

This study explores the barriers to, and drivers of, India's energy transition away from fossil fuels and towards renewable energy and draws insights on how CIF supported projects have interacted with just transitions issues in the country. It uses a framework developed by the Just Transition Initiative – a partnership between CIF and the Center for Strategic and International Studies (CSIS) – to explore the diverse perspectives and approaches of the key actors involved in India's energy transition. This framework highlights the importance of considering both the distributional impacts of climate action, which includes the fair allocation of benefits and harms, and social inclusion that addresses the recognition and participation of marginalized groups in shaping transition processes. This case study was developed in collaboration with The Energy and Resources Institute (TERI).

CONTEXT & CHALLENGES IN INDIA

India is one of the fastest-growing economies in the world, with an average GDP growth rate of over 6.2 percent since 1990. Central to many of India's development plans is the accessibility to energy and its reliability. Although India's per capita CO₂ emissions are well below global averages, it is currently the third-largest emitter of CO₂ in the world, with sizable population segments extremely vulnerable to climate change.

The national government has thus set ambitious renewable energy goals that include the development of 175 gigawatts (GW) of renewable energy by 2022. However, such a transition away from coal and towards renewable energy will heavily impact its coal sector that currently provides 45 percent of India's total primary energy demand. This is why coal lies at the center of all discussions about a just energy transition in India.

There are several barriers to this transition. Until recently, coal was the cheapest way to provide energy. The supply variability of renewable energy and the cost of energy storage to manage this variability, along with limitations in the current grid infrastructure undermining its distribution, has affected the expansion of renewable energy. Furthermore, the Indian Railways' dependence on high coal transport payments to cross-subsidize passenger fares, has also made the move away from coal unpopular. There are also powerful vested interests striving to maintain the status quo, which is slowing down the transition process.

A particularly relevant aspect of India's just transition is the geographic distribution of the energy transition. The states in India with high solar radiation, and thus significant solar power generation capacity, are in the west of the country, while the coal-rich states are predominantly in the center and east. This geographic distribution raises important implications for



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how local-, state-, and national-level agencies need to manage the energy transition and its impacts on particular groups and regions.

Despite these barriers, there are multiple strong drivers towards an accelerated energy transition. India's vulnerability to climate change has put pressure on national and local governments to reduce fossil fuel use. In addition, the costs of installing

renewable energy are dropping rapidly to become competitive with even the cheapest fossil fuels; in fact, the latter's costs are under pressure on multiple fronts, including high transportation costs. Moreover, the declining employment in the coal sector, in contrast to the growing job opportunities in the renewable energy sector, is both a symptom and a driver of the energy transition. This reality highlights the need for conscious and proactive planning to manage the allocation of benefits and harms associated with the energy transition in India.

JUST TRANSITION FRAMEWORK IN THE CONTEXT OF INDIA

Although the concept of just transitions has not been used explicitly or extensively in India until very recently, approaches, such as 'environmentalism of the poor', environmental and social justice, as well as climate sustainability, have provided important direction to India's development agenda.

This case study applies a conceptual framework, aligned with these movements and others, to gain insights on how just transition considerations can inform the energy transition in India. The framework, developed by the Just Transition Initiative, includes dimensions of **social inclusion** and **distributional impacts**, with a cross-cutting consideration related to the **depth of intended change**.

Social inclusion, or procedural justice, refers to the recognition of all groups, with a proactive emphasis on the inclusion and influence of marginalized groups in decision-making processes. Distributional impacts address the allocation of the benefits and harms, associated with economic, social, and environmental changes. Each of the dimensions is considered along a continuum related to the depth of intended change from reform on one hand to deep systemic transformation on the other.

SOCIAL INCLUSION

India has had a long history of social and environmental activism that is focused on the recognition of people's rights at the local levels. Nonetheless, there remain groups who are often not recognized as direct stakeholders in the energy transition. Groups, such as Adivasis (Indigenous Tribes) and Dalits (Scheduled Castes), are often excluded from decision-making processes concerning land or discriminated against with regards to employment. Informal workers in the coal supply chain, especially women and children, are also seldom recognized as stakeholders directly impacted by the transition.

An example of unequal treatment is the decommissioning of the Badarpur Power Plant in New Delhi. Formal employees were offered employment at the Tughlaqabad sub-station, while contractual workers were not re-employed. Furthermore, no negotiated transition plan was put in place to protect contractual workers, leaving them worse off and vulnerable. Therefore, deliberate policy discussions on coal phase-outs are required at the national, state, and local levels. However,



JUST TRANSITION CONCEPTS AND PRACTICES HELP TO FOCUS ATTENTION ON IMPORTANT QUESTIONS RELATED TO CHANGE, INCLUDING:

- Who decides what kinds of transitions are needed?
- How are different groups included in the decision-making processes?
- Who benefits and loses in change processes?
- How can benefits be distributed and losses mitigated, in both safe and just ways?

at present, no convening body has either the mandate or institutional structure to support a socially inclusive dialogue on a just transition in India.

DISTRIBUTIONAL IMPACTS

Based on the high correlation between access to electricity, per capita consumption, and the Human Development Index in a country, the Government of India (GoI) has pursued the electrification of villages and households and made significant progress. Nonetheless, the quality of supply and access to electricity still varies across households, representing major challenges to a just energy transition. Many households remain reliant on biomass and kerosene for cooking, heating, and lighting. As women and girls do most of the cooking, poor access to electricity is highly gendered, in terms of distributional impact.

While there is nothing inherent in energy technologies, which predetermines whether transitions into or out of a particular energy source will necessarily be just or unjust, the transition away from coal in India is having negative impacts on coal-related employment. However, it will have positive environmental impacts, due to reduced forest clearing for mining and new plants, improved air quality, and decreased climate risk. At the same time, the transition toward increased renewable energy, requiring the use of large tracts of land for solar parks, also has both positive and negative impacts on livelihoods. While project-level environmental and social safeguards can help mitigate some of these localized impacts, it is important that energy transition projects link to broader just transition considerations across geographic areas, economic sectors, and social groups.

CIF IN INDIA

CIF and its partner multilateral development banks (MDBs) have contributed to India's energy transition through support for cross-sectoral and multi-stakeholder dialogues that have informed energy policies and plans and through financing of renewable energy and electricity transmission projects.

In 2010, CIF collaborated with the Asian Development Bank, the International Bank for Reconstruction and Development, and key national stakeholders to develop India's Clean Technology Fund (CTF) Country Investment Plan (CIP). A key component of CIP was to support India's National Solar Mission (NSM) — an initiative to increase India's solar capacity from 17.82 megawatts in 2010 to 20 GW by 2022. In 2015, Gol increased this goal to 100 GW by 2022, with 60 GW to be sourced from solar parks and 40 GW from rooftop solar systems. To support the CIP, CTF and MDBs provided technical assistance, capacity building programs, and concessional project finance to develop solar parks, energy transmission infrastructure, and rooftop solar power projects. These initiatives contributed to bringing utility-scale solar tariffs to grid parity and decreased financing costs for borrowers for solar projects across India.

A project-level analysis reveals that these initiatives have contributed to India's solar sector growth, and through Corporate Social Responsibility funding, to local socio-economic development in the vicinity of the projects. However, less evident are the socio-economic considerations and impacts extending beyond those addressed by project-level social and environmental safeguards. Given the geographic distribution of energy transition impacts and the need for economic diversification in districts currently dependent on coal, broader and well-coordinated local-, state-, and national-level planning and support processes are required to ensure just transitions.

INSIGHTS, IMPLICATIONS, AND OPPORTUNITIES

This case study identifies several implications and associated opportunities for CIF, MDBs, and other stakeholders to contribute to ensuring that the energy transition in India is just:

- **Modeling: Support complex system modeling on the barriers to and drivers of the energy transition to better understand and predict distributional impacts.** This modeling will provide a shared and informed basis for inclusive dialogues and planning while simultaneously mitigating the influence of narrow vested interests.
- **Social inclusion: Recognize and empower marginalized stakeholders by establishing local-level platforms to formally engage them and build their capacity to influence transition outcomes.** The marginalization of

informal labor and the exclusion of land users in coal regions and renewable energy projects highlight the need to proactively support social inclusion processes.

- **Partnerships: Establish working relations and capacity-building processes within and across national and state government departments for just transitions.** A programmatic approach, promoting cross-sectoral dialogues and governmental collaborations, creates opportunities for relevant energy projects to support just transitions at multiple scales.
- **Regional planning: Priority geographical areas need to be identified and plans developed, based on the relative impact of barriers and drivers related to coal transitions.** The disproportionate impact of the transition on 5–6 coal-dependent states highlights the value of and need for conducting focused vulnerability assessments and development planning, especially for regions at immediate risk.
- **Economic diversification: Develop detailed economic transition plans that include priority activities, timelines, and budgets through collaborative, informed, and empowered stakeholder engagement.** Transition plans need to include anticipatory skills planning, the repurposing of mines and power plants, the rehabilitation of mines and local environments, along with the planning of economic diversification in previous coal-dominated areas.
- **Finance: Develop budgets, including funding requirements, for the transition.** This needs to target not only clean energy projects, but also support for regions that will be affected by the phase-out of coal.
- **Safeguards: Establish the institutional frameworks, along with the environmental and social safeguards, needed to support the implementation, monitoring, and learning related to just transitions.** Current social and environmental safeguards provide project-level mechanisms for managing risk. Additional institutions and frameworks will need to be developed to build the capacity required for supporting just transition outcomes at the state and national levels.
- **Scale: Identify and mobilize state, national, and international institutions to support and scale just transitions and broader transformational change.** CIF and partner MDBs, as well as broader climate finance institutions, are well-positioned to support and learn from transition processes globally. They could, in turn, mobilize this learning to support just transitions through country engagements and project finance.