

Just Transition for Green Growth and Green Jobs in Jharkhand

A Strategic Road Map

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A STRATEGIC ROADMAP



Targets

1.5°C temp.
increase

Net Zero
by
2070

Energy
Independence
by
2047

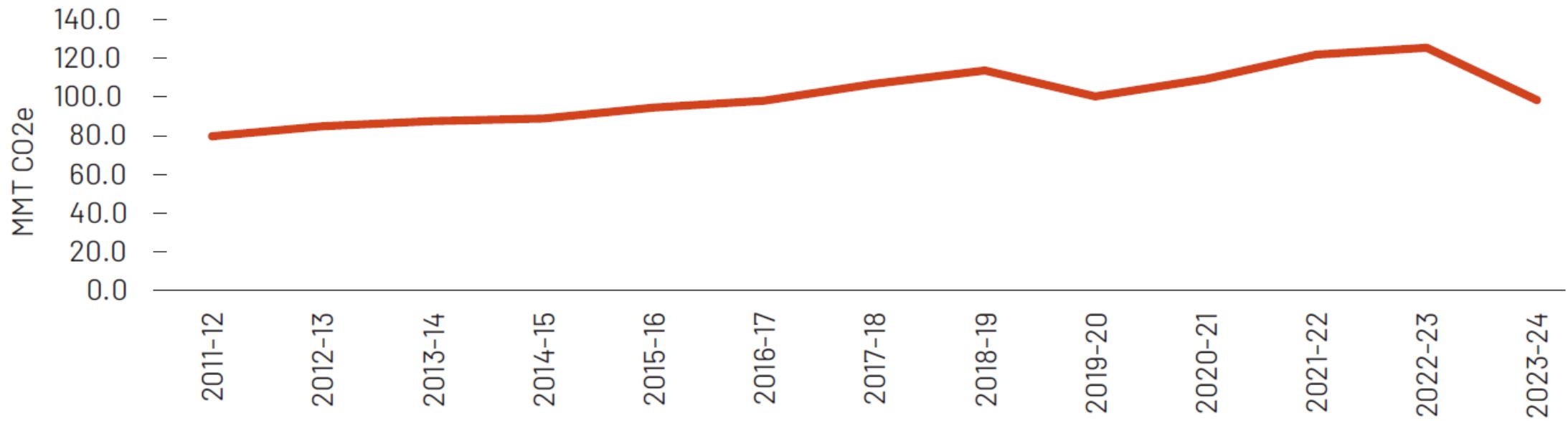
Meeting these targets will require the biggest transformation in the economic systems in the shortest time.

A Just Transition is crucial to ensure minimal disruption

Just Transition in Jharkhand

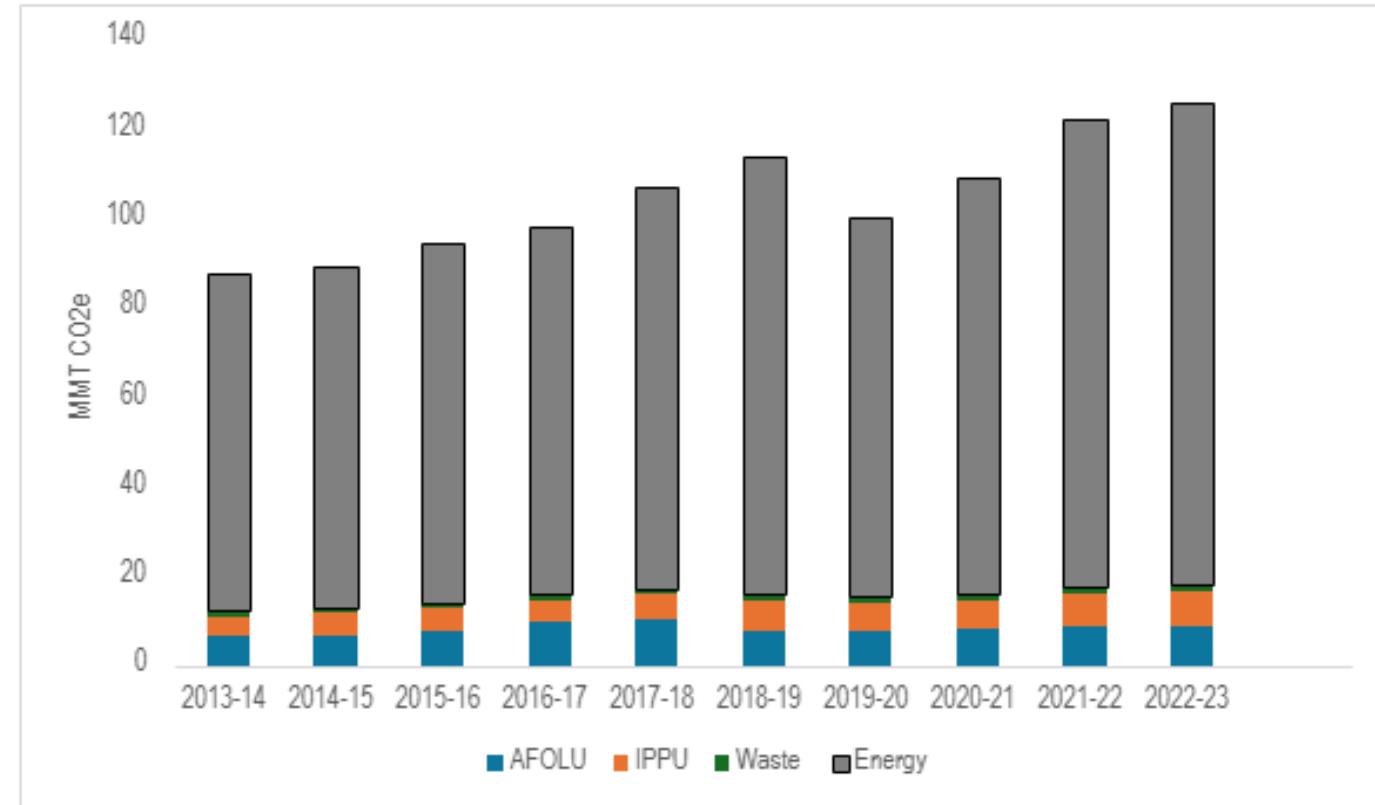
GHG emission profile

- Jharkhand accounts for about **4%** of India's total emissions, increasing at a CAGR of 4% over the last decade.
- Per capita emission is about 2.5 MT CO₂e, which is **more than India's** average of 2.1 MT CO₂e (2022-23).



Economic profile

- Industrial sector (mining + secondary sector) accounts for **41% of the GSVA**.
- The energy sector (including thermal power and energy-related industrial emissions) accounts for about **86% of the state's total GHG emissions**.
- **Reducing the emission intensity of the GDP will require transforming the state's core energy and industrial sectors.**



What does just transition entail?

1. **Build a resilient green economy** to meet net zero target by developing new green businesses, including MSMEs, and by supporting fossil fuel-dependent businesses to shift to green energy and industry.
2. **Improve the social, economic, and environmental resilience** of affected regions, and build resilient communities.
3. **Support workers and communities** affected by the fossil-fuel phase-down in a manner that makes them better off, and **enhances opportunities for the youth**.
4. **Enhance energy security and access**.
5. **Ensures an inclusive process** by including all stakeholders in decision-making.

Better than before...

Key Issues, Opportunities & Recommendations

Coal mining

- Second-largest coal producer of India, accounting for nearly 20% of national output. Major economic and employment anchor.
- Despite growth in overall coal production and expansion being planned for coking coal, a large share of mines are ageing, have low productivity, and are economically stressed.
- Nearly over **half of the operational mines (98), will need transition planning in the next 5-10 years**, primarily concentrated in districts such as Dhanbad, Ramgarh, and Bokaro.
- Massive **opportunity in repurposing coal mining land** for green industry and energy development, and supporting just transition of mining areas.

Coal mining

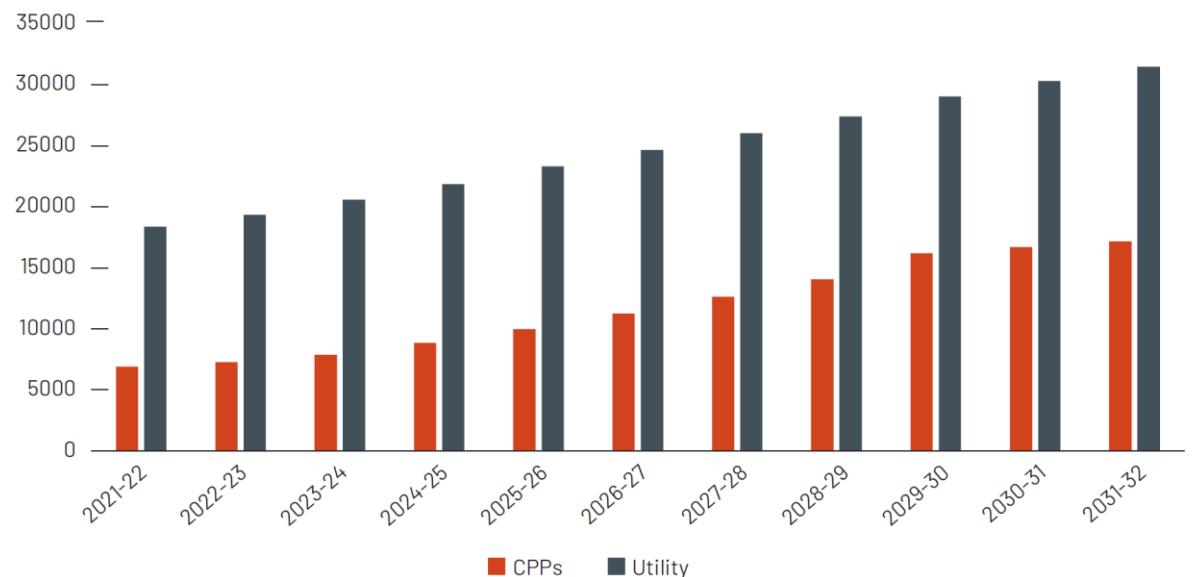
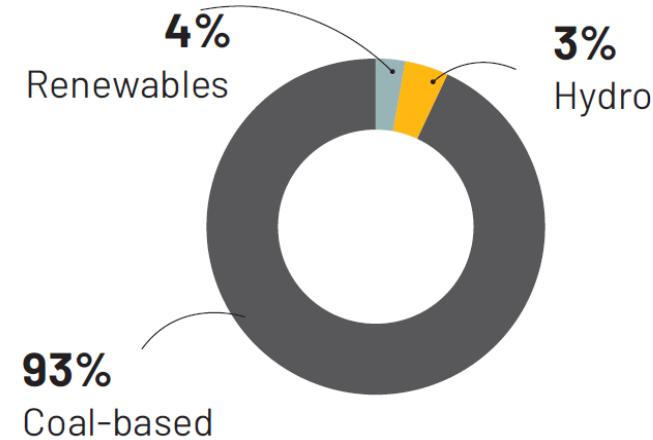
- Immediate opportunity to plan repurposing for over 11,000 ha of land with closed and non-operational mines.
- **Policy support- Coal Mine Closure Guidelines 2025 has mandated “just transformation” as part of final mine closure planning, repurposing a central component of it with the objective to benefit local communities and the environment.**

Land type	Potential land availability (ha)	Opportunity
Closed coal mining land	11,186	Immediate
Industrial wasteland	3,300	Immediate
Coal mining land to become available in the next 10 years	33,589	5-10 years

Source: iFOREST analysis

Coal-based power

- Coal-based power capacity - 7.5 GW (utility scale capacity about 6 GW).
- Low RE penetration in utility capacity- only 4% renewables and 3% hydro
- Considering projected Renewable energy capacity enhancement is essential to reduce the emissions intensity of the energy sector.
- Overall, about **77 GW of RE potential** (solar, wind, and biomass).



Factories

Jharkhand has 2,257 operational factories as per the Annual Survey of Industries of 2023-24

Highly Impacted

- **67%** of operational factories (nearly 1,511) will be highly impacted by the energy transition.
- Accounts for **92%** of the total economic output from all factories.
- Accounts for **82%** of all factory employment - 1.9 lakh formal workers.

Moderately Impacted

- **12%** of the operational factories will be moderately impacted by the energy transition.
- They provide about **7%** of total factory employment.

Industrial decarbonisation is critical for green growth, anchored by steel, cement, and automobile leaders, and scaled across MSMEs.

Workforce dependence on key transition sectors

- Over **3 lakh formal workers** are dependent on coal mining, coal-based TPPs, and various factories (high and medium impact categories).
- In addition, **at least twice**, informal workers are associated with these industries.
- The energy transition can potentially impact these workers in various ways, considering the transition of industries, operational processes, and the requirement of different skills.

Sector	No. of formal workers
Coal mining	85,056
Coal-based power	14,652
Factories	2,02,709
Total	3,02,417

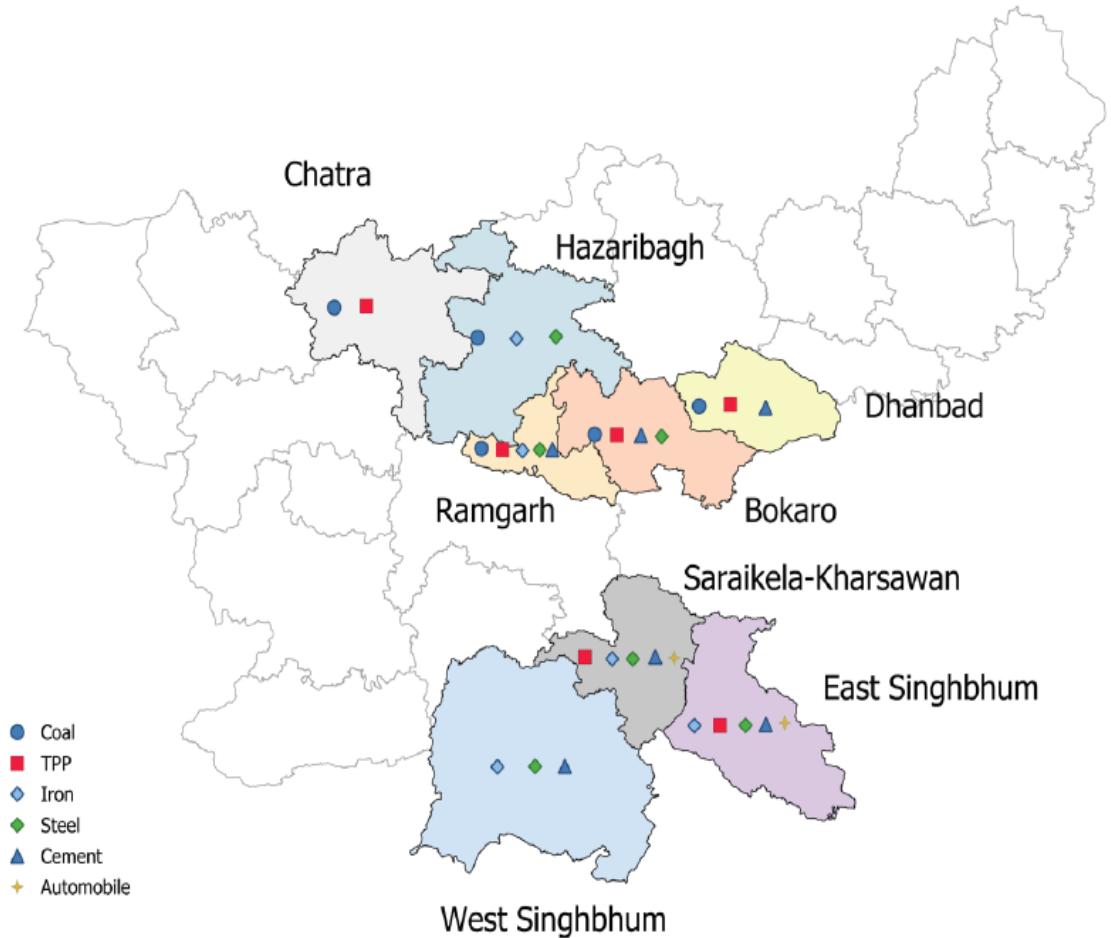
Transition hotspots

Eight districts (3 clusters) are the transition hotspots - *Dhanbad, Bokaro, Ramgarh, Chatra, Hazaribagh, Saraikela-Kharsawan, East Singhbhum, and West Singhbhum*.

Accounts for:

- **77%** of the state's coal mining capacity.
- **70%** coal based power capacity.
- **96%** of crude steel capacity.
- **100%** of auto component manufacturing.

The regions also have high concentrations of other factories and mines, such as iron ore and limestone.

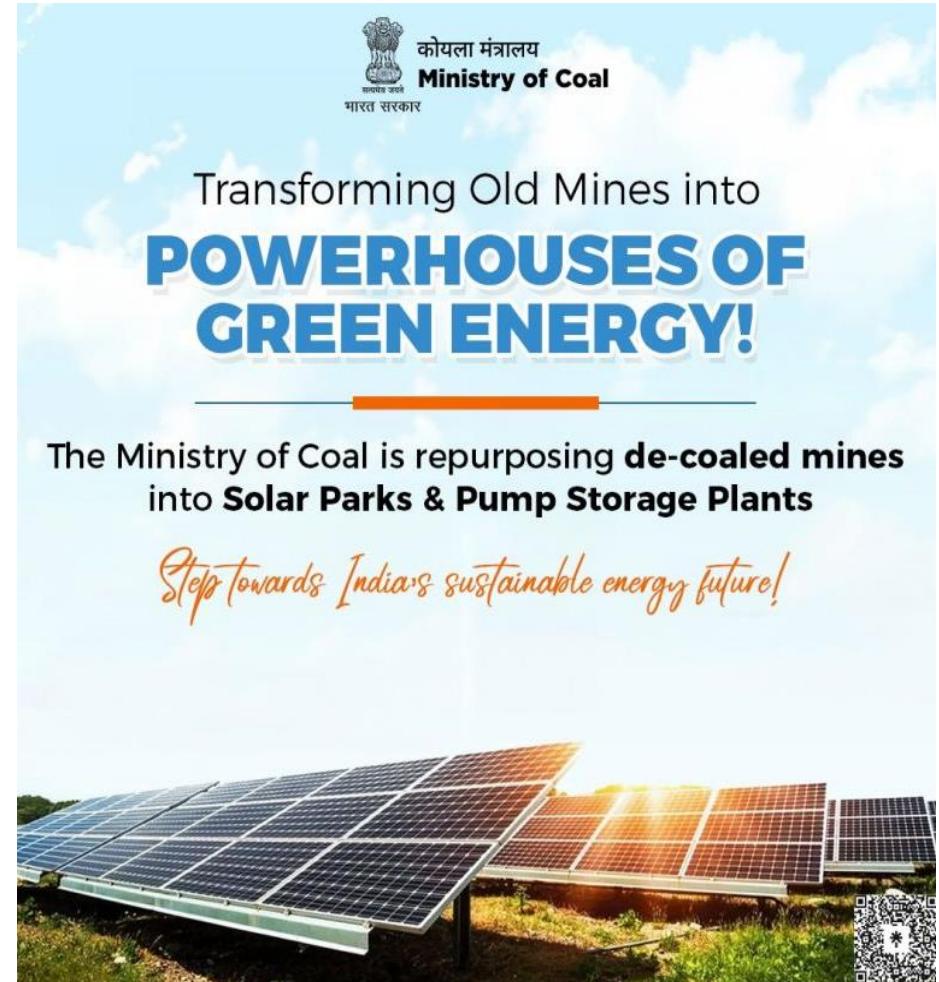


Recommendations

1. Develop a **State Just Transition Policy** to ensure a comprehensive and well-managed transition across various sectors. The policy should focus on:
 - a. Economic diversification and innovation
 - b. Repurposing of land and infrastructure
 - c. Skilling and human resource development
 - d. Augmenting social and physical infrastructure in affected regions
 - e. Mobilising public and private finances to support transition measures.
2. Develop **Regional Just Energy Transition (Investment) Plans** to support inclusive growth and prevent socio-economic disruption.
 - a. Over the next decade, priority hotspot clusters should be taken up through a phased approach to design and operationalise these plans.
 - b. Need to be designed as 10-year plans with clear investment opportunities.

Recommendations

- Repurposing coal mining land offers significant potential for green energy, industry, and local jobs.
- Immediate opportunity: 11,000+ ha from closed/non-operational mines; 33,500+ ha over next decade.
- Opportunities for green industries, including SMEs, green energy, value-added agriculture, and horticulture.



Recommendations

- **Green industrial growth-** through RE scale-up, green metals and mining, green manufacturing, and green hydrogen hubs.
- **Phased green-hydrogen adoption by the steel sector**
 - Enable phased green hydrogen use in steel: 10% by 2030 - 100% by 2050.
 - Essentially, by 2035, the focus should shift to green hydrogen-based steelmaking alongside the adoption of CCUS technologies as it becomes viable.
 - The state has developed a Green Hydrogen Taskforce and can support the ambition through necessary policies and industry engagement.

Recommendations

- Make Jamshedpur-Adityapur auto-cluster the EV hub of Eastern India.
 - Prioritise MSME transition support- **73% of auto component manufacturers are micro and small enterprises.**
 - Strengthen Industrial Investment & Promotion Policy and EV Policy to support MSMEs.
 - Improve access to finance, technology upgradation, and incentives
 - Scale EV-aligned skilling and reskilling for workers

Recommendations

- Establish a **State Green Skills Mission** to provide strategic leadership, ensure inter-departmental coordination, and align skilling initiatives with Jharkhand's just transition and green growth priorities.
- Strengthen skilling infrastructure in transition-affected districts by upgrading training facilities, trainers, and equipment.
- Integrate green skills across mainstream training systems by embedding updated National Occupational Standards (NOS) and Qualification Packs (QPs) into ITIs, polytechnics, and JSDMS-linked programmes, co-designed with industry.
- **Institutionalise government–industry partnerships** for workforce transition and workforce development.

Recommendations

Utilising DMF in alignment with just transition measures

- Jharkhand is India's second-largest DMF state (after Odisha). Cumulative DMF accrual stands at ₹16,977 crore—about 12% of India's total DMF corpus, with over 71% from coal mining.
- Strategic opportunity for just transition: Effective utilisation of DMF can directly support just transition-aligned investments- livelihood, skilling.
- **Jharkhand DMF Rules (amended 2024):** Mandate a **dedicated endowment of up to 10% of annual DMF receipts** to support **sustainable livelihoods**, especially in **mine-closure districts**.
- Coal mine closure guidelines also mention that DMF funds can be aligned to support just transition of local communities-DMF Rules can be amended to align with this.

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<https://iforest.global/>