# Just Transitions in India

## A study by the Climate Investment Funds

**Background on the Climate Investment Funds**

The Climate Investment Funds (CIF) were created in 2008 to help finance accelerated transitions to low-carbon and climate-resilient development in low- and middle-income countries. Its programs finance clean technology, energy access, climate resilience, and sustainable forestry initiatives. CIF operates in 72 developing countries through six Multilateral Development Banks (MDBs) as its implementing agencies. CIF operates as a laboratory for developing, implementing, and evaluating new approaches to climate investments, as well as learning from them.

**Key Characteristics of Just Transitions 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 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 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 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.

**CIF's support to India's transition**

A 2021 case study report found that CIF and its partner 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 (IBRD), 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, GoI 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.

**Impacts of CIF Supported Projects on Just Transition of the Work Force and Creation of Decent Work and Quality Jobs/Economic Diversification and Transformation**

In 2014, the Government of India launched its ambitious 'Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects.' A key objective of this scheme was to accelerate the development of the solar capacity of large solar parks.

The **Bhadla Solar Park**, spread across more than 14,000 acres in a remote desert landscape, is the world's largest solar park with a capacity of 2,245 MW. The project achieved a levelized tariff (over 25 years) of USD0.36 (INR2.44) per kWh, achieving record-low tariffs. CIF co-financed ADB's support to the Rajasthan Renewable Energy Corporation (RRECL) to design and plan the solar park's infrastructure. In addition, ADB worked with the national transmission utility under a separate CTF project to evacuate the power from the solar parks in Bhadla to the national grid.

The Bhadla Solar Park contributed to improved employment opportunities. About 40 percent of the local workforce of 1,000 come from nearby villages. Most of the local workforce are employed in low-skilled jobs, such as security and solar panel cleaning. Additionally, some landowners were able to procure more productive land with the compensation received, thus potentially creating employment opportunities for laborers in the area. The Bhadla Solar Park also contributed to the creation of income-generating activities and alternate livelihoods specifically for women: 150 women were provided vocational training on embroidery work and handicrafts. 75 women were trained in basic accounting, finance management, and negotiation skills. 415 women benefited from Micro Enterprise Development Training on Animal Husbandry (Goat Rearing).

The development of solar parks in remote locations created many socio-economic opportunities that may otherwise have not existed. They also created benefits further afield such as cleaner and cheaper electricity that have the potential to support human development and economic growth. In the transition processes, these social and economic benefits could be proactively distributed in ways that contribute to more inclusive and equitable development. The focus on the communities in the near vicinity could be expanded to take into account systemic changes at local, regional, and national levels with a view to contributing more intentionally to a just transition.

CTF, IBRD, and other partners also implemented a USD 13 million technical assistance and capacity building program known as the **Sustainable Partnership for Rooftop Solar Acceleration in Bharat (SUPRABHA)**. Under the SUPRABHA Technical Assistance Program, the Skill Council for Green Jobs has partnered with 14 training institutions to train bankers, entrepreneurs, distribution company (DISCOM) officers, rooftop solar developers, and maintenance staff across 17 states. A total of 1,542 participants have been trained since mid-2018.

The aim of the training program designed for loan appraisal officers is to provide them with a thorough understanding of the structure of the Grid-Connected Rooftop Solar PV sector, business models, financing opportunities, risks and risk mitigation strategies, as well as project costing and evaluation. In the case of the training program for DISCOM officers, it provides an in-depth understanding on streamlining the processes of inspection and integration into the grid across the consumer spectrum. The Entrepreneurs Training program module, seeks to enable entrepreneurs to understand project management approaches, business models, financing opportunities, risks and risk mitigation strategies, along with costing, thus further accelerating the growth of grid-connected rooftop solar systems across the consumer spectrum.

The focus on skills development within just transition discussions and initiatives is often limited to reskilling coal miners to help them find alternative employment. However, just transitions, more broadly, are going to require significant decarbonization across the entire economy, and this, in turn, will open up a wide range of new employment and livelihood opportunities. The SUPRABHA program demonstrates that skills will be required across the entire economy, and particularly, across the emerging renewable energy sector, including the up-skilling of investment analysts, policy makers, distribution utilities officers, developers, installers, and maintenance staff. As areas such as new energy-efficient building standards, industrial decarbonization, the rehabilitation of coal mining areas, and the repurposing of coal fired power stations develop, so too will new opportunities arise and new skills be needed. This suggests that a key component of just transitions will be to anticipate new skills requirements across entire sectors and put in place the institutions and curricula needed to support the development of existing and emerging skills needs.

While these projects illustrate the kinds of local benefits that can be derived from climate investments, a just transition for India implies a much wider and deeper level of change that extends beyond local level impacts 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 and Lessons Learned**

The case study identified 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.

**Looking ahead**

CIF is currently exploring opportunities to provide support to countries pursuing just transitions. A recent Discussion Paper on just transitions further outlines some of the key roles and attributes of CIF and the MDBs to support just transitions through future investments. CIF's five new strategic investment programs are being designed to help create new green jobs and opportunities in the transition to a green economy. Two of these programs, which are for accelerating coal transition and integrating renewable energy, have received commitments of up to $2 billion, which the G7 welcomed in June, and will support developing countries in accelerating the transition from coal while investing in technology, job training, and infrastructure to unlock a more reliable and prosperous clean energy economy.