

Vichaar-Vimarsh

JUST

Transition

NEWSLETTER

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DIVERSIFICATION OF ECONOMIC CHOICES IN THE COAL BELT

Message from the Senior Director's Desk, TERI

We are glad to bring out the 3rd Issue of our Just Transition Newsletter – 'Vichaar-Vimarsh'. This Issue primarily focuses on alternative livelihoods in coal belts, economic diversification, complexities and opportunities. 'Vichaar-Vimarsh' attempts to bring together various thoughts and voices from the academia, practitioners, thought leaders, businesses and researchers. Apart from conceptual writing and evidence sharing, what is unique here is the local voices and ground insights that occupies a prominent place and remains embedded in the thought flow. This also brings to fore the criticality of the 'people-centered thinking', inextricably linked to the elements of equality, inclusion and engagement in the Just Transition discourse.

I encourage one and all in this space to connect and articulate their valuable thoughts regarding Just Transition and enrich idea and knowledge exchange that can eventually help in shaping our future course.

A K Saxena
Electricity & Fuels 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

The 3rd bi-annual newsletter, Vichaar-Vimarsh has placed special emphasis on economic diversification in the coal belt and promoting resilient future. This newsletter that attempted to capture varied perspectives, has created a space for a knowledge dialogue among researchers, practitioners, thinkers and other actors from State, industry, academia and civil society. As we disseminate this rich reflections across wide range of stakeholders, optimism of building a better world gets echoed and brings to fore, the core thinking of inclusion and equity.

Research, innovations, ground action and deliberation on Just Transition would seemingly instill the belief of creating an alternative pathway that is people centered and which also upholds the principles of social justice. Lessons from the past initiatives, ground insights and voices from the coal producing geographies articulated by several authors in this newsletter would throw light on real life challenges, necessity for a policy discourse and designing a blueprint that can promote a virtuous ecosystem enabling the society and common masses adapt to the changing context.

We hope that this effort of putting together varied thoughts and ideas helps in creating a complex canvas that sensitises a reader about the risks and opportunities of transitioning beyond coal and generates a passion for co-creating a cleaner and a resilient future.

- Jayanta Mitra, PhD





TERI team having a discussion with the tribal residents of Orampada village of Sundargarh, Odisha

We don't want to see an energy transition divide and we don't want to leave any community, individual or region behind. To do this ADB launched a Just Transition support platform at COP27 at Sharm-el-Sheikh. ADB like many other MDBs has signed on to a just transition high level principles to articulate what we see as a common understanding of just transition and to guide our operations.

Pradeep Tharakan
Regional Advisor - South Asia, Asian Development Bank
(World Sustainable Development Summit 2023)



HASTEN SLOWLY – TRANSITION IS FOR PEOPLE, NOT JUST AGAINST EMISSIONS

R P Subramanian

An independent writer. Views expressed are personal.



Source: Coal India Ltd [<https://www.coalindia.in/news-media/gallery/>]

Perspective

With the impacts of climate change caused by untrammelled carbon emissions being felt with increasing intensity across the world, India and other nations have accepted the urgency for undertaking energy transitions away from coal towards cleaner (low/zero emissions) options such as renewable energy (RE). However, there is great concern that such massive energy transitions, if carried out without sufficient thought and care, will endanger the very existence of millions of people whose lives currently centre on the extraction, processing, transport and usage of coal. Indeed, the impacts of energy transition could potentially be far more immediate and devastating for these people than for

the more privileged sections of the populace. Hence, the imperative to achieve 'just' transition: which in essence means that transition must be undertaken along 'just' paths that protect and enhance the economic and social well-being of all people who will be affected, directly or indirectly, by the transition.

The simple question is: how does India go about preparing for energy transition—that too, a just transition—when coal is a key driver of India's economic growth, and when coal mines and coal-based industries continue to provide employment and entrepreneurial opportunities for tens of millions of people, a majority of them underprivileged with few or no other livelihood options?



Hard coal realities

India's continuing dependence on coal as a primary energy source is dictated by hard economic and geo-political realities that are well known but bear reiteration. India has the world's fifth largest reserves of coal, and is the second largest producer of coal after China.¹

However, India is relatively poor in oil and gas reserves and imports most of its requirements. Coal accounts for 55% of India's total energy consumption, and more than 70% of India's electricity generation comes from coal-fired power plants.²

Coal is also used for providing heat in many large core industrial sectors like cement and steel, as well as in vast numbers of MSMEs in sub-sectors such as basic metals, brick, ceramics, chemicals, food processing, pharmaceuticals and textiles.

Coal mines, coal-based industries and allied enterprises provide employment and entrepreneurial opportunities for tens of millions of people across India. According to one study (Dsouza and Singhal, 2021),³

at a conservative estimate over 13 million people are employed in coal mining, transport, power, sponge iron, steel, and bricks sectors; and this figure does not include the millions of informal and indirect workers who are as dependent for their livelihoods on the coal value chain—in the mines and MSMEs as well as in other coal-linked enterprises and activities like coal transport by road and rail, washeries, warehouses and stockyards, etc.

Considering these ground realities, it is understandable that India will continue to use coal—domestically mined as well as imported—to meet a major portion of its energy needs in the short to medium term. Indeed, this has been asserted clearly and repeatedly by the Indian government; for instance, in the statements by the Ministry of Coal that India's coal demand continues to grow and is expected to reach 1.5 billion tonnes by 2030, and that domestic coal production is being ramped up (from about 770 Mt in 2021–22) to reach one billion tonnes by 2030.^{4,5}

It is also not surprising that India (along with other

¹ Ministry of Coal, Year End Review 2020. <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1685058>

² Ministry of Coal. (a) <https://coal.nic.in/en/major-statistics/coal-indian-energy-choice> (b) <https://coal.nic.in/en/major-statistics/generation-of-thermal-power-from-raw-coal>

³ <https://www.teriin.org/article/coal-transitions-india-mitigating-socio-economic-fallouts>

⁴ <https://www.livemint.com/industry/energy/india-will-achieve-1-5-bn-coal-production-by-2030-minister-11669908623285.html>

⁵ <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1808702>



Transition literature is replete with examples of energy transition which triggers abrupt job losses, mental and physical stress, migration and a dose of resistance from coalitions that stand to lose power and influence...

A 'just transition' is not a set of rules written in stone, but a vision and a process to be negotiated. Increasingly, deep decarbonisation is social, cultural or political as much as it is technical...

—Anmol Arora

*'In the global race to net-zero emissions, finishing just is more important than finishing first'.
20 February 2023. Scroll.in*



coal-rich nations like China, Indonesia and South Africa) fought hard at COP-27 to fend off demands by some developed nations during the COP-27 discussions to commit to a total 'phase-out' of coal. As a result of their efforts, the final COP-27 declaration instead calls for "accelerating efforts towards the phasedown of unabated coal power and phase-out of inefficient fossil fuel subsidies, while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for support towards a just transition..."⁶

Yet, the eventual transition away from coal is as inevitable for India as the looming threats of climate change. With barely four decades remaining for India to achieve its 'net zero' target (2070), there is no time to lose in engaging with the challenges of achieving a just transition.

So unprecedented are these challenges and so complex are the issues that will have to be confronted and overcome in the decades ahead, that India must proceed with extreme caution in planning for the transition—yet proceed with a clear long-term vision in mind, a vision that unwaveringly focuses on and gives primacy to enhancing the welfare and interests of the millions of people whose lives today are centred on the coal value chain.

⁶ Emphases by author. Source: UNFCCC. https://unfccc.int/sites/default/files/resource/cop27_auv_2_cover%20decision.pdf



The human angle

Certainly, India is on the right track in focusing on creating and expanding the manufacturing capacities and incentivizing markets for low/zero-emission products (e.g., electric vehicles, rooftop solar systems) as well as hiking the share of RE in the overall energy 'mix' (increasing the share of RE in electricity grid, mandating the use of biomass pellets in thermal power plants, and so on). Much of the policy-level converse is on scaling up measures such as these, and on supporting efforts to develop clean (non-coal) technologies that could be adopted by industries in place of their existing coal-based systems. All these initiatives will undoubtedly help India reduce its coal-based emissions and achieve its goal of becoming a net-zero economy by 2070.

However, so far what appears to be rare—if not completely missing—in the policy-level conversations on energy transition is the human angle: specifically, the future of millions of people who are today directly dependent on the coal ecosystem for their livelihoods and lives, and who therefore face maximum peril from transition.

This is the real challenge that India faces today: transitioning entire regions and districts, finding livelihood opportunities for a population the size of smaller countries, and meeting our development and climate goals... Characteristics endemic to the Indian market complicate this transition process further. These include the large presence of contract/off-roll labour in every sector... The share of off-roll labour accounts for at least 70% of the total labour across all sectors, reaching as high as 92% and 80% in transport and bricks, respectively...

—Swati DSouza, Kavya Singhal

'Coal Transitions in India: Mitigating the Socio-Economic Fallouts', 21 June 2022, TERI

The grim reality is that today, a very large proportion of these people live and work in conditions that are inconceivably harsh. They are the 'informal' workers; hired by labour contractors to work in coal mines or in coal transport or in coal-based MSMEs and enterprises—with pitifully low wages and uncertain tenure, no access to even rudimentary housing or sanitation, no social security safety nets to assure adequate nutrition or even basic healthcare, leave alone medical assistance when needed, and no supportive institutions to whom they might turn for addressing needs, securing rights, or redressing grievances. They are the 'Uncounted Millions': voiceless and unrecognized because they do not exist on official rolls. They usually have little or no education, and no formal skills training; any skillsets they possess have been acquired experientially and are not documented or 'certified' in any form thus rendering these skills irrelevant or of little value in any other work context.

These are people whose daily lives are so fragile that any disruption in the coal ecosystem, however slight or short-term, could plunge them into utter destitution. Worse, even the traditional 'realms of last resort' to which the impoverished turn to earn a pittance through gruelling manual labour—such as urban construction sites, cable-laying, rail and road-building—will become difficult to access; because the closure of coal mines will inevitably trigger the shutting down of tens of thousands of coal-dependent MSMEs and other allied enterprises, displacing unprecedented numbers of other daily wagers who would all flock to these very realms to seek work.

Light at the end of the coal tunnel



Source: Coal India Ltd [<https://www.coalindia.in/news-media/gallery/>]

When the most primary stakeholders in the coal ecosystem lead such vulnerable, hopeless lives, when they are so utterly deprived of even basic social and economic rights and security even today, how do we confront the challenge of building and strengthening their 'resilience' to cope with the imminent energy transition?

The answer to this difficult question will guide us in charting a meaningful and practical just energy transition strategy. Parallel explorations along the following broad lines might help us find the answer.

Study, engage, understand

We have to grasp the magnitude and complexity of the issues involved; for which research, field studies and analyses will have to be conducted on a massive (perhaps, nationwide) scale by both state and non-state actors, working in coordination and through pooling of knowledge and expertise. The studies will have to cover and closely involve communities at all levels of society, and in all the diverse sectors of the economy that are linked, directly or indirectly, with the production and consumption of coal. The important stakeholder groups will include people working at every level in coal mines and coal-based industries; in downstream industries and enterprises; and also in all the various enterprises and services that support and sustain people living in the townships that have sprung up around coal mines and coal-using industrial clusters.

These studies will help in understanding the direct and snowball effects of the transition, qualitative and quantitative: in terms of adverse impacts on the lives and livelihoods of people, and also in terms of disruptions in energy availability, energy costs, and energy usage patterns down and beyond the coal value chain. Based on this understanding, a clear, long-term strategic map for energy transition can be drawn up, covering diverse sectors nationwide and outlining (for example) the policy and regulatory frameworks that should be in place to guide and monitor the transition process, the roles and responsibilities of different agencies and institutions from the panchayat level to national level, systems for information flows, evaluations and course corrections, and so on.

Once this national-level strategic map is outlined, the action plans for energy transition can be developed and implemented for different geographical areas—as before, in a comprehensively participatory manner, involving

in each case all stakeholders in all sectors from policy to grassroots levels. These action plans must reflect the same clear, long-term vision for socio-economic development as the national strategy; and they should be flexible enough to cope with the many uncertainties and conflicts of interest and priorities among different stakeholders that the coming decades will bring, and to allow for any modifications and course corrections that are needed in the course of implementations.

Learn from experience

Useful lessons and insights can be drawn from the experiences of coal mine closures: in India as well as other countries.



If transition is to address some of the long-term difficulties in the region either created by the energy industry or as foreseen by its closure, then it is important to engage with the local constituency, i.e., the community, the workers, the traders, the local media, the local political leadership, the local bureaucracy, and the industry...

— Ruchi Gupta

'Mapping the Impact of Coal Mines and their Closure: A Case of Betul'. TERI, 2021.



An example is the case of Betul (Madhya Pradesh), where coal mining has had a history of 150 years and where a number of mines have been shut down due to mineral exhaustion. The impacts of mine closure on the erstwhile miners (registered and contractual), as well as the snowballing and lasting socio-economic effects on the wider communities in the neighbouring coal townships and beyond, have been studied and vividly documented (Ruchi Gupta, 2021)⁷. The study recommends that a wholly participatory approach must be followed to identify and implement schemes and actions that reduce vulnerabilities and create opportunities for rural employment and enhanced incomes. Wherever

⁷ Gupta, Ruchi. 2021. Mapping the Impact of Coal Mines and their Closure: A Case of Betul. New Delhi: The Energy and Resources Institute



possible, convergence may be found with existing government programs for promoting employment and livelihoods (e.g., MGNREGA, NRLM, etc.). Education, skills development, and infrastructure strengthening will form core elements of these initiatives. Key thrust areas could include agriculture (millet cultivation, apiculture, agroforestry), remediation and re-purposing of abandoned coal mines, and promoting MSMEs.

“Skilling is a very important part of growth and a major component of our Budget and our policy-making. But it is also important that we find other ways of skilling... Many of the jobs that the next generation will do, do not exist today. We need to think about this much more fluidly...”

— Sanjeev Sanyal
Member, Prime Minister’s Economic Advisory Council

Another example is the case of the Ruhr region, in Germany, often cited as the best example of a successful transition away from coal. The transition extended over 60 years, from about 1957—when the Ruhr coal mines employed about 473,000 people—to 2018, when coal production ceased and employment fell to zero. The Ruhr case illustrates the care that was taken for strategizing and planning; for engaging in long-term processes of dialogue; the primacy given to participation by all levels of stakeholders; and the time and resources that were invested for carrying out the transition process to completion.⁸ The German government bore the financial burden of transition, which included support for retirement funds, pensions, skills training and retraining programs, fostering entrepreneurship, and investments in infrastructure. Former coal mines and industrial sites were converted to ‘industrial tourism’ sites; some mines even qualified to be included in the UNESCO World Heritage list—for example, the Zollverein Coal Mine Industrial Complex.⁹ Many ex-miners were able to find

⁸ Arora, A., Schroeder, H. 2022. How to avoid unjust energy transitions: insights from the Ruhr region. *Energy Sustain Soc* 12, 19 (2022). <https://doi.org/10.1186/s13705-022-00345-5>

⁹ <https://whc.unesco.org/en/list/975/>

jobs in Germany’s metals industry; many others, in the burgeoning tourism industry.

The success of the Ruhr transition hinged on the German government’s approach: *“a bottom-up approach, and the critical role of codetermination with equal voices for workers and employers at the table.”*¹⁰

Spread awareness

There is little evidence of enhancing awareness on energy transition, its implications on the coal ecosystem and means of mitigating risks for ensuring justice and resilience.

Hence, it is vital for the government to initiate a large-scale awareness program covering every aspect of the transition. The ‘Uncounted Millions’ must be made aware of the implications of energy transition so that they can take timely action in skilling and re-skilling themselves. They must be made aware that coal is not an end in itself; that the future is going to be different; and that preparations must be made now to hedge the looming impacts of transition.

Start preparing now

With the prospect of millions of people being displaced by the transition accompanied by huge socio-economic disruptions, it is clear that opportunities for alternative livelihoods will have to be created on a massive scale—which in turn means putting in place supportive institutions and infrastructure along with the required human resources for reskilling, vocational training, entrepreneurship, and so on.

It is understandably hard for us today to envision the kinds of skills that will be required, or jobs that erstwhile coal-sector workers might be trained and empowered to do, decades into the future. Much depends on knowing how many people are likely to be displaced by closures of coal mines and coal-based industries/enterprises, in different areas; the socio-economic profiles of these people including their existing skillsets; the possible employment-generating uses that coal mining sites can be put to after closure and reclamation (e.g., RE-based industrial estates, agriculture, fisheries, sports, adventure tourism?); whether and how quickly alternative (non-coal) technologies can be developed for adoption by coal-based industries; and the likes.

these are vital exercises that demand considerable

¹⁰ Arora, A., Schroeder, H. 2022. *Ibid.* p.8/13



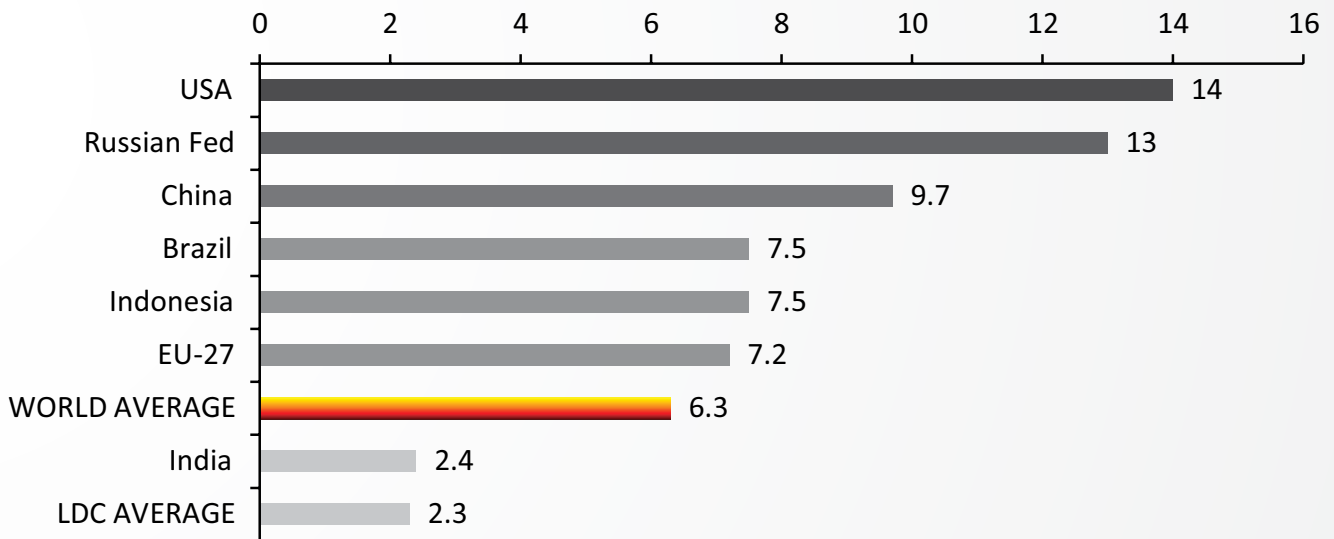
investments of time and resources. Hence, the government must initiate work on the foundations for such large-scale transformations, through ideation and discussions, research, and pilot projects; and the progress in this direction should reflect on the ground as well as in every Budget at Union and State levels in terms of focused increases in allocations for transition-related work: studies, R&D for clean technology, skilling, training institutes, entrepreneurship support, and so on.

Afterword

Lastly, it is pertinent to reflect on how and why the world got into this climate crisis in the first place (see chart). The intention is not to cast blame or to flog dead horses, but to underline the harsh truth: that the people of India and the least developed countries (LDCs) will continue to lift a far heavier share of the emissions reduction burden than the developed countries over the next 50 years, even though it is the latter that are responsible

for the overwhelmingly greater share of cumulative CO₂ emissions. In coming decades, the adverse impacts of climate change are likely to be felt with increasing intensity across the planet—making it all the more important for developed nations to share resources and scale up assistance to LDCs for adaptation and mitigation measures.

At the same time, we must recognize that within India too, it is not the relatively well-off sections but the most marginalized and voiceless sections of our populace—among them the desperate millions of contractual labourers in our coal mines, MSMEs, transport and other sectors—who will face the greatest pain from the energy transition. Only by remaining conscious of this reality can we develop and follow a transition path that is truly just; a path that does not perpetuate the horrific conditions in which these millions now work and live, but instead provides them with access to better health and nutrition, better housing, better education and work opportunities all the basic means to lead lives that can bring them hope and dignity and fulfilment, lives that are humane.



Per capita GHG emissions of major emitters in 2020, including inventory-based LULUF
(Source: UNEP Emissions Gap Report, 2022; figure E51, p.17)

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OUR ROUTE TO JUST TRANSITION: AN EMERGING PRAGMATIC PERSPECTIVE FROM COAL DEPENDENT COMMUNITIES

Sreedhar Ramamurthi
Managing Trustee, Environics Trust.



Trucks carrying coal from Kulda OCP in Sundargarh, Odisha. Photo Credits: Arpita Victor

What Do We Mean by Just Transition?

“Just Transition is a principle, a process and a practice.” ~
Just Transition Alliance

Just Transition is a vision-led, unifying and place-based set of principles, processes, and practices that build economic and political power to shift from an extractive economy to a regenerative economy. This means approaching production and consumption cycles holistically and waste-free. The transition itself must be just and equitable, redressing past harms and creating new relationships of power for the future through

reparations. If the process of transition is not just, the outcome will never be. Just Transition describes both where we are going and how we get there.

Our route to Just Transition primarily hinges upon climate justice. This can be achieved, if and only if, we are able to secure ecological and environmental justice. These demand restoring past ecological and environmental damages and to ensure access to information, participation and justice in environmental and economic decision making. This can enable people to rightfully claim resources and remaining Carbon Budget and develop resilient communities.



Economic justice can come about only when access to physical and financial resources to the poor is available by design, as the models of trickle-down have clearly failed us. These have indeed, on the contrary, led to political and corporate collusion, oligopolies and tax havens, directly raising inequalities across nations and amongst people. Fundamental to this, and ensure human rights are not violated, especially among coal dependent communities, we aim to develop people owned energy systems which is the driving force for economic activities.

This would quietly challenge the current structure of energy production, distribution, trade and supply of energy which has severe adverse economic, environmental and social consequences. We will identify opportunities for local communities in the ongoing and potential economic activities, and drive opportunities which will create diseconomies for scale. Such efforts which demonstrate peoples' abilities can also aid in addressing informalisation, union busting and unequal bargaining power, which is squeezing workers, as most operations are getting outsourced as contractual operations.

CONTEXT AND OPPORTUNITY

The crisis of runaway climate change impacting billions especially in Asia through erratic and extreme events, characterized with cyclones affecting both coasts of India to lightning itself killing nearly 300 people in a short pre-monsoon spell. This is currently intertwined with economic, employment and equity crisis and calling for urgent and significant changes. Huge debt burden of countries perpetuated by failing industrial economy leading to a predicted meltdown worse than the 2008, exacerbated by the pandemic, which continues to be enigmatic, forces us to explore and put together learnings from the past and potential opportunities ahead.

Mechanisation, robotics and Artificial Intelligence are completely changing the nature of work and huge job losses stare at the current work-force. Concurrently, new concepts of human organisation and getting back to the roots and nurturing natural ecosystems, rather than exploiting them beyond their resilience as opportunities for future are emerging. Further, inequality, stemming from unequal ownership of capital, very large transfers of public to private wealth and extremely skewed worker to owner incomes call for exploring new patterns of

ownership, such as producer owned entities and use of new forms of stakeholder capitalism.

Economic justice can be ensured if we identify the public resources and finances available and direct these investments in new environmentally sound economic activities.

In the context of the mining areas specific funds created through long years of peoples' struggle such as the District Mineral Foundation Funds, Environmental and Social Protection Funds and investments are directed through people led activities.

We have narrowed down specific aspects which we will collectively work with the community in the aspects on which specific area and the larger community of practice with whom we have been engaging over decades.

PRAGMATIC PROCESSES TO ENSURE TRANSITION

Some of our nascent efforts across the country that we have undertaken emboldens us to take up this

POTENTIAL TECHNOLOGIES AND SERVICES

TECHNOLOGY AND PRODUCTS FARM AND FOREST

- CEREALS, PULSES, OIL SEEDS, MUSHROOM, SPICES AND CONDIMENTS, FOREST PRODUCTS, FRUITS AND VEGETABLE, BIO-PESTICIDES AND BIO-FERTILISERS

SHELTER

- HONEYCOMB, FLYASH, SOIL BLOCKS, PLUMBING, WIRING, BAMBOO

ENERGY

- BIODIESEL, MICROHYDRO, SOLAR, BIOGAS, WIND

HEALTH

- SANITARY NAPKINS, OXYGEN CONCENTRATORS, AIR MONITORING



COMMUNICATION SYSTEMS

- WIFI – COWMESH, RADIO, IVR SYSTEMS
- ART-THEATRE-AUDIO-VIDEO

FISCAL GATEWAYS

- SMALL FINANCES THROUGH DIRECT LENDING TO SHG AND JLG

(IN THE FIRST PHASE SEVERAL OF THESE HAVE BEEN INITIATED AND WORK IS CONTINUING ON EXPLORING SEVERAL OPPORTUNITIES)

challenge. In Himachal Pradesh communities have been able to negotiate exclusive rights to transport limestone for cement plants Cooperatives of Land Losers. As the Secretariat of the India Ban Asbestos Network, we have been instrumental in creating an Executive Council comprises of Representatives of Trade Unions, ARD Victims, NGOs and small entrepreneurs working on alternate materials and enabling beginning to work on how a just transition can be there for workers, claiming compensation for occupational and environmental victims.

It is therefore pragmatic to create a cluster of enterprises with high technology and management inputs and demonstrate ability to create livelihoods in such a scale and nature which will attract policy changes in the State and function as lighthouses for building templates.

KEY INTERVENTIONS

RECLAIMING THE COAL ECONOMY

Miners often do not close the mines properly and local communities do not have the wherewithal to restore the ecosystem to be able to be productive. Unless during the closing periods the economic activities are not shifted to the local communities and significant amount of the economic value is captured locally this is almost unlikely to happen. Since the coal economy is not going to last more than a generation, local communities have now got to find more role in this economy. Reclamation, post-mine closure is an economic activity that should ideally be completely with the local communities. They would have historical knowledge and the most skills required in the process.

The displaced people of Gevra (one of the largest coal mines in Korba), who were neither resettled nor provided employment as promised have now formed a company which transports coal from the mine to the railway siding and has logged a turn over of nearly 14 million USD. With these resources they have rehabilitated themselves and currently in the process of establishing solar systems in the resettled village.

FARMER AND FOREST PRODUCER COMPANIES

Promoting farmer and forest producer companies is one strand of this process. We have established support systems to enable formation of such companies with the assistance of the National Bank for Agriculture and Rural Development (NABARD). The four FPOs produce cashew, mango, black and red rice, groundnut, sesame and seasonal vegetables. They procure Mahua (*Madhuca longifolia*), Chironji (*Buchanania Lanzas*) and undertake value addition. A 5-MT solar cold storage enables temporary storage which is app based and enables constant oversight of materials stored and ambient conditions.

We have established a bio-fertiliser and bio-pesticide unit which can provide the basis for moving to chemical-free farming. This enables the farmer producers with a demonstrated and back-stop based basis for shifting from harmful chemicals.

ENABLING THE VULNERABLE

The Majhi Community is a recognised Particularly Vulnerable Tribal Group (PVTG) in Chhattisgarh. A large settlement of this community lives around the Jampalli Coal Mines and several have been and are being displaced by the mine and its expansion. We are working closely with this community to understand their perspectives and design alternate livelihood strategies. We are developing value-adding systems for the forest and farm produce.

POLICY IMPLICATIONS

The success of this programme can have significant and far-reaching implications to policy and programmes of the government. The State Government is recognising the need for investment and action far beyond its current efforts in creating and strengthening the rural economy. 'Narwa Garwa Ghurwa Badi' is the flagship scheme of the government of Chhattisgarh using



indigenous knowledge and technology through water conservation, livestock management, encouragement of organic manure and backyard nutrition. Our programme can serve as a model to integrate modern technology and information systems to this flagship programme. This can be emulated in other parts of the state based on the community's priorities, resources available and technologies adapted appropriately. Further, the context is similar in the adjoining coal regions of Telangana, Maharashtra, Madhya Pradesh, Orissa, Jharkhand and West Bengal where we could roll-out this programme and accompanying policy changes which will be attractive.

The need for alternate livelihoods for coal dependent communities is still not clearly understood despite the institutions that depend upon it conceding to the imminent threat to the industry. The end to this sector could be dramatic, as we notice that as much as 40 GW of coal-based projects are stranded and many of the projects are facing closure due to stricter pollution norms. Any demonstrable means of dealing with such eventualities will not only have implications for policy, but find a pragmatic way out for the people.

Since this is also a period which is witnessing significant changes in agricultural, mining and labour laws in the country, these efforts could also inform and guide the roll-out of the rules and notifications pertaining to their actual implementation on the ground. We want to demonstrate that this can flower into a vibrant local transition economy and be able to cater to other communities in terms of knowledge and resources.

Key Lessons

1. We need managed transition that is embedded in climate justice.
2. We need deep innovations in local technologies and localisation of technologies.
3. Investments must go out to seek the unreached and be enabling.
4. Long gestation should be anticipated since these are processes of building physical infrastructure most relevant to a particular socio-economic reality.
5. Policies must be derived from practice and embrace the process for climate justice.

[Under climate change]...I would say focus on the just transitions, the informal sector because there's going to be no accounting of how many livelihoods and jobs are going to be lost because they don't figure on anybody's registers. For instance in the coal industry - what about the man on the cycle who goes and takes some of the coal that's dropped off trucks and sells it in the local market, what's going to happen to him? What's going to happen to the truckers?

Bahar Dutt

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FINDING OUT THE KEY POINTS TO CATALYSE A GENDER-RESPONSIVE JUST TRANSITION

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Women of Bantabori sahi in Angul, Odisha. Photo Credits: Jayanta Mitra

The effects of climate change pose a significant risk to the working world. These consequences include, but are not limited to, heat waves, floods, droughts, shifting rainfall patterns, rising sea levels, and other extreme weather events and slow onset catastrophes. The world of work is also impacted by various mitigation and adaptation methods, particularly when groups that are already confronted with socio-economic vulnerabilities are barred from participation. In the same vein, the vulnerabilities of employees are exacerbated by the effects of climate change in industries that are already plagued by problems associated with informality and a lack of decent work (ILO, 2016).

When viewed through the lens of gender, these perils have specific repercussions for women and the accomplishment of gender equality in the working environment. According to statistics provided by the International Labor Organization (ILO), women earn 77% of what men earn around the globe, and if things continue as they are, it will take 70 years to eliminate the wage disparity among the genders. At the same time, gender disparities in employment continue to be exacerbated by occupational and sectoral segregation, which plays a role in both the quantity and quality of available jobs. Thus, transitions to a low-carbon future are not only difficult from a technical and economic point of

view, but also from a social and gendered point of view. Energy transitions often have an undiscovered gender element that is not obvious (Anfinsen & Heidenreich, 2017; Scoones et al., 2015). It may be because we have never seen anything like the scale of societal change needed to address the climate problem, and it will fundamentally alter every aspect of our society and economy. For example, poorly planned mine closures are likely to have a considerable impact on women's employment; even if it may not be obvious at first, it eventually can aggravate the situation. Negative effects of a poorly managed transition for women include personal and safety difficulties, restricted access to health care and other social amenities and deprivation due to inadequate inclusion in the employment and wage structure, community transformations, and re-skilling programmes (Foot, 2022). A JTRC-IIT Kanpur study found that women who lost jobs in power plant closure, have few existing skills such as weaving, stitching and cooking, however, the women expressed their need for some training to improvise their existing skills to make it an alternate livelihood (Swarnakar et al., 2022).

A just transition to sustainable economies and societies, thus, can bridge this gap and ensure that the negative impacts are minimised while good benefits enhance gender inclusivity and decent work, rather than sustaining or increasing gender inequities. Consequently, a just transition has the potential to generate green growth, foster inclusive communities, remodel gender

norms, and contribute to the attainment of the Sustainable Development Goals, in which women can play crucial roles. Eight key steps are identified in the present study that can work as catalyst for a gender-responsive just transition (see the figure below):

The first step in putting gender at the centre of a just transition process is to identify, assess, and acknowledge the points of gender inclusion. Second, the raw information, data, and research in this case serve as the basis for making plans to deal with the problems that come with including women in the transition pathway. It will necessitate novel conceptual and analytical research and improved data collection and analysis of gender, notably in relation to just transition policy. Third, government agencies like the labor department, the social welfare department, the women and child development department, and other nodal agencies need to work together to collect data and do research on how the fast changes in energy affect women's jobs and how women can change the way clean energy projects are done. Forth, gender concerns can be a significant component in just transition processes of labour unions and unofficial workers' associations, for example, in North America unions have created initiatives to support apprenticeships, education, and employment opportunities for women in the skilled crafts (NABTU, 2021). Fifth, finance to mitigate gender-specific risks and vulnerabilities that will arise because of energy transition. Sixth, providing women skills and,



Key points to catalyse a gender-responsive just transition



if necessary, re-skilling them is very critical to secure decent new employment in low-emitting industries. (ITUC, 2016). Seventh, coal companies can make sure that men and women are equally included in rehabilitation programmes by facilitating gender-related opportunities and risks assessments that show the social, economic, and environmental factors at operation. Eighth, it is vital to study and figure out how men and women see the just transition. This will help figure out the latent needs of men and women at different points along the energy transition pathway. JTRC-IIT Kanpur has conducted a study on grassroot stakeholders' perception of just transition and found that women have better perception of the negativities of fossil-fuels, while men are found to be more concerned of their livelihood in the process of just transition (Swarnakar et al., 2022). In the end, these strategies will be helpful if they are paired with changes in behaviour and culture that break the cultural norms that keep women from taking part in the social, political, and economic conversations that are forming around the clean energy transition. Even though this is a long and slow process, it is necessary if we want to realise the dream of a "just" energy transition and a society where everyone can participate (Roy, 2022).

Just transition has the potential to generate green growth, foster inclusive communities, remodel gender norms, and contribute to the attainment of the Sustainable Development Goals, in which women can play crucial roles.

How can these key points diversify the economic conditions of a woman in the fossil-fuel sector?

Supporting and empowering women and girls in any kind of development programme is crucial since it will lead to economic progress, according to the Sustainable Development Goal (SDG) number 5: Gender equality (Janikowska and Kukczycka, 2021). The majority of research focuses on how mine closures affect formal,

frequently male, mine workers, ignoring the social effects on women who serve as dependent spouses of laid-off miners, employees in supply and secondary goods and service industries, and residents of communities experiencing economic decline (World Bank, 2022).

The barriers women encounter in entering the formal labour market, however, must be taken into account during a just transition. 92% of working-age women in developing nations are employed in the informal economy, and the condition is same in case of coal sector. Due to their informal status, these workers typically lack access to social protections, which increases the likelihood that they will pass up opportunities for training and reskilling as well as unemployment insurance and other benefits that could be beneficial to them during an economic transition.

Women comprise only 32% of the worldwide clean energy workforce. Compared to the non-renewable energy sector, where women make up only 22% of the workforce, this is an improvement. A gender-responsive just transition that allows women and men to equitably benefit from the global renewable energy transition is more critical than ever.

Financial institutions can also play an active role in expanding access to capital and supporting new business prospects headed by women in relevant industries such as the renewable energy industry. Insurance firms can also play a significant role in assisting businesses with the just transition and safeguarding the livelihoods that are at risk due to technological transition.

A just transition demands extensive engagement and involvement of historically underrepresented social groups, particularly women, in decision-making. There is evidence that involving women in decision-making improves environmental governance, whether through improved representation and voice of women in their communities, society at large, the governmental level, or through increasing labour force involvement. In Sub-Saharan Africa, for instance, investors attempted to promote solar-powered cooking stoves, however, the project was ultimately abandoned because the stoves required too much time to cook food and did not properly meet the needs of the women (UNEP, 2022). This example demonstrates how essential it is for women to have a better representation in the process of any kind of transition. By ensuring that more women are consulted on investment initiatives and represented in top decision-making positions, financial institutions may raise



awareness of the significance of gender-sensitive climate action in their business operations.

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UNJUST TRANSITION THAT WENT UNNOTICED: EXCLUSION OF WOMEN COAL MINERS

- Arpita Victor, Intern, TERI



A woman emerging from an incline. Source: Annual Report of Chief Inspector of Mines in India, 1927

Today's discourse on a just transition away from fossil fuels to cleaner energy is shaped by the broader consensus around climate change mitigation and the need to achieve net zero carbon emissions in order to avoid the catastrophic effects of global warming. If one is to understand the concept of just transition as a primarily labour and employment issue aiming at fair and equitable outcomes for all concerned parties especially those more socio-economically vulnerable - there was a time in the dawn of the scientific-technical era of the world where there was an "unjust" transition. This was the gradual exclusion of women from mining activities in the context of increased industrialisation and mechanisation

at the end of the eighteenth century and "the emergence of the male breadwinner model" with international and domestic codes that prevented women from engaging in underground mine labour (ILO, 2021). This shift saw the construction of coal mining as a physically demanding, hands-on masculine activity that was crucial for the burgeoning energy needs of a post-world war global economy.

Mining in most parts of the world had been an activity carried out by the family unit, and in Europe this continued in the coal mining industry until the nineteenth century and there was a gendered division of labour - women were involved in surface work while

men were mostly involved in underground duties in great numbers although women were notoriously paid half the wages that their male counterparts were. In Germany, women were involved in above ground activities like picking, sorting, hammering and washing the ore while in Britain family work persisted till the eighteenth century, and women even worked underground in family teams and in Scotland, women formed forty per cent of coal mine workers were female (Romano & Papastefanaki, 2020). The exclusion of these women and many others across the globe was associated with mechanisation and the pressure to increase production efficiency (Alexander, 2007). In this context it is thus clear that the current energy transition and climate change mitigation debate is not the first threat posed to the coal mining labour status quo across the world. Just as a shift in technologies poses a threat to coal mining labour today in the developing world, increasing mechanisation posed a threat to women's labour around the turn of the nineteenth century.

This transition began with the promulgation of the Mines Act of 1842 in the United Kingdom which was an attempt to curb the misuse of cheap labour from women and children. While this was much needed, it altogether had a negative impact on women's contribution to productive labour. Noted expert on women in extractive industries, Kuntala Lahiri-Dutt, says (Lahiri-Dutt, 2020): "Coal mining wages were so low that it was critical for the females in the family to also work, and it was much more preferable that they work with their male relatives in the mines".

While a better alternative would have been a rationalization of pay for women and men, regulations instead called for the total exclusion of women from coal mining labour in an attempt to ensure their safety. The 1842 Act also did not provide any financial support as it put thousands of women out of work (Romano and Papastefanaki, 2020), who were forced into more

precarious work that paid lower wages (Lahiri-Dutt, 2020). Many other countries in Europe followed Britain's suit such that by the time ILO's Convention 45 (C045 - Underground Work (Women) Convention, 1935) was introduced, women's participation in any underground work in the industrialised world was negligible (Romano & Papastefanaki, 2020). As such, Convention 45 had a particular focus on the global south where women were still involved in underground mining work.

COAL MINING WAGES WERE SO LOW THAT IT WAS CRITICAL FOR THE FEMALES IN THE FAMILY TO ALSO WORK, AND IT WAS MUCH MORE PREFERABLE THAT THEY WORK WITH THEIR MALE RELATIVES IN THE MINES

Nature of women's engagement in coal mining in India

To get an idea of the social composition of coal mine workers back then, the 1901 Chief Inspector of Mines reported that in the Giridih, Jharia, and Raniganj collieries, 10 percent of the labour were tribals, mainly Santhals and Kols while 60 percent were from "semi-Hinduised" castes such as Bauris, Bagdis, Chamars, Telis, Turis, Musahars and some Jolhas, with the rest being 'Mohammedans'" (Lahiri-Dutt, 2011). The bauris were the first to bring women to the coal mines and this was soon followed by the santhals, kols, koras and bhuiyans (Lahiri-Dutt, 2001). Simeon (1996) reports that in Jharia, adivasis formed the most numerous castes in the labour force while the depressed class formed 20.2 percent and the artisan class comprised 22 percent (Simeon, 1996). It can also be concluded from these numbers that the women engaged in coal mining labour were mostly tribal as they worked alongside their men in daily labour units. Lahiri-Dutt argues that "women's work as part of the family labour unit was specific to eastern India" particularly the Raniganj and Jharia coalfields as a "result of British efforts to create a 'captive' labour force that would not return to the fields during the cropping season" (Lahiri-Dutt, 2011). In addition to this coal mining wages were so low that it was critical for the females in the family to also work, and it was much more preferable that they work with their

This Act helped to invisibilise the long and impressive history of productive labour by women in the mining industry, delegitimized women as productive workers in mining and pushed women into more insecure areas of work.



male relatives in the mines (ibid.). This formed the basis of the family labour unit under which entire families were engaged in mining coal in Eastern India and were paid on a piece rate basis.

Table 1: Ethnic division of women miners in Raniganj between the wars

Castes	Women/100 men of their caste	Castes	Women/100 men of their caste
Doms	111.0	Jolahs	59.4
Beldars	102.0	Bauris	55.8
Santhals	87.0	Telis	45.5
Bhuiyas	80.1	Rajputs	27.2
Mallahs	79.5	Goalas	24.5
Kurmis	67.5		

Source: Lahiri-Dutt, 2001

In colonial India women were engaged as kamins or gin girls in the early mines of Raniganj, Giridih and Jharia which were the only places where coal was mined in colonial India (Lahiri-Dutt, 2001). Simeon (1996) describes the family unit breaking up into pairs wherein the male relative (called malkatta in this case) cut the coal and the kamin carried this coal using baskets on their heads for a long distance to load it (Simeon, 1996). This would be put in larger baskets capable of carrying 250 kilograms and hauled to the surface using a winding engine called a 'gin' which was operated by 'gin' girls who worked in groups of around 20 (Lahiri-Dutt, 2001). There were small beam engines used as well for simultaneous pumping and winding and were operated by a team of 3 women (ibid.). With the introduction of steam engines, gin girls were no longer needed and women were mostly then engaged in surface work in open cast mines and in underground mines as well (ibid.). Eventually they got large scale employment as loaders lifting coal cut by their male partners. This was suitable for shallow open cast mines called pukuriya khads and at inclines as well (ibid.).

By the 1920s, however, there was a shift away from open cast mining to shaft or pit-mining and because of high capital investments this led to preference for a more stable and skilled workforce among colliery owners (ibid.). This ruled out the adivasis for whom commitment to land as farmers trumped their work in the coal mines (ibid.). Coal mine companies started engaging contractors who brought in labour from



Women workers leaving a wet coal mine with soaked garments clinging to the skin. Source: Annual Report of Chief Inspector of Mines in India, 1927

western Bihar and eastern Uttar Pradesh - the then United Provinces (ibid.). Adivasis responded to this influx of caste Hindu migrants by leaving the collieries to work in the plantations of Northern Bengal and Assam (ibid.). This caused the composition of coal mine workers to be mostly immigrant and male as the women coal miners who were mostly adivasis left coal mining along with the men of their families.

Causes for decline in female coal mining labour

While coal mining greatly expanded over the twentieth century, the number of women employed in coal mining fell from forty four percent at the start of the century to less than six percent by its end (Lahiri-Dutt, 2012). Khaitan (2020) argues that coal mines in India employed 60,000 women in the early 1900s and the only other industry in the subcontinent at that time that engaged more women as labour were tea plantations (Khaitan, 2020). Eastern Coalfields Limited records from 1901 show that there were 26,520 women working in its coal mines -



meaning that there was one woman for every two men employed in the company's mines (Lahiri-Dutt, 2012). Simeon (1996) reported that while women formed 37.5 percent of the coal mining workforce in 1920, it fell to 11.5 percent in 1938 and attributes this change to the mechanisation of coal producing activities like loading, hauling, and screening. This was accompanied by the simultaneous recession of tribal labour from mining and women workers were mostly tribal (Simeon, 1996). The demand for labour in the early twentieth century was high as mechanisation in the coal mines was low and women formed a third of this labour force (Khaitan, 2020). During these years, coal mines were the most important employer of women in the mining sector (Lahiri-Dutt, 2012). The following tables show a trend of women's engagement in coal mining activities in the twentieth century.

Table 2: Female workers in Jharia in the first half of the twentieth century

Year	Number of female miners for every 10 male miners in Jharia
1915	5.6
1920	6.1
1925	4.8
1930	2.7
1935	1.6
1944	3.6

Source: Compiled from Simeon, 1996

Table 3: Women workers in Eastern Indian Collieries, 1901-2006

Year	Number of female workers	Number of male workers	%Female: Male
1901	26,520	55,682	47.6%
1921	70,831	115,982	61.1%
1973	15,181	60,620	25.0%
1980	16,094	169,136	9.5%
1990	12,875	165,829	7.8%
2006	9,879	151,855	6.5%

Source: Khaitan, 2020

This decline in female labour has been attributed to regulations on women's work at night and underground,

the increasing engagement of migrant labour as mentioned before and the mechanisation of labour that was traditionally performed by women. While the latter two causes have been discussed in fair detail, the first one needs to be looked into a bit more as it was part of a global shift in attitudes towards what formed appropriate and socially acceptable forms of labour for women. This had begun with the 1842 Mines Act in the UK which inspired other industrialised countries to follow suit. While it is acknowledged that this was done in the interest of women and child labourers and had been celebrated as a "victory of the working class to free themselves from unsafe work practices and exploitative labour conditions", others have argued that "it was the first and one of the most discriminatory labour legislation" against women since it was the first time that women were excluded from an occupation (Lahiri-Dutt, 2020). It has also been understood in the context of changing moral attitudes and what was understood to be the duties of motherhood, "the idea of home, family life and motherhood ... which restricted women's participation in the labour market" (Romano & Papastefanaki, 2020). These attitudes, prevalent in conservative Victorian Britain, found their way across the globe with the promulgation of the International Labour Organization's Convention 45 (C045) which called for the prohibition of women and young persons from working in any kind of underground mine in 1935. C045 came into force in 1937 and 38 member countries ratified it.

Table 4: Women workers in Indian Coal Mines (1939-1947)

Year	Share of women workers		
	Underground	Surface	Open
1939	0	41.9%	33.7%
1940	0	42.1%	39.1%
1941	-	-	-
1942	0	-	40%
1943	5.7%	-	38.9%
1944	19.2%	43%	36.8%
1945	21.3%	41.7%	35.5%
1946	10.6%	45.5%	40%
1947	-	45%	40%

Source: Khaitan, 2020



The Indian Mines Act of 1935 preceded the ratification of ILO's C045 and enforced a complete ban on women in underground work (Lahiri-Dutt, 2001). In spite of this, Table 4 shows an increase in female labour underground in coal mines around the time of the Second World War. This shows that women did add value to the coal mining process and were necessary to meet shortages during the coal crisis as the war strained India's resources (Khaitan, 2020). As Britain fell short of its domestic coal production, coal from India was required to bridge the shortage (ibid.). The Indian government, making an exception for the war and informing this to the ILO started recruiting women and by 1945 there were 22,517 women working underground in India's coal mines when there were none recorded in 1942 (ibid.). Administrators also noted that engaging women would have a positive psychological effect on the men as they "preferred working with their womenfolk" (ibid.). However, this re-employment of women in underground work in coal mines would be short lived as post-independence the Mines Act of 1952 reiterated India's commitment to the ILO's C045 in the following language:

No woman shall, notwithstanding anything contained in any other law, (a) be employed in part of a mine which is below ground, and (b) in any mine above ground except for between the hours of 6 a.m. and 7 p.m.

MANY SEPARATE ACCOUNTS HAVE DETAILED HOW WOMEN COULD NOT FIND ALTERNATIVE SOURCES OF INCOME AND THIS WORSENE THE SITUATION OF UNATTACHED WOMEN AND WIDOWS WHO WERE PUT OUT OF WORK BY THE 1935 LEGISLATION [AS] THERE WERE NO OTHER OPPORTUNITIES FOR INCOME IN THE LOCAL ECONOMY IN THE MINING REGION OF RANIGANJ

This sentiment was echoed in the 2002 report of the National Commission on Labour which said that there ought to be prohibition of underground work in mines for women and that women must be prohibited from working in between certain hours. While the regulations on women's labour were a product of their times and indeed conditions of underground work were quite pathetic as has been described by many labour historians, it is also pertinent to look at the consequences of women losing coal mining related livelihoods as is discussed in the next section.

How the transition was unjust for women coal miners and their families

As mentioned earlier in this paper, a critical reason for women to work alongside the men in their families was the dismally low wages in the coal mining industry, thus women's labour was crucial to add to the income of the household. This is corroborated by historians who describe that the decline of women workers in mines was associated with deterioration in the living standards for entire families (Lahiri-Dutt, 2011). Not only that, many separate accounts have detailed how women could not find alternative sources of income (ibid.) and this worsened the situation of unattached women and widows who were put out of work by the 1935 legislation. In her study on Raniganj, Lahiri-Dutt argues that the importance that had been given to technological advancements in the mining industry had resulted in the destruction of the natural resource bases and the livelihood options of the rural poor (Lahiri-Dutt, 2001). This meant that there were no other opportunities for income in the local economy in the mining region of Raniganj. Lahiri-Dutt makes a case for how this excluded women from "the power to determine their own lives" (Lahiri-Dutt, 2001). The illegalisation of female labour in underground mines did not mean a complete cessation of all forms of women's engagement in coal mining, but it did mean that any further participation was informal and unregulated creating an even more hostile environment to work in. Lahiri-Dutt (2011) used census data from 2001 to demonstrate that the proportion of women against the total number of workers in 'informal mining and quarrying' was as high as 33 percent. Dhiraj Kumar Nite (2014) in his study on the Jharia coalfield says that their exclusion from the coal mining labourforce caused the impoverishment of living conditions in the coal belt even



as women increasingly competed for what few surface jobs there were available and family incomes went down by 40 percent due the exclusion of women from coal mining labour (ibid.). Only a small share of the women made redundant got work as wagon loaders, shale-pickers, maidservants, and scavengers (ibid.). This change was accompanied by a decrease in wage rates, and a reduction in working days during the years of the Great Depression (ibid.). He also observes that as women no longer worked alongside their men in the mines, seasonal migration increased and there was also an increase in prostitution (ibid.). Reduction in household and individual earnings manifested itself in the form of the deterioration of the physical condition as malnutrition increased along with conditions like rickets and other diseases (ibid.). The loss of conjugal life for single male miners who had immigrated away from their hometowns and of their wives and families left behind (ibid.) is also an aspect of the masculinization of coal mining that has not been given much credence.

Conclusion

This article has so far, through a review of literature, illustrated how women formed an integral part of the coal mining labour force in colonial India not only through their contribution to coal production but also by how entire families, communities and ethnic groups were affected by their women being put out of labour. It is also important to note that these women belonged to the most oppressed classes of society, particularly tribals. Thus, the impact of new regulations in mining laws was borne disproportionately by the tribal communities of India's coal producing regions in the east. It was, after all, their extremely backward socio-economic conditions that coerced them into physical labour in unforgiving conditions when the traditional Indian upper-caste norm did not allow women to venture beyond the confines of the house.

While the Mines Act, 1952, prohibited women labour underground - a condition that was revoked only in 2019 - there has not been an absolute cessation of women working in coal mines. Records from Jharia and other parts of Jharkhand in particular have consistently displayed the continued and illegal involvement of women and children in coal mining activities such as coal cutting and loading. Like in the past, this participation is not out of choice but instead arises from a coercion that is a product of socio-economic backwardness, political

apathy - even encouragement. These people, especially the women and children, form the lowest rung of the socio-economic order either in larger society or in the mines themselves. Not only is their labour informal and devoid of any form of social or financial security, it is also illegal, as mafias continue to make profits by engaging labour in coal mines that are abandoned or discontinued by coal mining companies.

The question that arises here is - what happens to these people once there is no longer a demand for coal? Will they remain suspended in a limbo, beholden to highly unequal power relations, and left to fend for themselves or shift to poorer conditions of work in whatever other industry they would find themselves in, much like the women whose labour was rendered illegal in 1935? Lahiri-Dutt describes Raniganj of that era as having no other economic avenue outside of coal mining, and the situation today for most of India's coal belt (much wider in geographical scope than in colonial India) remains much the same. Even informal work in coal earns labourers two times more than what they would from farming which was the main livelihood in these areas prior to the advent of the coal mining industry.

It is thus imperative that policymakers and administrators are cognizant of these issues as well, as the discourse on clean energy reaches a fever pitch in the face of the worsening climate crisis. Jharkhand, Odisha, Chhattisgarh, and West Bengal - states that form the core of India's coal producing belt - are also the most vulnerable to climate change (Mohan, 2021). This forms a double edged sword of Damocles hanging over the heads of informal labourers in the coal mines of these states who face both an impending closure of coal mines in the coming decades but also the ill effects of climate change. Skill development, social security, and investment in improved human development indicators are the need of the hour to prevent outcomes that could include entire communities losing their means of livelihood quite unfairly after having borne the brunt of coal mining on their natural resources, health and social capital for decades.

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We spoke to 5,000 people in Jharkhand on what will happen if the coal mines are shut in the future. Less than 5% knew there is some concept called just transition. I think depending on who you're talking to and what you're trying to figure out, the understanding of climate change as a lived experience is very deep rooted but the understanding of what climate mitigations can mean to my jobs and my livelihood and my future and my children - that is very low.

Aarti Khosla,
 Founder & Director, Climate Trends
 (World Sustainable Development Summit 2023)



THE CASTE CONUNDRUM IN INDIA: INSIGHTS FROM TERI'S FIELDWORK

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Men of Harijan sahi village of Angul district, Odisha playing cards in the afternoon.

Indian society is a heterogeneous entity layered with diverse linguistic, religious and cultural identities. The lives of the 1.2 billion people are marked by vastly differing everyday experiences and is exposed to varying degrees of marginalisation. While the Indian constitution prescribes no discrimination on the basis of caste, class, sex, religion or descent, this is no guarantee for a truly equitable society. In fact, these identities intersect to produce and reproduce each other and an intersectional nexus is formed where each influences the other. This nexus has an over-arching effect on all spheres of life and through this article we aim to showcase the wide-ranging impacts that such implicit, inherent identities have on our lives.

TERI's team recently visited the coal belts of Eastern India, specifically Odisha, to understand the ground realities in the context of the coal phase-down debates. Post the

declaration of the 2030 decarbonization and 2070 net zero goals, India, as most other nations, has been abuzz about phasing down from fossil fuels. The field visit, however, painted a completely different picture. People were living completely co-dependent lives on coal with zilch idea about any such developments on the national front. They were unaware that the future holds no coal and that they would be robbed of their livelihoods soon enough.

When we tried to analyse the villages with respect to an eventual just transition that (ideally) must take place, we deduced that various structural issues mar the process and caste is the foremost in it. Being an entrenched part of the Indian social milieu, it has inter-sectional effects across different verticals and has heavy bearing on everyday lives.

This article aims at capturing structural barriers to a transition to a greener and just economy within the coal belt, with a specific focus on caste. We approach caste as a complex issue, interacting constantly with factors such as class and gender. However, our focus is on its dominant effect in shaping allied circumstances, while hiding under the pretext of an extinct/by-gone era social evil.

THE LAST RESORT OF THE PRIVILEGED CASTES IS THE ONLY OPTION FOR THE LOWER CASTES IN THE VILLAGE

The Chhendipada village with a population of 5510¹, is located in the Angul district of Odisha. Like most Indian villages, Chhendipada too observes caste-based biases and we analysed them with respect to two factors – effect on implementation of government schemes and settlement patterns. We did this through investigating three tolas or ‘sahi’ to gather a holistic understanding – Banta Boris sahi, a General settlement, Harijan Sahi, an SC/ST settlement and Kumbharsahi, an OBC settlement.

The case of government schemes

One of the starkest examples of caste leading to structural problems can be seen in the way government schemes are implemented. Government schemes are planned and charted for the goodwill of all, there is no discrimination envisaged and yet, by the time it hits the ground, inherent biases creep in. During TERI’s fieldwork many such examples were witnessed. These are the silent clarion calls for a just transition as they highlight how complex the issue is on ground.

In Chhendipada, of the 3 settlements that were studied by TERI, only Harijan sahi - an SC hamlet - had no piped water connections in the households. Women from the sahi were forced to collect water from the only functional hand pump in the area, almost 20-25 times a day. In case of water shortages, MCL(Mahanadi Coalfields Limited) sends a water tanker which stops at the entrance of the settlement. The women collect water from these tankers. However, the water secured is insufficient. The other sahis have piped connection and only resort to nearby bore wells/hand pumps/water tank in case of emergency/less

supply. The last resort of the privileged castes is the only option for the lower castes in the village.

In ‘Caste and provision of public goods in India’, Raghunath Prasad Saket through an empirical study of 22 states of India based on secondary data, found that at PHC level negative variables of health infrastructure (like PHCs without water and PHCs without electricity) were positively correlated with the population of SC/ST. Similarly, the availability of general infrastructure (like road and national highway in 100 square kilometres), drinking water and tap water, and sanitation in house premises (availability of latrine and drainage) were also negatively correlated with the population of SC/ST.² (Saket, 2018, p. 162)

These examples highlight the inherent caste biases amongst people and how it gets reflected in their quotidian lives. When it comes to actual administration on ground many policies fail because the people responsible for implementing let their caste biases influence their work. Hence many policies fail to have an effect at the grassroots level for these reasons only.

Another reason why policies fail to have an impact on the ground is also the poor dissemination of information. People at the grassroots level are neither aware nor vocal about their rights. During TERI’s fieldwork, we were informed that a job fair was conducted by NHDC Odisha and 10-20 people from Bantabori sahi - general category hamlet - secured jobs through it. The other areas weren’t even aware about this opportunity at hand. None of the other caste settlements reported any awareness or employment secured through such a fair. Given the lack of employment opportunities in the area, it is hard to believe that such a fair would be deliberately missed by the youth in the village. From another part of the sahi, women informed the selection of 3-4 girls under state government’s skilling program. They were sent to Bangalore for training. However, they had to return mid-training due to spread of Covid-19. None of the other sahis mentioned sending girls from their settlement for any kind of trainings. In fact, when asked how often women from the area travelled outside the village, lower caste areas said they didn’t.

National Campaign on Dalit Human Rights (NCDHR) conducted an investigation across 25032 scheduled caste and scheduled tribe households in India to gauge the

1 <https://www.census2011.co.in/data/village/404465-chhendipada-orissa.html>

2 Saket, R.P. (2018). Caste and Provision of Public Goods in India. International journal of social science and humanity, 160-164. <https://doi.org/10.18178/ijssh.2018.V8.954>



extent of realisation of key entitlements of relief package announced by the central government under the Pradhan Mantri Garib Kalyan Yojana (NCDHR, 2020). The Odisha factsheet notes the following observation³

- regarding the Ayushman Bharat scheme, majority of SC and ST respondents were not aware about free testing and treatment of the scheme.
- almost all respondents reported not being enrolled.
- more than half of SC households reported that they were not visited by the health workers for checking symptoms.

Similarly, the national infrastructure equity audit 2010 (NIEA)⁴ found that SC/ST/Minority habitations were excluded in infrastructure coverage. Only 28% of the SC habitation had fair price shops, 13% habitations had a higher secondary school, 16% had primary schools, 15% had middle schools, and 17% had ICDS (Integrated child development scheme) located in their area. 59% of the habitations had not been electrified as per norms, 28% did not have electricity and 46% of the habitations were not connected by a pucca road. A similar narrative was heard during our fieldwork when SC/ST/OBC hamlets reported that electrification was either incomplete or electricity supply was erratic. Worse still, the few houses who did use electricity on a regular basis reported that the bills were egregiously high. In one such case the bill for 2 months turned out to be Rs.10,000 - an exorbitant amount for a house in the villages. Burdened by such costs and unable to pay, people end up with their supply being cut and continue spending their lives in the dark.

[THE] GLARING DISSATISFACTION AMONG SC/STS WAS MAINLY DUE TO TWO REASONS: SOCIAL BARRIERS DUE TO LOCATION OF SERVICES IN POWERFUL DOMINANT CASTE HABITATIONS AND ATTITUDE OF DOMINANT CASTE SERVICE PROVIDERS

In a separate group exercise where members from SC,ST,BC (backward caste) and General habitations were asked to rate infrastructure as poor, moderate and good, low aggregate ratings were given by SC/ ST/ Minority groups in comparison with BC and General caste groups for eight infrastructure services, that were commonly available in the GP (Social Equity Watch, 2010). This glaring dissatisfaction among SC/STs was mainly due to two reasons: social barriers due to location of services in powerful dominant caste habitations and attitude of dominant caste service providers.

Similarly, the gaps in access to public goods surfaced during the Covid-19 pandemic, when essential, life-saving services could not reach the public equitably and on time. The COVID-19 Relief Package provided for delivery of raw supplementary food material by the Anganwadi workers to the households with pregnant / lactating women and children aged 0-6 years. It was carried out via ICDS. Within SC settlements, 88% of households with pregnant and lactating women and 71% of households with children aged 0-6 years reported not receiving the benefits of the scheme.

In this context it is important to reiterate that social protection constitutes the 'just' of just transition. Lack of attention to pre-existing deficiencies will weaken the bridge that just transition hopes to serve as to a post-coal society.

Land ownership and spatial privileges

Land, as a resource and means of production, becomes a safety net in the face of mine closures and loss of employment in the coal belt. However, land ownership pattern is highly unequal and divided along the lines of caste.

Field observations from TERI's research reveal how land served as a source of alternative income, food security, collateral for securing credit and repaying the same and a ground for diversified livelihood options, as jobs shrank where mines were abandoned or closed. The NSO report on Land and Livestock Holdings of Households and Situation Assessment of Agricultural Households Survey⁵ published in September 2021 indicates this trend. The Scheduled Castes have the least ownership of land in comparison to their share in population,

³ National campaign on Dalit human rights. (2020). Delayed and Denied: Injustice in COVID-19 relief (Odisha Factsheet). http://www.ncdhr.org.in/wp-content/uploads/2020/09/4-NCDHR-State-Odisha-weclaim_April-May-2020.pdf

⁴ Praxis-Institute for Participatory Practices, Secretariat. Social Equity Watch. (2014). National Infrastructure Equity Audit 2010. https://www.socialequitywatch.org/_files/ugd/8a8dda_a4ada773608b4c6d9e3266ec2e5d1566.pdf

⁵ <https://www.deccanherald.com/opinion/panorama/caste-still-decides-who-holds-agri-land-and-how-much-1130718.html>



especially compared to OBCs and those belonging to 'Other' castes have a higher access to land in comparison to their share in population, 48% and 29% respectively. Further, OBCs make up 46% of the total agricultural households whereas SC and ST households accounted for 16% and 14% respectively. The data, however excludes agricultural labourers who would have given a more real picture of marginalisation in the country. Similar trends were observed in Chhendipada village. SCs in the village owned the least amount of land and worked mostly as agricultural labourers, whereas OBC and general castes owned commercially viable land holdings. After the closure of Chhendipada OC mine in 2014 that left the local population unemployed, they returned to farming.



Kitchen gardens were a common site in Bantabori sahi, Chhendipada village

LAND HELPED THE UPPER CASTES IN ACCUMULATING REVENUE AS WELL AS SHIELDING THEMSELVES FROM MINE CLOSURE. THIS PRIVILEGE IS UNAVAILABLE TO THE LOWER CASTES IN THE VILLAGE

In Bantabori sahi (General settlement area), farmers owned an average of 1 acre of land and sold produce such as sunflower oil, groundnuts in the local markets. They owned enough land to have kitchen gardens for every family which took care of the household requirements and then separate land for agricultural

purposes. In Kumbharsahi (OBC Settlement area), with smaller land holdings, farmers produced enough for self-consumption and secured minimal profits by selling the surplus. In the Harijansahi (SC/ST area), however, most residents were landless and unemployed. Depending on demand, they switched between working as agricultural labourers on the lands of the upper caste or working under contractual workers in road construction and other short-term projects.

Upper castes from the village found themselves in strong class position. With sizeable land holdings, they were able to secure credit to buy trucks for coal transportation, while this helped them generate more income, on mine closure, they suffered huge losses. However, by selling off more land, they were able to pay off their debts. Similarly, having land gave them an upper hand economically and most families of Bantabori sahi owned cattle which formed another source of income for them. It is evident how land helped the upper castes in accumulating revenue as well as shielding themselves from mine closure. This privilege is unavailable to the lower castes in the village who barely earn enough for daily food requirements. With no savings and alternative livelihood options, SCs in the village become the most vulnerable community.



Residents of Bantabori sahi also owned cattle which formed an additional source of income

Within just transition, assessing group-based resilience and relative vulnerabilities should become an important element in helping the communities' transition.



Conclusion

Evidence from the field and existing research confirm the elusive nature of caste and caste practices. Within just transition, a strong institutional support in the form of alternative livelihood assistance, provision of transition-specific benefits and public goods, skilling etc. must be put in place. It is important to investigate any obstructions that might come in the way of realising

these protective and facilitating measures no matter how structural they are in nature. Investigation of existing gaps in policy-making and implementation will shed a light on necessary prerequisites and priority areas within just transition. These barriers, if left unaddressed, will go on to reproduce and further the miseries of coal communities who have been promised a just society as we move away from coal.



Photo Credits: Apoorva Singh



PHOTO GALLERY

Fly Ash Brick Manufacturing



STEP 1:
2:1:(.25) IS THE PROPORTION OF FLY ASH: SAND : CEMENT THAT IS MIXED TOGETHER IN A CHURNER



STEP 2: ONCE MIXED, THE CHURNER IS STOPPED AND THE MIXTURE GOES UP INTO THE MACHINE THROUGH THE BELT



STEP 3: THE MOULDS IN THE MACHINE CAST THEM INTO FLY ASH BRICKS. IN ONE ROUND 15 SUCH BRICKS ARE MADE



STEP 4: THESE BRICKS ARE THEN MANUALLY CARRIED TO BE DRIED IN THE SUN



STEP 5: IN 5MIN 15 BRICKS ARE PRODUCED WHICH ARE SOLD FOR RS.3-3.5 EACH. THE LABOURERS ARE PAID RS.500/DAY, MUCH HIGHER THAN THE RS.300/DAY THEY EARN IN COAL MINES

Photo Credits: Parul Singh

Photo location: Kosala, Angul, Odisha



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