

India's Coal Transition: Findings from the Field and Way Forward

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Findings from the Field and Way Forward

India at COP 26

India's pledge at the COP 26 to phase 'down' and not phase 'out' coal was met with mixed reviews. While many nations criticised the country's stand as being detrimental to combating climate change, climate experts have come out in support of India's stand. They argue that the new language used in the agreement is an important indication of the energy transformation underway and is reflective of the Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC) principle.

The global push to phase out coal comes from the huge impact the fossil fuel has on global warming. Coal is the single largest contributor to anthropogenic climate change accounting for 20 % of the total greenhouse gas (GHG) emissions worldwide¹. Despite emitting per capita emissions of about 2.47 Tco2e (tonnes of carbon dioxide equivalent), as compared to the global average of 6.45 tco2/per capita, India has the third highest emissions in the world (only behind China and USA)². A major reason for this is India's heavy reliance on coal for its energy demand. Recognising the harmful greenhouse emissions generated by fossil fuels and the very real threat of global warming, India pledged to shift to fifty percent renewable energy by the end of the decade and declared a target of net zero emissions by 2070 in COP 26. However, it also emphasised on the historically skewed carbon emissions by developed countries and their failure to meet their climate finance targets.

In order to understand India's stand at the conference and the country's journey towards a just transition it is crucial to understand the socio-economic and political ways in which coal is intertwined in the Indian economy and society.

¹ IEA. "It's critical to tackle coal emissions". IEA. Paris (2021). <https://www.iea.org/commentaries/it-s-critical-to-tackle-coal-emissions>

² "India urges G20 nations to bring down per capita emissions by '30" The Hindustan Times. (July 25, 2021). <https://www.hindustantimes.com/india-news/india-urges-g20-nations-to-bring-down-per-capita-emissions-by-30-101627152729395.html>

India's Coal Economy and Dependency

Currently, the Indian economy and energy sector is heavily reliant on coal. India produced 716 million tonnes of coal in the year 2020-2021³. Apart from Coal India Limited, which is the bulk producer of coal, various public and private enterprises are also involved in mining operations in the country. Approximately 80% of India's energy needs are met by three fossil fuels - coal, oil and biomass - with coal being the dominant energy source, contributing to about 44% of India's primary energy demand⁴. Coal is also the major fossil fuel in the power sector, accounting for 52% of electricity generation in the country⁵. Further, the coal sector generates large-scale employment in the country and is a huge source of revenue for a number of states including Jharkhand, Chhattisgarh, Odisha, and Madhya Pradesh. Approximately 355,000 workers⁶ are directly employed in and 1.2 million⁷ are dependent on the coal sector in India. These numbers are exclusive of employment in coal logistics including road and railway transportation.

If India is to reduce its dependence on coal, policy integration is key. For this purpose, it is essential to recognise the cross cutting nature of India's socio-economic dependence on coal. Swaniti Initiative has been working in mining affected districts in Jharkhand over the last five years. The following section brings forth insights from the ground to better understand the current situation and India's pathway to a just transition.

Vulnerabilities Associated with Just Transition: Insights from the Ground

As seen in the previous section, not only is coal the predominant source for India's energy needs, but hundreds of thousands of people are dependent on it for their livelihood. Any pathway to just transition cannot ignore the vulnerabilities that will arise in the economy and the society as a result of phasing out coal completely. Some of the major concerns that need to be addressed are discussed below:

³ Details available at: <https://pib.gov.in/PressReleaselframePage.aspx?PRID=1742430>

⁴ "India Energy Outlook." World Energy Outlook. International Energy Agency. (2021). Accessed November 16, 2021. https://iea.blob.core.windows.net/assets/1de6d91e-e23f-4e02-b1fb-51fdd6283b22/India_Energy_Outlook_2021.pdf

⁵ Details available at: <https://powermin.gov.in/en/content/power-sector-glance-all-india>

⁶ Transparency, Climate. "Brown to green: The G20 transition to a low-carbon economy." Climate Transparency, c/o Humboldt-Viadrina Governance Platform: Berlin, Germany (2018).

⁷ Lahiri-Dutt, Kuntala. "The diverse worlds of coal in India: Energising the nation, energising livelihoods." Energy Policy 99 (2016): 203-213.

Revenue

Approximately 38% (284) districts in India exhibit some kind of coal dependency. These districts are either home to coal workers or coal pensioners or collect District Mineral Fund (DMF) revenues, or they benefit from the CSR spending by coal companies⁸. Further, for coal rich states, royalties received from coal mining are a major source of revenue and play an important role in the state exchequer. Royalty paid from coal mining in India increased from INR 99.73 billion in 2014-15 to INR 147.46 billion in 2018-19 with a CAGR of 8.14%⁹. In Jharkhand specifically, coal royalties accounted for 1.46% of GSDP in 2017-18, contributing 17.4% of tax receipts to the state exchequer¹⁰. Further, coal mining companies are mandated to contribute a percentage of their profits to District Mineral Fund Trust (DMFT) which are to be utilised for the social development of mining affected populations.

Our **field team in DMFT Chatra reported** that the state's revenue from coal mining has been increasing over the last three years and in the absence of an alternate source of revenue at the same level, it would be extremely difficult for the state and district administrations to transition out coal and look at alternate sources of energy.

Livelihood

The coal sector is a major source of livelihood in coal rich states. Studies report that phasing out coal will lead to long term unemployment for the affected population and could reduce their earning by upto 30%¹¹. Our **field teams in Godda and Deoghar** for example reported that transitioning from coal would severely impact livelihood in the district. Further, they observed that government initiatives for skilling youth in the district are not very successful because there is limited interest in them and that there are very few job opportunities post the completion of skilling programmes. It was also observed that a huge number of the population is involved in illegal mining in the area. As we look towards generating alternative sources of employment for the people employed in the coal sector it is also crucial to not leave behind this section of the population and look at ways to introduce them to the formal workforce.

⁸ Pai, Sandeep. "Fossil fuel phase outs to meet global climate targets: investigating the spatial and temporal dimensions of just transitions." PhD diss, University of British Columbia. (2021).

⁹ Bhattacharjya, S., Gupta, R., Mini, G., Chaudhury, S., Juneja, M., Sharma, K. "Assessing Vulnerability from Coal Dependence and Need for a Just Transition". The Energy and Resources Institute, New Delhi. (2021).

¹⁰ ibid

¹¹ ibid

Further, in at least seven districts across Jharkhand, Chhattisgarh, Uttar Pradesh and Madhya Pradesh, approximately 50% of people are already multidimensionally poor¹². Therefore, to facilitate a just transition it is of foremost importance that alternative sources of livelihood be generated before shutting down coal operations and gradual transition be carried out in order to minimise economic loss of the already vulnerable populations.

Social and Infrastructure Development

The coal sector is not only a major source of employment and revenue in coal rich states, but it has also led to infrastructural development in the districts. Mining activities have led to the construction of schools, hospitals, improved transportation in remote villages and stimulated the local economy¹³. Coal India and its subsidiaries, for example, spent 19.78 billion rupees between 2017-20 on CSR for various infrastructure projects in the region¹⁴.

Further, the establishment of DMFT under the Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY) is another way in which revenue from coal is being utilised for the social development of districts. Under the scheme various initiatives are being undertaken to provide education and health facilities and livelihood opportunities for mining affected populations. Our field teams in **Ramgarh, Ranchi, Pakur and Godda** report how the DMFT funds were utilised during the COVID-19 pandemic to provide immediate relief to people in the districts. In Pakur for example, the team worked towards ensuring a swift response to the COVID-19 pandemic by utilising DMFT funds for two purposes - (1) setting up Didi kitchens throughout the district so as to ensure free food to the migrants or anyone who could not afford food, and (2) to upgrade healthcare facilities and convert them to COVID care centres. Further, steps are being taken to build energy infrastructure which acts as a backbone to these health care facilities.

Therefore phasing out coal without a viable and feasible alternative for social and infrastructure development might put a halt on the ongoing social welfare programs and schemes in the region and might lead to the collective disenfranchisement of the already vulnerable populations.

¹² Chandra Bhushan and Srestha Banerjee. Five R's: A cross-sectoral landscape of Just Transition in India, International Forum for Environment, Sustainability & Technology (iFOREST), New Delhi. (2021).

¹³ Bhattacharjya, S., Gupta, R., Mini, G., Chaudhury, S., Juneja, M., Sharma, K. "Harnessing opportunities for a Just Transition in India". The Energy and Resources Institute, New Delhi. (2021).

¹⁴ Bhattacharjya, S., Gupta, R., Mini, G., Chaudhury, S., Juneja, M., Sharma, K. "Assessing Vulnerability from Coal Dependence and Need for a Just Transition". The Energy and Resources Institute, New Delhi. (2021).

India's Growing Energy Needs

As India continues to develop, there has been a substantial increase in the country's energy demands. Since 2000, India has witnessed a 60% increase in energy demand on a per capita basis. Given that India is heavily reliant on coal for its energy needs, coal demand per capita went up from 25% of the world average in 1990 to 60% of the world average in 2019¹⁵. India is also witnessing an increase in its electricity demand aided by the economic recovery post the COVID-19 pandemic related lockdown. Between April and September 2021 India's electricity demand rose by 12.7% to 707 billion units on a year-on-year basis¹⁶. While there is a push towards renewable sources of energy (especially solar) for fulfilling India's electricity demand, teams in **Ranchi, Deoghar and Godda** point towards the extremely expensive nature of equipment for solar energy and its unaffordability for the majority of the population. The Ranchi team also mentioned that they had been working on piloting hydro panels but realised their non feasibility due to extremely high cost (Rs 2.5 lakh per panel). They also highlight the long power cuts in the area pointing towards failure to meet the region's energy needs. Therefore, while a transition towards renewable sources of energy is essential, it is imperative that India's energy needs in urban as well as rural areas be fulfilled before we completely transition from coal in order to avoid any huge shocks to the system.

Talking to our **field team in Jharkhand** working on ecological and sustainable energy transformation in the state also revealed that while there has been a push towards renewable energy in the country, the market for the same is not mature enough. As we look to shift more and more energy from alternate sources, it is crucial that we not only focus on awareness and installation but also develop the market to cater to the entire value chain including post sale services. The team further commented on the huge dependence on subsidies for solarisation, which it argued is not sustainable in the long run. They also noted that currently while the public sector has been pushing for renewable energy, absorption in the private sector is minimal. This needs to change as we gradually look towards just transition.

The team also had important insights on the viability of phasing out coal. They argued that while we might shift to renewable sources of energy, due to variability in these sources (uncertainty regarding their availability when required) it is impossible to completely phase out coal as it would always serve as a secondary and tertiary power reserve. Pointing towards the gap in availability of solar power and consumption patterns (mostly in the evening once the sun goes down), the team opined that

¹⁵ "India Energy Outlook." World Energy Outlook. International Energy Agency. (2021). Accessed November 16, 2021. https://iea.blob.core.windows.net/assets/1de6d91e-e23f-4e02-b1fb-51fdd6283b22/India_Energy_Outlook_2021.pdf

¹⁶ Details on: <https://www.livemint.com/news/india/indias-electricity-demand-expected-to-grow-8-8-5-in-fy22-icra-11633330521291.html>

completely transitioning out coal would only be possible if we can develop enough storage capacity and infrastructure for renewable sources of energy.

Recommendations and Way Forward

While a just transition to renewable sources of energy is crucial for India and the world at large to mitigate climate change, currently the coal sector is a major source of revenue, livelihood, development and energy for India. In such a scenario, policy integration is essential for just transition. A pathway towards this transition can only be chalked by taking into cognisance the socio, economic and political ways in which the coal sector is intertwined in Indian society. Some of the steps that can be taken in this direction include:

- **Climate finance:** A climate investment fund (pool of financial resources to invest in new initiatives) can be created within the country to support low carbon, climate resilient economic growth. The pool of funds can be divided into two categories: clean technology fund (demonstrate, deploy, or transfer low-carbon technologies) and strategy climate fund (development initiatives like pilot program for climate resilience, scaling up renewable energy program and environmental conservation).

Further, the Central Government along with the Urban Local Bodies can focus towards a Credit Guarantee Scheme (CGS) to increase the flow of funds towards social enterprises in the climate technology and resilience projects. The CGS would help in making the lending for social enterprises easier by absorbing and sharing the risks associated with lending. The CGS would also help in increasing the amount of funds lent to the social enterprises beyond their collateral limits as the risk associated with the project would be shared by Central Government and Urban Local Bodies.

Similarly, locals along with donors (CSR, Central & State government, NGOs) can set up Hometown Trust Fund for financing the working capital for social enterprises in renewable energy space at seed stage. The Hometown Trust Funds are widely used by the Japanese government to support risky sectors such as solar and wind power projects. The working capital of the enterprise at the seed stage would help in initial operations.

- **Subsidising and promoting renewable energy:** In order to transition from coal to alternative energy sources, it is essential that the same are accessible to the most vulnerable sections of society who, as of now, are unable to afford it. Therefore, massive subsidies and incentives need to be provided by the government to be able to undertake the journey of just transition.

Further, integrating renewable energy solutions into different sectors will be crucial as we gradually transition from coal. Some of the steps that can be taken include:

- Reviving the backbone of the rural economy, by promoting agri - solar and wind projects, and usage of solar water pumps for cost effective irrigation solutions
 - Initiating roof-top solar projects for existing and upcoming infrastructures by targeting government buildings, hospitals, universities, office complexes, shopping malls and industries
 - Prioritizing the use of uninhabited land for large scale wind and solar projects and integrating both the technology for better energy generation efficiency
 - Ensuring optimum use of existing water bodies, for developing floating solar plants
 - Promotion of renewable energy generation through biomass, for better waste management
 - Aligning new constructions with the principles of sustainability and renewable energy to reduce their carbon footprints.
- **Reclaiming fallow land:** Teams in **Ranchi and Deoghar** point towards the ways in which barren land due to closure of mines can be used to create employment in the green sector in the region. Depending on the traditional livelihood of people of the districts, the land can be used to encourage afforestation and farming, among others. Funds from various State and Central schemes including MGNREGS can be leveraged for this purpose. This will also lead to the creation of alternative sources of livelihood during and after the transition.
 - **Skill development and generation of alternate sources of livelihood:** In order to ensure an effective transition it is essential to create enough livelihood opportunities for the people currently dependent on the coal sector. While skilling programs are already underway, they can only be effective if they are complemented with livelihood opportunities. For this purpose, mapping existing skill sets, identifying the most viable livelihood opportunities and re-skilling the workforce is crucial. Further, as we transition to alternate sources of energy, the workforce will need to be trained to adapt to the changing production process.