

Vichaar-Vimarsh

JUST

Transition

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ENHANCING STAKEHOLDER ENGAGEMENT FOR A JUST ENERGY TRANSITION

Message from the Desk of the Senior Director, TERI

On behalf of TERI, I take this opportunity to thank the researchers, practitioners, academia and civil society for their contributions to the newsletter. I am happy to inform them that the encouraging feedback we have received so far has resulted in promoting mutual learning and developing a diversified knowledge pool. TERI is happy to facilitate this discourse, broaden the engagement and deepen the understanding on the subject through this communication. I am sure that an initiative like this will also shape our future thinking and action and open the door for networking and collaboration as we share a common goal and aspire to build a resilient future through shared vision.

Given the dominance of coal in the energy mix in India, the transition to clean energy transition calls for a well-planned strategy, pathways and action plan to facilitate an orderly and smooth transition in the years to come. As we embark on the journey, let us spread the critical need for the just transition and alternatives for making informed choices and ensuring that the entire ecosystem is future-ready.

A K Saxena
Senior Director
Electricity and Renewables Division



TERI's Mission

To usher transitions to a cleaner and sustainable future through the conservation and efficient use of energy and other resources, and innovative ways of minimizing and reusing waste

Editorial

Over the last one and half years, the Just Transition Newsletter - Vichaar-Vimarsh has effectively enabled meaningful engagement of various researchers, practitioners and others who contributed immensely in shaping the discourse on a topic of the day that calls for a collective reflection and action for building a resilient future. The articles, blogs and photo galleries give a sense of ground realities in coal producing geographies, challenges and aspirations of the communities in and around the coal mining areas, coal transition and green economy perspectives as well as sociocultural and economic dilemmas.

The newsletter has been widely circulated ever since we launched it. So far, we have reached out to many and received encouraging response. We believe this would go a long way in bringing together various stakeholders for a dialogue which can become the foundation of an inclusive process. While this idea-exchange space helps collectively echo shared and varied thoughts, comprehend the complex reality, it also encourages articulating innovative solutions that could inform others, give a nudge and guide creation of the future roadmaps.

As we continue to engage with various stakeholders in the coal value chain, in our subsequent issues we will attempt to blend the nuances and complexities involved, ground insights and anecdotes, policy perspectives and potential opportunities around the themes of significance. A sustained communication on the theme of Just Transition and other inter-linked dimensions will indeed pave the way for an alternative thinking and decision-making in order to promote a greener economy and common good.

- Dr. Jayanta Mitra, Ph.D., Senior Fellow, TERI

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Together we have an opportunity to build a better future. Just energy transitions can improve jobs and livelihoods, and strengthen economic resilience. We affirm that no country should have to choose between fighting poverty and fighting for our planet. We will pursue development models that implement sustainable, inclusive, and just transitions globally, while leaving no one behind.

- New Delhi Leader's Declaration, G20 Summit 2023, India



GOVERNING ENERGY TRANSITION IN INDIA: A MULTISTAKEHOLDER GOVERNANCE FRAMEWORK TO SHIFT TOWARDS 'JUST' ENERGY TRANSITION.

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Ena colliery, Jharia. Photo credits: Apoorva Singh

The bridge between energy transition and 'just' energy transition lies in the governance process. Energy transition in India, as of now, is primarily rooted in the debates surrounding technology transfer and somewhat, its associated job losses. However, there is a need to shift from the conventional paradigm of energy transition and embrace the concept of just transition as an inclusive transition that would require the participation and upliftment of all stakeholders to ensure that no-one is truly left behind.

This article explains the challenge at hand, the role of multistakeholder governance/partnerships in ensuring

a just transition and proposes a framework to enhance interactions between relevant stakeholders. We also argue that women are important stakeholders of the energy transition process, and it is crucial to involve them in the governance process.

1.1 India's energy transition: challenges and opportunities of just transition

India is in the midst of energy transition, making a shift towards renewables from fossil fuel. Although India's



A JUST ENERGY TRANSITION PROVIDES A UNIQUE OPPORTUNITY FOR INDIA, AS IT STILL NEEDS TO MEET THE ENERGY NEEDS OF ITS CITIZENS. THEREFORE, ENERGY TRANSITION IN INDIA SHOULD NOT JUST AIM TO DECARBONISE, BUT ALSO ENSURE ACCESS TO MODERN ENERGY SERVICES FOR ALL ITS CITIZENS. THIS REQUIRES A SHIFT FROM A MERE ENERGY TRANSITION TO A 'JUST' ENERGY TRANSITION

energy economy is still coal dependent, being the fifth largest producer, but by 2030 there will be decline in coal mining and a surge in renewable energy deployment.¹ This transition process is not just technological but also has socio-economic implications. The closure of coal mines would not only lead to loss of livelihood of coal workers but entire communities dependent on coal, directly or indirectly. Furthermore, India's coal-belts also have a unique paradox. Despite these regions being rich in resources, the development is comparatively low to other parts of the country. Hence, without channelizing green investments into these coal pockets, transition will lead to more stress into the existing poor socio-economic conditions of these regions. Further, the informality of the energy sector, poor development imperatives in the coal belt regions, revenue loss through District Mineral Funds (DMFs), Coal India Limited etc. has amplified the magnitude of the problem. The discourse on just transition, which emerged as a labour union moment, has evolved to highlight these socio-economic implications of energy transition and trade-offs with other Sustainable Development Goals (SDGs). A just transition can be defined as a people-centric transition, which is needed to ensure sustainable livelihood of coal-dependent community.² This requires incorporation of energy justice principles- distributive, procedural, and recognition in the governance process.³

¹ Central Electricity Authority. Optimal Generation Capacity Mix for 2029–30. 61. 2020. Available online: https://cea.nic.in/old/reports/others/planning/irp/Optimal_mix_report_2029-30_FINAL.pdf

² Swarnakar, P, Singh, M.K, & Chatterjee, R. (2022). What is Just Transition? Perception of Grassroots Stakeholders. Kanpur, Uttar Pradesh: Just Transition Research Centre, Indian Institute of Technology Kanpur.

³ Jenkins, K., McCauley, D., Heffron, R., Stephan, H. and Rehner, R., 2016. Energy justice: A conceptual review. *Energy Research & Social Science*, 11, pp.174-182.

A just energy transition provides a unique opportunity for India, as it still needs to meet the energy needs of its citizens. Therefore, energy transition in India should not just aim to decarbonise, but also ensure access to modern energy services for all its citizens. This requires a shift from a mere energy transition to a 'just' energy transition.⁴

However, this shift comes with its own set of challenges. Unarguably, the costs required to address this issue are massive, resulting in stress on the existing financial architectures in emerging and low-income economies, which are still recovering from the pandemic.⁵ Further, the discourse on just transition is also evolving with blurred lines which makes the quantification of finance requirement, scarce and inadequate.

The main challenge that lies is that the implementation process is still top-down, focussing on technology transfer, rather than using a holistic approach. The main reason behind this is the lack of proper mechanisms and frameworks to govern this transition. Literature has argued that implementing a just transition in India, at the local level, involves decentralising local governance and engagement of local stakeholders.⁶

The next section highlights the role of multistakeholder governance in ensuring a just transition.

1.2 Multistakeholder Partnership is the key to make that shift from energy transition to 'just' energy transition

Against the current backdrop of world order, emerging and low-income economies sit in the middle of a unique seesaw where the financial requirement for the deployment of renewable energy is on the one end and the socio-economic loss from shutting down fossil fuel reserves on the other. Hence, existing literature stresses that to make the energy transition 'just', the three main stakeholders, i.e., government, industry, and civil society, should engage in a cohesive manner centred around good governance practises (accountability, legitimacy, and fairness).

The literature has highlighted the role of Multi-Stakeholder Partnerships (MSPs), as important

⁴ Swarnakar, P. and Singh, M.K., 2022. Local Governance in Just Energy Transition: Towards a Community-Centric Framework. *Sustainability*, 14(11), p.6495.

⁵ Zakeri, B., Paulavets, K., Barreto-Gomez, L., Echeverri, L.G., Pachauri, S., Boza-Kiss, B., Zimm, C., Rogelj, J., Creutzig, F., Urge-Vorsatz, D. and Victor, D.G., 2022. Pandemic, war, and global energy transitions. *Energies*, 15(17), p.6114.

⁶ Swarnakar, P. and Singh, M.K., 2022. Local Governance in Just Energy Transition: Towards a Community-Centric Framework. *Sustainability*, 14(11), p.6495.



governance instruments to solve complex challenges that require capabilities from different sectors.⁷ MSPs are less structured and steered in such a manner that autonomous policy actors combine forces in all stages of the policy process.⁸ A revamped enthusiasm for MSP grew over the last decade against the backdrop of a larger trend in global governance known as “multistakeholderism”. They gained more popularity as research suggested that the engagement of multiple stakeholders and non-state actors has the potential to fill in the governance gap created by the traditional multilateral processes.⁹ There were many moments where the emerging and low-income economies demanded a reform of the western dominated climate negotiations to operate outside its regular architecture, in which MSPs became a potential solution. Thus, multi-stakeholder collaborations can increase the efficiency of environmental governance through the involvement of a wide range of parties, which might boost representation and eventually raise the democratic credibility of global climate action.

THUS, MULTI-STAKEHOLDER COLLABORATIONS CAN INCREASE THE EFFICIENCY OF ENVIRONMENTAL GOVERNANCE THROUGH THE INVOLVEMENT OF A WIDE RANGE OF PARTIES, WHICH MIGHT BOOST REPRESENTATION AND EVENTUALLY RAISE THE DEMOCRATIC CREDIBILITY OF GLOBAL CLIMATE ACTION.

The role of MSPs can also be applied in the context of operationalising just transition, locally in India, as they can pave the way to mitigate the transition challenges by bringing in relevant stakeholders to address concerns such as representation, finance, etc. The literature points to a lack of governance frameworks for just transition.

⁷ Pinkse, J. and Kolk, A., 2012. Addressing the climate change—sustainable development nexus: The role of multistakeholder partnerships. *Business & Society*, 51(1), pp.176-210.

⁸ Danielson, M., Ekenberg, L. and Komendantova, N., 2018. A multi-stakeholder approach to energy transition policy formation in Jordan. In *Group Decision and Negotiation in an Uncertain World: 18th International Conference, GDN 2018, Nanjing, China, June 9-13, 2018, Proceedings 18* (pp. 190-202). Springer International Publishing.

⁹ Widerberg, O., Fast, C., Rosas, M.K. and Pattberg, P., 2023. Multi-stakeholder partnerships for the SDGs: is the “next generation” fit for purpose? *International Environmental Agreements: Politics, Law and Economics*, pp.1-7.

Taking on the existing frameworks and gaps highlighted above, we propose a multistakeholder governance framework, with MSPs as an instrument to govern India’s just energy transition (Figure 1). The framework highlights the importance of keeping the community at the centre of the governance process and partnerships among different stakeholders.

MSP framework can play an important role in solving the following challenges of energy transition

- 1. Reducing trade-offs with SDGs:** As highlighted in the previous section, energy transition has social implications and there are important trade-offs between renewable energy transition and various SDGs. MSPs cut across various sectors, with public and private actors participating in a non-hierarchical manner, which can open up opportunities for linkages between complex agendas.¹⁰ Further, MSPs also have the potential to fill the regulatory gaps of public governance as well as the limitations of all three actors (government, private, and civil society). Therefore, MSPs can help in minimizing the transition related trade-offs and integrate the transition and sustainability agenda.
- 2. Mobilising Finance:** India requires an estimated 900 billion US Dollars for a just energy transition vis-à-vis coal mines and thermal power plants over the next 30 years through investments in new industries and infrastructure and for grants/subsidies to support the coal industry, communities, and workers.¹¹ These types of financial quantification studies are scarce for India and often undermine the valuation as the social and ecological impacts of the energy transition are omitted. Hence, once a proper quantification is carried out, the finance estimated will be more, in which new and additional sources will be required. MSPs to some extent can fill in the gap by bringing multiple parties and pool in resources that will de-risk the whole investment chain. For example, India through MSPs in the future can engage in a certain multilateral or plurilateral engagement like the Just Energy Transition Partnership (JETP) which will aim to enhance investments towards just energy transition in the country. In such a partnership, the Ministry of Coal or the Ministry of New and Renewable Energy etc. can develop projects to seek funding from international

¹⁰ Pinkse, J. and Kolk, A., 2012. Addressing the climate change—sustainable development nexus: The role of multistakeholder partnerships. *Business & Society*, 51(1), pp.176-210.

¹¹ <https://www.hindustantimes.com/india-news/india-needs-estimated-900-billion-for-just-energy-transition-iforest-101679628545063.html>



financial institutions like the World Bank or the Asian Development Bank (ADB), who's on-boarding can leverage private funding. Through this ecosystem think tanks, non-governmental institutions and self-helps groups at project locations can also be part of the process and thus as a whole have the potential to mobilize new and additional sources of funding.

3. Enhancing community representation: The proposed framework puts community at the centre and partnerships that revolve around community engagement can enhance participation and representation, which can lead to an inclusive and just transition. However, an important thing to note is that the mere involvement of the community does not ensure a just transition. This is because there exist power relations, within the community, that can lead to only a few powerful and influential stakeholders being part of the discussions. The other stakeholders should ensure an inclusive community participation. We also argue that women are important stakeholders and their participation in the governance process is crucial. Women are impacted both directly and indirectly by the closure of coal mines and incorporating gender justice principles is important to ensure a just transition in India.

4. Knowledge Management: As highlighted, throughout the article, the normative understanding of 'Just' energy transition is incomplete, which undermines factors such as finance requirements, stakeholder engagement, policy choices, etc. The inclusion of academia, thinktanks, research units of

governmental and non-governmental organizations, which are critical pillars of MSPs, should be an integral part of a project. Through this, a new knowledge output can be developed at the end of projects which will help to better address the challenges of just energy transition throughout this article.

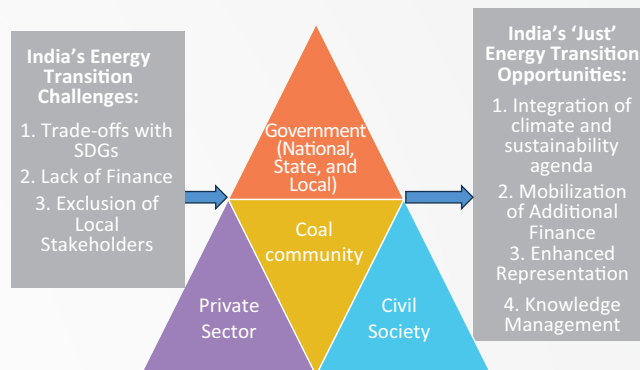


Figure 1: A Multi-stakeholder Partnership framework to govern India's 'just' energy transition

Source: Author's own compilation based on various sources¹²

¹² Swarnakar, P. and Singh, M.K., 2022. Local Governance in Just Energy Transition: Towards a Community-Centric Framework. *Sustainability*, 14(11), p.6495; Pinkse, J. and Kolk, A., 2012. Addressing the climate change—sustainable development nexus: The role of multistakeholder partnerships. *Business & Society*, 51(1), pp.176-210.

UNLOCKING STAKEHOLDER SYNERGY IN A JUST ENERGY TRANSITION

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TERI team in conversation with local Panchayat office/ trade union members in Chhattisgarh. *Photo credits: Jayanta Mitra*

The world is at a pivotal moment in history, where the decisions taken today will shape the energy landscape for generations to come. The transition to cleaner, more sustainable energy sources is not just an environmental imperative but also a social and economic one. Achieving a just energy transition is multi-fold and inter-dimensional. This requires active inclusive stakeholder engagement complemented by increasing the opportunities and quality of interactions among the different stakeholders. Meaningful engagement would determine the future pathway and make transition to an alternative green economy a reality.

The Just Transition Declaration made at the UN Climate Change Conference in Scotland (COP26) recognises the need to ensure that no one is left behind in the transition to net-zero economies, particularly those working in sectors, cities, and regions reliant on carbon-intensive industries and production. A just energy transition involves more than just reducing carbon emissions. It

entails a comprehensive approach that considers the following principles:

Equity: Ensuring that the benefits and burdens of the transition are distributed fairly across population and demography.

Inclusion: Engaging a diverse range of stakeholders, including marginalized communities, workers, and industry representatives, to provide input and shape the transition.

Employment: Fostering the creation of quality jobs in the renewable energy sector and supporting the retraining and transition of workers from fossil fuel industries.

Representation: Giving local communities a voice in decision-making processes and allowing them to participate in renewable energy projects.

Affordability: Ensuring that energy remains affordable for all, especially vulnerable populations.



2.1 Importance of stakeholder engagement

Adoption of technologies is clearly instrumental in shifting away from fossil fuel-based energy towards a decarbonized economy. Hence, decisions about the selection and implementation of technologies, along with the associated policies that drive these changes, will have profound effects on people and communities. These will have far-reaching, percolating implications for equity, jobs, environmental and energy justice, health, and more. Such a scale of transition requires representation on varied levels, which can aim to distribute the benefits and burdens of the transition fairly. Stakeholder engagement aligns with the principles of democratic governance that help identify and mitigate potential risks and negative externalities associated with the energy transition. It can facilitate collaborative decision-making with active feedback, dispute resolution, the adoption of best practices, and long-term innovative solutions. Local communities may have insights into environmental conditions, cultural considerations, and economic dynamics that must be leveraged to promote actionable ideas and on-ground demonstrations geared towards the transformation of the local ecosystem. Social dialogue with unions, employers, and the government, as well as active engagement with communities, international organisations, academia, and civil society (including youth), helps to create plans that are sustainable, culturally appropriate, and practical to implement. In other words, stakeholder engagement brings public support, fosters trust, fosters innovations, and contributes to the development of sustainable energy systems that benefit society.

2.2 Role of the government

The governments at different levels assume a pivotal role in enhancing stakeholder engagement in just transition, as they have the responsibility and authority to shape policies, regulations, and programs that guide the transformation of the energy sector in an equitable and sustainable manner. Along with policy development and implementation, the role of the government is to create a regulatory framework to encourage sustainable practices and minimise negative impacts on communities and ecosystems. These include setting emissions standards, renewable energy mandates, energy efficiency requirements, and environmental protections.

The key aspects of the government in enhancing stakeholder engagement can be categorised as:

THE GOVERNMENTS AT DIFFERENT LEVELS ASSUME A PIVOTAL ROLE IN ENHANCING STAKEHOLDER ENGAGEMENT IN JUST TRANSITION, AS THEY HAVE THE RESPONSIBILITY AND AUTHORITY TO SHAPE POLICIES, REGULATIONS, AND PROGRAMS THAT GUIDE THE TRANSFORMATION OF THE ENERGY SECTOR IN AN EQUITABLE AND SUSTAINABLE MANNER.

- Establishing a Legal and Regulatory Framework for Engagement:** Government agencies at national and regional levels should develop clear guidelines and procedures for stakeholder consultation during the energy transition. This framework should outline the objectives, principles, and methods for engagement, ensuring that it is inclusive, transparent, and accessible to all stakeholders. These regulations can require industry stakeholders, including coal mining companies and renewable energy developers, to engage with affected communities, workers, and other relevant parties when planning and executing transition initiatives.
- Institutionalizing Consultation Mechanisms:** Governments can establish formal mechanisms for stakeholder consultation, such as advisory committees, working groups, or public hearings. The primary objective is to create a dedicated government department or office responsible for overseeing stakeholder consultation in the energy transition. This department should have the authority and resources to coordinate consultation efforts across various agencies. The advisory committees or working groups should represent diverse stakeholders including industry entities, labour unions, environmental organizations, and local communities. These committees should have a defined mandate, membership criteria, and regular meeting schedules.
- Environmental and Social Impact Assessments (ESIA):** ESIA for just transition should involve inputs from affected communities and stakeholders, and their findings should constitute project decisions. "In general, assessing the social impacts of a just energy transition should follow a social impact assessment



methodology that identifies future studies of the energy transition on individuals, organizations, and social macro-systems, and reasonably assesses the related impacts. Referring to the international evaluation of social impacts of energy transition, quantitative and qualitative analyses such as life cycle assessment, shared socio-economic pathways, and integrated assessment model analysis methods can be used as references for both mathematical empirical studies and empirical case studies. In addition, the inclusion of social stability risk assessment as a tool can better promote social equity when assessing the social impacts of a just energy transition.” (Sun-Zhang-Wang-Shao, 2023)

- **Community Benefits Agreements (CBAs):** Collaborate with local communities to negotiate CBAs that outline the benefits communities will receive from the transition. Prioritize job creation, infrastructure investments, and other community needs.
- **Feedback Loops:** Feedback loops are iterative processes that involve gathering inputs, assessing and making adjustments based on those inputs. There are different feedback loops which work together to boost the expansion of low-carbon technologies and reduce the dependency on fossil fuels. These are volume-cost feedback loop, technology feedback loop, expectations feedback loop, finance feedback loop, society feedback loop, politics feedback loop and geopolitics feedback loop. The government should objectively consider these feedback loops and formulate structured feedback mechanisms in different stages of the transition. These include transparent inclusive data inputs from all stakeholders and demonstrate adaptive responsiveness to make clear changes like revising regulations, modifying workforce transition plans.
- **Data Collection, Sharing and Facilitating Dialogue:** Governments should ensure that relevant data, information, and studies related to the energy transition are accessible to all stakeholders. This transparency around informed discussions along with government agencies can serve as impartial mediators to facilitate constructive dialogue among stakeholders.
- **Accountability, Monitoring and Reporting:** Governments are responsible for holding stakeholders accountable for their commitments and engagement with other stakeholders. These majorly involve

compliance monitoring, audits, and penalties for non-compliance.

- **Conflict resolution and grievance redressal:** Properly structured dispute resolution mechanisms and grievance redressal frameworks can pave the way for expansion of the level and type of stakeholder consultation in just transition. The principles of arbitration, negotiation and mediation by government-appointed intermediaries can be instrumental in this regard.

2.3 Role of coal mining companies

Coal mining has a long legacy of providing needed jobs in isolated communities but it is also associated with places that suffer from high poverty and weaker long-term economic growth. While many EU countries have committed to phasing out coal-fired power plants by the 2030s and 2040s in order to reach their net-zero targets, developing countries still heavily rely on coal as source of electricity as-well-as employment. The new IEA Coal Transition Exposure Index highlights countries where coal dependency is high and transitions are likely to be most challenging: Indonesia, Mongolia, China, Viet Nam, India and South Africa stand out.

COAL MINING HAS A LONG LEGACY OF PROVIDING NEEDED JOBS IN ISOLATED COMMUNITIES BUT IT IS ALSO ASSOCIATED WITH PLACES THAT SUFFER FROM HIGH POVERTY AND WEAKER LONG-TERM ECONOMIC GROWTH.

Closing coal mines has implications for labour markets beyond mine workers. Since the coal mining sector creates a spill-over effect resulting in an increase in non-mining employment, it negatively affects workers along the coal value chain, hurts local economies reliant on mining, disrupts community well-being and social capital, and squeezes public finances. So it is inevitable for the coal-mining companies to emerge as significant players or drivers of the just transition progression. The coal-mining companies are to primarily decide on repurposing closed or abandoned mines and/or mine site redevelopment. The insights of coal-mining companies



constitute a large component of developing a stable inclusive framework for just transition which is likely to enhance their engagements with other players like governments and communities.



Office of the General Manager, Mahanadi Coalfields Limited. *Photo Credits: Apoorva Singh*

The modus operandi of the coal-mining companies should begin with the essence of long-term planning at both vertical and horizontal levels of participation, with additional analysis to identify and quantify points of dependency and transition risks across the coal ecosystem. This means they should identify the loss of livelihoods and assess the enablers and barriers to regional economic diversification alternatives and whether they are feasible and scalable. Vertical integration of stakeholder engagement would require the coal mining companies, government, civil societies and local communities to help in formulation of strong climate, just transition, labour market and social protection policies; whereas the horizontal integration implies cooperation among different departments within a particular stakeholder.

Numerous public and private sector enterprises are involved in coal mining operations in India. Coal India Limited (CIL) has spent Rs. 553.85 crore during the year 2020-21 on corporate social responsibility (CSR) activities which have impacted thousands of beneficiaries. NTPC has also spent two-thirds of its CSR funds for eradicating hunger and poverty, health care and sanitation,

education and skill development, and rural development. So the proceeds of corporate social responsibility (CSR) and how they should be spent form a very important aspect of stakeholder engagement on part of coal-mining companies as this requires insights from local communities also.

Any just transition pathway would require plans to secure coal workers' pensions in a sustainable manner such that even with the decline of coal sector, pension funds never cease to exist. Country-specific studies have shown that in United States, retired workers' pensions were negatively affected in the face of decline of coal sector. When coal mining industries decline, most workers and community members do not migrate after losing their jobs due to a strong sense of belonging and the fact that most workers are older and less skilled. Given such risks, discussions about formulating a structured pension plan for retiring workers and reskilling of younger employees would require both vertical and horizontal stakeholder engagement including coal-mining companies and the government. The successful closure of hard coal mines in Germany's Saarland and Ruhr region laid down several long-term plans including guaranteed pensions for older retired workers and jobs for younger workers.

In India, there are nearly half a million coal industry pensioners in 199 districts whose pension depend on the continuation of the coal mining sector (Pai, 2021). The pension is constituted by equal contributions from coal mining companies and workers, according to Coal Mining Provident Fund Organisation (CMPFO). However, in practice, the money to pay pension is derived from existing funds of existing workers and coal companies. So evidently, the absence of consolidated savings and structured pension implies the underfunding of the current and future pension plans. Several recommendations have been given by the CMPFO like increasing management contribution per tonne of coal produced, upper cap on pension drawn. These may result in pension funds being sustainable for short-term, but discussions about ensuring proper funding of future pensions is likely to require greater stakeholder engagement with the coal-mining companies.

2.4 Role of civil society organisations (CSOs)

Civil society plays a critical role in driving action to address the climate emergency and just transition. Civil Society Organisations are voluntary associations of people who join hands together for the achievement



of common economic interest. They are non-state not-for-profit entities that are separate from both state and market and aim to serve the poor marginalised sections of the society through the principle of self-help and mutual-help. These include community-based organisations, self-help group as-well-as non-governmental organizations (NGOs).

THE PRIMARY ROLE OF CSOS LIE IN GENERATING ENOUGH CONFIDENCE AND CREDIBILITY THAT THE PEOPLE NEED FOR BACKING STRUCTURAL AND TEMPORAL SHIFT IN THE PROCESS OF JUST TRANSITION.

The primary role of CSOs lie in generating enough confidence and credibility that the people need for backing structural and temporal shift in the process of just transition. Their engagement at various levels along with government and coal mining companies is necessary for identifying infrastructural and social vulnerabilities subject to a region, before framing long-term strategies for just transition. The phasing out of coal mines from pre-established regions would not only mean the loss of existing infrastructure capabilities and the social capital associated with it, but also the collective disenfranchisement of programmes and initiatives that rely heavily on the influence and financial capital of coal companies. It is the active responsibility of the civil society organisations at the national, municipal and panchayati level to sensitize top stakeholders and policy-makers like representatives of coal-bearing regions, government agencies about the idea and need for effective just transition planning. These imply the need to create roadmaps and mechanisms where the existing infrastructure and initiatives can be leveraged to create positive externalities on different dimensions like investment, development, industry diversification.

In order to accomplish a decentralised, smooth transition at the lowest levels (mine/zone/district), all stakeholders must be actively taken into consideration. Labour unions must be part of the events and discussions from day one to avoid resistance in the future. There should be proportionate representation in the labour union for the marginalised sections that are directly or indirectly impacted by the just transition. In India, as in many other

countries, women along with tribal people are likely to be disproportionately affected by this transition in several ways. Women are primarily employed as informal workers in the coal sector. In many cases women collect coal at a greater risk of vulnerability while giving it to their husband who sell at higher price. As a result of the energy transition and job loss, women will also be indirectly impacted as men will face financial difficulties at home which will lead to rise in alcoholism and domestic violence. The underrepresentation of women in decision-making forums diminishes the chances that their concerns on mine closure will be effectively heard. Since the coal belt lies in the eastern side of the India and predominantly in the tribal belt, they will also be immensely affected by the just transition. Many tribal communities in India lack access to essential social services such as healthcare, safe drinking water, and sanitation. A just transition may put additional burden on these resources or fail to remedy these inadequacies. The lack of participation of tribal communities can result in policies and projects that do not consider the unique needs and concerns of these communities. Prior-informed consent and meaningful participation of tribal communities in decision-making processes of just transitions in India should be ensured so that it does not disproportionately harm tribal communities. Many in the mining areas do not understand terms such as 'just transitions'. There has to be a concerted effort to make miners aware of the decisions being taken to close or repurpose old mines, and with enough time. Civil society organisations and think tanks could carry out ethnographic studies on the grass-level rather than relying on 'helicopter' surveys or telephonic interviews. Public awareness campaigns are to be initiated by CSOs to make the locals aware of basic terms like 'just transition', emission intensity of fuels and to resolve the information asymmetry about how energy transition will impact regional employment, livelihood and how to raise funds for redevelopment and rehabilitation. Media can play an important role in disseminating information about the need for a just transition, its goals and potential benefits and the cost it inflicts. It acts as an important connecting link among the different stakeholders in just transition and the general mass population. It provides a platform for the marginalized and affected communities to voice their concerns, share their experiences, and participate in decision-making processes through op-ed, general discussions and talk show.

The District Mineral Foundation (DMF) is one the key resources for economic diversification in coal districts in



India. As a benefit-sharing scheme for mining-affected communities, these funds are formed out of royalty from coal companies and are intended to be used for investment plans to promote just transition and local industries like forestry, fisheries. The effective utilization of these funds should not be treated as exogenous exclusive policy instruments, but should be included in the extended purview of the civil societies and local communities. Not just as mere novelty initiatives, but DMF funds are required to be targeted towards the benefits of local population in the process of just transition.

The experience and notions of civil society organisations are required for effective stakeholder mapping exercise in order to identify local and regional ambitious representatives who may facilitate meetings and events for community engagement. Additionally, the CSOs need to develop and present mechanisms to understand the needs and concerns of non-unionized workers (indirect, induced and informal coal employees) and female employees who are very often under-represented in regional governance. These are linked with different decision-making paradigms like reclamation of mines – whether to abandon them or restructure them; decommissioning of coal infrastructure- environmental remediation of mines and/or shift to a type of clean energy conducive to the geography and demography of the particular region. Thus proper guidelines are needed to be drafted for closure and reclamation of mines and how they can be converted to local tourism and/or alternative diversifications like industrial parks, solar parks. Insights of CSOs are instrumental in recognizing the optimal alternatives for employing the marginalised sections of the region and including the gender perspective of that particular region.



Photovoltaic panels at the Boortai Coal Mine, Inner Mongolia region, China.

Source: <https://global.chinadaily.com.cn/a/202205/05/WS62732582a310fd2b29e5aa7d.html>

The establishment of Industrial parks and solar parks in a post just transition scenario can help diversify the local revenue stream and provide economic stimuli to boost employability and poverty-alleviation. Several states in India like Uttarakhand, Himachal, Punjab, Andhra Pradesh and Telangana have gradually shifted towards a land-leasing model in order to fast track the establishment of solar energy projects in their respective neighbourhoods, boost clean energy investments and enhanced employment levels. Another instance of pro-activeness is shown by the state of Jharkhand which has become the first Indian state to have created a dedicated just transition task force to assess details about the dependency of the local communities on the coal economy and hold series of consultations with key stakeholders such as industries, business sectors, PSUs, and civil society organisations.

A pragmatic workable narrative of just transition is witnessed in Port Augusta which is the epicentre of South Australia's energy transition. On one hand, the unplanned closure of 68 years-old coal station had left many without work, but on the other hand the residents decided on what they wanted: Aurora solar energy project. Port Augusta is an unusual example of social dialogue for just transition because it started with a bottom-up process driven forward by civil society, community members, workers and their union, rather than a top-down process driven by government or employers.

As part of Canada's commitment to phase out of conventional coal-fired electricity by 2030, the establishment of a task force for just transition for Canadian coal power workers and communities in 2018, is another case-study where Canadian Labour organisation and unions have won commitment from their Government to form the same, as part of Canada's national strategy on climate change, in order to ensure that workers and their communities are protected during the phase-out of coal-fired power plants.

2.5 Conclusion

The transition to low carbon economy and discourse on energy transitions at the international stage – the G20, the G7, the annual Conference of Parties (COP) and many more – rallies around the phrase “just transition” or “just energy transition”. This is not just a fancy jargon, but a real paradigm which requires targeted infrastructure development and allocation of resources for promoting and expanding stakeholder engagement. More focus is needed on better co-learning opportunities among



TOP-DOWN APPROACH HAS TO BE COMPLEMENTED BY BOTTOM-UP APPROACH FOR CALL-TO-ACTION SO AS TO CREATE AWARENESS ABOUT THE ISSUES AT VARIOUS FORA AND LEVELS OF JUST TRANSITION.

various stakeholders and means to implement them in such a way that reflect a proper assessment of local-level risks and regional benefits. Top-down approach has to be complemented by bottom-up approach for call-to-action so as to create awareness about the issues at various fora and levels of just transition. Education and capacity-building initiatives are needed to be coupled with collective commitment towards building resilience. Different multi-lateral bodies, agencies at different levels of governance should cooperate for adequate finance and monitoring to study, identify, anticipate and mitigate the incidence and impacts of 'just transition divide' across communities and regions.

The Global North, which has lessened its reliance on coal, is attempting to persuade developing nations to do the same by verbally promising to pay for initiatives like mine closures with a multi-stakeholder approach including worker rehabilitation and reskilling. India would eventually need a lot of assistance and funding as it moves away from coal (According to a recent iForest research, the cost of energy transition to be USD 900 billion). Given India's massive reliance on the coal mining industry, there must be a clear plan that directs action in the ensuing decades. It must take into account all points of view while maintaining a non-negotiable stance that prioritises national interests and livelihoods related to mining. While external financing (such as grants and low-interest loans) will be required, we must first look within. Building institutional capacity at the ground level

is the first proactive step. At the recent G-20 meeting, the Ministry of Coal has presented a 'Just Transition Roadmap' at Energy Transitions Working Group (ETWG) meeting. India has even called for 'phase-down of fossil fuels' and not just coal which is yet to prove visionary in the journey of just transition.

References:

- Bhattacharya, Souvik et al, "Assessing vulnerability from coal dependence and need for a Just Transition", (TERI) 2021, <https://www.teriin.org/policy-brief/working-paper-assessing-vulnerability-coal-dependence-and-need-just-transition>
- Bhattacharya, Souvik et al, "Harnessing opportunities for a just transition in India", (TERI) 2021 https://www.teriin.org/sites/default/files/2021-06/Harnessing-opportunities-Just-Transition_WP2.pdf
- Just Transition Centre, "Just Transition A Report for the OECD" 2017 <https://www.oecd.org/environment/cc/g20-climate/collapsecontents/Just-Transition-Centre-report-just-transition.pdf>
- Pai, Sandeep, "Building Bridges to a Just Transition: Connecting India's challenges and solutions with international experience" (IISD) 2021 <https://www.iisd.org/system/files/2021-06/building-bridges-just-transition-india-en.pdf>
- Singh & Victor "Establishing Women as a critical stakeholder in India's Energy Just Transition: Evidences from Jharkhand, Odisha and Chhattisgarh" TERI, 2023 <https://justtransition.in/images/reports/ESTABLISHING%20WOMEN%20AS%20CRITICAL%20STAKEHOLDERS%20IN%20INDIA'S%20JUST%20TRANSITION.pdf>
- Sun, Zhang, Wang and Shao, "Literature review and analysis of the social impact of a just energy transition" 2023 <https://www.frontiersin.org/articles/10.3389/fsufs.2023.1119877/full>



HOW CAN MEDIA BRING TOGETHER DIVERSE STAKEHOLDERS IN INDIA'S JUST ENERGY TRANSITION DISCUSSIONS?

Mayank Aggarwal, Independent Journalist



A deserted marketplace in Gelhopani in the vicinity of the Kurasia-Chirmiri mines, Chhattisgarh, active since the colonial period but seeing a downturn with closure of old quarries. *Photo Credit: Arpita Victor*

It is almost a cliché to note that India is an extremely diverse country but it is probably so true when it comes to India's energy needs. Grappling with issues of energy security, the world's most populated country is pursuing energy security by consistently increasing its coal production while at the same time trying to secure the climate leadership mantle with rapid adoption of renewable energy. These twin goals, whose geographical areas of operations within India are largely distinct, define India's complex energy discussions.

Before even arguing about the space for stakeholder consultation it is imperative to understand the extent to

which coal mining and thermal power plants are directly and indirectly connected to the lives of people. Over the past few years, there have been many researchers who have pointed out the extent to which people rely on the coal ecosystem.

According to the research conducted by Dr Sandeep Pai, an energy expert working in the field of Just Transition, at least 40% of India's districts have some form of dependency on the coal ecosystem. Another research by Swati Dsouza notes that at least 13 million people in India are employed in coal mining and allied sectors such as transport, power, sponge iron, etc.



AT LEAST 40% OF INDIA'S DISTRICTS HAVE SOME FORM OF DEPENDENCY ON THE COAL ECOSYSTEM.

Beyond studies, the reality is also starkly visible when anyone visits any coal mine area and witnesses every other business dependent on people and companies involved in coal mining. Whether it is a food business, transport, medical, clothing, hotels, etc., they owe some form of dependency to the coal ecosystem. In fact, it is not just the close-knit coal mining towns but the adjacent areas as well whose economy depends on them.

Spread awareness

According to the latest government figures, India is producing about 900 million tonnes of coal and in the next few years, it is going to increase to about 1.5 billion tonnes - primarily the central and eastern belt of the country.

If India decides on a peak year for coal even 10-15 years from now, even then the involvement of the coal-dependent population will not go down anytime soon. There is, however, no denying that the energy transition in India is already underway with India rapidly pushing for renewable power. So, irrespective of the time period when the coal phase-down kicks in, the stakeholders in India will need to understand the contours of the energy transition discussion. In such a scenario, the media has a significant responsibility to ensure any fear-mongering about coal mining suddenly closing down is avoided. Instead, the media will have the unique chance to spread awareness about Just Transition especially because in the Indian context just transition won't be limited to the labour involved in mining.

In fact, there is an opportunity for the Indian press to break down the meaning of just transition and the impact it will have on society. It can spread awareness about the impact of the energy transition on the livelihoods of people directly or indirectly involved, allied industries, coal mining centres and adjacent areas, forests, wildlife and water streams, etc.

Bring together diverse stakeholders

It is also important to understand that any energy transition conversation that is taking shape needs to

address many sections. To start any of these discussions, the most basic understanding that is needed is that in the Indian structure even though the decisions regarding India's energy policies are taken at the federal/national level, the states are critical actors as the country's system provides for multi-tier governance.

In addition to the central government and the states, formal and informal coal mine workers, transport workers, unions, allied industries, mining-affected communities, etc. are some of the sections that are important stakeholders in the Just Transition discussion. People dependent on forests impacted by mining or farmers dependent on water streams coming from such forests are also important in these conversations.

With such diverse stakeholders ranging from industry to political class, mining-affected communities directly impacted to people having induced jobs, the pool is huge. And in such an instance, what is often lacking is a space for multi-stakeholder consultation. Thus, the media at national, regional and local levels can be the thread that facilitates these conversations separately at different levels and also bring these diverse stakeholders together.

It can provide the stakeholders with a platform where different stakeholders openly share their views about the impact of the energy transition, and develop ideas to tackle it. It is crucial because more often than not, an open space for multistakeholder conversation is often missing.

Using vernacular language

Another vital responsibility that the media has is to talk to people in a language beyond English. Mostly, the energy transition conversations, discussions, workshops, etc., are focused in English which may be a preferred one for the policymakers but not for the affected communities.

The ground reality is that for the people whose lives are at stake due to the energy transition, who ensure that India has the energy it needs to grow, and who bear the brunt of policy changes, English is not the preferred language.

It has been repeatedly argued by experts, civil society leaders and community leaders working on the ground that any energy transition conversation that aims to win the confidence of people, bring them on board and involve them in discussions needs to happen in vernacular languages or the ones that they understand.

The argument is not in isolation and not without historical context. For instance, we have seen how so many people in India's villages and towns understand the



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meaning of climate change and its impacts without being exposed to those conversations in English. It is simply because so many people have worked and continue to work with communities on the ground in the language they understand. Similarly, for an energy transition conversation to succeed, it needs to use the language of the masses.

Capacity building

It is also clearly evident that in energy transition discussions, the entry-level of various stakeholders is different. Thus, for any informed multi-stakeholder conversation on Just Energy Transition, work towards capacity building of some of these stakeholders becomes crucial.

Whether it is the community leaders, informal workers, gender groups, unions, etc., it will certainly be a welcome step if experts and civil society organisations tie up with the media to carry out capacity-building exercises and workshops. These efforts can be aimed at building the capacity of the media as well as the above-mentioned stakeholders to understand the nuances of energy transition. It is because until they are armed with the knowledge about energy transition, how it will impact their life, what they need to demand and be careful about, etc., the just energy transition discussions won't be rich.

THE MEDIA BY BRINGING INTERNATIONAL EXAMPLES OF ENERGY TRANSITION CAN ALSO ENSURE THAT THE INVOLVED STAKEHOLDERS LEARN FROM WHAT MAY OR MAY NOT HAVE WORKED FOR OTHERS.

The media by bringing international examples of energy transition can also ensure that the involved stakeholders learn from what may or may not have worked for others.

Highlight lacunae and discuss the framework

The discussions on Just Energy Transition are complex and aim to touch so many levels of governance - politics, economy at the level of central and state government, business, livelihoods, infrastructure, health, education, gender, labour, environment, forests, technology, etc. In that context, the media's role is not just to play the role of facilitator to bring diverse viewpoints together but also to play the role it is known for - a watchdog.

For instance, major coal-dependent economies like South Africa took nearly a decade after a series of consultations across the country to develop an energy transition plan. A country like India, which is much bigger in terms of scale and diversity, definitely requires exhaustive work to bring a comprehensive plan.

At present, in India, the national governments and states are trying to form the broad parameters of a national-level Just Transition policy and framework. It is far from taking a concrete shape but every step matters. Media has the responsibility to ensure that any such exercise to create these frameworks and any such national or state policy is not finalised without involving critical stakeholders such as affected communities. Media's role becomes critical in ensuring that such policies or frameworks are not loaded in favour of one section. Moreover, it is not just one policy or framework, the media also needs to carefully dissect and raise questions about the numerous steps that contribute to the larger energy transition discussions to ensure accountability.

Discuss possibilities and alternate livelihoods

Beyond being a platform for facilitating conversations or acting as the watchdog, another important role that media needs to play is to discuss the livelihood-related issues that the energy transition will impact.

Whether it is the migration of people that phase down of coal projects may trigger, the reskilling/retraining of the population or exploration of alternate livelihoods, there are a plethora of livelihood-related conversations which need intense and detailed discussion.

It is also important because a gradual phasedown of the coal ecosystem, as and when it happens, and adoption of renewable energy, which is already underway, will be in different geographies. In that context, will it mean more



jobs in another part of the country? Will the clean energy transition mean more jobs and more livelihoods for the fossil-fuel workforce is something that the media can explore while working with civil society?

Trust deficit

In India, the definition of transition is beyond how it is conceived in Western countries where it is primarily about labour. Moreover, there is a lot of tension between different stakeholders due to various issues including a historical trust deficit where communities residing in resource-rich areas were often uprooted and displaced.

THE MEDIA'S ROLE AS A FACILITATOR AND A WATCHDOG IS ALSO TO ENSURE THE ROADMAPS, FRAMEWORKS, AND POLICIES BEING DEVELOPED TO ADDRESS JUST ENERGY TRANSITION STAY TRUE TO THE SPIRIT OF TAKING ALL STAKEHOLDERS TOGETHER.

The media's role as a facilitator and a watchdog is also to ensure the roadmaps, frameworks, and policies being developed to address just energy transition stay true to the spirit of taking all stakeholders together. It needs to ensure that the trust deficit is being bridged rather than being widened in favour of only a powerful few.

Just Energy Transition in India is a very intertwined and very complex phenomenon. It will need an approach wherein a comprehensive mechanism is needed but at

the same time due to the kind of stakeholders involved, it will also need a decentralised approach to address the concerns of communities involved.

The Just Energy Transition in a diverse country like India gives an opportunity for transformative justice that is focused on people, and communities involved. It means policy making at various levels and thus media can play the role of check and balance at most of the steps. It can play an integral role in the country's energy transition policy.

References

- Dsouza, S., & Singhal, K. (2021). Socio-economic impacts of coal transitions in India: Bottom-up analysis of jobs in coal and coal-consuming industries. National Foundation for India. <https://nfi.org.in/sites/default/files/publication/cti.pdf>
- Pai, S. (2021). Fossil fuel phase outs to meet global climate targets : investigating the spatial and temporal dimensions of just transitions. University of British Columbia. <https://open.library.ubc.ca/soa/cIRcle/collections/ubctheses/24/items/1.0398719>
- PIB. (2023a). No Coal Shortage; 8.51% Increase in Domestic Production till June 2023. <https://pib.gov.in/PressReleasePage.aspx?PRID=1942029#:~:text=The%20all%20India%20Coal%20Production%20in%20the%20year,year%202013-14%20with%20a%20growth%20of%20about%2058%25.>
- PIB. (2023b). With 16% growth coal production touches 698.25 million ton during April 2022 -January 2023. <https://pib.gov.in/PressReleasePage.aspx?PRID=1901930>



GREEN JOBS AND SKILLING IN RENEWABLE ENERGY

Dr. (Mrs.) Parveen Dhamija, Advisor, Skill Council for Green Jobs



A solar pump installed for irrigation subsidised by the Chhattisgarh Saur Sujala Yojana. *Photo Credit: Arpita Victor*

Green jobs are jobs that contribute to preserving or restoring the environment. As per the United Nations Environment Programme (UNEP), green jobs are positions in agriculture, manufacturing, R&D, administrative, and service activities aimed at substantially preserving or restoring environmental quality. Green jobs are a result of the transition to a decarbonized economy which involves changes in production processes and energy use through environmentally friendly technologies.

India has embarked on a journey to achieve net zero carbon emissions by 2070. This is expected to create a surge of investments in the job sector, representing an important opportunity for the creation of green

jobs. Various studies forecast that India's shift to a green economy could add up to 3.4 million jobs in the renewable energy sector alone by 2030.¹ Massive growth in the domestic renewable energy sector has already created thousands of jobs in India. As per the Renewable Energy and Jobs Annual Review 2022 by the International Renewable Energy Agency, there is an increase in employment in renewable energy worldwide, with the solar photovoltaic industry accounting for more than a third of the total renewable energy jobs. Employment in the biofuel sector has also seen impressive growth

¹ <https://www.ceew.in/publications/indias-expanding-clean-energy-workforce>



specifically in the areas of feedstock operations and biodiesel output. Similarly, in wind, focus is on growing offshore installations while in hydropower projects two thirds of direct jobs are in manufacturing.²

	World	China	Brazil	India	United States	European Union (EU27) ³
Solar PV	4,291 ^a	2,682	115.2	217 ^a	255	235
Liquid biofuels	2,421	51	874.2 ^a	35	322.6 ^b	142
Hydropower ^a	2,370	872.3	176.9	414	72.4 ^a	89
Wind power	1,371	654	63.8	35	120.2	298
Solar heating and cooling	769	636	42	19		19
Solid biomass ^{b,c}	716	190		58	46.3 ^b	314
Biogas	307	145		85		64
Geothermal energy ^{b,d}	196	78.9			8 ^b	60 ^a
CSP	79	59.2				5.2
Total	12,677^e	5,368	1,272	863	923^e	1,242^f

Figure 1: Estimated direct and indirect jobs in Renewable Energy worldwide by industry 2020-21 (thousands of jobs)

Source: Renewable Energy and Jobs Annual Review 2022, IRENA

India is now working towards making herself energy independent before the completion of 100 years of independence in the year 2047. It is proposed that we will reach net zero emissions by 2070. There would also be a network of CNG & PNG across the country, with a target of 20 percent ethanol blending (in petrol / diesel). The country is also emphasizing a circular economy. Additionally, India has also set a target of 500 GW of renewable energy by 2030 and has announced the National Hydrogen Mission to make India a Global Hub for Green Hydrogen Production and Export during next 25 years. We are now moving towards a Clean Energy Transition and thus the new opportunities from Green Growth to Green Job are opening up today for our startups & youth.

India is leading the global transition towards renewable energy with its cumulative renewable energy capacity of 175 GW (including large hydro) as of June 2023³. This makes India the fourth highest contributor to renewable energy globally. Solar energy remains the biggest driver of growth in the renewable energy sector, with an increase from 2.63 GW in 2014 to 49.3 GW in 2021⁴. The solar value chain typically includes solar manufacturing, design, business development, assembly,

² <https://www.irena.org/publications/2022/Sep/Renewable-Energy-and-Jobs-Annual-Review-2022>

³ https://mnre.gov.in/img/documents/uploads/file_f-1671012052530.pdf

⁴ <https://sscgi.in/wp-content/uploads/2023/05/Skills-Landscape-for-Green-Jobs-Report.pdf>

construction/ installation & commissioning, operation and maintenance etc. The solar industry, owing to this multi-stage process, has led to new & innovative ideas and entrepreneurial opportunities across different businesses with diverse clientele in segments like B2B, B2C, etc. As the solar industry continues to expand, other positions pertaining to legal, financing, Administrative and IT functions are also emerging at a rapid rate, making it an aspirational sector for employment.

To address the skilled manpower issue associated with sustainable development, the Ministry of Skill Development and Entrepreneurship (MSDE) has set up a separate skill council, "Skill Council for Green Jobs" for the purpose of developing competencies / skills in the domains of renewable energy, sustainable development and environmental issues. SCGJ was set up with a mandate to design and implement a wide range of capacity building and skilling interventions. SCGJ's key activities encompass all stages of training design and delivery including performing skill gap analysis, occupational mapping, developing qualifications based on industry requirements, etc. SCGJ enables the development of a skilled workforce aligned with the National Skills Qualification Framework. Based on sector analysis and interaction with stakeholders, SCGJ has so far, developed 53 nationally (NSQC) approved qualifications across various subdomains (e.g. Renewable energy, waste management etc) along with their courseware and training content.

Sector-wise Job Roles	NSQC approved Job Levels						NSQC Approved
	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	
Solar Photovoltaic	1	2	9	6	0	2	20
Wind Energy	0	1	3	2	0	0	6
Bioenergy	0	2	2	1	1	1	7
Waste Management	0	2	1	0	1	0	4
Waste Water Treatment	0	3	2	0	0	0	5
Green Hydrogen	0	0	1	1	0	0	2
Others	0	3	5	1	0	0	9
Total	1	13	23	11	2	3	53

Figure 2: Snapshot of NSQF aligned nationally approved Job Roles

As per a study by SCGJ titled 'Gearing up the Indian Workforce for a Green Economy', up to 35 million green jobs will be created by 2047 across emerging and traditional sectors. Sectors such as renewable energy, green hydrogen, waste management, electric vehicles, sustainable textiles and green construction are key sectors that will drive green growth in India and host the highest number of green jobs, especially in urban and peri-urban areas. The promised green growth is



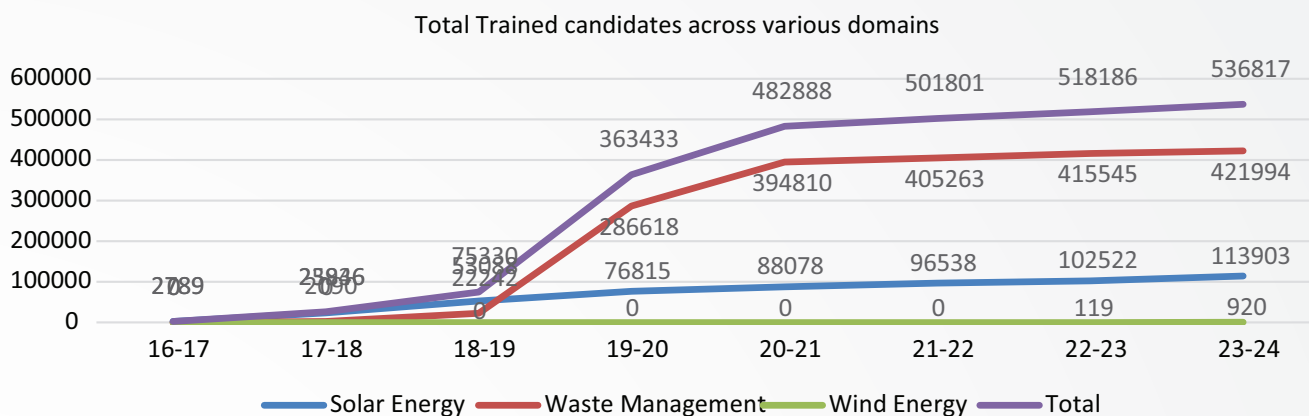


Figure 3: Trainings in Green Jobs

AS PER A STUDY BY SCGJ TITLED 'GEARING UP THE INDIAN WORKFORCE FOR A GREEN ECONOMY', UP TO 35 MILLION GREEN JOBS WILL BE CREATED BY 2047 ACROSS EMERGING AND TRADITIONAL SECTORS.

an opportunity for the country to create meaningful livelihoods, which could help leverage the global need for skilled human resources and achieve net zero targets for well-managed transitions for labour in traditional industries that are impacted as a result of these shifts.

Existing gaps and ways to bridge them

It is well known that there has been significant progress in skilling for the renewable energy sector but several gaps and challenges still persist. Addressing these gaps is crucial to harness the full potential of renewable energy and to support a sustainable transition away from fossil fuels. There is a need for a concerted effort from governments, educational institutions, industry stakeholders, and international organizations. By investing in standardized, inclusive, and up-to-date training programs, it is possible to close these gaps and build a skilled workforce that can drive the transition to clean and sustainable energy sources. The following strategies may be adopted to address these gaps and enhance the skilling of renewable energy professionals:

- **Increase access to training:** Access to quality training and education in renewable energy is not equitable. Rural and underserved communities often lack access to training programs, limiting their ability to participate in the green job market.
- **Update of technological advancements:** Renewable energy technologies are evolving rapidly, and training programs may struggle to keep pace with these advancements. Workers need to be imparted updated training to effectively operate and maintain the latest equipment.
- **Diversity and Inclusion:** There is often a lack of diversity in the renewable energy workforce. Women and underrepresented minorities are underrepresented in many green job sectors. Efforts to promote diversity and inclusion need to be a part of skilling initiatives.
- **Infrastructure Development:** Building the infrastructure for training and education in renewable energy, including laboratories, demonstration projects, and training facilities needs to be developed.
- **Addressing the limited availability of funds:** Insufficient funding and resources for skilling programs can limit their effectiveness and reach. Public and private investments are needed to support comprehensive training initiatives. Industries are also required to ensure the intake of skilled human resources.
- **Raise Awareness:** Launch awareness campaigns to inform individuals about the career opportunities and benefits of working in the renewable energy sector. Highlight the success stories of individuals who have pursued careers in renewable energy to inspire others.



- **Promote Transition Support:** Offer transition support programs for workers in traditional energy sectors to help them acquire new skills for renewable energy careers. Collaborate with unions and industry associations to ensure a smooth transition for workers.
- **Align Training with Industry Needs:** Collaborate closely with industry stakeholders to align training programs with the specific needs of the renewable energy job market. Conduct regular skills gap analyses to ensure training programs remain relevant.
- **Support Continuous Learning:** Establish lifelong learning programs that enable renewable energy

professionals to update their skills and stay current with technological advancements. Encourage participation in industry conferences, workshops, and webinars.

The progressive implementation of these strategies by stakeholders can bridge the gaps in skilling for renewable energy and create a skilled workforce that can drive the transition to clean and sustainable energy sources. We can thus unlock our full potential in renewable energy and create a sustainable ecosystem which will drive industry growth to encourage a just transition to sustainable economic growth.



STAKEHOLDER ENGAGEMENT IN COAL MINES FOR JUST TRANSITION

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People of Nepali Dhaura settlement in Dhanbad, Jharkhand. Photo Credit: Apoorva Singh

According to the International Energy Agency, India's current primary energy composition is primarily reliant on fossil fuels, which account for more than 80% of the mix (IEA). Among these fossil fuels, coal is expected to play an important role in meeting India's energy needs in the next decades. However, with India gradually progressing toward a clean energy transition and aiming for Net Zero emissions by 2070, a significant structural evolution in the production and consumption of fossil fuels within the economy is expected in the long run. These impending changes are expected to have a considerable impact on the workforce, local communities, and the economic fabric of districts and states, particularly those that rely heavily on coal for revenue and employment.

India is the second largest consumer of coal and coal has played a crucial role in India's energy sector, accounting for 55% of the country's energy needs and over 75% of its electricity needs¹. In addition, coal is also a vital ingredient and energy source in production of many important material/products viz. steel, cement, fertilizer, paper etc. Although in line with NDC goals and commitments made in its Panchamrit declaration at COP 26, India will push for renewable/non-fossil-based energy but share of coal in the energy basket is going to remain significant in foreseeable future.

¹ <https://www.niti.gov.in/sites/default/files/2023-02/Report-Committee-on-Low-Carbon-Technologies.pdf>

Currently there are no plans to shift away from coal or similarly related activities in the near or far future. Instead, new coal mines will be opened to meet energy and coal demand, which will involve consolidation in favour of big mine. Also, there would be significant coal demand for projected adoption of clean coal technologies such as coal gasification, coal liquefaction etc. In such a situation, coal consumption in the country is likely to peak somewhere between 2035 and 2040 and may undergo gradual tapering thereafter. This may result in phase-wise measured closure of mines – starting from low-capacity mines requiring closure on just transition principles. Besides, coal mines will also closedown in the intervening period due to exhaustion of reserves, safety problems, viability issues etc., requiring proper closure to ensure that there is no loss of income for people dependent on these mines. To ensure that livelihood of people dependent on coal mines, coal washeries etc., (collectively referred to as an ‘asset’ or a ‘coal-based asset’ henceforth) and connected community services are sustained post closure, we need to frame a policy and start skilling from now to ensure that coal assets are closed seamlessly on principles of just transition. This will enable coal sector developing a comprehensive mine closure framework and robust capacity for implementing mine closure practices on principles of just transition in coal sector by the time tapering of coal demand starts in the long run. The coal sector is deeply interconnected, not only to other sectors, but also to the local communities. Coal bearing regions have been subsumed into mainly monoculture societies centred around coal mining and its use. This has led to heavy economic and social dependence on the coal sector, with it affecting livelihoods, infrastructure, environmental conditions, state revenues, and quality of life in these regions.

To address these complex issues, a multi-level action and implementation framework is required with an aim to build a firm base and capacity to enable seamless handling of closure of coal-based assets happening in long term in a just manner. Toward this end, the suggested framework aims to address the key challenges brought about by the closure of coal-based assets. some pre-requisites to enable closure of coal assets on principles of just transition based on the action and implementation framework, proposed below.

Key Challenges in closure of coal-based assets -

i. Livelihoods: The coal sector provides employment to many people in coal bearing areas, either directly through mining companies, or indirectly through

contractors used by the mining companies. People are also employed downstream in the coal value chain, for instance in coal transport services. In addition, many aspects of the local economy are directly or indirectly supported by coal. Closure of coal mines would impact local economies, cause the loss of formal and informal jobs, and affect small enterprises. Any strategy for promoting just transition must address this challenge, and include development of alternate options for employment, such as training and skilling of affected populations, restoration of traditional livelihoods, and identifying new employment and entrepreneurship opportunities.

ii. Community health: Communities living in coal regions are provided facilities of medical care through the hospitals/dispensaries run by coal companies. The mine closure framework should ensure that such facilities are continued in some way in post closure period. Also, the entire mining area should be closed in a manner to ensure that the water and air regime is free from any harmful contaminant and land area is stabilized in environmentally sustainable manner.

iii. Physical and social infrastructure: Often, in coal bearing regions, there is lack of sufficient public infrastructure, and poor access to education and clean drinking water. Public sector entities (such as Coal India Ltd.) are known to set up infrastructure in these regions and provide access to these amenities. For instance, schools, hospitals, and roads set up by the mining company is used by the local community. The community may also be supplied with water for domestic and irrigation purposes. The framework/policy need to ensure that such social & physical infrastructure is sustained post closure.

iv. Repurposing of resources: The coal economy has significant impacts on natural resources such as land, water, and air. Coal mining, particularly the nationally predominant open cast mining, changes the landform by creating large pits and overburden mounds. Loss of forests and biodiversity is also seen with coal-related projects. Redressal of these impacts on the local environment is a challenge that must be dealt with as part of coal mine closure.

v. Public Finance: Coal mining and associated activities contribute significantly to the state revenue in coal bearing states. This contribution includes revenue from royalties on mining, District Mineral Fund contributions, and share of GST. The loss of such





Water being supplied by tankers in Rampur village, Jharsuguda. *Photo credits: Apoorva Singh*

revenue could impact existing state finances and public spending and worsen regional inequities. This aspect needs to be considered in the policy for just transition.

Pre-requisites to enable a just transition

- i. **Coal Transition Policy:** Given the complexity and long duration of the transition, a well-defined policy framework will be required. This will provide the necessary administrative and legal backing for the proposed actions. It is recommended that the central government should develop a coal just transition policy. This policy should be finalized after adequate consultations with relevant stakeholders and providing the public an opportunity to comment on the policy. The policy should be periodically (say, every five years) revisited and refined based on gathered experience.
- ii. **Regional development framework:** Coal-bearing states should prepare a broad framework and plan for a post closure future in these regions, based on consultations with the local communities. This framework can guide asset-specific redevelopment plans.
- iii. **Geospatial survey of coal bearing areas:** To understand the extent of assets being dealt with,

and the ground reality regarding the landscape, a detailed geospatial survey of coal bearing regions could be carried out to prepare a roadmap for coal mine closure.

- iv. **Financing:** The transition is likely to require significant financial resources (e.g., for ecological restoration in legacy mines, developing new employment opportunities, industries, skilling and retraining etc.).

Role of Stakeholder in coal Mines for Just Transition

Over 90 percent of India's coal mining industry is government owned, while private corporations hold large shares of the power sector. Four of CIL's seven subsidiaries dominate coal production within Jharkhand, owning over 90 percent of all active coal mines. Additionally, private enterprises such as Tata Steel and small government-run companies own mines as well. India has a widespread informal and illegal mining sector where coal is scavenged to use for domestic fuel or to sell on the market. Though there are more jobs in the informal coal sector than the formal sector, the informal workers remain largely underrepresented and unprotected. Given the importance of Indian Railways, it remains an important stakeholder for just transition planning nationally.

Stakeholders play a crucial role in the process of a just transition in coal mining regions. A just transition refers to a fair and equitable shift away from coal mining and its associated industries towards more sustainable and environmentally friendly alternatives.

Here are the key roles that various stakeholders can play in this process:

1. Government and Regulators:

- **Policy Development:** Governments must create and implement policies that support a just transition. This includes regulations to protect workers' rights, environmental standards, and financial incentives for transitioning to clean energy and other industries.
- **Investment:** Governments can allocate funds for retraining and reskilling programs, infrastructure development, and economic diversification in coal-dependent communities.

2. Coal Mining Companies:

- **Responsible Closure:** Mining companies should responsibly close coal mines, which includes proper environmental remediation and ensuring



the safety of workers during the transition.

- **Investment in Clean Energy:** Companies can invest in renewable energy projects or other sustainable industries in the same regions to provide new job opportunities.

3. Labor Unions and Workers:

- **Advocacy:** Labor unions can advocate for workers' rights during the transition, ensuring that they receive fair wages, job training, and support for reemployment.
- **Skills Development:** Workers can participate in retraining programs to acquire skills needed in alternative industries.

4. Local Communities:

- **Economic Diversification:** Communities can work on diversifying their local economies by attracting new businesses and industries that can provide jobs.
- **Environmental Conservation:** Local residents can advocate for responsible environmental practices during mine closure and the development of sustainable projects.

5. Environmental and Social NGOs:

- **Advocacy:** NGOs can raise awareness about environmental and social impacts of coal mining and advocate for cleaner alternatives.
- **Support:** They can provide support to affected communities and workers during the transition.

6. Academia and Research Institutions:

- **Research and Innovation:** Academics can conduct research on just transition strategies, renewable energy technologies, and sustainable development, contributing to evidence-based policies.

7. Investors and Financial Institutions:

- **Investment in Transition:** Investors can direct funds towards sustainable projects and companies involved in the transition, fostering economic growth in affected regions.

8. International Organizations:

- **Guidance and Funding:** International organizations can provide guidance, best practices, and financial support for just transition initiatives, especially in developing countries.

9. Civil Society and the General Public:

- **Awareness and Advocacy:** Civil society and the

public can raise awareness about the need for a just transition, support clean energy policies, and engage in advocacy efforts.

Collaboration and coordination among these stakeholders are essential to ensure a successful and equitable transition away from coal mining. The goal is to mitigate the negative impacts on workers, communities, and the environment while fostering economic growth in regions affected by the decline of the coal industry.

Potential of Expanding the Coal Mining sector.

In terms of new sectors, there is strong potential for solar energy projects in the state, including in coal-dependent districts. Today, most of the investments in the solar sector are going to western and southern states such as Gujarat, Rajasthan, and Karnataka. These states have suitable solar resources, available land, and policies for promoting the solar sector, such as net metering and tax holidays.

Areas with an average Global Horizontal Irradiance (GHI) above 4.0 kWh/m²/day are considered suitable for solar power, while areas with wind power Class 3 (A Wind Class 3 turbine is designed for an easy life with average wind speeds up to 7.5 m/s, and these turbines typically have extra-large rotors to allow them to capture as much energy as possible from the lower wind speeds they are subjected to). and above are considered suitable for wind power.²

The mines that have been closed/abandoned/discontinued due to multitude of reasons can be used for:-

- » Dumping /Filling of fly ash in to the worked-out area for suitable reclamation.
- » Development of eco and mine tourism parks
- » Afforestation
- » Pisciculture
- » Source to supply of drinking water and other domestic use.
- » Generation of sand from overburden of opencast mines at few places

CIL is also exploring the possibilities to develop ground mounted solar power projects in its suitable de-coaled area:-

- » De-coaled Mines may be used for constructing Pumped Hydro storage Projects.

² <https://www.nrel.gov/docs/legosti/fy97/22223.pdf>



- » Decoaled Mines may be used for constructing New Pit Head Thermal PowerStation.

STAKEHOLDER ENGAGEMENT IS AT THE HEART OF ACHIEVING A JUST TRANSITION IN COAL-DEPENDENT REGIONS. BY INVOLVING LOCAL COMMUNITIES, WORKERS, ENVIRONMENTAL ADVOCATES, GOVERNMENTS, AND INDUSTRY PARTNERS, WE CAN ENSURE THAT THE SHIFT AWAY FROM COAL MINING IS FAIR, SUSTAINABLE, AND BENEFICIAL FOR ALL.

Conclusion

Just transition in India in coal sector is not just about providing alternatives to the formal coal workforce; instead, it is about a broad-based socio-economic transition of the coal mining areas. A well-managed transition will require support of all level of government- centre, state and district, to develop and implement policies and plans, and mobilise funds. Transition of the coal PSUs will be crucial to minimise job losses and government liabilities. Bottom-up planning and convergence of various programmes at the district level will be essential for a successful transition planning. Stakeholder engagement is at the heart of achieving a just transition in coal-dependent regions. By involving local communities, workers, environmental advocates, governments, and industry partners, we can ensure that the shift away from coal mining is fair, sustainable, and beneficial for all. Through collaboration and proactive planning, we can navigate this transition successfully, leaving no one behind and building a more sustainable future for coal-dependent regions.



RAT HOLE MINING – A COMPLEX PROBLEM DEFYING EASY SOLUTIONS

Chaitanya Baruah, Intern, Electricity and Renewables Division, TERI



Extraction of coal near the Umso waterfall in East Jaintia Hills.

Source: <https://thewire.in/rights/meghalaya-illegal-coal-mining-agnes-kharshiing>

Meghalaya, a state in the northeast of India, falls in one of the richest biodiversity regions in the world. While the area is beautiful and enchanting, there lies a controversial history of coal mining, often called “rat hole mining,” which is largely ignored or overlooked by State government policymakers. The method of carrying out this mining is neither sophisticated nor scientific, but it has been the bread and butter for many living in the area and adjoining states. The continuance of this primitive form of mining comes at an enormous human and environmental cost.

Though the small-scale coal mining in Meghalaya started in the nineteenth century during the British period, it could not continue due to lack of profitability for them. The mining began to flourish only in the mid-1970s, particularly in the Jaintia Hills region. The Jaintia Hill

district, created in 1972, was later divided into two districts – East Jaintia Hills and West Jaintia Hills. The capital of East Jaintia Hills is Khliehriat, while the West Jaintia Hills district, created in 2012, has its headquarters at Jowai. Coal mining is one of the most pivotal economic activities in the Jaintia Hills Districts, Meghalaya. The mining methods employed are unscientific, unsystematic, and primitive. The two Jaintia districts have seven major coal-producing regions: Bapung, Lakadong, Musiang, Lamare, Sutnga, Jarain, Ioksi, and Khliehriat. According to the Indian Mineral Yearbook (2008), the geological coal reserve of the state stands at about 460 million tons. However, unofficial sources estimate the reserves to be over 600 million tonnes. The coal in Jaintia Hills is characterised by its low ash content, high volatile matter, and high calorific value. Moreover, it is sub-bituminous



and has a comparatively high sulphur content. With appropriate technology in its extraction and processing, this coal holds significant potential value.

What is rat hole mining?

“Rat hole mining” is a primitive method of manual coal mining that is unscientific and rudimentary. This technique exposes its workers to a high risk of accidents, leading to considerable environmental degradation.



Extracted coal in East Jaintia Hills waiting to be transported to destinations outside Meghalaya.

Source: <https://thewire.in/rights/meghalaya-illegal-coal-mining-agnes-kharshiing>

The process starts with felling trees and digging pits in hilly terrain. Miners subsequently create small horizontal tunnels into the hillsides. These tunnels are utilised to remove soil and, over time, to extract coal. This excavation persists until a coal seam is unearthed. The entrances to these tunnels, termed “rat holes,” typically measure no more than a metre in diameter. To extract coal, miners must delve deep into these confined spaces, armed with tools and a basket. Due to their limited width, these tunnels usually only accommodate one individual at a time.

In the ‘side-cutting’ variant of rat-hole mining, an opening is made on the hill’s side where a coal seam is visible from the outside or a potential coal seam is within. Through this slender tunnel, miners probe the hill’s interior for coal. If located, it’s manually extracted using basic tools.

The box-cutting method involves initially clearing the land by removing ground vegetation. Following this, pits spanning 5 to 100 m² are excavated vertically to reach the coal seam. The depth of these shafts can range from

20 m to 130 m, depending on the coal seam’s depth. Once the desired depth is achieved, horizontal, narrow tunnels are carved into the seam. Typically, due to the thinness of the coal seams, these tunnels have a height of approximately 3 to 4 feet.¹

The lack of safety measures in these mines is deeply concerning. Underground coal mining is infamously associated with a high incidence of worker accidents and fatalities. Miners venture into the mines early in the morning, equipped only with torches on their foreheads and little to no safety gear. Training is virtually non-existent, with newcomers predominantly learning by observing experienced miners. The working conditions within the mines are treacherous. Inadequate ventilation often results in deaths from asphyxiation. Furthermore, the interiors of the mines are thick with smoke, and when combined with poor lighting, visibility is drastically reduced.

Those working in the mines frequently suffer from many health issues including headaches, fever, tuberculosis, malaria, gastrointestinal diseases, diarrhoea, stomach infections, liver problems, jaundice, and overall weakness. Malaria and jaundice are particularly prevalent. These health issues could be attributed to the poor sanitation

DUE TO LIMITED MECHANISATION, COAL EXTRACTION AND LOADING HEAVILY DEPEND ON LABOUR-INTENSIVE METHODS THAT REQUIRE INTENSE PHYSICAL EFFORT.

in the mines and the scarcity of clean drinking water. Typically, the primary drinking water sources are either the local streams or underground water sources.²

Due to limited mechanisation, coal extraction and loading heavily depend on labour-intensive methods that require intense physical effort. Workers venture deep into the rat holes, labouring in these subterranean tunnels to extract coal. Their work schedules are unpredictable, without set hours. For many, the principle

¹ Saha, A. (2018, December 20). Where coal is mined via ‘rat-holes’. The Indian Express. <https://indianexpress.com/article/explained/meghalaya-illegal-rat-hole-mining-east-jaintia-hills-ngt-5501238/>

² Upadhyay, R., & Ranjan, G. (2016). Occupational risks in mining: The case of Nepalese migrant workers in the coal mines of Jaintia Hills, Meghalaya. *The Oriental Anthropologist*, 16(1), 87-98.



is straightforward: longer work hours lead to increased earnings. Within the mines, migrant labourers handle the digging, transporting, and loading of coal into baskets. Once the coal is brought to the surface, it's loaded onto trucks using cranes. Pay is based on tasks, and there's a considerable variation in wages and they normally earn around INR 600 -2,000 daily.³ Despite the inherent dangers of their job, concrete safety measures are noticeably absent. Workers receive minimal training and often lack essential safety equipment, which increases the risk of accidents and fatalities.

The coal from these mines gets sold both domestically, particularly in Assam, and globally, with Bangladesh being a prominent purchaser. It is roughly estimated that each year, Meghalaya exports an astounding 14 lakh tonnes of coal to Bangladesh, generating over INR 254 crore.⁴

Who are the Miners?



The small size of the rat hole mines mean that young children are sent to fetch coal from the tunnels.

Source: <https://freedom24x7.blogspot.com/2011/04/rat-holes-mines-in-jaintia.html>

Most of the labourers employed in rat-hole mining are child labourers from Assam, Bangladesh, or Nepal. These 10 to 14-year-old children who are trafficked into the state are compelled to work in hazardous coal extraction jobs in these mines, generally out of necessity to support their families. This practice breaches Article 23 of the Indian Constitution, which expressly prohibits human

³ Saha, A. (2021). When rat hole mining offers the only job opportunity. Times of India. <https://timesofindia.indiatimes.com/india/northeast-diary-is-meghalaya-trying-to-legalise-rat-hole-coal-mining/articleshow/95467928.cms>

⁴ Nongrem, W. I. (Year of Publication). Health and livelihood conditions of coal workers: A case study of Jaintia Hills of Meghalaya. MZUIR.

MOST OF THE LABOURERS EMPLOYED IN RAT-HOLE MINING ARE CHILD LABOURERS FROM ASSAM, BANGLADESH, OR NEPAL.

trafficking and forced labour. In addition, Article 24 of the Constitution prohibits children under the age of 14 from working in factories, mines, or other dangerous occupations. These mines utilise the archaic rat-hole extraction technique. The small size of the rat holes suggests that only children can navigate within them, as adults do not fit into them and that too without any safety equipment.⁵

Distinct Features of Meghalaya's Coal Mining Landscape

While coal mining occurs in various parts of the country and the world, three distinct characteristics differentiate it from conventional mining in Meghalaya. Firstly, Meghalaya's designation as a tribal state under the 6th Schedule of the constitution means all lands are privately or community-owned. Consequently, like limestone mining, coal mining operations are largely undertaken by private entities. Ambiguities emerge because the 6th Schedule doesn't explicitly cover mining, prompting environmental advocates to call for centralised oversight regarding mining and environmental regulations.

The second distinctive aspect is the state's geological composition. The coal deposits, primarily located in the Jaintia Hills, are in horizontal seams only a few feet high. This unusual formation makes open-cast mining unfeasible, leading to the prevalent practice of rat-hole mining.

Lastly, the workforce in these mines mainly consists of immigrants from Nepal, economically disadvantaged areas of Assam, and Bangladesh. The social dynamics in Meghalaya further intensify the situation, as non-tribals and marginalised tribals often feel like second-class citizens.⁶

⁵ Nath, M. (2018). Violation of Human Rights in Coal Mining Areas of Jaintia Hills, Meghalaya. *Journal of Ultra Scientist of Physical Sciences-Section B (Physics, Geology, Nano Technology Engineering, Bio Sciences, Material Science Management)*, 30(8)

⁶ Saikia, A. (2019, February 1). The hills are alive with black gold: Despite the tragedy, rat-hole mining in the Jaintia Hills is likely to continue. *The Hindu*. <https://www.thehindu.com/society/the-hills-are-alive-with-black-gold/article26150354.ece>



Disputes relating to Rat mining

On April 17, 2014, the National Green Tribunal (NGT) passed an interim order banning illegal rat-hole mining after the All Dimasa Students Union and the Dima Hasao District Committee filed a petition that highlighted the unscientific and unregulated rat-hole coal mining operations in the Jaintia Hills. However, following protests by the mining lobby, the tribunal allowed the transport of already-mined coal. This was however abused, reports from 3rd parties have explicitly shown that people were abusing this system and were extracting more coal and showcasing it as old coal. Later the Supreme court lifted the same ban in 2019 after fierce opposition from the Meghalaya government opposing the ban on mining. The Supreme Court stated their reason as the local tribal people were the landowners and the minerals beneath. They, however, said that for Meghalaya to continue their coal mining activities, they have to follow proper protocols as listed out in - the Mines and Minerals (Development and Regulation) Act, and the Mineral Concession Rules 1960 Acts.⁷

Despite rat hole mining being outlawed, there continue to be reported instances of its operation within the state. Tragically, many of these illicit activities have led to significant loss of life. The situation remains so dire that the Meghalaya High Court recently felt compelled to intervene. In a stern directive last month, the court ordered the state government to ensure that “not an ounce of illegally mined coal” is transported. Furthermore, it cautioned the chief secretary and the state police chief against yielding to any “political interference” in upholding the ban.

Conclusion

The persistence of this issue begs the question — why is enforcing the ban so challenging? Before its prohibition in 2014, the coal industry was a major contributor to the state’s revenue, raking in about Rs 700 crore annually, as per government sources quoted in the media. The wealth generated by coal mining transformed the financial status of many mine owners, catapulting them into the crorepati bracket. Many of these newly found affluent individuals transitioned into roles as contractors and politicians, further complicating the enforcement landscape. One more reason why rat mining persists is that the miners have no source of income if the mines are

shut down. To close the illegal rat mining activities, the miners need a “Just Transition”.⁸

The state of Meghalaya has a wealth of natural resources with enormous employment opportunities for these miners. Tourism, particularly ecotourism is one such promising industries. The state is blessed with fast moving rivers, waterfalls, breathtaking meadows, rich wildlife and enchanting mountains and forests. As a hilly region with a moderate climate, it is an ideal vacation destination.

Meghalaya’s unique culture could be a strong base for cultural tourism. Its distinct cultural identity, colourful customs and traditional lifestyles are certainly major attractions for any tourist. Besides, there are numerous monoliths and monuments, unique arts and crafts in the State. Sadly, local people are hardly aware of the economic value of their cultural heritage. Eco-tourists who are eager to learn about the indigenous culture can choose to have homestays in local households immersing themselves in cooking and eating, playing games and participating in religious rituals. However, such facilities and opportunities are not marketed well. It is therefore, up to the stakeholders particularly NGOs, District Council, Church and village headmen to work together.⁹

Another industry that has great income generating potential is horticulture. Horticulture should always do well in Meghalaya due to its favourable climate and topographical conditions. Sohliya village is an example of spectacular success in this area where an initiative led by the Technology Mission for the Integrated Development of Horticulture in the Northeastern region bore rich dividends. The mission worked in collaboration with the Government of Meghalaya. Similarly, Mawpran village in in the East Khasi Hills District also saw success in a similar venture. Sohliya was chosen as a test site for strawberry growing, and its massive success encouraged other villages in the neighbourhood to adopt this cultivation. In the villages where strawberry cultivation has been introduced there have been dramatic socioeconomic changes in terms of noteworthy rise in salaries, a boom in job prospects, and a significant overall improvement in the quality of life. Moreover, this shift in agriculture has stimulated the development of ecotourism in these regions.¹⁰

⁷ Special Correspondent. (2021, September 27). Meghalaya to resume coal mining despite green concerns. The Hindu. <https://www.thehindu.com/news/national/other-states/meghalaya-to-resume-coal-mining-despite-green-concerns/article36695763.ece>

⁸ Kalita, J. (2022). Northeast Diary: Is Meghalaya trying to legalise rat-hole coal mining? Times of India. Retrieved from <https://timesofindia.indiatimes.com/india/northeast-diary-is-meghalaya-trying-to-legalise-rat-hole-coal-mining/articleshow/95467928.cms>

⁹ Peinlang, B. L. (2019). The Scope of Tourism in Meghalaya. J Tourism Hospit, 8(397), 2167-0269.

¹⁰ Lyngdoh, S. (2014). Strawberry cultivation: horticultural revolution in



In other words, a greener economic transition is in dire need in this state. Hence, it is crucial that the Meghalaya government and other stakeholders take up similar horticultural programs in locations wherein rat hole mining continues. This would help promote the

development of other types of job opportunities, and workers would not have to risk their lives in these rat mines to earn a living. Only when workers' livelihoods are safeguarded can we claim that we're pursuing a just transition as India moves towards net zero.

Meghalaya with reference to Sohliya and Mawpran villages. horticulture, 1(2), 3.



PERSPECTIVES FROM ACADEMIA: INTERVIEW WITH DR. DHIRAJ KUMAR NITE

Dr. Dhiraj Kumar Nite, Assistant Professor at the School of Liberal Studies, Ambedkar University, Delhi, specializes in historical economics, particularly in human development, labor relations, and economic institutions' role in development. With over two decades of experience, he has conducted extensive research and teaching in these fields, primarily focusing on the mining sectors of India and South Africa. Dr. Nite's initial research centered on workplace safety and compensation issues for mine workers, addressing work hazards in the mining industry. His work has expanded to encompass broader labor relations and their impact on the quality of life for miners. Additionally, he has examined gender dynamics and women workers' welfare within mining. Dr. Nite's approach is comparative, linking experiences in India and South Africa, and occasionally, Northwestern Europe (Germany, UK, and the US), enriching the global understanding of mining and labor practice.

The following section contains excerpts from an interview conducted with Dr. Nite on the issue of gender justice in energy transitions in India with particular reference to the coal mining regions of India. The transcription has been edited and abridged for better reading.

Given your experience globally with regard to mining labor, how do you feel women are impacted by coal mining activities? How is their involvement different from that of men in coal mining?

See the problem of women and their question of employment in welfare in the mining industry are multi-layered and, in some sense, distinguishable from the question of welfare of main workers in the mining industry. Historically speaking the employment opportunity for women in the organized mining sector in India has been shrinking since the 1950s-1960s because of the prohibition on the employment of women from underground mining which affected mostly the coal industry which operated mostly through underground mining at that point of time. We also see

that when opencast mining became capital intensive and increasingly mechanized, the employment opportunities for women reduced even there. Women as a result remained in the mining industry in a significant number only in the informal and unorganized aspects of mining which is known as the smaller scale mining or artisanal mining. As far as the organized capital-intensive branches of mining whether coal or iron sector are concerned, women have returned back to these areas in the wake of informalisation and contractualisation of surface works over the last 20-25 years. Therefore, we can see two distinguishing aspects of women's engagement with mining sector - they lost employment opportunities in the wake of the growth of the mining industry and its increasing mechanization and organization as a result of which they are heavily concentrated in a small-scale artisanal mining; in recent times, they are concentrated in informal, contractualised branches of the minerals extraction sector. Consequently, they are concentrated in low-paid, less-skill intensive branches of the mining, because better-paid, mechanical and skill-intensive branches are populated by the male workers. Hence, the earning of women is also low. Their power of collectivization is also low, and they are engaged in insecure, low-paid, low-skilled, vulnerable employment arrangement within the mining sector. The next layer of the problem faced by women workers in the mining industry is that they face the challenges of inadequate

SINCE THE MINING INDUSTRY BECAME MASCULINE AND HEAVILY ASSOCIATED WITH THE PRESENCE OF MEN WORKERS, THE MINING SECTORS ALSO BECAME MASCULINE AND GET A GENDER-WISE SKEWED SOCIAL LANDSCAPE.



implementation of certain protective legislations, such as maternity and crèche benefits, which is a hindrance for married women to carry on their employment in absence of supportive institutions, ideally provided under the Maternity Benefits Act, 1961.

Since the mining industry became masculine and heavily associated with the presence of men workers, the mining sectors also became masculine and get a gender-wise skewed social landscape. It brought to the women also a sense of social insecurity, because their number was relatively lower than the main workers, and the masculine image of mining activities peddled an aggressive social life, a masculine social life, where the women workers had to bear the brunt of being relatively small in number and also subject to male macho public culture in the workplace as well as the social space in the mining areas. These are some specific challenges that continue to confront the women in the mining industry. The difficulties are much more in organised mining as compared to unorganised informal mining, where women are in significant number and the wage disparity between men and women is low. The unorganized, low mechanized nature of small artisanal mining would mean that wages are low for both men and women and job is unorganized and informal for both men and women.

In the context of your previous observations, what do you feel have been the measures taken by the government or by coal mining subsidiaries as is their mandate also? How do you feel that they have addressed these social issues? Do you feel they have addressed it at all? What is your opinion on that?

Initially it was thought that the prohibition on employment of women from below ground mining would address the physical vulnerability of women. So, the prohibition which went against the employment opportunity of the women was itself supposed to be a protective measure for the women. In 2019 the government relaxed this law and allowed the entry of the women personnel for below ground mining. However, it is confined to the technical personnel, not for the general working person. Some other measures to safeguard the interests of the women included the adoption of the Maternity Benefits Act way back in 1941 and 1942 and its subsequent amends to strengthen the allowances made available to women and the number of crèches to be set up in the workplaces.

Other protective measures which were remarkable included the equal wage for equal work irrespective

of sex identity. The mining industry was the first which adopted it way back in 1959. The government of India made a similar law only in 1976-77. These were the protective legal lessons to safeguard the interests of the women. Nonetheless, as I said, the prohibition on women's employment from below ground mining proved counterproductive for the employment opportunities of women. And in the long run, it led to the reduction in employment of women, increasing the masculine macho image of mining occupation, which was antithetical to the egalitarian and respectable intercourse between men and women in the mining canters in the mining workplace. Since the implementation of some other laws like maternity and crèche benefits with noticeable breaches and poor implementation, the amount of safeguard that women should have been able to receive from such measures is far below expectations.

How do you see the relationship between women and gendered access to energy in these regions, particularly in say coal-bearing regions in India?

Gendered access to energy could be understood in two ways. One that I have dealt with is the employment opportunities in the extraction of minerals. And coal is and continues to be the chief source of fuel in India. The extraction of coal mineral provided less employment opportunity to women, as I said. However, it's equally a fact that there is a component of informal coal mining, informal trade in coal, informal unorganized collection of so-called illegal coal, and women are engaged in a good number in these trades. The poor working women participate in such informal collection of coal, informal trade of such so-called illegal coal, processing of coal at their home and selling them in the market and through this, they can generate some income to add to their household expenditure. In another words, typically there is significant inequality along the gender line between men and women to access the economic opportunities

THAT THERE IS A COMPONENT OF INFORMAL COAL MINING, INFORMAL TRADE IN COAL, INFORMAL UNORGANIZED COLLECTION OF SO-CALLED ILLEGAL COAL, AND WOMEN ARE ENGAGED IN A GOOD NUMBER IN THESE TRADES.



arising from the extraction of fuel like coal.

There is another aspect of your question that is the access to the final output from the coal fuel, i.e., energy in the form of electricity, its distribution and also the use of coal in the iron and steel industry where it is significantly used. In those areas, if we look at the gender wise access, we see two kinds of gender inequality. In terms of employment opportunities, women have a lower presence in the metallurgical industry and power generating industry and also in the transportation industry based on coal, which is though very limited now because the railways have moved away from coal based to electricity and oil based, mostly electricity based, but electricity generated in the power plant where women have far lower presence in the work force. So, in these ancillary areas metallurgical and power generation, in terms of employment women have lower presence in the work force.

At the household level, in terms of the consumption of electricity, it is definitely a case that the access to affordability of electricity improves the quality of life, especially of women. It reduces, in a remarkable way, the hazardous aspect of cooking meals at home when there is a good supply of electricity, and it also enables them to improve their daily life when there is a sustained availability of electricity at their home.

How do you feel a transition to more sustainable, renewable, cleaner forms of energy can be made more gender just in India since the requirements of skills for employment in renewable energy are more technical and specialised. What is your opinion on how this transition to cleaner energy can be made more gender just in the future?

See the transition to renewable energy is now increasingly being called for and considered a desirable ideal. If we want to make a swift transition to cleaner energy and as you said that how to make this energy transition just, we need to ensure that those who are employed in carbon based fuel extraction are not becoming the victims of this process and that the communities currently seeking their livelihood from the extraction of and transportation and trade in coal are prepared to be able to participate in the renewable energy sector - energy which is basically solar energy or solar hydroelectric and wind energy in some cases geothermal, etc. This would require massive investment in human capital development in the communities and regional pockets where carbon fuel extraction takes

ARE WE ENSURING THAT THOSE WHO LOSE THEIR EMPLOYMENT OPPORTUNITY FROM THE SCALING DOWN OF THE COAL MINING INDUSTRY ARE ABLE TO TRAVEL TO THE NEW CENTRES OF ENERGY (RE) PRODUCTION OR TO NEW METALLURGICAL CENTRES THAT WOULD COME UP TO SUPPLY THE EQUIPMENT FOR THE RENEWABLE ENERGY?

place. As you rightly said, the production of inputs going into renewable energy are knowledge and capital intensive and the suitable working population would have to be far more skilled and educated than the labour force currently engaged in coal extraction. So, investment in human capital must be heightened especially in the regional pockets where the mining communities are concentrated.

Secondly, we will have to also look at its forward and backward linkages. The equipment used in renewable energy is all metals whether wind energy or solar energy or hydroelectric or geothermal. In another words, the metallurgical industry will grow to supply that equipment and please remember that so as long we do have the metallurgical industry, i.e. iron steel, aluminium etc., there will be some demand for coal because coal is a necessary input in them. But if metallurgical industry would grow to cater to the demands of RE, it is also more capital, technology, and knowledge intensive than the coal extraction industry. And to prepare the mining communities to be suitable for getting to fairly participate in metallurgical industry again it would mean an investment in human capital development in mining communities to prepare them to participate in the technology and knowledge intensive metallurgical industry.

The third critical component of this just transition is spatial mobility. Are we looking forward to developing the renewable energy capacity in the centres and areas where the current mining communities are living in? If not, then are we ensuring that those who lose their employment opportunity from the scaling down of the coal mining industry are able to travel to the new centres of energy (RE) production or to new metallurgical centres that would come up to supply the equipment for the



renewable energy? So, this is the issue of spatial mobility of the mining communities from one de-industrializing pocket to the new industrial centre. This is one thing nobody is talking about when we talk about the issue of just energy transition.

So, there are these three broad areas. Now gender issues come in each three of them. As I said that in terms of employment women's presence is definitely far lower than the presence of men in the coal industry as far as India is concerned. The focus on renewable energy would not like to reproduce the same gender scenario in the future – it should be gender just also. Hence the investment in human capital development should be gender just. Men and women, girls and boys in the mining community should be equally prepared for being able to participate in the renewable energy sector and also metallurgical sector which would scale up if renewable energy expands. The question of spatial mobility would have to take into account that traditionally the migrant working population in India has been predominantly single males and that has its own adverse consequences, for instance, the breaking down or separation of the family, alienation from family life, the threat to the regular family life, social alienation etc. Now, when we imagine both just energy transition and gender justice, we must ensure that spatial mobility should be the mobility of the family unit and should ensure the regular family life for the workforce associated with the renewal sector and also the metallurgical sector. Keeping that all in mind, we possibly can ensure a healthy transition and a gender-just transition.

How do you feel policy makers and civil society organisations or research organisations can promote a just transition for women in coal bearing regions?

We'll have to devise a number of focused initiatives. One of them would have to be undertaken well in advance before the transition starts - human capital development

among these population groups that also simultaneously addresses the gendered-risks of energy transition.

Second would be to ensure that deindustrialization and development in these areas should be accompanied by new forms of employment generation for the affected people. And third, in case of the significant rupture or regional unbalance in the current centers of economic development, how to ensure smooth, a special mobility of the population from the traditional mining centers to the new center of development.

Finally, two things are a source of lesson for us on this. One, we need to ensure in the existing mining industry the fairness in employment opportunities for both men and women which are at this moment missing. Simultaneously the implementation of protective legislation for women has to significantly raise its performance. Another aspect of just transition would be to ensure that the adoption of policy and its execution should not just remain financial and legal issues. It should involve the social and political stakeholders from the population group who are at the receiving end. And the third thing which is not at all being talked about is the special shift that it would herald whenever we start making this transition possible. How to ensure a social and political inclusivity of that special shift that would arise from this just in transition in the large country like India.



Events section

Experts' Roundtable on Gender-Just Transition (7th July 2023 | TERI Office | Hybrid mode)



Attendees at the Experts' Roundtable on Gender Just Transition

TERI organized a closed door Experts' Roundtable to discuss a Discussion Paper on Gender-Just transition that had been drafted by the team. The Discussion Paper is titled 'Establishing Women as Critical Stakeholders' in India's Just Energy Transition: Evidences from Jharkhand, Odisha and Chhattisgarh' and aims to highlight the importance of including women as an important stakeholder in the just transition discourse. The paper brings out the gendered nature of vulnerabilities that are present in the coal geographies of India and offers recommendations to make the energy transition process more gender-inclusive.

The roundtable began with a presentation from TERI's side taking the audience through the discussion paper and was followed by a detailed dialogue on the issue. The experts reviewed the paper and offered insightful ways in which the paper could be strengthened further.

The experts included –

- Dr. Smriti Das, Associate Professor, XLRI Jhajjar
- Dr. Suravee Nayak, Associate Fellow, Centre for Policy Research
- Roli Srivastava, Correspondent, Just Transition, Thomas Reuters Foundation
- Dr. Upasona Ghosh, Assistant Professor, Indian Institute of Public Health, Bhubaneswar

The event also saw participation from various other research organizations, academicians, students etc. who also shared their thoughts and made the discussion an enriching one. We were heartened to see everyone's interest in our work and are deeply gained by their invaluable inputs.



*Roli Srivastava, Climate Correspondent,
Thomson Reuters Foundation*



Dr. Smriti Das, Associate Professor, XLRI Jhajjar

Just Transition India convening (3rd August | India Habitat Centre | In-person workshop)



Speakers panel at the Just Transition India Convening

TERI in collaboration with Thomson Reuters Foundation (TRF) had a convening on Just Transition in India which included a multi-stakeholder workshop titled 'Building a resilient future: Investing in green jobs and reskilling for women workers'. This workshop was planned in the context of India's G20 presidency in 2023, alongside the parallel Business20 (B20) and Think20 (T20) deliberations, and aimed to provide an inclusive space for key stakeholders from India's private sector, civil society, media, academia, and labour organisations to discuss how adequate investment opportunities, financing for green jobs and reskilling initiatives could enable equitable and sustainable solutions for India's workers and businesses.

The workshop began with opening remarks from Dr. Jayanta Mitra, Senior Fellow, TERI and Mr. Nicholas Glitcher, COO, TRF. It had 3 thematic break-out sessions on the following topics-

- Theme I - Sustainable financing for green jobs and worker support
- Theme II - Empowering women workers and reskilling
- Theme III - Financing for a just transition

Each theme had a domain expert who provided the necessary guidance to the participants and a moderator to steer the discussion. The domain experts included Dr. Parveen Dhamija, Advisor, Skill Council for Green Jobs (Theme I), Sabina Dewan, President and Executive Director, JustJobs Network (Theme II), Sandeep Pai, Director, Research & Strategy, Swaniti Initiative (Theme III).

The workshop was moderated by Amb. Ajai Malhotra, Distinguished Fellow, TERI and also saw participation from Mr. Varad Pande, Partner & Director, BCG during the panel discussion. The event was attended by participants from other research organization, journalists, NGOs, students as well as heads of organizations. Mr. Girish Sethi, Senior Director, TERI and Mr. Nicholas Glitcher, TRF gave the concluding remarks and vote of thanks respectively.



Breakout sessions at the Convening (Left); Sabina Dewan, President and Executive Director, JustJobs Network (Centre); Nicholas Glitcher, COO, Thomson Reuters Foundation (Right)

Photo Essay – Kenapara Eco Park, Surajpur, Chhattisgarh

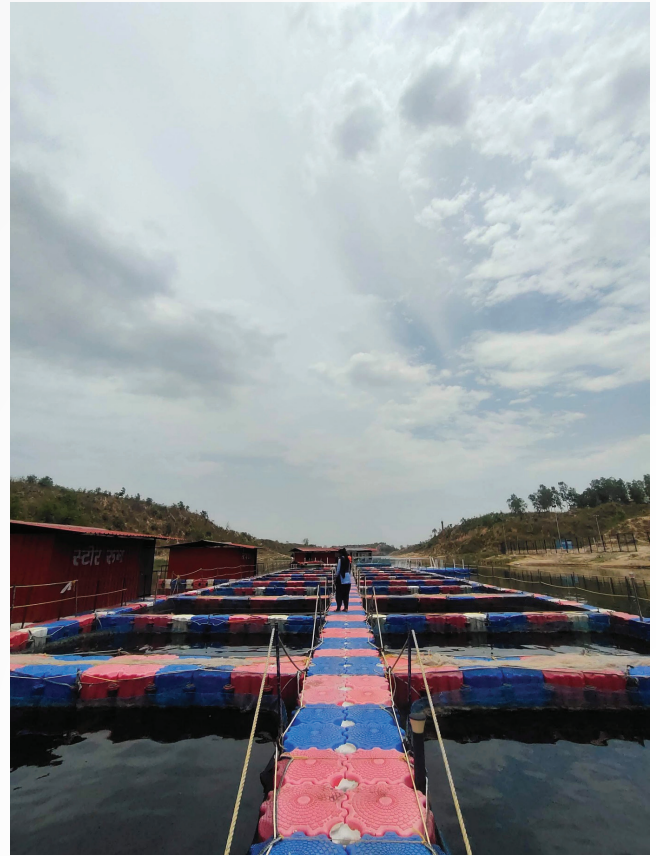
The repurposing of closed/abandoned/discontinued coal mines is a top priority of the Ministry of Coal and Coal India Limited, its major PSU. Kenapara Eco Park in Surajpur district of Northern Chhattisgarh was one of a series of underground mines in the Bishrampur Area of South Eastern Coalfields Limited, the Chhattisgarh based subsidiary of Coal India Limited. Abandoned for over 30 years, the mine was eventually closed and converted into an eco-park by the SECL in 2018. It is a great example of how an alternative source of income can be created for people of the neighbouring villages through repurposing the land. The entire eco-park is run and operated by members of the women SHGs active in the area. Such examples are important to highlight and build upon such that with the shift towards cleaner forms of energy, the repurposed mines might serve the local community productively by providing alternative sources of income and livelihoods.



Entrance to the Kenapara Eco-Park. Photo credits: Apoorva Singh



An SHG member operating a motorised boat. Photo credits: Apoorva Singh



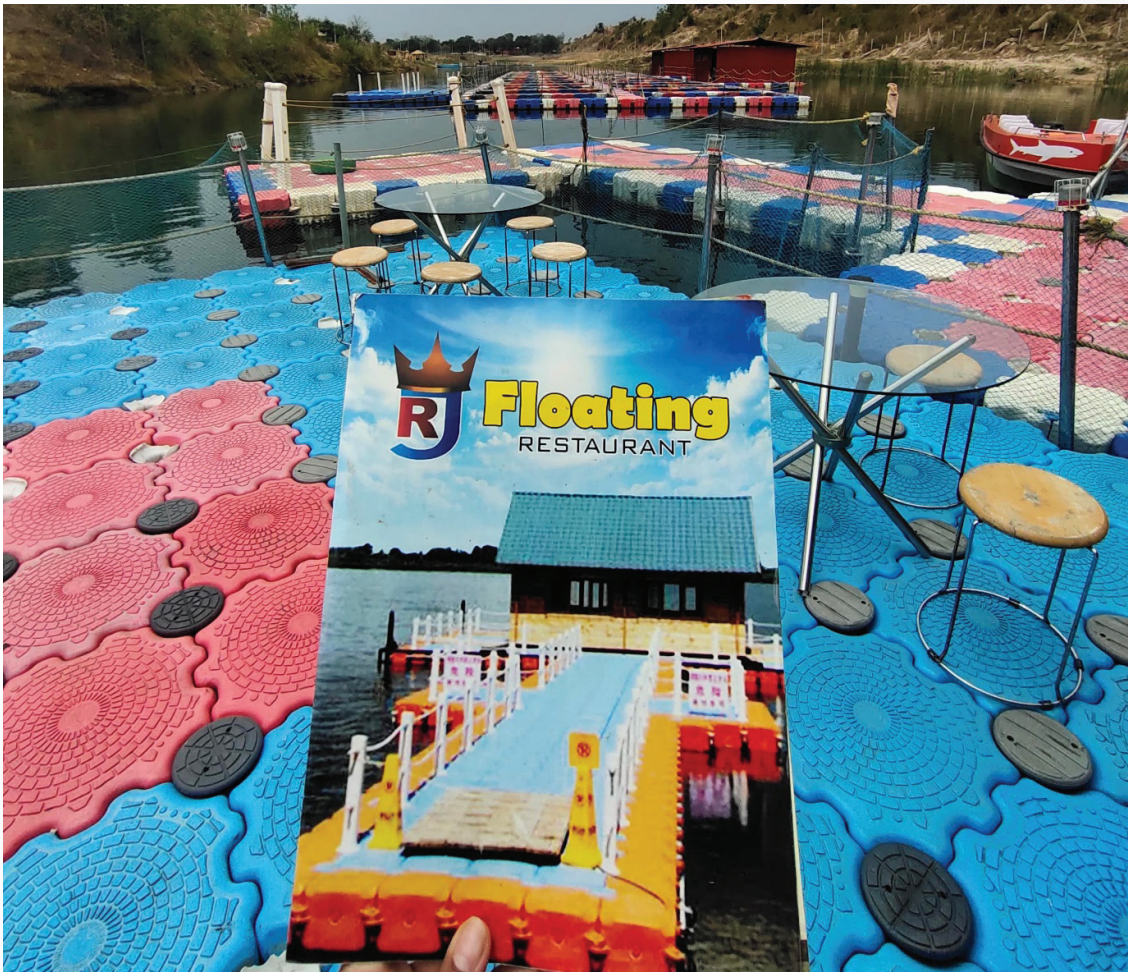
Pisciculture is practiced in the lake formed in what was earlier an open cast coal mine. Photo credits: Apoorva Singh



Boating is carried for the public in the eco-park. Photo credits: Arpita Victor



View of the back of the floating restaurant (seen in the next photo) adjacent to the pisciculture enclosures.
Photo credits: Arpita Victor





View of the kids park in the eco-park. Photo credits: Apoorva Singh



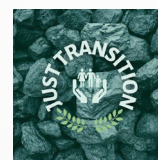


Khudiya colliery, Jharkhand. Photo credits: Apoorva Singh

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