

SOLAR ENERGY IS NOT THE BEST OPTION FOR INDIA

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The Pavagada solar park, in Kyataganacharulu village, Karnataka | Photo Credit: Getty Images

The Hindu's editorial, [Energy conundrum](#) (December 15, 2022), expressing caution about the country's bubbling enthusiasm in the climate change agenda by going the whole hog on solar energy is timely but spartan, and needs amplification. Apart from the external pressure that is pushing India more and more into the so-called carbon limiting renewable energy path, the Prime Minister's own enthusiasm and support and a simple understanding that solar energy is a free gift from the sun have made identifying what is good for the country difficult. Shorn of misperceptions and ill-conceived pressures, we can conclude that solar energy is not the best option for India and that we are better off in just relying on large hydro and coal. Now, what are the misconceptions?

One argument put forth in favour of solar power is that the levelised cost of power is coming down and is close to that of coal. There are two flaws here.

The first is the wrong comparison of solar power with coal electricity at the load centre, instead of at the pithed, which costs about half that of the load centre. According to the Central Electricity Authority, which was once the final arbiter in electricity matters, moving electricity through high voltage wires is cheaper than moving coal — and that is the reason for starting the National Thermal Power Corporation Limited (now NTPC Limited) during K.C. Pant's time.

The second flaw is not comparing like with like. Solar electricity is intermittent and coal electricity is continuous. So, you have to add the cost of storage by battery. Protagonists of solar power will want us to add the environmental cost of carbon to coal — for its greenhouse gas emissions — but now the carbon market has crashed and is in that state for years; one does not have any objection to add its market price. The shadow price or true economic value of coal is even lower than its market price, since the cost of labour in mining carries a shadow price of zero (they being unskilled workers who would be unemployed otherwise).

Some enterprising researchers (E. Somanathan of the ISI et al.) have quantified the cost of carbon emission in terms of deaths due to particle (PM2.5) pollution. Implicitly, they agree not to consider the greenhouse gases cost of coal, because it is a global issue, but want to include the particulate emission cost of carbon, which is a local issue. Here, the number of deaths is multiplied by a figure for the value of statistical life, calculated by asking potential victims "how much would you like to pay to avoid an increase in probability by 10% of your death due to pollution?"; they have arrived at a figure of 1 crore. The comparable figure in the United States is

1.8 crore. To start with, who gets such high compensation anyway? The victims of the Bhopal gas tragedy got a pittance compared to this figure. Taking this value of statistical life, they have adduced 1.64 per kwh of electricity to the carbon cost alone. Taken along with coal to load centre at a price of \$44 per tonne and capital costs of coal plants at 8 cents to 12 cents per kwh for new power plants with low capacity utilisation factor (which is never the case with coal, as they are operated nearer the base load with high plant load factors), coal-based electricity is categorically made unviable.

Thus, solar energy is made financially viable by misguiding the people by leaving out storage battery cost; handicapping it with subsidies and concessions that are front loaded by the government, and forcing it on the industry and hapless discoms through state policy. That this is thrust down the throats of client discoms and industry is clear from the slow progress so far, the programme missing its target by 40%-50%, and discoms renegeing on their 25-year power purchase agreements, on seeing lower and lower prices in later bids for others.

There seems to be competition, egged on by the West, between India and China, as to who does more renewable energy. We can do more renewable energy in large hydro, which is both low carbon and least cost. India has utilised only about 15% of its hydro potential whereas the U.S. and Europe have utilised 90% and 98% of their potential, respectively. The extent of utilisation of hydro potential seems to be an index of civilisational development and evolution. While China relies on renewable energy, it banks more on coal and hydro. The Three Gorges project on the Yangtze is the world's biggest hydro electric project. In India, powerful environmentalists stop large hydro projects in their tracks. One major reason for the sickness in the power sector is due to the focus on renewable energy in a big way. It is a pity that the NTPC which was a model thermal power producer meant to produce coal-based electricity from pithead, is doing unrelated diversification into renewables, which is not its core competence. The only place where solar power is viable in India is its use in water heating, and even that is because of increasing block tariffs.

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