

Policy Brief

Beyond coal: Just transition in India's coal districts



Insights

1. India must start deliberations on coal phase-down and just transition because of the following factors:
 - Increasing cost competitiveness and reliability of renewable-based power;
 - Decreasing attractiveness of coal-based power due to increasing cost and stricter environmental regulations;
 - The need to reverse the 'resource curse' and improve the socio-economic and environmental conditions of coal mining areas;
 - The urgency of climate action, as India is one of the most vulnerable countries; and,
 - To avoid socio-economic disruptions of unplanned mine closure.
2. From the in-depth study of the Ramgarh district, the dependence of the communities on coal mining can be characterized by the following:
 - **Informal dependence:** Dependence on coal for income is mainly informal. In Ramgarh, the proportion of informal workers was nearly three times the formal workforce.
 - **Low-income dependence:** Nearly two-thirds of the households deriving an income from coal had meager monthly income between ₹6,000 (US \$83) – ₹10,000 (US \$139).
 - **Spatially concentrated dependence:** In Ramgarh, the direct dependence on coal mines for jobs and income was concentrated within a 10 km radius of the mines.
 - **Constructed dependence:** An undue focus on coal mining has stymied the development of other economic sectors, creating what can arguably be termed as 'constructed' dependence on coal.
3. Just Transition is not a consideration of the future; it is here and now in many coal mining districts, as mines are being closed in an unplanned manner. In Jharkhand, 50% of mines are closed. In Ramgarh, half of the mines are closed, and two-thirds of the operational mines are unprofitable.
4. Considering the characteristics of the dependence and the poor socio-economic status of most coal mining areas, just transition in India will require 'structural changes' to support a broad-based socio-economic transition. This will include:
 - Economic diversification plans and development of low-carbon industrial restructuring;
 - Investments in social infrastructure such as education, skills, healthcare, and basic amenities;
 - Mine reclamation and coal mine area redevelopment; and,
 - Transitioning of the coal sector, including restructuring the coal PSUs.
5. Global experiences show that just transition is a long-term process, with a phased plan for closing down coal mines and coal-based power. India should, therefore, develop long-term plans for coal phase-out. This will ensure a planned socio-economic transition while ensuring that India's energy security is not compromised.
6. Just transition planning will require bottom-up engagement and a coalition of various stakeholders, including policymakers, public representatives, administrators, industry, unions, and the local community. A top-down approach is not likely to succeed.
7. A transition of this scale will require the support of all levels of Government- the Centre, State, and District, to develop and implement Just Transition policies and plans, and mobilize financial resources.
8. The funding for just transition will have to come from both public and private sources. District Mineral Foundation (DMF) and Coal cess will be important sources of finance to support just transition.
9. Energy transition must go hand-in-hand with just transition. A well-planned and well-managed just transition will enable India to show strong commitments for climate action and support sustainable development goals in the coal mining areas.
10. India should take a leadership role in framing the global debate on just transition and develop an international coalition to support it.

1. JUST TRANSITION: AN IMPERATIVE FOR INDIA'S ENERGY TRANSITION AND CLIMATE ACTION

Coal, the most significant contributor to greenhouse gas emissions, is the backbone of India's industrial sector and energy security. It is the major source of electricity, fuels various industrial sectors, cross-subsidises the Indian railways, and is a major employment generator in key mining and industrial areas. Arguments of reliance on coal mining and energy security (over 71% of electricity generation in India is from coal-based power) has kept at bay any policy discussion on phasing out coal.

What is Just Transition?

The Paris Agreement (2015) and the Intergovernmental Panel on Climate Change (IPCC) report (2018) have set the timeframe for a fossil-fuel transition. If catastrophic impacts of climate change are to be avoided, the world will have to reach net-zero emissions by 2050. This will require a 'system transition' in electricity generation and phasing out of coal-based power by 2050.

Just Transition was included in the Paris Climate Agreement in 2015 to ensure that the workers and communities dependent on fossil fuels like coal do not suffer due to the closing of mines and power plants to meet the climate change goals. In all its framings, it seeks to build an equitable and resilient economy in fossil-fuel dependent regions, leading to an improved quality for all

However, there are five critical factors – influenced by market realities and social responsibility – which must compel us to think otherwise. These include-

i) Competition from renewables: With a steady decline in the cost of renewable energy, especially solar and wind, brought about by innovation and increased deployment, and uninterrupted renewable energy becoming a reality, the cost advantage of coal is gradually eroding. Already the cost of power from utility-scale solar photovoltaic is 40% below the cost of existing coal power in India and less than half the price of new coal-fired power.

ii) Rising pollution control costs: Coal power plants are the single largest source of industrial pollution, responsible for 60% of suspended particulate matter (SPM), 50% of sulphur dioxide (SO₂), 30% of nitrogen oxide (NOx) and 80% of mercury (Hg) emissions.¹ The pollution standards of power plants have thus been progressively made stringent. The estimated capital expenditure required to meet these standards is about ₹86,135 crore (US \$1.2 billion). This will add between ₹0.32 and 0.72/kWh to the existing coal power tariffs.² Going ahead, the pollution standards will become even more stringent, putting a question mark on the financial viability of old and polluting plants.

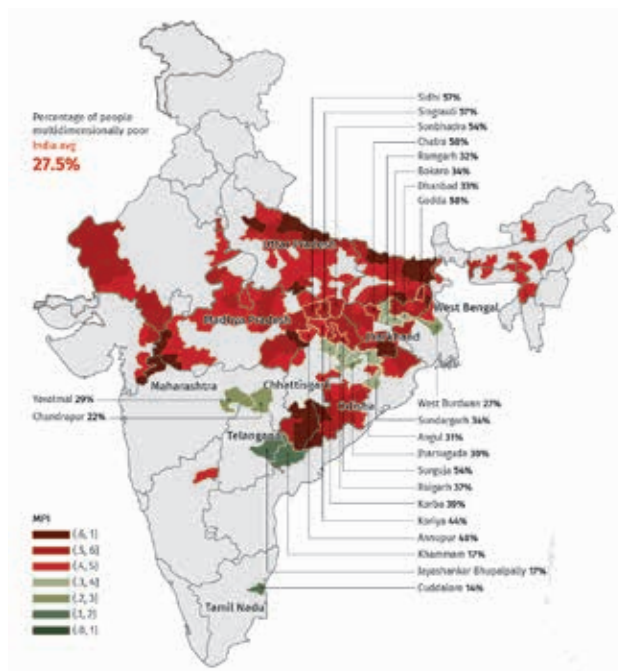
iii) Reversing the resource curse: Resource extraction has led to large-scale displacement and deprivation for local people in coal regions. Besides, these people have borne the environmental externalities of such activities, as coal mining areas are critically polluted in terms of air, water and soil pollution. Coal mining is also responsible for about half of all the forestland diverted for mining, affecting forest-based livelihoods, an important source of income for marginalized communities. Additionally, more than 50% of the population in most top coal districts are multidimensionally poor, suffering from poor health, education and living standards. This is twice India's average of 27.5%.³ Just transition is an opportunity to reverse the resource curse in these regions.

¹ Bhushan, C., Bhati, P., Sanjeev, K., Sangeetha, A., Siddhartha, Sai., Ramanathan, S. and Rudra, A. (2015). *Heat on Power: Green Rating of Coal-based Power Plants*. Centre for Science and Environment, New Delhi.

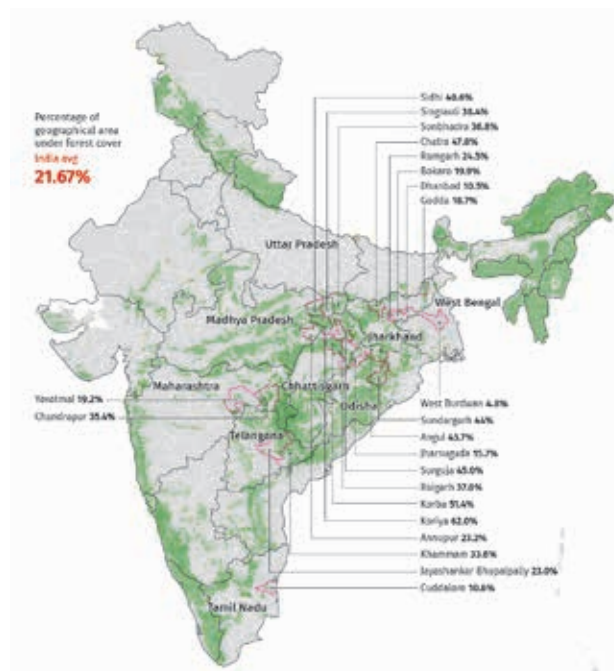
² Garg, V., Narayanaswamy, D., Ganesan, K. and Viswanathan, B. (2019). *India's Energy Transition: The cost of meeting air pollution standards in the coal-fired electricity sector*. International Institute for Sustainable Development. <https://www.iisd.org/system/files/2020-08/india-energy-transition-air-pollution-standards.pdf>

³ Oxford Poverty and Human Development Initiative. *Country level analysis: India*. University of Oxford. <https://ophi.org.uk/multidimensional-poverty-index/databank/country-level/>

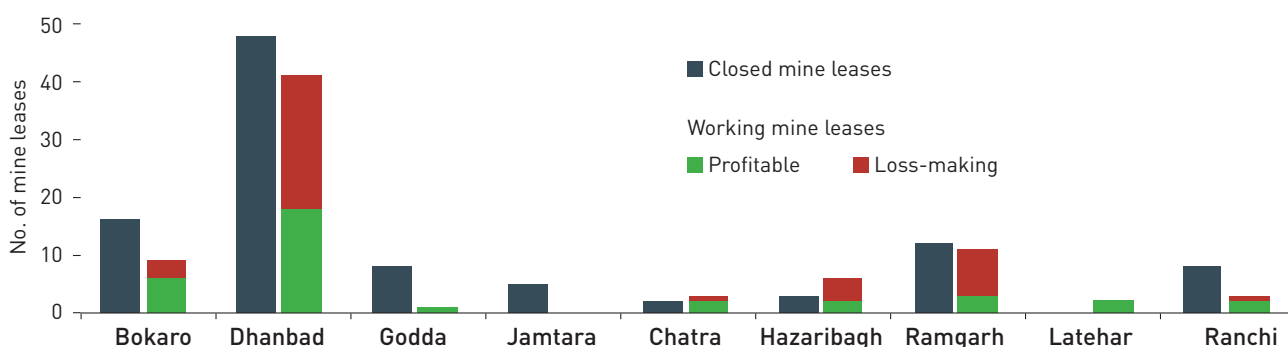
Multidimensionally poor people in top coal mining districts



Forest cover in top coal mining districts



Status of coal mining leases in Jharkhand



iv) Urgency of climate action: India is the fifth most vulnerable country to catastrophic impacts of climate change. In the last 20 years, it has suffered a loss of US \$14 billion annually due to extreme weather events, the second highest among G20 countries.⁴ India also risks losing 2.5% - 4.5% of GDP by 2030 due to heat waves alone.⁵ It is, therefore, in India's interest that the GHG emissions are reduced significantly, a key mechanism of which will be cutting down heavily on coal consumption.

v) Profitability of coal mines and unplanned mine closure: While Coal India Limited (CIL), India's largest producer of coal, is overall profitable, 70% of its mines are running into losses.⁶ The unprofitable mines are being closed down (temporarily or permanently) in an unplanned manner. In Jharkhand, over 50% of the coal mines are closed and of the operational mines, half are unprofitable. The issue of unplanned mine closure, which is still subterranean, will become a full-blown crisis and lead to massive socio-economic disruptions if it is not addressed now.⁷

⁴ Climate Transparency. (2020). *Comparing G20 Climate Action and Responses to the COVID-19 crisis*. <https://www.climate-transparency.org/wp-content/uploads/2020/11/India-CT-2020-WEB.pdf>

⁵ Woetzel, J., Pinner, D., Samandari, H., Gupta, R., Engel, H., Krishnan, M., Carter, P. (2020). *Will India get too hot to work?* McKinsey Global Institute <https://www.mckinsey.com/business-functions/sustainability/our-insights/will-india-get-too-hot-to-work#>

⁶ Lok Sabha Unstarred Question No. 3751 dated December 11, 2019

⁷ Mishra, S. (2018). Mine Closures and the Issue of Livelihood. *Economic & Political Weekly*, Vol. 53

2. UNDERSTANDING JUST TRANSITION - CASE STUDY OF RAMGARH, JHARKHAND

Ramgarh is among the top five coal-producing districts of Jharkhand, but its mining activities are shrinking. About 50% of mines in the district have been closed or temporarily discontinued due to various factors, including unprofitability. The remaining mines (two-thirds of them being unprofitable) have a life of about 10-25 years, and there are very few new ones in the pipeline. Therefore, coal mining activities in the district will largely phase out in the next decade or two, making it a perfect case for a prospective just transition. Further, the district's socio-economic profile, demographics (50% rural and 50% urban), land use pattern (45% agriculture, 29% forest land, 11% wasteland, 15% other uses), natural resource base, and its strategic location close to the state's capital offers an interesting canvas to understand how coal mining has shaped the district's economy and its social relations, and what a just transition for such a region entails.

The in-depth study of Ramgarh district was designed with the following objectives:

- Assess the nature and extent of coal dependency and distributional impacts of coal mining;
- Capture stakeholders' perception on coal mine closure;
- Identify the district's risk factors from unplanned mine closure; and,
- Develop a matrix for just transition planning at the district-level.

The study relied on a mix of primary and secondary research for its objectives. Primary research included household survey with 406 households⁸, 14 focus group discussions (FGDs) covering 138 participants from mine-dependent communities and Panchayati Raj Institution (PRI) leaders and semi-structured interviews with key state government and political representatives, including the Chief Minister of Jharkhand, labour union leaders, coal industry officials, the district administration and civil society group representatives.



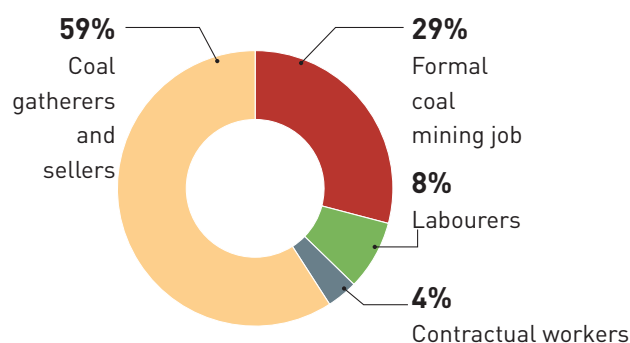
⁸ The sample size for household survey was determined considering a 95% confidence level and 5% margin of error. The sample was chosen from three geographic strata, at a distance of 0-3 km, 3-10km and beyond 10km from the mine/mine cluster, based on the population share of each stratum. The spatial categorisation has been derived from the classification broadly used by *Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKY)* to identify areas that are directly and indirectly affected by mining. Areas within 0-3 km are considered to be most (directly) impacted by the presence of mining activities, those within 3-10 km to be moderately or indirectly impacted by mining-related activities, and those beyond 10 km to be the least impacted or unaffected by mining-related activities. The radii and sample locations were identified through geo-spatial mapping (GIS).

2.1 Key findings

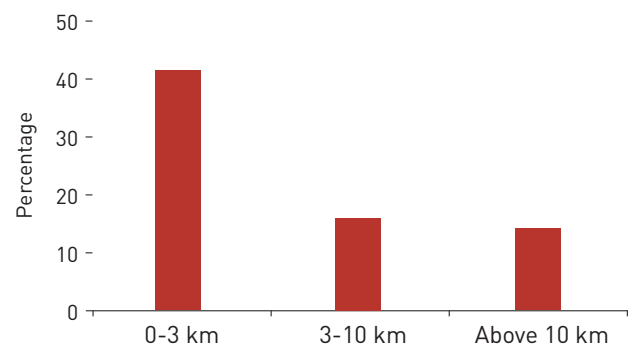
Dependence on coal

- The most significant dependence on coal was for income. 27% of the surveyed households (equivalent to 54,000 households in the district) were found to be directly dependent on coal (partially or fully) for their earnings.
- Dependence on coal for income is largely informal. Nearly 70% of the households deriving an income from coal constitute part of the informal coal economy, with meagre incomes – between ₹5,000- ₹10,000 (US \$70- US \$139) per month. These people also do not have any labour protection, social safety net, and are highly dependent on government schemes for most basic amenities.
- Dependence on coal for income was concentrated closer to the mines. More than 40% households within 3km of mines had a direct income from coal as opposed to less than 17% beyond 3km.
- The perceived dependence on coal for household livelihood was significantly higher than the actual dependence. 77% of the households considered that coal mining had a bearing on their income in ‘someway’, even though only 27% of the households derived an income from it.
- 52% of the surveyed households used coal as the primary cooking fuel even though 70% households had Liquefied Petroleum Gas (LPG) connections. The high usage of coal can be attributed to its lower cost compared to LPG and the ease of its procurement, especially closer to the coal mines.
- The average monthly household consumption of coal for cooking fuel was 116kg, amounting to 0.28 million tonnes (MT) annually for the entire district.

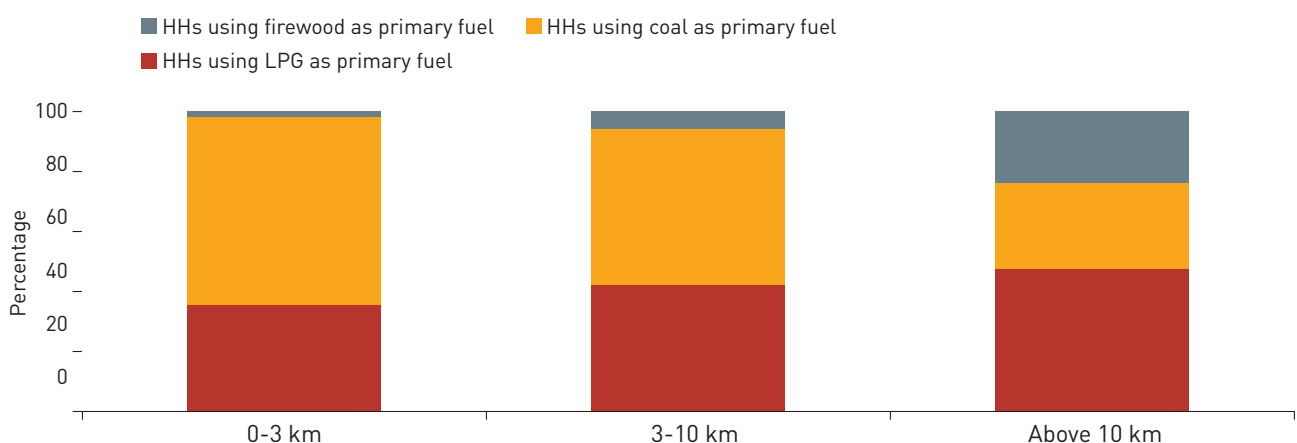
Occupation of households dependent on coal



Spatial distribution of households deriving income from coal



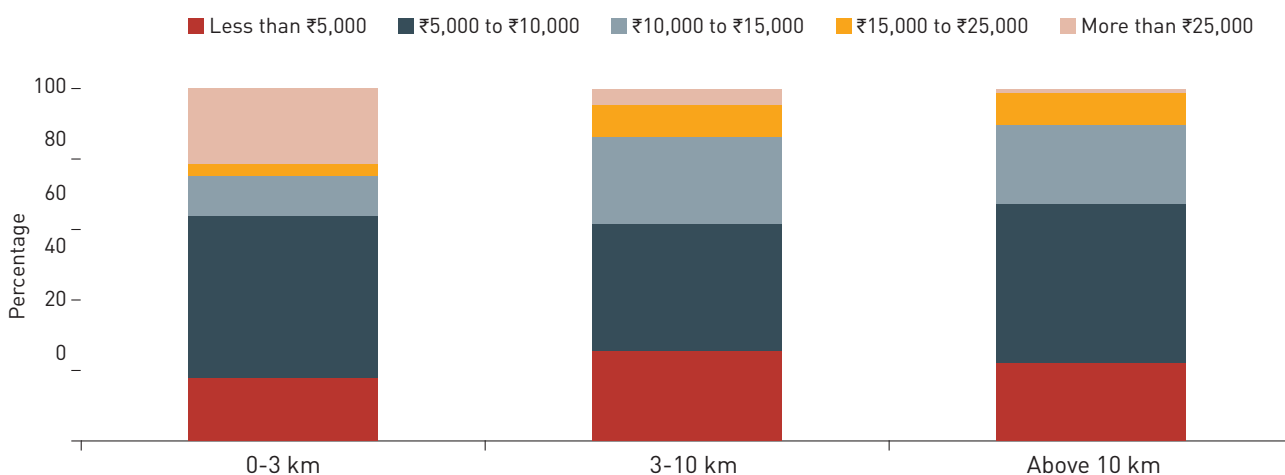
Coal consumption as cooking fuel



Distributional Impacts – mining *versus* non-mining areas

- Mining areas (within 3km of the mines) had the highest concentration of households with monthly incomes above ₹25,000 (US \$347). However, the proportion of households with monthly incomes below ₹10,000 (US \$139) remained the same in mining and non-mining areas (beyond 3km of the mines), indicating that coal mining has created isolated pockets of affluence but not led to an improvement in the income levels of the larger population, including of those living closer to mines.
- There was no discernible difference between the mining and non-mining areas with respect to access to basic amenities (clean cooking fuel, piped water supply connections and electricity). Even though coal companies had set up or supported a few hospitals and schools in the district, such infrastructure benefitted only a small population. The companies' welfare benefits (housing, healthcare, clean cooking fuel) were being availed of only by employees who have a secure job with the company and the CSR investments made by the company(s) were extremely limited.

Income distribution among households



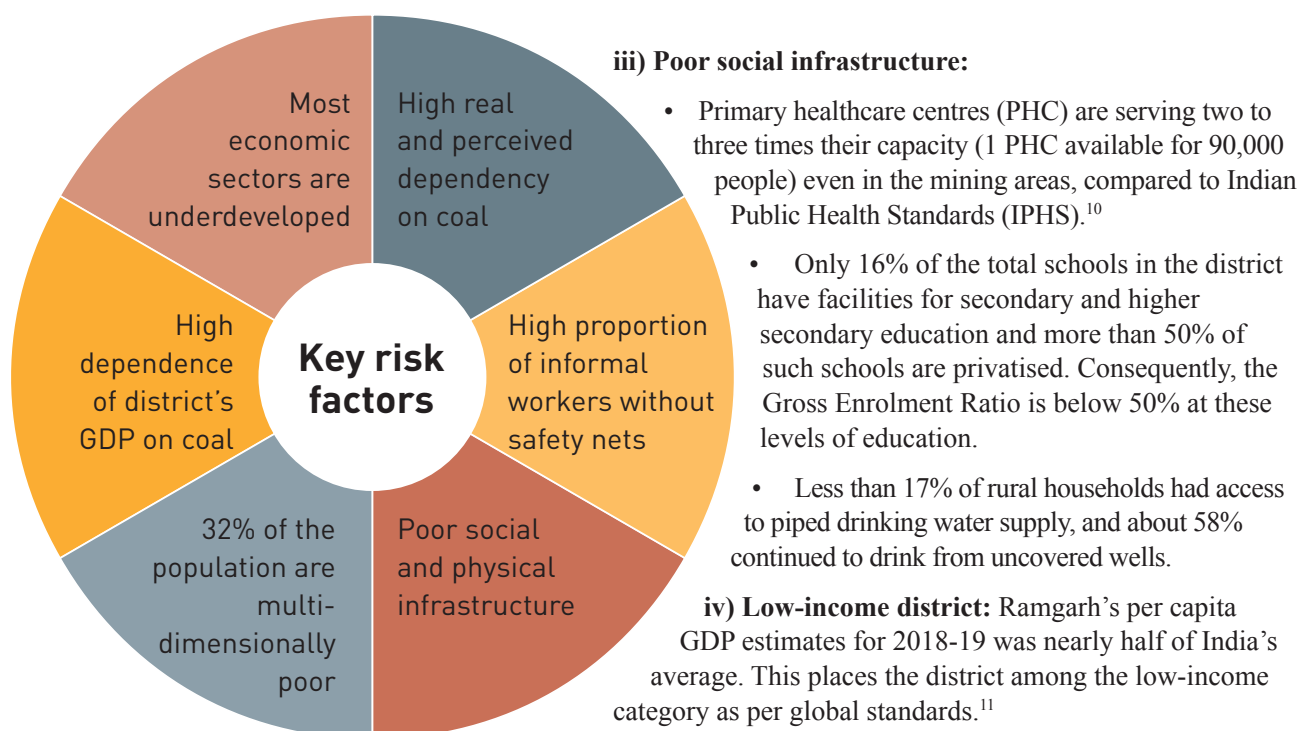
Risks from unplanned mine closure

The findings establish that the dependence on coal for income is high in Ramgarh, both in the actual and perceived sense, and the high proportion of informal workers with no social safety nets and alternate livelihood options would be among the worst impacted by coal mine closure. In addition to these, the key risk factors for the district from unplanned mine closure are described below:

i) Coal – centric economy: Coal remains the single largest contributor to the district's GDP, with a share of about 21%. In addition, other industrial sectors are also heavily reliant on coal, such as coal washeries, thermal power plants, sponge iron units, refractories, etc.

ii) Underdevelopment in other sectors: A focus on coal mining and related industry over decades has stymied the development of other sectors and the diversification of the economy. For instance, Ramgarh's agricultural productivity is higher than the state and national average, but only 18% of its gross cropped area is irrigated.⁹ Forests occupy one-fourth of the district's geographical area, but no attempts have been made to develop forest-based livelihoods. The story is similar for aquaculture and tourism, with significant potential for employment generation.

⁹ NABCONS. (2016). *District Irrigation Plan 2016-2021: Ramgarh, Jharkhand*. Government of Jharkhand.



2.2. Just transition planning for Ramgarh

Planning a just transition in Ramgarh will involve six key components-

(i) Planning timeframe- Considering the remaining life of operational and the upcoming mines, the timeframe for planning just transition in the district would be between 20-25 years. The district can follow a staggered approach for coal mine closure in three phases and avoid any forced closure.

(ii) Inclusive planning: Just transition planning should adopt a participatory planning approach to suitably capture the extent and types of vulnerabilities of local communities to coal mine closure, their aspirations, and preparedness for alternatives. District-level planning through such an approach has already been outlined by the erstwhile Planning Commission, which the district can build on further.

(iii) Alternative income and employment opportunities for coal industry workers- This will need a separate approach for formal and informal workers considering their skill sets, education levels, mobility issue etc.

- For the formal workforce, the key components will be retraining and reskilling, providing temporary financial assistance (such as mobility assistance, re-employment relief grant etc.), planning for early retirement options with severance benefits, and pension support.
- For the informal workforce, employment support through government livelihood programmes, employment in building new social and economic infrastructure and skill training will be important.

(iv) Economic Diversification - This can be achieved primarily through three approaches:

- Harnessing the natural resource base-** This includes providing a boost to agriculture by significantly augmenting the irrigation coverage of cropped area, promoting horticulture, developing forest-based livelihoods based on Non-Timber Forest Products (NTFP). The district has already been identified as an important aquaculture region by the State Directorate of Fisheries¹² and improving the potential of the fisheries industry through cage culture in the coal pits will generate both employment and income.

¹⁰ IPHS stipulates having 1 PHC per 30,000 people in rural areas, and 1 PHC per 50,000 people in urban areas

¹¹ World Bank Data Team. (2019). New country classifications by income levels: 2019-2020. *World Bank Blogs*. <https://blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020>

¹² Directorate of Fisheries, Government of Jharkhand, Aquaculture resources, as available from <http://jharkhandfisheries.org/aquaculture.php>, last accessed on August 2020



- **Reclamation and redevelopment of mining land/mined areas-** Mine reclamation and land redevelopment are key opportunities, as more than 10.5% of the district's geographical area (14,000 ha) is under mining. A coal mining area redevelopment plan for the district will be important to improve economic opportunities and reuse assets.
- **Industrial restructuring-** A low-carbon industrial restructuring, including identifying alternative non-polluting use of coal, will be a crucial component to create employment and drive growth in the secondary and tertiary sectors.

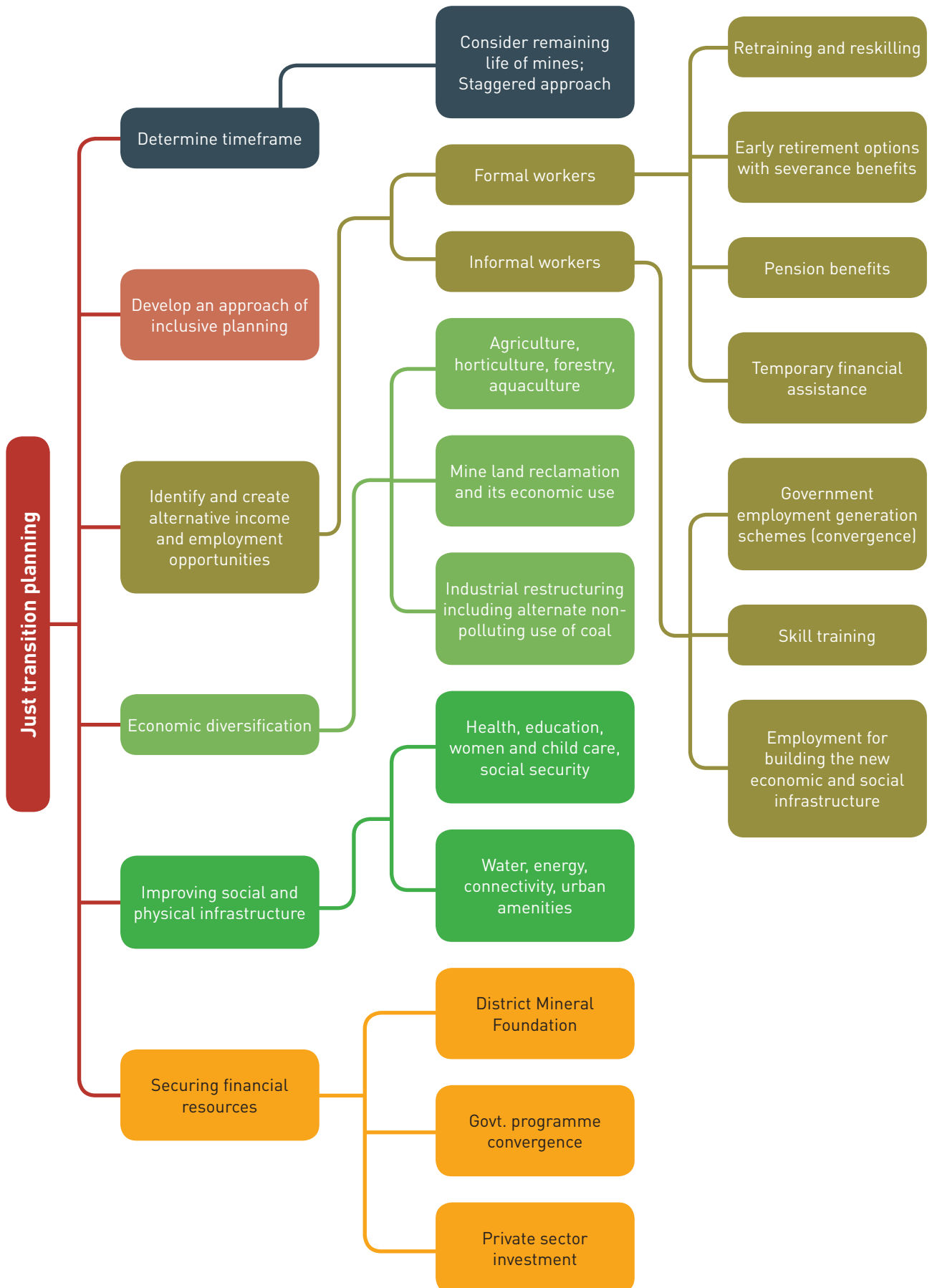
(v) Improvement of social and physical infrastructure- This will be crucial on two aspects:

- To ensure social support and safety nets for the local community, investments in education, especially beyond elementary levels will help to improve employability, and deliver significant outcomes in 10 years' time.
- Adequate infrastructure for water, energy supply, connectivity and urban amenities will also be crucial to support the district's service sector and improve its investment potential, both for private and public entities.

(vi) Mobilisation of financial resources- Financial resources can be mobilised at the district-level, by utilising District Mineral Foundation (DMF) funds, convergence of plans and programmes, and attracting private sector investments in co-ordination with state and central governments.

The Ramgarh planning matrix is also a reference template for other coal mining districts of India.

District planning matrix for just transition



3. JUST TRANSITION FRAMEWORK FOR INDIA

There is no universal, standardised framework for just transition, as it is widely accepted that just transition plans, strategies and framework need to be site and context specific. This is well established through just transition frameworks and plans proposed by Government appointed agencies, inter-governmental organisations, civil society organisations, trade union alliances, academicians etc.

Considering the Ramgarh study and global experiences, an ‘indicative’ just transition framework can be has been developed for India. The framework includes two components:

- Pillars and key elements of just transition; and,
- Policies and the role of various levels of government.

3.1 Pillars and key elements

A just transition framework can be built around eight pillars as described below:

Pillars and key elements of just transition in India	
Pillars	Key elements
Strong national and state government support	<ul style="list-style-type: none"> • Develop regional, state and national plan for coal phase-out. • Establish a coherent policy architecture, where provisions of just transition are integrated in national plans and policies, and in policies and plans of the state and local governments. • Establish interministerial and multi-departmental coordination cell for just transition. • Facilitate social dialogue throughout the stages of just transition (pre-coal mining phase-out, during phase-out and post phase-out) to ensure transparent decision-making. • Set up a multi-stakeholder special body/agency for coal mine closure while entrusting it with the highest stake and responsibility to lead the process. • Provide financial and tax incentives to attract new low-carbon industries (that support local jobs) to secure diverse income and revenue sources.
Diverse coalition and local engagement	<ul style="list-style-type: none"> • Develop a strong and diverse coalition of various actors and stakeholders (including workers, community members, labour unions, environmentalists, businesses, local government) to work towards a shared vision of just transition through co-ordination and consensus. • Prepare a joint just transition proposal and engage with local communities.
Effective communication strategy	<ul style="list-style-type: none"> • Develop a communication strategy to reach out to all stakeholders, from national to local levels, to clearly convey the objective, need and timeframe for just transition. • Develop dedicated portal and information repository.
Local support systems	Open a just transition cell at local administrative levels to provide information, and engage with formal and informal workers to identify appropriate opportunities to substitute their incomes/ livelihoods, as per their skills, adaptive capacity and scope of mobility.
Economic diversification and social security	<ul style="list-style-type: none"> • Develop an economic diversification plan, taking into consideration local resources, manpower and connectivity. • Foster local entrepreneurship through investments in vocational training centres, educational programmes/facilities. • Invest in land and environmental restoration to create long-term economic and social assets.
Coal sector transition	<ul style="list-style-type: none"> • Enable restructuring of CIL and its subsidiaries, for diversification into solar, wind, energy storage, e-mobility etc., that is also aligned to the public purpose of energy security. • Create a special ‘Workforce Transition Fund’ to provide relief measures for displaced workers, such as temporary income support, mobility assistance, early retirement package, training and re-skilling assistance for younger workers etc.
Social and physical infrastructure development	Invest in infrastructure, such as for education, healthcare, clean water, energy, connectivity and urban amenities to improve social capital, and to attract businesses and investors.
Public and private investments	<ul style="list-style-type: none"> • Identify local, national and international funding sources and create a dedicated public fund. • Use public funds to attract private investments.

3.2 Policies and the role of various levels of government

Implementing the various pillars of just transition will require support from all levels of the government as described below.

Central government

The central government will have the most crucial role in developing supportive policies and measures for just transition. In five areas, the Centre's support and engagement will be crucial-

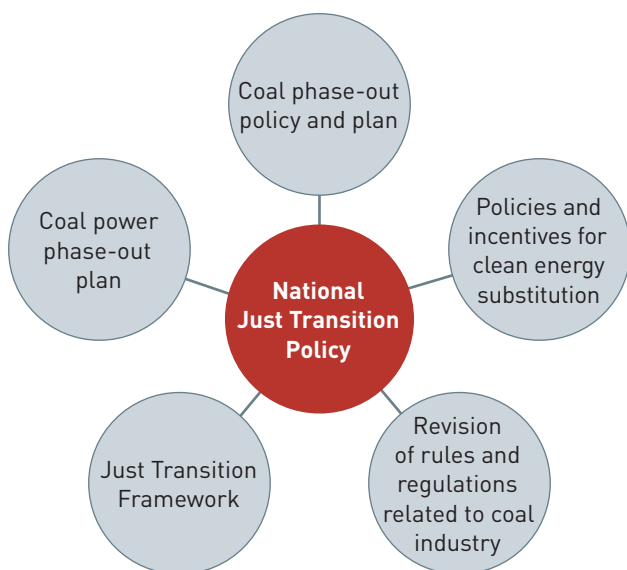
- Developing a national just transition policy;
- Developing a convergence plan for national policies and programmes;
- Transitioning of coal public sector undertakings;
- Allocating a financial package for just transition; and,
- Pushing for an international framework to support just transition in developing countries.

State Government

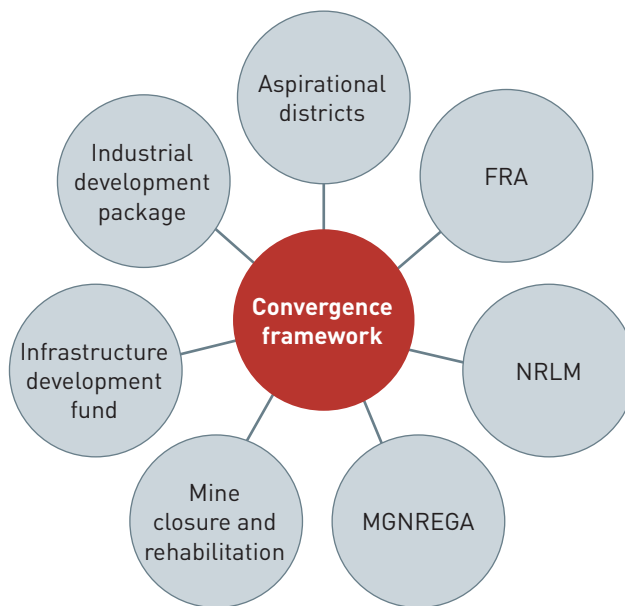
The state government(s) will be at the front line for dealing with just transition. The State will have a key role on particularly four fronts-

- Building a broad-based consensus and action plan to phase-out coal mining and power plants;

Elements of a national just transition policy



Convergence framework for just transition



Mine closure and just transition can be a win-win proposition for CIL

Most of the underground mines of Coal India Limited (CIL) have been running into losses. They employ about 40-45% of CIL's total workforce but account for only 5% of the company's raw coal production. The annual losses incurred by these mines average nearly ₹16,000 crore (US \$2.2 billion), which is about the same as the company's annual profits in 2018-19. Closing these mines can be a win-win proposition for CIL and the local economy that has come to be dependent on these mines. The additional profits can be used to provide a good severance package for its employees and invest in the socio-economic transition of these mining areas.

- Developing an economic and industrial policy that can help steer away from coal dependence with respect to industrial development, employment and government revenue;
- Developing a state-level policy for just transition, aligned with the national policy and state development vision; and,
- Facilitating and implementing the socio-economic transition using state and national policy instruments and financial support.

A state-level just transition policy that is aligned to its vision and action plan can be a starting point for facilitating a concerted approach on just transition for the coal mining areas.

District administration and local institutions

A key criterion of just transition is local engagement and community dialogue.²⁵ An implementation plan needs to be developed at the local level through such engagement. The district administration and the local institutions have crucial roles to play in the following aspects:

- A participatory planning process taking into account the local context; and,
- Implementation mechanism of just transition plan and financial support for it.

Financial Resources for Just Transition

It is important to recognise that the budget for just transition will be substantial and require a combination of public and private investments to facilitate a socio-economic transition of coal regions. Among government revenue sources, District Mineral Foundation (DMF) and coal cess can play a key role.

DMFs were instituted with the objective to work for the interest and benefit of mining-affected communities. Government estimates suggest that about ₹6,000 crore (US \$830 million) are likely to be collected by DMFs annually. In addition to making investments in high priority areas such as drinking water supply, healthcare, education, skill development which are much needed in coal regions, DMF funds can also create long-term security in these regions through investments for creating sustainable livelihood options. Besides DMF, there is coal cess which collects about ₹38,000 crore (US \$5.3 billion) per year and will be used for GST compensation till 2022. Post 2022, it can also be used for socio-economic transition of coal regions.

The matrix for just transition planning as proposed can provide a blueprint for the socio-economic planning that will be necessary. The Constitution of India has a solid underpinning for local-level planning and the government has also used such an approach for district development planning.

Way Ahead

Across the world, just transition strategies are being advocated to mitigate the impacts of climate change and create alternative social and economic foundations that can sustain coal-dependent areas. For India, such a policy dialogue is yet to begin.

This policy proposal aims to serve as a reference point for facilitating a broader discussion on just transition framework and strategies. However, considering the complex coal face of India, this is only the beginning. Further in-depth work is required to capture the diversity in coal mining districts and to develop various policies, strategies and investment plans.

iFOREST

International Forum for Environment, Sustainability & Technology (iFOREST), an independent non-profit environmental research organisation, was started by renowned scientists and environmentalists to innovate on policies and practices for tackling the pressing environmental and sustainability challenges of our times. As an institution, we strive to remain locally relevant and globally integrated. Our work on Just Transition is borne out of this mission and endeavour.

