty formula:** ~Rs 50 lakhs - 1 Cr per annum for one pollutant depending on the unit size
- Closure an option: rarely used by PCBs because of nature of ‘essential’ sector

Coal based TPP: **huge** GHG footprint



- Sector's coal consumption increased from 300 million tonnes in 2006-07 to 600 million tonnes in 2017-18 (2/3rd of country's total coal consumption).
- GHG emissions also rose from 500 million tonnes in 2005 to 1,000 million tonnes in 2015.
- India's coal power generation's contribution was nearly 1.1 Gt CO₂ eq; one-third of India's total GHG emissions.
- Coal-based power contributes around 50 percent of the country's fuel-related CO₂ emissions.
- **Massive opportunity to de-carbonize**

CSE Finding – 22% GHG Emission Reduction Possible by 2030



- Need advanced TPP technologies in India to replace aging plants; new capacity – ultra and advanced supercritical, IGCC technologies
- Closure of old thermal power plants
- Biomass co-firing in all coal-plants at-least 10%

Biomass: Time for Multi-Prolonged Strategy



- **GLOBALLY ACCEPTED, COST-EFFECTIVE STRATEGY**
 - Abundant biomass available
 - Reduces CO₂ footprint as well as other pollutants
 - Requires minimum modification and investment
 - TPPs have the capability to remove any supply chain constraints of biomass which is difficult for small biomass users.
 - Avoiding significant economic risk by limiting the investment in new coal plants.
 - Local employment generation through pellet or briquette manufacturing & additional income to the farmers
 - Government has now announced co-firing 5-10%. This can increase co-benefits.

