

Coal can choke your breath or light your house. What will India choose?

This article is the first part of a two part series written by Dr Baldev Raj – a Padma Shri awardee, and Dr. R Srikanth – researcher in the field of energy and environment.

By Dr. R Srikanth and Dr. Baldev Raj

While putting its formal stamp of approval on the 'Paris Agreement on Climate Change' on the birth anniversary of Mahatma Gandhi, the Government of India (GOI) has rightly taken pride in its ongoing action plans to achieve the INDCs (Intended Nationally Determined Contributions) declared by India.

India's Efforts to Combat Climate Change

While the annual per capita CO₂ emission of India is still one of the lowest in the World, GOI is trying to control the rise of emissions through a number of measures, such as:

- a hugely successful nationwide program to install more efficient LED bulbs replacing older CFL or filament lamps, which is estimated to have reduced the carbon footprint by about 43,000 t per day;
- agricultural demand side management program in which inefficient pump sets (25-30% efficiency) are being replaced by energy-efficient pump sets (40-45% efficiency), which can also be powered by dedicated solar panels;
- allowing State and Central utilities to transfer their coal linkages from less efficient units to more efficient ones thereby reducing overall tariff for both parties: and
- replacing older sub-critical units with super-critical units in a progressive manner.

The National Clean Energy Fund (NCEF)

A major share of the funding for India's plans to enhance renewable energy capacity, from the current level of 14% to 40% by 2030, is derived from the NCEF. It has been accumulated through a dramatic increase in the clean environment cess from Rs. 50 per tonne of coal in FY 11 to Rs. 400 per tonne used in FY 17. This cess (equivalent to a "carbon tax") contributes to a direct hike in the tariff of coal-based power plants, thereby bridging the gap between the tariffs of these plants and those powered by renewable sources.

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In addition, a share of the funds (about Rs. 260,000 Mi in FY 17 alone) is being used to subsidise renewable energy in multiple ways, including the construction of "green" energy corridors to connect renewable energy sources to the National Grid. While the contributions from this carbon tax will keep increasing per annum by 2020, there is no action plan to use the NCEF to clean up the coal sector itself, which fulfils more than 75% of India's total electricity requirements today.



India's problem is not coal but the pollution associated with coal-based

Power to All by 2020?

As of August 2016, India had a total installed power generation capacity of 306 GW, in addition to the grid-connected captive power-generating capacity of 41 GW (of which 60% is coal-based). The peak demand in India was only 153 GW. However, power shortages continue due to various reasons, including – the affordability of power, particularly in the rural areas of India, gaps in last mile connectivity, or poor financial health of the power distribution entities.

India's actions to comply with the Paris Agreement also have to be balanced with India's goal of "Power to All by 2020," since about 240 million Indians lack access to electricity.

Are renewable sources of electricity economically viable?

In FY16, coal-based power plants produced more than 75% of the electricity generated in India. While renewable sources power accounted for only 6% of the electricity generated in FY 16. Even if GOI's plan to enhance renewable energy capacity to 175 GW by 2030 fructifies, the total electricity generated by renewable sources will still be less than that generated by coal-based power plants. India has enough coal reserves to last several decades even at double the current rate of production, and coal-based power is far cheaper than solar power in India at this time.

For example, the coal-based power plants of India's largest power generator (NTPC), have a tariff of Rs. 3.07 per unit in FY 16, while the most competitive price discovered in the April 2016 NTPC tenders for solar power is about Rs. 4.80 per unit. Therefore, the predominance of coal-fired power generation will continue for the foreseeable future in India, even with the recent focus on renewables.

From a perusal of key facts related to the Indian power sector, it is evident that India's problem is not coal but the pollution associated with coal-based power plants. However, there are several critical issues that India's

power sector is grappling with in relation to its compliance with environment statutes. Therefore, urgent attention of the Central and State Governments and other owners of coal-fired power plants is required to enhance the efficiency of the plants and reduce their water consumption and emission levels.

***Dr Baldev Raj**, an Padma Sri awardee has provided unique interpretations and solutions to challenges in energy, water, healthcare, manufacturing and national strategic unsolvables in a large measure, with clear impact, distinctions and awards. He has been selected for eminent positions, awards, and fellowships of prestigious academies.*

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