

## Will India's coal power plans pose a threat to limiting global warming to safe levels?

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*In a recent paper, Shearer et al. have argued that the future emissions from India's coal plants would exceed the country's climate commitments in the sector. They suggest that this would threaten the goal of limiting warming to below 1.5°C. The conclusions as presented in Shearer et al. are misleading. We demonstrate that they have projected an unlikely scenario, without exploring the more likely alternate scenarios proposed by India's official new Draft National Electricity Plan.*

A historic global climate agreement was reached in Paris towards the end of 2015, with the goal of limiting global warming to below 2°C (ref. 1). India committed to having 40% of the total installed capacity of electric power generation through nonfossil fuels by 2030 (ref. 2). Based on the CoalSwarm database (<http://coal-swarm.org>) on the proposed coal power plants in India, Shearer *et al.*<sup>3</sup> concluded that 243 GW of coal-fired electricity generation capacity is under development in India (including plants in 'announced', 'pre-permit development', 'permitted' and 'under-construction' stages), and future emissions from these coal plants would exceed the India's climate commitments in this sector. Further, Shearer *et al.*<sup>3</sup> argued that India's proposed coal plants alone would threaten the global goal of limiting warming to below 1.5°C. In my opinion, the analysis and conclusions as presented in Shearer *et al.*<sup>3</sup> are incomplete and misleading. They ask 'what if' all the proposed coal power plants in India are completed, and how will this affect India's power sector emission? A report<sup>4</sup> co-authored by CoalSwarm itself shows that the success rate for coal power plants in India is low, especially in the last couple of years. Also, between 2010 and 2012, only about 50% of all proposed coal plants in India were completed and over the period 2012–2014, only 1 out of 6 proposed power plants reached completion<sup>5</sup>. The coal power plant proposals by mid-2016 as quoted by Shearer *et al.*<sup>3</sup> are not a new development; rather they represent a planning pipeline, which is about 5–10 years old. Recently, India released its new Draft National Electricity Plan<sup>6</sup>, which can be regarded as a roadmap for the country's power sector in the next five years. India took an ambitious goal of building 175 GW in renewable energy by 2022 as

part of its commitment in Paris. The Central Electricity Authority (CEA), Government of India (GoI) has further projected that India's renewable capacity will increase to 275 GW in 2027 (ref. 6). This represents an addition of 149 GW in renewables capacity in India's electricity mix by the year 2027, in comparison to the previous plan<sup>7</sup>. Figure 1 compares the renewable capacity projections from the latest draft National Electricity Plan<sup>6</sup> and the previous National Electricity Plan<sup>7</sup>.

CEA<sup>6</sup> estimates that if these renewable energy goals and other efficiency plans in the power sector are achieved, then India will not be required to add any new coal power plant during the period 2017–2027, except for those that are already 'under construction' (~50 GW).

We believe that India will not build new coal power plants beyond what is already under construction (~50 GW), as the country is likely to achieve its renewable energy goals for 2027, for the following reasons.

(1) India's recent power sector plan, which provides a roadmap for the sector for the next five years, gives a powerful negative signal for any proposed thermal power plants that are yet to begin construction<sup>6</sup>. For example, India recently cancelled the construction of four coal-fired ultra mega power plants. Further, CEA<sup>6</sup> in its projection assumes that no gas-fired capacity will be deployed after 2022 (ref. 8) due to uncertainty in the availability of natural gas in India.

(2) India plans to curtail coal imports for public sector thermal plants in this fiscal year (2017–18) itself, and plans to extend this to the private sector in the near future<sup>9</sup>.

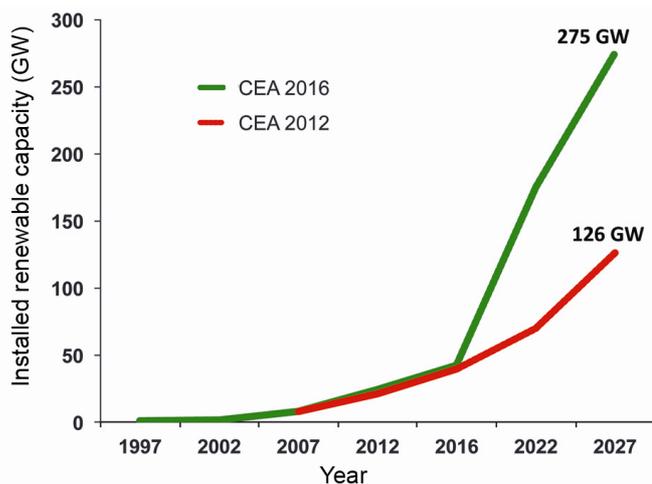
(3) Besides regulations, the expansion of coal power plants in India is threatened by economics as well. Declining prices in renewable energy are making coal plans financially unviable. Recently,

two power companies offered to charge Rs 2.62 kWh of electricity generated from solar panels in Rajasthan, compared to the current coal prices of Rs 3.20 per kWh (as charged by the National Thermal Power Corporation). The wholesale price bids for wind energy have also reached a record low of Rs 3.46 per kWh in February 2017 (ref. 10). This too sends a clear signal to the market that the economics is heavily tilted in favour of renewable, at the cost of coal.

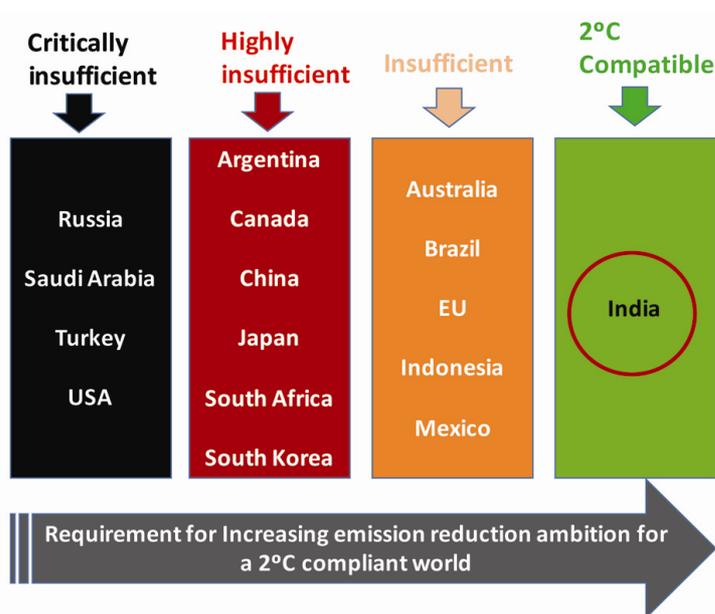
(4) In terms of taxes and incentives, GoI has made it amply clear as to where its priorities lie. In the last two years, i.e. 2014–2016, GoI has increased the 'clean environment cess' on coal from Rs 100 per tonne to Rs 400 per tonne<sup>6</sup>, making electrical energy from coal even more expensive. Investment in solar power is also increasing because of a recent move to allow the Government-backed Solar Energy Corporation to act as a guarantor in agreements between energy developers and cash-strapped power distribution companies<sup>9</sup>.

(5) Further, low operating cost of renewables such as solar power is one of its biggest advantages. As sunshine is free, the overall cost remains flat across the life of a project. Fossil fuel-based power plants, by contrast, are saddled with perennial fuel costs that are prone to inflation<sup>11</sup>.

(6) Other powerful domestic drivers against increased coal plants are air pollution, health risks and water stress<sup>5</sup>. Studies suggest that the coal plant expansion in India between 2009 and 2015 resulted in a 13% increase in the levels of PM2.5 fine particle pollution and about one-third increase in sulphur dioxide (SO<sub>2</sub>) pollution. It has also been shown that major coal power station clusters in the country correlated with high SO<sub>2</sub> and nitrogen oxides (NO<sub>x</sub>) pollution levels. Further it has been shown that existing



**Figure 1.** Renewable capacity in India as projected by the latest draft National Electricity Plan (CEA, 2016) compared to the previous plan (CEA, 2012).



**Figure 2.** Current climate and energy policies of the G-20 member nations as rated by the independent science consortium Climate Action Tracker (<http://climateactiontracker.org/countries/india.html>).

coal plants in the seven worst drought-affected states consumed enough water that could have met the needs of around 50 million people<sup>5</sup>. A recent report demonstrated the co-benefits of India's planned decarbonization for reduction in ambient air pollution and associated health risks<sup>12</sup>.

It is clear from the above discussion that Shearer *et al.*<sup>3</sup> project a hypothetical scenario for India's coal power plants up to 2030. It is also clear that the scenario which they explored, i.e. 'if all the proposed coal power plants are completed and start operation', is an unlikely one.

Still, the results were widely publicized, highlighted before the UNFCCC's Bonn meeting and ahead of G-7 meeting in Sicily, Italy. The world media ran headlines such as 'India's coal plant plans conflict with climate commitments (Phys.org)', 'India's outsized coal plans would wipe out Paris climate goals (UCI News)', 'India's planned coal plants could "single-handedly jeopardise" 1.5°C target (Carbon Brief)'. The United States recently pulled out of the Paris Agreement. One of the arguments of the US against its participation in the Paris Agreement is that India and China are

not doing enough to share the burden of climate mitigation<sup>13</sup>. Shearer *et al.*<sup>3</sup> and the associated press coverage reinforced this incorrect claim. In reality, India's Draft National Electricity Plan envisages that the share of non-fossil-based installed capacity comprising nuclear, hydro and renewables will increase to 46.8% by 2022, and will further increase to 56.5% by 2027, as against the country's commitment of 40% by 2030 (ref. 6). Climate Action Tracker<sup>14</sup> too concludes that 'India is set to overachieve its Paris Agreement climate pledge' and India is the only country among the G-20 group of nations whose current and planned climate and energy policies are compliant to the goal of limiting global warming to below 2°C. In other words, if all other large countries of the world would follow the Indian example, then global warming could be limited below 2°C goal (Figure 2).

India is going much beyond its Paris commitments not only in its power sector, but is planning a transformative change in its transport sector as well. The country is currently exploring opportunities to become a 100% e-vehicle nation by 2030. GoI's official policy think-tank NITI Aayog recently published a report exploring the ways and means to actually operationalize this plan<sup>15</sup>. Thus, India is looking forward to transformative shifts even in the sectors where it has no specific international commitments. Clearly, the country's green growth strategy is guided by prudent economics and concern for the environment. With improvements in technology, life-cycle fuel savings and health benefits, e-vehicles are increasingly becoming more attractive even without formal climate mitigation goals. India's green growth story and future plans reinforce the idea that global climate mitigation is no longer a 'burden-sharing' arrangement, but is actually an 'opportunity-sharing' mechanism. Coal power is no longer an asset, rather it is fast becoming a liability – India knows it only too well.

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## COMMENTARY

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