Enabling a Just Transition in India's Power Generation Sector

Seed Community Meetings in West Bengal & Rajasthan

Background

The world is undergoing a paradigm shift towards environmental sustainability and climate resilience across sectors. A key anchor for this envisaged shift is the energy sector, particularly the power generation sector, which contributes significantly to environmental deterioration through the air and other forms of pollution. To counter this, India has embarked on an ambitious journey of achieving a target of 175 GW of renewable capacity by 2022 and ramping it to 500 GW by 2030.

A shift from fossil-based power generation to renewables is bound to have significant socio-economic consequences for the ecosystem, especially on the livelihood of people dependent on the thermal power generation value chain. Similarly, the expedited process of installing renewable capacity through solar-based, wind-based, or other non-conventional energy-based power plants will impact several allied stakeholders. For instance, it will impact the community living on and around the land utilised to construct such renewable energy projects by affecting their habitat and livelihood. In this context, CUTS has been undertaking a state-wide study of assessing the readiness of two states, i.e., Rajasthan and West Bengal, for this transition.

The objective of Seed Communities in each of these states was to bring together stakeholders directly or indirectly impacted by this transition. These stakeholders comprise representatives from conventional and renewable power generation plants, communities linked to conventional, renewable power generation and mine-dependent, coal mining industry, academia, civil society organisations, and the government. The purpose was to assess renewable energy's social, environmental, and economic impacts transition in power generation sectors.

Key Participants (West Bengal)

- S Suresh Kumar, IAS, Additional Chief Secretary (Power), Government of West Bengal
- Bitu Biswas, Senior Manager and Superintending Engineer, Santaldih Thermal Power Station

- Mir Taibur Rahaman, Mine Agent, Barjora North Coal Mine
- Utpal Goswami, Consultant, Ministry of New and Renewable Energy
- Pankaj Roy Sarkar, Trade Union Leader, CITU, Durgapur
- Jibon Aich, General Secretary, DVC Shramik Union
- Nimai Maji, Teacher, Jamgari Primary School, Lotiaboni
- Goutam Biswas, M.D., Durgapur Projects Limited (DPL)P
- Proloy Shankar Mukherjee, Additional Chief Engineer, WBSEDCL
- B Sadhukhan, Superintending Engineer, PPSP, WBSEDCL
- Amalesh Kumar, Ex-Director (Mining), WBPDCL
- Jaya Mitra, Author, Editor, Vumadhyasagar Patrika
- Jayabrata Mukherjee, M.D., GP Green
- Aniruddha Pradhan, Superintending Engineer, Rammam HP, WBSEDCL
- Gulan Chandra Murmu, Community Representative, Prakriti Bachao O Adibashi Bachao Mancha
- Kuntala Lahiri Dutt, Professor, Australian National University

Key Participants (Rajasthan)

- R S Bhati, Superintendent Engineer, Rajasthan Rajya Vidyut Utpadan Nigam Ltd
- R N Gupta, Deputy Chief Engineer, Rajasthan Rajya Vidyut Utpadan Nigam Ltd
- A K Tyagi, Superintending Engineer, Jaipur Vidyut Vitran Nigam Ltd
- Simran Grover, Founder and CEO, Bask Research Foundation
- Gajendra Pal Singh, District President, Urjadhani Bhu Visthapit Kisan Kalyan Samiti, Korba, Chattisgarh
- Arjun Kumar Vastrakar, Media In-charge, Urjadhani Bhu Visthapit Kisan Kalyan Samiti, Korba, Chattisgarh
- Amitabh Baloch, ERDS Foundation, Jaisalmer
- Sushant Upadhyay, Associate Professor, Department of Chemical Engineering, MNIT, Jaipur
- M P Sharma, Technical Manager, Rajasthan Renewable Energy Corporation Limited
- N K Gupta, Technical Manager, Rajasthan Renewable Energy Corporation Limited
- Sumer Singh, Community Representative, Sanwata Village, Jaisalmer
- Barkat Khan, Community Representative, Nedar Village, Jaisalmer
- Yar Mohammad, Worker, Bhadla Solar Park, Jodhpur
- Iqbal, Worker, Bhadla Solar Park, Jodhpur
- Sujit Narwade, Project Scientist, Bombay Natural History Society, Ajmer

Major Points Discussed in the Meetings

With the growing awareness regarding climate change and the need for environmental sustainability - a shift from a fossil fuel-powered growth to a cleaner and low-carbon growth trajectory is inevitable. With India aiming for 500 GW of renewable energy by 2030 and net-zero carbon emissions by 2070, it is only a matter of time until there is a complete transition to green energy from fossil fuels. However, such a transition is fraught with several disguised challenges which can potentially exacerbate the pre-existing socio-economic asymmetries, thus proving to be highly counterproductive.

Power generation in India is mainly dependent on coal which makes up approximately 70 percent of India's energy portfolio. India is among the top five coal-producing countries globally. The majority of these mines are concentrated in the eastern part of the country in West Bengal, Orissa, Jharkhand, Chhattisgarh, and Andhra Pradesh.

On the other hand, the renewable energy generation potential is much higher in the western and southern parts of Indi, implying there is a spatial mismatch between the states with coal reserves and regions with renewable energy potentials. While a shift to renewables would ensure a reliable and competitive energy supply, it would also necessitate downscaling and complete closure of these coal mines, posing several challenges to the communities dependent on them.

Apart from environmental concerns which motivate this transition, another vital point underlining its necessity is the health hazard posed by the toxic fly ash and the emissions from thermal power plants. The water from these ash ponds pollutes the underground water used for drinking purposes resulting in poor health and various skin diseases for the locals. Also, during monsoons, the fly ash ponds often overflow into the nearby farmlands destroying the crops and making these lands unfit for cultivation.

Coal-burning produces a considerable amount of fly ash which contaminates air and water. Fly ash is mainly composed of alumina, silica, and other oxides, and when mixed with water, it raises its pH, making it unsuitable for drinking or agriculture. Besides that, coal-burning emits CO_2 and poisonous SO_X, NO_X, which are harmful to the atmosphere and causes respiratory problems to those inhaling it.

It has been found that the communities living close to the coal mines are at significant risk from the heavy pollution generated by coal mines. The average life span for these communities is below 60 years.

However, the main problem that makes this transition imperative is the depleting coal reserves in the mines and logistical issues with coal supply that have already started manifesting in frequent coal crises in the country. Especially states, such as Rajasthan that is not coal-rich,

mainly import coal from neighbouring states for thermal plants. For this reason, it has always faced problems regarding energy generation and distribution, resulting in higher energy tariffs compared to other states.

One of the biggest challenges posed by this proposed shift to clean energy is the loss of employment. Coal mines and thermal power plants require a lot of workforces. Hence, they provide formal and informal work to many people, thus uplifting the economy of the regions surrounding the plant.

On the other hand, renewable energy is not as labour-intensive as its non-renewable counterpart. While it may require some workforce initially during construction and installation, once the plant is up and running, it is mainly automated with little to no requirement for labour except for maintenance and repair. Thus, a shift to clean energy would result in social unrest in these coal mining communities fuelled by losing their livelihoods.

Besides that, this concern is further exacerbated by the fact that the resource potential of states like West Bengal is not much when it comes to renewables. Apart from solar energy and biomass energy, the potential for wind and large hydel energy plants is rather unremarkable in the state. Thus, the scope for green jobs in this sector is also low, which cannot absorb those rendered jobless from the clean energy transition even if they are adequately trained or upskilled.

Another significant issue regarding installing renewable power plants is the availability of land. Land in West Bengal is fertile due to which the state has an agrarian economy, and the availability of uncultivable stretches of land for renewable energy installations is low. Additionally, floating solar plants also result in loss of livelihoods for those dependent on the waterbody.

Thus, to fully utilise West Bengal's solar potential, the best recourse in this situation is rooftop solar installations that would feed directly into the state and central grids. Apart from that, old decommissioned thermal power plants could also be repurposed as sites for solar power plants.

Despite all the environmental pollution caused by coal mining and thermal power plants, one cannot disregard that coal has been embedded into our socio-cultural fabric, especially in the coal-rich belts of Durgapur, Asansol, and Raniganj. Hence instead of phasing it out completely, steps should be taken to reduce the pollution from coal particles.

On the other hand, the resource potential of states like Rajasthan is exceptionally high regarding renewables. Due to its desert cover of approximately 102,000 square kilometers (three percent of India's total landmass). It also has high solar irradiance, wind speeds, and abundant barren land to deploy many solar and wind power projects.

The state alone has a potential of about 1,27,000 MW to 1,42,000 MW of solar energy generation. If the state were to capitalise on this potential correctly, Rajasthan could be one of the most significant contributors to India's target of achieving 500 GW of renewable energy by 2030.

With the rise in renewable energy and energy becoming more affordable, there could be an increase in gadgets and electronics in the state. This could potentially create a greater demand for labour in these allied industries, thus proving to be a possible solution for the job crisis that would result from this proposed transition.

A significant issue regarding the installation of renewable power plants is land acquisition. Rajasthan is home to the critically endangered Great Indian Bustard (GIB) due to its arid climate. Standing at about 4 feet tall and weighing about 15 kgs, the GIB is among the heaviest flying birds globally, making flight difficult for this bird. Besides that, it has a poor frontal vision. The GIB's migratory flight path goes through north Gujarat and western Rajasthan- both crucial for solar power projects. Hence, the bird is at a fatal risk of collision from overhead electricity transmission lines.

Apart from the GIB, the solar energy installations in the uncultivable deserts of Jaisalmer have proven to be fatal to the camels inhabiting the region. There have been cases where camels have bled to death after being cut by sharp-edged angles installed to erect solar panels in the desert while searching for food.

To save these animals from habitat loss, the Supreme Court ordered all transmission lines in Rajasthan's Jaisalmer district and surrounding areas to go underground. Apart from that, old decommissioned thermal power plants could also be repurposed as solar and wind power plants sites.

Thermal power plants need to be modernised and advanced technologies incorporated to bring down toxic emissions and wastes as much as possible. Both the government and privately-owned thermal power plants in West Bengal and Rajasthan have started making interventions in this regard. Also, as part of their CSR, thermal power plants could take measures to mitigate some of the harm done by these plants by promoting community development in the surrounding regions. For this, they could help provide medical facilities, develop schools, maintain roads, run capacity-building programmes to train the local youth to find employment in those plants, and so on.

Apart from the social challenges threatening this transition, a few factors which could potentially expedite this transition from renewables to non-renewables are technological advancements in grid stability and energy storage. Without improved energy storage systems such as pump and battery storage, it would be nearly impossible to ensure that clean energy

remains affordable, especially when the state and central subsidies are discontinued in the future.

Conclusion

Due to the depleting coal reserves and the many environmental and health hazards posed by thermal power stations for the inhabitants living close to those plants, a shift from fossil fuels to renewables might seem to be the most reasonable way ahead. However, one must remember that such a transition must not cost the most economically poor and the disadvantaged. It must ensure distributive justice for every person directly or indirectly impacted.

While ensuring this might be difficult since justice itself is subjective, we must at least ensure that it is fair to everyone and no one has to shoulder the burden of this transition alone.