



Associated Press, Manish Swarup

India's Energy- Environment Catch- 22

Extreme weather events, like India's heatwaves, pose new challenges to green solutions.

By **Monika Mondal**

Rani, a domestic worker in New Delhi, travels 10-15 kilometers every day from her cramped urban slum in Goyla Dairy, Najafgarh, to high rise buildings in Dwarka. Sometimes she hops on a shared rickshaw, or hangs by the door of an overloaded minibus. Traveling is just one of the difficult parts of her day when she is forced to endure the heat. Generally, “the entire days are exhausting,” she said on a sweltering early May evening, sitting on a cot outside her one-room apartment.

As she narrated the horror of that day’s morning to her four children and me, her *dupatta* continuously switched jobs. Sometimes the shawl was a fan in her hand and sometimes it acted as a tissue wiping sweat from her face and neck.

While going to work that day, Rani fell asleep by mistake in the shared rickshaw. “I lost control and almost fell off of it,” she said, bumping her head with her hand as if it was her fault that she could not sleep the previous night.

“It was so hot at night. So many mosquitoes. And no electricity from 9 pm to 5 am” she complained. She and her school-age kids slept for barely an hour, the only time when

electricity brought some respite from the unbearable heat. The power cuts have become quite frequent this year, according to Rani.

Her family is not alone.

Heat arrived in India well before summer in 2022. Heatwaves blanketed the entire spring season and broke all records since record-keeping began in 1901.

To defeat the heatwaves, power demand increased in India. That in turn created energy shortages and led to the power cuts that plagued Rani and her family. But heatwaves and the power cuts not only affected households like Rani's but also the government's coal policy. The extreme heat raised questions about the further impacts on the environment of combatting such heat – which, in turn, could lead to still more extreme weather events in the future.

The overall response of the government was to view the coal shortage as an emergency issue. India thus eased regulations to increase the availability of coal in the country. But experts warn that such steps are shortsighted and detrimental to the environment. According to analysts, India does not really have a shortage of coal; the

problem is more a logistical and managerial issue rather than a simple demand-supply mismatch.

While India plans to reach carbon neutral status by 2070, extreme weather events like the recent heatwaves keep pushing India's energy sector to depend on traditional coal in the absence of enough renewable energy. Government policies were supposed to promote renewables to reduce carbon-intensive power sources, but against the backdrop of extreme heatwaves, coal seemed to be the only option to quickly bring relief amid increasing energy demands.

While there are huge investments coming in the renewable sector, and the government should accelerate the pace of deploying renewables, energy experts also warn that deploying renewables will have huge costs if not done prudently.

Climate Change Is Posing New Questions for Energy Policy

Rani depends on a private power distribution company to acquire energy for her rented room. While Delhiites get free electricity up to 200 kilowatt hours, many of the tenants living in informal settlements

and urban slums, like Rani, do not have the same privilege. Rani occupies only one room in a four-room house. All four of the families who share this approximately 125-square-meter area also share a common electricity meter and often end up paying 3,000-4,000 Indian rupees per month. Yet when they needed their electric fans to run the most this summer, they lacked the power.

In April, the electricity supply fell short by 1.88 billion kWh across India. While the heatwaves and temperature reached record levels, the country faced its worst power crisis in six years.

India's dire dependence on coal for its power needs was evident from the government's response to the frequent blackouts and brownouts in the country. To fix the energy shortfall, on May 7, in a notification, the environment ministry allowed a few coal mines to expand production up to 50 percent, in some cases waiving the need for mandatory environmental clearances.

Pointing at the impact of this decision on the environment, Kashish Shah, an energy finance expert at the Institute of Energy Economics and Financial Analysis (IEEFA),

said that this policy was misguided.

“Expansion of coal without any environmental assessment could be very dangerous for the forests, flora, fauna, and especially for indigenous communities living near the coal mines.”

In another notification, the government invoked an emergency provision which allowed power plants to blend in 30 percent imported coal without any permission until next year.

The government pointed out that the heatwave had induced coal demand and supply issues in thermal power plants across the country. In a Twitter Spaces discussion, however, Sreedhar Ramamurthi, a geologist and managing trustee at Environics Trust, disagreed with the government's narrative, stating that there is no shortage of coal in the country, nor was the rise in demand a surprise.

Another panelist, Sunil Dahiya, an analyst at the Center for Research on Energy and Clean Air added, “The Central Electricity Authorities [a government body that advises government, plans and formulates India’s energy system] forecasted the demands to increase. The peak demand for March and

April this year was 280 GW. And India reached about 214 GW. However, those forecasts were not taken seriously and not enough was done.”

Moreover, Vibhuti Garg, an energy economist at IEEFA, told The Diplomat, “As per the regulations, the developers have to maintain at least 20 to 21 days of coal supply or at least a minimum of 15 days. But the coal supply was maintained for seven to eight days.”

“The understanding that unavailability of energy means that there is a dearth of coal is a flawed orientation of both people and the government,” added Ramamurthi.

Ramamurthi argued that the coal shortage was used as an excuse to open up the coal mining sector. He said, “The moment you use the word ‘shortage’ then decisions are taken to address a crisis. And when there is a crisis, the state uses special power to make decisions” – mostly without any consultation or reference to the people.

Garg from IEEFA also said it was shortsighted that India is looking forward to ramping up more and more coal production. This is particularly concerning given that

coal is getting expensive, while prices of renewables are decreasing.

With current coal imports and the mandatory blending of coal for power generation, the Investment Information and Credit Rating Agency of India Limited (ICRA) estimated that the cost of power generation in the country will increase by 4.5 - 5 percent. Increased energy prices will become an additional blow to Rani's already meager income.

Renewables Are the Future, But What's the Present?

The inside walls of Rani's house were once painted yellow, but the candle soot and kitchen flames have brushed the wall black. There is no proper ventilation in her house. Her house's tin roof does not offer any insulation from the heat, and the only table fan is mostly unsuccessful in reducing the temperature.

Delhi, and for that matter northern India, has faced multiple bouts of heatwaves this year. The heatwave of March and April in northern India surpassed the average temperature by 4.5-6.4 degrees Celsius, often reaching 41 degrees C (105.8 F).

With each passing year, India's inequality gap becomes starker and wider. These inequalities often decide the quality and span of life. The latest inequality report mentioned that inequalities lead to the death of one person every four seconds. Inequality also manifests in susceptibility to extreme weather events, including the recent heatwaves. Najafgarh, where Rani lives, recorded the highest temperature in Delhi, reaching 49.1 degrees C in May (120.4 F) on multiple days.

The annual mean temperature of a city is often 1 to 3 degrees higher than its surroundings. Concrete infrastructure and the lack of proper green and open surroundings further increase the temperature of cities, as compared to rural areas. During summer, when skies are clear and winds are calm, this phenomenon – known as the urban heat island effect – is more intense.

Increased temperatures from urban heat islands affect not only the environment but also quality of life. The heat, in turn, spirals into an increase in energy consumption, impacting human health and water quality.

Researchers point out that with every 0.6 degree rise in temperature, energy demand increases by 1.5 to 2 percent.

“There is no doubt that the demand of energy in India has increased during this period of heatwaves,” said Harjeet Singh, a senior adviser with Climate Action Network International. “This is a classic example of how we have to organize and look at climate action much more comprehensively.”

Singh further explained that when working in climate action, pursuing either mitigation or adaptation is not enough. Some responses to deal with the changing climate may not be in sync with climate action, and that’s what has been happening. “Working on climate related issues, it’s important not to work in silos and to keep the complexity in consideration,” Singh said.

Beyond the grid, the heat has widespread and deep penetrating impacts. The World Health Organization states that heat can have a serious direct and indirect impact on health, from serious respiratory diseases to heatstrokes to mental health disabilities.

With temperatures increasing, cooling solutions are imperative for people like Rani and her family to survive. Sandeep Pai,

senior research lead with the Just Transition Initiative, a collaborative project between the Center for Strategic and International Studies and the Climate Investment Funds said, “For a country like India, air conditioners should become a human rights issue.”

Reports from the U.N.’s Intergovernmental Panel on Climate Change (IPCC) have warned that global temperatures will increase by 1.5 degrees in the next few decades, accompanied by frequent heatwaves, dry spells, cyclones, and other extreme weather events. To compensate for energy demands, energy plants are bound to work at higher capacity, leading to more emission of greenhouse gasses.

While renewables are the future, in the short term and especially during such immediate power crises, coal is unavoidable, as it dominates the Indian energy mix.

Pai emphasized, “While there is so much momentum on renewables and other greener technology, they cannot be deployed in two months, or tomorrow for example, to avert whatever is going on.” In the short term, even if controversial, any country will rely upon whatever energy sources it has.

Ironically, the carbon-intensive coal power plants India uses to respond to these crises contribute in a major way to the world's greenhouse gasses and are helping cause still more extreme weather events. Coal contributes about 70 percent of India's energy mix and the majority of India's greenhouse gasses – approximately 69 percent – are emitted by the energy sector.

To make sure that India's future energy needs are met without any compromise with its environment, and to reduce its dependence on coal, Garg from IEEFA said, "We should increase the deployment of renewables at a quicker rate."

The Risks of a Quick Renewable Expansion

India aims to reach 175 GW of renewable energy by 2022, and set a goal of expanding that to 500 GW by 2030. Although India's renewable energy has expanded by a staggering 286 percent in the last 7.5 years, it may still fall short. "It might be difficult for the country to add further 25 GW in the next few months, so quickly," said Shah from IEEFA. Even the quickest renewable energy source, solar, ideally takes about six to eight months to be set up.

While India plans to move away from polluting coal and to ramp up greener technologies, there are concerns about what that pathway may look like. How will the transition from coal to renewables impact people and their surroundings?

From what is known, “The geography of coal is very different from the geography of renewables,” said Pai. So while studies suggest that renewables will be instrumental in producing more job opportunities, the benefits might not go to the same people that will be negatively affected, especially the ones who will lose jobs in the coal sector. Pai expanded on this, saying, for instance that workers from coal mines in Jharkhand or Chhattisgarh might lose jobs, whereas new solar jobs are more likely to be generated in states like Rajasthan.

There are also concerns about child labor, human rights issues, and (ironically) environmental conservation. Ramamurthi from Environics explained: “There is a huge question on how renewables are going to be. If renewables mean more and more mining of the rare earth metals, we might increase

problems” for certain people and the environment.

Adding to Ramamurthi’s point, Pai said, “When you try to do something faster” – such as deploying green energy – “the consent with the indigenous community and locals, and benefit sharing with the local community, goes for a toss.”

While renewables can offer greener options to confront extreme temperatures, the onus for these energy sources is often passed to marginalized communities and their resources. Land Conflict Watch, a research organization that tracks land disputes in India, notes there are 67 ongoing cases of land conflict in the country involving clean energy deployments (including hydropower, nuclear power, and solar power projects), impacting 393,029 people, untold amounts of wildlife, and over 153,000 hectares of land.

“For a country like India, land is going to be a major issue” in the transition from coal to renewables, Pai pointed out. “Solar and wind are very land intensive energies compared to coal. We need about 4 to 5 acres for 1 GW of energy production from renewables like solar or wind, meanwhile

about 1 acre of land is sufficient to produce 1 GW of energy from coal.”

Studies show that land is often subjected to social discrimination in India, and land use policies tend to favor industrialists over locals. It is estimated that for every 100 ha of solar panels to be deployed, 31-43 ha unmanaged forest might be cleared throughout the world.

Another issue that will impact the lives of India’s people will be the loss of coal-based jobs as the sector diminishes. Most of these jobs are already precarious and temporary, mostly in the private sector without job security or unions. Those left unemployed by the downscaling of coal will have little support.

Pai mentioned that, right now, none of India’s states has the capacity to leave coal or is actually thinking of a just transition.

But as Singh from CAN said, “Whether it’s India or any other country, it’s quite clear that we need to move towards a fossil fuel free world – including coal, gas, and oil. The direction has already been set by the global policies and even India understands it.”

The UNFCCC Paris agreement on climate change acknowledged the history of the problem and the prominent role of developed countries in releasing greenhouse gasses into the atmosphere. One of the ways the U.N. framework sought to address the global inequalities of the climate crisis and development is through climate finance – in 2009, developed countries promised to contribute \$100 billion annually toward climate action. However, since then countries have failed to reach the target every single year.

“The Western countries have to do more and support economies like India and others to adapt greener pathways. But most of the developing countries have been left alone in the absence of climate finance,” said Singh. “We have to think about how society can be benefitted beyond energy deployment.”

How Much Energy Is Too Much Energy?

Another facet of climate inequities is the amount of energy used per person. While India is the third-largest carbon emitter in the world, its per capita emissions, at 1.74 metric tons, are far less than the top two contributors. Each person in China produces approximately seven times more

greenhouse gasses than the average Indian; for an American, the number jumps to 15 times. While China has promised to reach net-zero emissions by 2060, India pledged to do so by 2070 at COP26 in Glasgow last year.

But with millions like Rani facing dire socioeconomic conditions in India, the country still has to build enough infrastructure to boost its peoples' quality of life. From proper housing to transportation facilities to economic opportunities, the development of every sector will entail more carbon emissions.

Before beginning to reduce carbon emissions, each country will have to reach a point where it has enough facilities and economic stability to begin the transition. China plans to have its carbon emissions peak around 2030, and India is estimated to reach a peak between 2040 and 2045.

Energy is the most important ingredient in the recipe of growth and development, and India will need much more of it to expand electricity to remote places and to lift millions out of poverty. But there are uncertainties as to how green or sustainable the whole process will be. That question only grows more and more uncertain as

extreme weather events take place due to a changing climate.

Coal is often demonized for being polluting but “even renewables are not absolutely green,” warned Ramamurthi.

“We have moved far away from our natural way of life, and we are now dependent on the fruits of technology revolution,” said Abhishek Nath, sector head of the Energy and Power team at the Center for Study of Science, Technology and Policy (CSTEP). “It might be useful to look at how concepts of degrowth might work out in these situations.”

Pointing out that “degrowth” may carry negative connotations, Ramamurthi suggested creating diseconomies of scale, to keep economies in sync with the environment. “If we have a distributed kind of energy development and ownership, then perhaps there will be a conscious way of reducing the use of energy,” he added. “Another way could be reducing the energy intensity of the products that we use.”

To bring about meaningful change, “We need to have a complete rethink on how and who owns the process of energy production,

distribution and everything that happens in between.”

The Author

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