

# India's Green Odyssey: Navigating a Just Energy Transition

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## Abstract

*With climate change, comes the need for a rapid switch to clean energy and facilitating a just energy transition becomes even more imperative. The paper explores the concept of just energy transition, and delves into the realities of India's fossil fuel sectors and how it affects climate change and the green energy goals, thereby paving the need for a just transition framework that is tailored to India's unique circumstances. The Indian government has set ambitious targets for a rapid switch but it comes with significant energy justice concerns, particularly within the coal sector that accounts for a major portion of the current electricity generation in India. In conclusion, the paper sheds a light on the complex challenges with India's energy transition with a special focus on the coal sector. It aims to address the inherent issues of justice embedded with transition and thereby pave way for a more inclusive and equitable pathway towards a sustainable energy future in India.*

**Keywords:** *Just Transitions, Climate Justice, Coal, Sustainable Development, Renewable Energy, Energy Justice.*

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## Introduction

It wasn't until the global discussions over climate change, that the need and emphasis for an energy transition was recognized and highlighted upon at a global level to make a rapid switch to cleaner energy. To combat the catastrophe that comes with climate change, a global transition to renewable sources of energy instead of fossil fuel-based energy has been ongoing worldwide. Striking a harmonious balance between advancing economic development and safeguarding the environment has become central to achieve sustainable development and ensure just transitions.<sup>1</sup>

A key element for this predicated shift is the energy sector, more specifically, the power generation sector, which is a significant contributor to environmental degradation.<sup>2</sup> It has been made clear by the growing knowledge body and policy deliberations on climate change that a switch away from the fossil fuel economy is bound to happen. A fundamental transition in the generation of electricity derived from both non-conventional and renewable energy sources as well as the adaptation of deep industrial decarbonisation measures remain as the key focus. To achieve this, in the next three decades, aggressive efforts in terms of reduction in the production as well as consumption of fossil fuels will be required. Thereby encouraging the governments both at national and sub-national level to formulate policies, laws and plans that are supportive of this energy transition and will reinforce climate change action.

The Indian Energy Sector poses a formidable challenge for the possibility of attaining a profound and rapid structural transformation, more specifically on the country's surging energy demands and the question of how the supplies are met for the same. Given their massive potential in terms of emissions, such economies are debating on the conundrum between climate change versus growth. The dilemma of development, energy and environment brings forth the need for strategies to deal with the same.

What stands at the heart of multiple productive economic activities in India is the access to energy that is reliable, affordable and sustainable and thus provides us the potential to confront and acknowledge these developmental challenges that are being faced by the nation.<sup>3</sup>

Energy justice concerns also entails since 80% of the electricity consumption in India is driven through fossil fuel energy sources and given the deep dependency of coal, it is therefore imperative for the Indian government to formulate and negotiate a Just Energy Transition

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“Enabling Just Transition in India’s Power Generation Sector”, CUTS C- CIER <https://cuts-ccier.org/enabling-just-transition-in-indias-power-generation-sector/>

<sup>2</sup> Roy, Ashim, Benny Kuruvilla, and Ankit Bhardwaj, 'Energy and Climate Change: A Just Transition for Indian Labour', in Navroz K. Dubash (ed.), *India in a Warming World: Integrating Climate Change and Development* (Delhi, 2019; online <https://doi.org/10.1093/oso/9780199498734.003.0017>), Oxford Academic, 19 Dec.2019), <https://doi.org/10.1093/oso/9780199498734.003.0017>

<sup>3</sup> “Supporting Just Transitions”, CIF, (March 2021) [https://www.teriin.org/sites/default/files/2021-04/Project\\_Report.pdf](https://www.teriin.org/sites/default/files/2021-04/Project_Report.pdf)

Partnership (JTEP) deal that addresses the climate crisis and at the same time acts as a catalyst for a just transition for a largely coal-dependent country like India. <sup>4</sup>

In the coming years, there will be significant changes in terms of the production & consumption of the fossil fuel value chain due to the shift towards green energy in India. Despite being necessary for the development of a green economy, various segments including the workers, local communities and the areas dependent on fossil fuel industries, will significantly witness its impact. Therefore, a “just transition” is important, in order to avoid any trade-off between the environment and the economy especially in the fossil fuel dependent states & districts of India. Additionally, the implementation of a just transition will also be an aid in the nation’s commitment in providing opportunities for the socio-economic development in many coal districts of India and boosting the climate change action. <sup>5</sup>

This “just transition” which when implemented with good planning, can provide an aid in the diversification of the economy as well as securing decent work opportunities for the population residing in the fossil fuel dependent states and districts.

## **Just Transition: The Concept**

In order to attain the desired temperature goals as decided upon in the Paris Agreement<sup>6</sup>, it is needed that all sectors of the society incorporate prompt and fundamental shifts. While notwithstanding the precautionary measures and all the efforts put forth to combat the climate change, prediction is that the ongoing climate crisis will further amplify social inequality. <sup>7</sup> Thus, to preserve healthy and habitable conditions on the planet, climate action becomes imperative. However, the undeniable truth is that since different groups and regions have different capacities to react, adapt and benefit from the net zero transition gains<sup>8</sup>, thus these measures taken in order to attain climate neutrality doesn’t affect or impact everyone equally, thereby delegitimizing climate efforts and jeopardizing the transition. <sup>9</sup> In fact, the idea of a “just transition” gained momentum as a response to these challenges.

Mainly having its focus on labour union and efforts to acknowledge and act over societal and environmental concerns simultaneously by the frontline community, the concept found its origins in North American trade unions and environmental justice movements. However, the definition of just transition as it is today, goes beyond just labour issues with the expansion of the scope of climate change and sustainable development. <sup>10</sup> The concept has undergone a shift to a more comprehensive one from a very labour centric approach to one that focuses on

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<sup>4</sup> Sandeep Pai, “The G7 and Indian Just Energy Transition Partnership Roadmap” CSIS, (Last visited Nov. 1, 2023) <https://www.csis.org/analysis/g7-and-indian-just-energy-transition-partnership-roadmap>

<sup>5</sup> Chandra Bhushan & Srestha Banerjee, Just Transition Framework for India: Policies, Plans and Institutional Mechanisms, iFOREST (2023) <https://iforest.global/wp-content/uploads/2023/03/Just-Transition-Framework-For-India.pdf>

<sup>6</sup> <https://www.un.org/en/climatechange/paris-agreement>

<sup>7</sup> UNDP, *Human Development Report 2020—The Next Frontier: Human Development and the Anthropocene* (2020).

<sup>8</sup> OECD, “Framework for industry’s net-zero transition: Developing financing solutions in emerging and developing economies”, *OECD Environment Policy Papers*, No. 32, OECD Publishing, Paris (2022), <https://doi.org/10.1787/0c5e2bac-en>.

<sup>9</sup> Vilja Johansson, Just Transition as an Evolving Concept in International Climate Law, *Journal of Environmental Law*, Vol. 35, Issue 2, (July 2023) <https://doi.org/10.1093/jel/eqad017>

<sup>10</sup> Fikri Muhammad & Petra Christi, From Climate Financing to Just Energy Transition Financing, ORF, (May 25, 2023) <https://www.orfonline.org/research/from-climate-financing-to-just-energy-transition-financing/>

implementation of climate measures in a manner that protects and engages with the vulnerable and affected communities and people.<sup>11</sup>

The crux lies in the fact that there has to be a balance between economic development and protecting the environment in a way that no one is left behind in order to attain sustainable development and just transition.

## **International Perspective: The Global Policy & Initiatives**

Over the past few years, the concept became widely accepted within the United Nations (UN) and over various other International, national policy frameworks. It has been incorporated and mainstreamed into the UN by International Labor Organisation (ILO) with the established components of a sustainable development agenda.<sup>12</sup>

In 2015, at the Paris Agreement (COP21), Just Transition was included in the preamble<sup>13</sup> as well making a note of the urgency to address the challenges of climate change. At the Glasgow Climate Conference, (COP 26), a Just transition declaration was signed supporting conditions for a just transition globally, whereby the signatories resolved to support and aid in ensuring a just transition for the developing countries.<sup>14</sup>

The guidelines<sup>15</sup> for a "just transition" laid down by the UN's International Labor Organisation (ILO) 2015, provides a definitive model towards developing economies and societies that are environmentally sustainable for all. A tripartite multilateral negotiation amongst the unions, governments and employer's organization was made as a result of these guidelines. Unions and their allies put forth great efforts in order to get strong texts on the agenda of just transition in the agreement in response to the global climate deal which was a part of the negotiations that led to the Paris Agreement in 2015. The global climate deal here marks the historic milestone of nations committing themselves to curb global warming.<sup>16</sup>

The global north mainly facilitates a just energy transition through its national policies, laws, etc. For the largely coal dependent countries in the global south, Just Energy Transition Partnerships (JET-Ps) are emerging as a catalyst to support the measures of Just Transition.<sup>17</sup>The G7 nations launched JET-Ps, for helping emerging economies to transition from coal to technology that is low in emission, including with India, in order to facilitate a just transition of energy systems in such economies by extending financial aid and assistance needed for smooth and socially inclusive energy transition.<sup>18</sup>

## **Just Energy Financing**

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<sup>11</sup> Supra at 9

<sup>12</sup>Béla Galgóczi, Just transition towards environmentally sustainable economies and societies for all - ILO ACTRAV Policy Brief, (2018) [https://www.ilo.org/wcmsp5/groups/public/---ed\\_dialogue/---actrav/documents/publication/wcms\\_647648.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---actrav/documents/publication/wcms_647648.pdf)

<sup>13</sup>Paris Agreement", United Nations Framework Convention on Climate Change, United Nations, 2015.

<sup>14</sup> Supra at 5

<sup>15</sup> International Labour Organization (ILO), Guidelines for a just transition towards environmentally sustainable economies and societies for all, February 2016, Geneva, ILO, 2015.

<sup>16</sup> Just Transition Centre, Just Transition: A report for the OECD, (May 2017) <https://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf>

<sup>17</sup> Supra at 5

<sup>18</sup> Supra at 4

What stands as a big challenge is the transition to a low carbon economy. It will be socially, economically, culturally and politically painful to make this transition given the entrenchment of the carbon intensive industries. What is often being overlooked in the current financing model is that considerable investment is needed in order to address the needs of the affected regions. In the efforts of keeping up with the concept of justice, a shift to just transition financing is also needed. What this means is to enhance the adaptation capacity, paying greater attention is needed.<sup>19</sup> Through transparent social dialogue & institutional representation majorly focused on developing the livelihoods of the local community, a bottom-up approach should also be followed for the financing. Ultimately, the focus for a partnership of a just transition should extend its focus beyond climate mitigation financing and also be comprehensive of factors such as providing economic diversification, human resource capacity diversification, and any other factors supporting infrastructure.<sup>20</sup>

## **The Indian Context: Facilitating a Just Energy Transition**

Embarking upon its journey towards energy transition, there has been conscious efforts taken by India towards reducing its dependence on fossil fuels in terms of scaling up and expanding on its renewable energy capacity, usage of green hydrogen for energy storage, investments towards energy efficiency, policy measures and incentives provided by the government that enable green technology and energy, to name a few.<sup>21</sup> The massive scale at which India is attempting to ensure a clean energy transition comes with its own set of unique challenges. A crucial consideration in this regard would be to safeguard a just transition.

As a part of the United Nations Framework Convention on Climate Change (UNFCCC) and through the global climate commitment measures adopted by India, the nation also committed to make amendments in a targeted manner. To align with its international commitments and to simultaneously address environmental exigencies at a national level, an ambitious target was set by India in its renewable energy goals with updating its Nationally Determined Contributions (INDCs)<sup>22</sup>, that included renewable energy (RE) to meet 50% of the country's requirements by 2030 coupled with the net zero pledge.<sup>23</sup> India also demonstrated proactive leadership in the 2021 Glasgow Summit by setting its renewable energy targets to 500GW by 2030 & net-zero emissions by 2070.<sup>24</sup>

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<sup>19</sup> Supra at 10

<sup>20</sup> Supra at 10

<sup>21</sup> Pradeep Tharakan & Praveen Manikpuri, Ensuring a Just Transition is Key to India's Energy Transition Goals, ADB, (28 Apr, 2023) <https://www.adb.org/news/features/ensuring-just-transition-key-india-energy-transition-goals>

<sup>22</sup> Government of India (GoI). 2015. 'India's Intended Nationally Determined Contribution: Working towards Climate Justice'. Communicated to UNFCCC Secretariat. New Delhi, India: Government of India, <http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf>

<sup>23</sup> Sushmita Patel, Enabling A Participatory Just Energy Transition in India: Legal and Policy framework, JTRC <https://www.iitk.ac.in/JTRC/file/Enabling%20a%20Participatory%20Just%20Energy%20Transition%20in%20India%20-%20Legal%20and%20Policy%20Framework.%20Sushmita%20Patel.pdf>

<sup>24</sup> Stuti Halder, Ananya Peddibhotla, Amir Bazaz, Analysing intersections of justice with energy transitions in India - A systematic literature review, Energy Research & Social Science, Volume 98, 2023, 103010, ISSN 2214-6296, (<https://www.sciencedirect.com/science/article/pii/S2214629623000701> )/

Governments across the world are acknowledging the urgency to make amendments in their social, economic and even political priorities so as to bring down emissions dramatically in the wake of the recent Glasgow Climate Pact (COP26). With the ambition of reshaping every sector in the economy at the scale needed to deliver a net-zero future, Glasgow emerged as a platform for launching such innovative sectoral partnerships and a medium to provide new funding to support these as well. Additionally, the nation's commitment to formulate a Net Zero Plan for phasing "down" of coal took the centre stage. Apart from the Glasgow Climate Pact, collective bold commitments were made at COP 26 to combat climate change by measures such as halting & reversing forest loss, aligning the finance sector to meet net zero by 2050, restricting ethane emissions etc to quote a few.

By reshaping its policy framework to significantly grow the clean energy in its total installed capacity, India has now acquired a leadership position since the adoption & implementation of the 2015 Paris Agreement. In fact, in terms of the installed RE (Renewable Energy) capacity, which accounts for approximately 40% of the entire energy mix, India is currently at the 4th rank globally.

### **In Focus for Transition: Coal Sector and Associated Policies**

In the pursuit of an equitable and just transition, is essential to take into account the distributional impacts across various sectors, geographic scales, stakeholders, and time horizons. A critical domain for examining a just transition in India lies in assessing the interplay between the rapidly evolving renewable energy sector and the coal sector.<sup>25</sup>

It is known that coal dominates the energy landscape of India and therefore to meet the goals of the Paris Agreement, a rapid phase out of coal is required. However, this is obstructed by some major challenges, varying from vested interests to that of social disruption risks. It is vital for us to surpass the cost-effective scenarios of climate mitigation and let the previous coal transitions be a learning.

Around one-third of the CO<sub>2</sub> emissions globally is accounted by coal. Having notable negative externalities on the environment and health in general, this fossil fuel is one of the most carbon intensive ones and unlike oil or gas, could be easily replaced too. Thus, many countries now have the agenda of prioritising coal phase out and the political debates now revolve around how over the upcoming decades can we organise coal exits.<sup>26</sup>

It has been repeatedly insisted upon by the representatives of the Indian government being the G77 leaders in the negotiations for International Climate Policy, that because of the past & present-day high emissions, the targets for emission reduction becomes imperative. Nevertheless, the government of India has also pledged that by 2030, about 40% electricity will be drawn from non-fossil sources (both renewable & nuclear), as per the discussion outcome of the 2015 UN Climate Change Conference in Paris (COP 21). The skyrocketing demands for electricity is planned to be met with 275 GW of total generation capacity of renewable energy, and for that of coal-based capacity a total of 464 GW on top of the existing 478 GW. This was aimed to be materialized by 2022. Furthermore, the National Electricity

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<sup>25</sup> Supra at 3

<sup>26</sup> Francesca Diluio *et al* 2021 *Environ. Res. Lett.* <https://iopscience.iop.org/article/10.1088/1748-9326/ac1b58>

Plan also reiterates the decisions made for the abortion of the construction of coal fired power plants particularly those made between 2015 & 2016. Ultimately, as much as three times of power was generated through renewables, mainly the thermal power plants in 2017 alone as reported by the Central Electricity Authority in 2018.<sup>27</sup>

These enormous targets grant the rapid coal power plants phase out, accompanied with deploying of both off-grid and grid connected non-fossil fuel related utilities. However, given the complexity of India's transition problem, it is apparent that structural and policy reforms backed with climate finance are required to solve this.

In the next 2 decades, India's demand for energy is envisaged to be growing by 25% due to the amplified urbanisation as well as population density and thereby making it 3rd largest energy consumer globally. Thus, the policy dilemma of shifting to more sustainable sources and eliminating energy poverty is at the heart of India's challenge to energy transition. Thermal power (which is majorly coal generated), constitutes to 80% of India's total energy consumption currently. Having said that, it can be very well interpreted that thermal power is one of the main sources of generating employment (both direct & indirect) and also revenue generation. Moreover, with the transition related cost & benefits being unequally distributed, phasing-out of coal will be leading to concerns over social equity and energy justice given the lack of low-cost alternatives. People who lack the agency to influence these energy transition outcomes, including the marginalised communities, are at the brunt of such economic and social injustices.<sup>28</sup>

Hence, in India, energy transition has been identified as a top-down phenomenon thereby drawing the attention of policy makers as well as researchers towards the consequences of justice at both local and national levels and raising the question of "who benefits & how" and making it a catalyst in India's story of energy transition.

## **Conclusion**

Moreover, when we talk about a more fair or just and equitable transition especially in a country like India, just transitions would not solely mean decarbonization and its impact on the community, but rather it will be more on the lines of finding a balance between providing quick modern energy services to those who have been devoid of them and transitioning to a lower-carbon nation. While it is implied that this balance is imperative across all industries, it is also apparent that it will be vital in determining the change in India's energy sector considering climate change.

Involvement of both democratic and public control over the social and energy infrastructure ensuring that development requirements are met and the transitioning from coal to renewables does not come at the cost of those most vulnerable or the workers, is needed so as to have a "just transition". This means challenging privatisation further through formulating a

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<sup>27</sup> Brototi Roy & Anke Schaffartzik, Talk renewables, walk coal: The paradox of India's energy transition, PMC, (2020) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7547319/>

<sup>28</sup> Supra at 3

framework of public & cooperative ownership as well as management within the energy sector specifically with the coal and renewables production & distribution.

What will in fact be a determinant for India's program for a just transition is the particularities and the nitty gritty of India's energy institutions and trends. In order to minimise social and economic disruptions, it will be imperative for us to adopt a phased approach of transitions to ensure energy security. In this regard, formulating a comprehensive and exhaustive roadmap for phasing down of coal-based power production and decarbonising the industrial sector becomes crucial. This will encapsulate the judicious use of coal for developmental activities while also peaking its usage sooner and transitioning to renewable alternatives sooner. However, for countries like India, what is also needed for a just energy transition is an appropriate mix of sources and an overall growth in demand for energy, and which is why G20s emerging economies and G7 nations will have to look at the larger picture for reducing emissions, beyond phasing out of coal while also simultaneously ensuring growth in terms of economy as well as its alignment with other sustainable development goals (SDGs).