Environment and Pollution related Impacts of Coal Based Thermal Power Plants in India

By Campaign against Coal Based / Fired Thermal Power Plant Projects in India

1. Air Pollution / Pollutant

Almost all >(greater than) 100 MW Coal based / fired thermal power plants or CBTPPs or CFTPPs by consuming thousands of tons of coal daily, heavily pollute the air of the surrounding region. Burning coal also releases massive amounts of toxic mercury and arsenic.

2. Greenhouse Gas Emissions

Coal is considered a heavily polluting fuel in terms of black carbon, sulphates and other gaseous pollutants primarily due to incomplete and inefficient combustion. CBTPPs/CFTPPs are responsible for almost 21 per cent of the greenhouse gas emissions.

Official figures from China in 2003 suggest that TPPs using coal, released over 11 million tonnes of sulphur dioxide or SO2 into the air, accounting for more than 50 per cent of the total emissions in the country.

India is fifth (in the year 2001) in the world in carbon emissions (251 million metric tons of carbon equivalent). Emission levels in the CBTPPs are high.

3. Black Carbon

Black Carbon or BC due to the TPPs causes dense / intense fog, haze and smog as in the Indo-Gangetic or I-G/IG basin or as in the northern plains during the winter season and brings day to day life to standstill. An intense air pollution will persist throughout the year.

An increase in the concentration of BC produces changes in the monsoon (rainfall) patterns and abnormal heating of the atmosphere as BC is strongly absorbing in nature.

4. Global Warming and Climate Change

Coal is the most carbon intensive of all fossil fuels, emits massive amounts of carbon dioxide or CO2 leading to global warming and climate change.

5. Respiratory Ailments

SO2 causes a number of health problems, including respiratory disorders.

6.Water Environment

Water slurry is used to take the ash from the power plant to the ash pond for disposal.

The water may contain harmful heavy metals like boron, which have a tendency to leach out over a period of time. Due to this the ground water gets polluted and becomes unsuitable for domestic use.

The second factor affecting the water environment is the release of ash pond decant into the local water bodies. This is harmful to the fisheries and other aquatic biota in the water body.

7. Geochemical hazard by coal-ash from the Thermal Plants

Huge amounts of ash rich in toxic trace elements and radioactive elements or radionuclides, are disposed off in large ponds and on open grounds surrounding the power plant, thus contaminating the topsoil and the subsurface aquifer.

Absence of an underground lining permits easy mixing of the ash with the topsoil of the area. Al, As, Zn, Mo, Ba, V, Mo, Cd, Mn, and Pb exceed the WHO guidelines for drinking water in the tube well waters.

People living near the ash ponds are subjected to a high radiation dose from the ash ponds and the soil cover, which is ~ (approximately) 2.6 times higher than the world average.

8. Noise

The exposure of employees to high noise levels is more in the CBTPPs.

9. Land Environment

The natural soil becomes more alkaline due to the alkaline nature of flyash thereby damaging the agriculture / agricultural sector.

10. Biological Environment

The effect on biological environment can be divided into two parts, viz. the effect on flora and the effect on fauna. Effect on flora is due to two main reasons land acquisition and due to flue (combustion exhaust) gas emissions. Land acquisition leads to loss of habitat of some species.

11. Socio-Economic Environment

The study of the effects of power plants on the socio-economic environment is based on three parameters, viz. Resettlement and Rehabilitation (R&R), effect on local civic amenities and work related hazards to employees of the power plants.

The CBTPP has the highest number of accidents due to hazardous working conditions.

12. Assessment of Uncertainties

The development of civic amenities due to the setting of a CBTPP/CFTPP project is directly proportional to its size or installed capacity. Higher the capacity greater the civic amenities, pollution, hazardous working

conditions and health hazards.

13. Influence of coal based thermal power plants on aerosol optical properties in the Indo-Gangetic basin

India is the third-largest producer of coal in the world (365 million tons, 2003-04), where the coal used in the power plants is of poor quality (mostly E-F grade or lignite) with high ash content (35-50\%) and low calorific value.

Therefore, preference should be given to promotion of cleaner sources of energy to reduce the pollutant load in the atmospheres over India and China.

The total pollution load from the transport sector is quantitatively second to the TP sector.

Environmental impact of coal industry and thermal power plants in India

The problems associated with the use of coal are low calorific value and very high ash content. The ash content is as high as 55-60\%, with an average value of about 35-40\%.

Further, most of the coal is located in the eastern parts of the country and requires transportation over long distances, mostly by trains, which run on diesel. About 70\% oil is imported and is a big drain on India's hard currency.

Campaigns Thermal Trauma, February 2007

Ash samples taken from the 735-MW CFTPP in Pagbilao, Quezon in the Philippines operated by Mirant were found positive for mercury, arsenic and lead.

The same must be true for Indian plants, but it would probably need applications under the Right to Information or RTI Act, as industrialists, do not seem to display much loyalty to the people of India.

Despite all the well-documented negative impacts of CBTP generation, the Indian central / state governments are unfortunately bent on going forward with more and more in complete disregard of the impacts.

The Karnataka Industrial Development Board or KIADB has already handed over 263 ha. in Yellur to NPCL, which has begun to level agricultural land and clear forested areas, some privately owned and protected as sacred groves and believed to harbour leopards, wild boar and a rich avian diversity.

Villagers claim the company did not take prior permission, violating section 28 of the Panchayati / Panchayathi / Panchayti Raj Act. A writ petition challenging the project's environmental viability is pending before the Karnataka High Court (HC).

A National Environmental Engineering Research Institute's (NEERI) study

states that the project is unsustainable, even if a Flue Gas Desulphurisation (FGD) plant is installed. Yet, the polluting plant has been accorded clearance.

Though this coastal region is ecologically sensitive and no polluting project should be sited here, successive governments continue to try and extract commercial gains from clearances.

In an act that can only be described as "suicide by climate change," the Maharashtra Government has also sought to double the number of TPPs to eight!

The planners and leaders in India unfortunately neither seem able to comprehend the issues surrounding climate change, nor seem to be aware of the serious consequences for our economy.

Solutions will probably never be found until the government itself works to educate its people against the 'disease' of environmental degradation. Looking at alternate energy sources and investments in energy efficiency would ultimately benefit the economy itself.

Greenpeace India recently initiated a positive and creative campaign, "Switch for Mumbai" to encourage people to adopt energy efficient ways to use electricity so that the city could bridge the energy demand-supply gap.

We can influence the choices we make today by reducing our own power consumption.

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