

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**

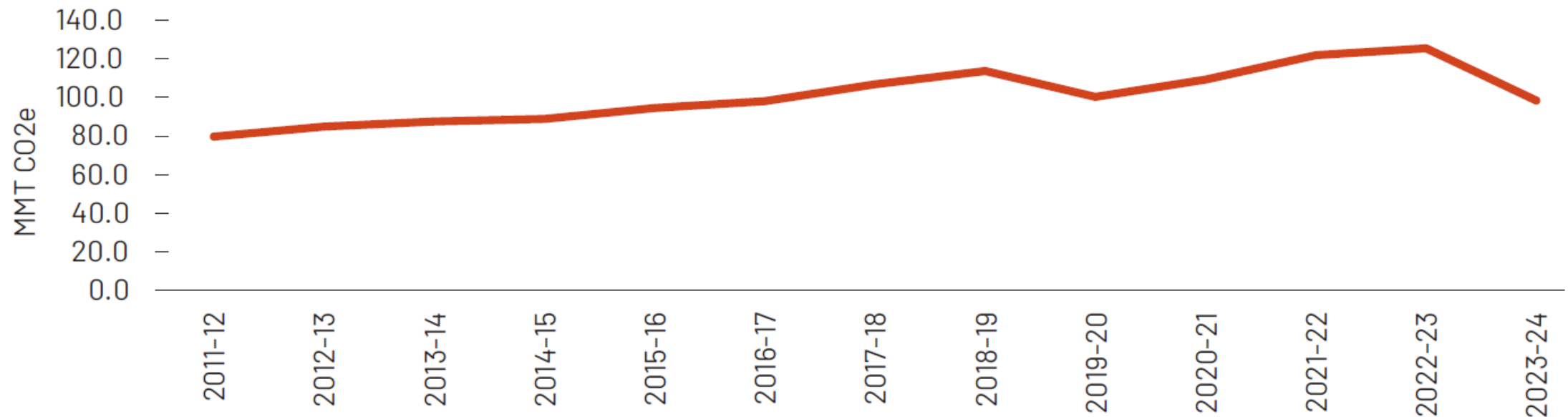
Meeting these targets will require the biggest transformation in the economic systems in the shortest time.

A Just Transition is crucial to ensure minimal disruption

Just Transition in Jharkhand

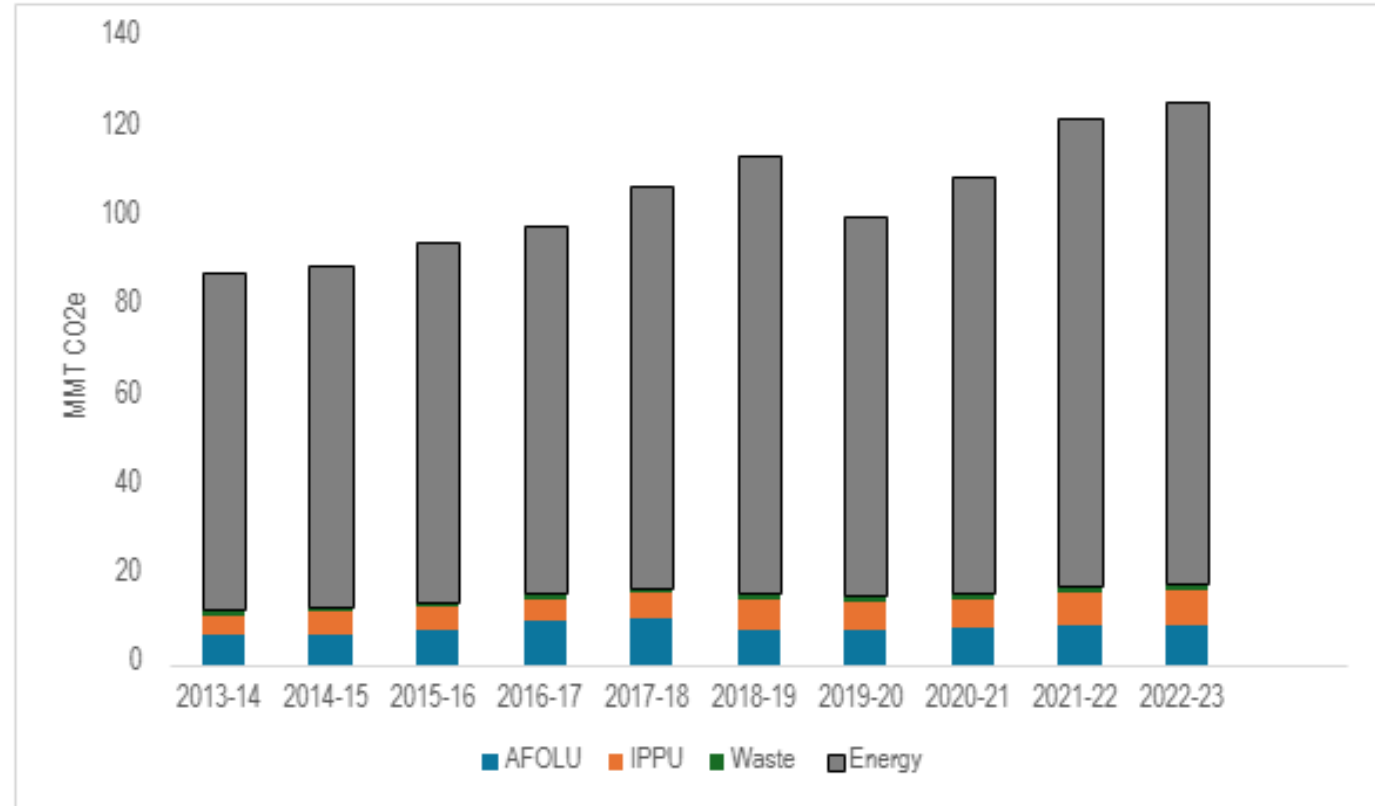
GHG emission profile

- 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

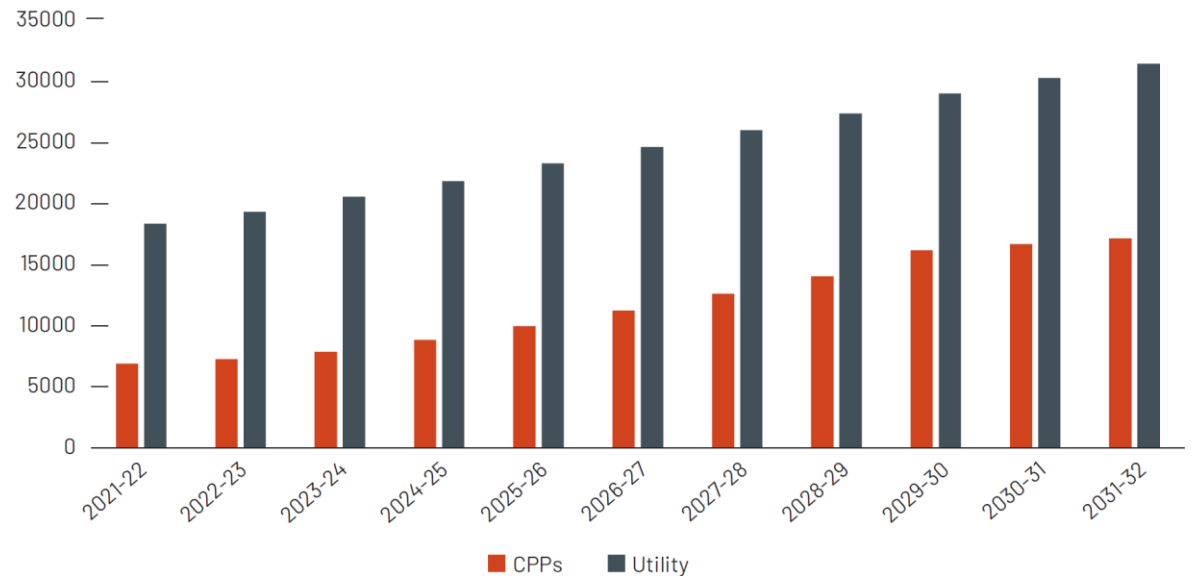
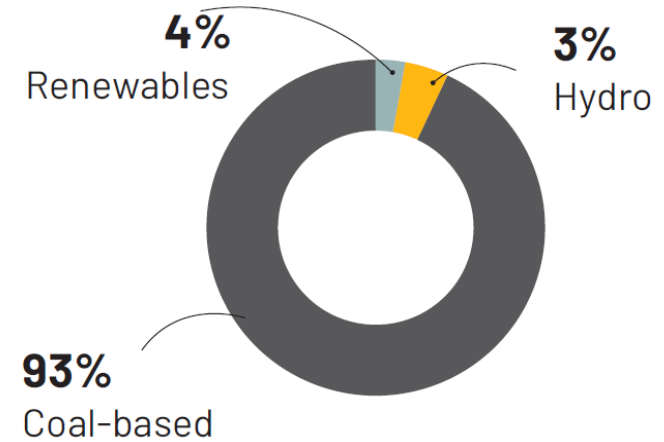
- Immediate opportunity to plan repurposing for over 11,000 ha of land with closed and non-operational mines.
- **Policy support- Coal Mine Closure Guidelines 2025 has mandated “just transformation” as part of final mine closure planning, repurposing a central component of it with the objective to benefit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

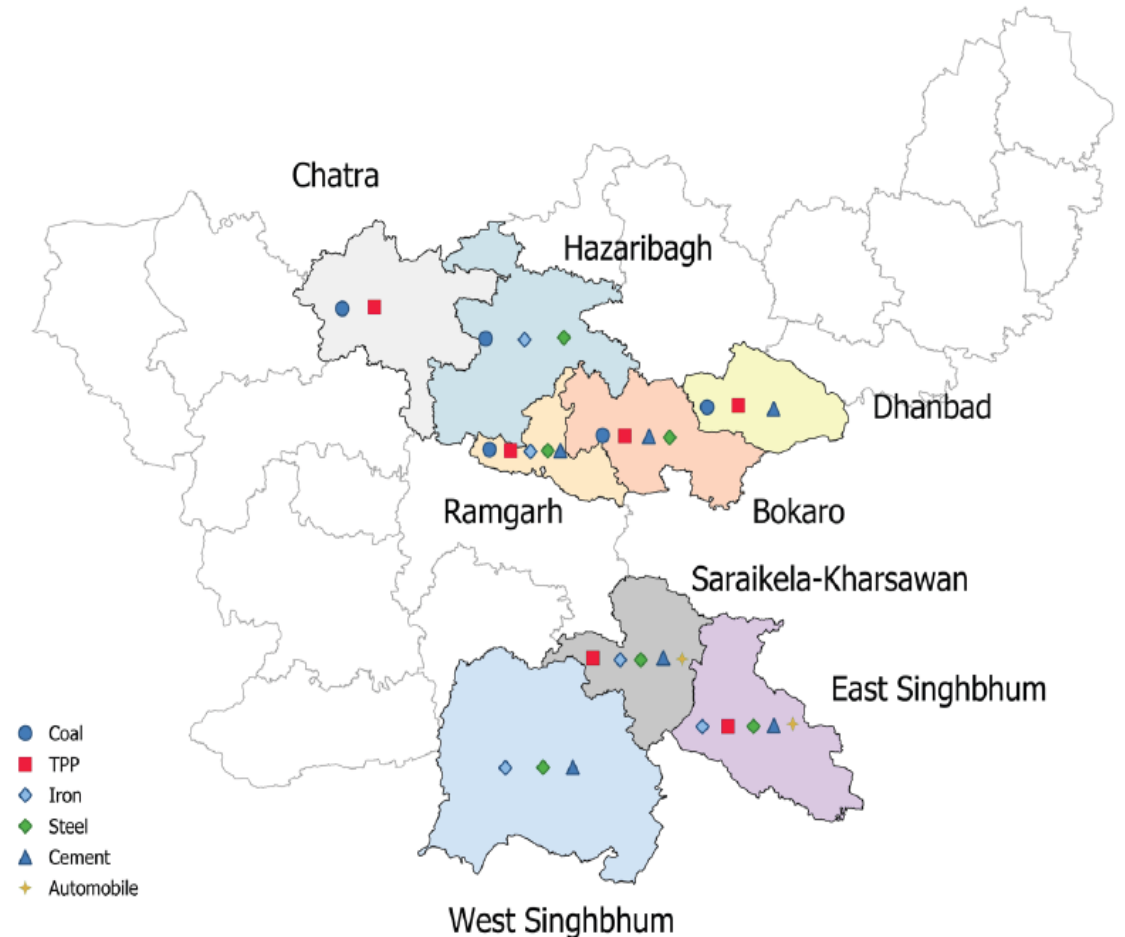
Transition hotspots

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.

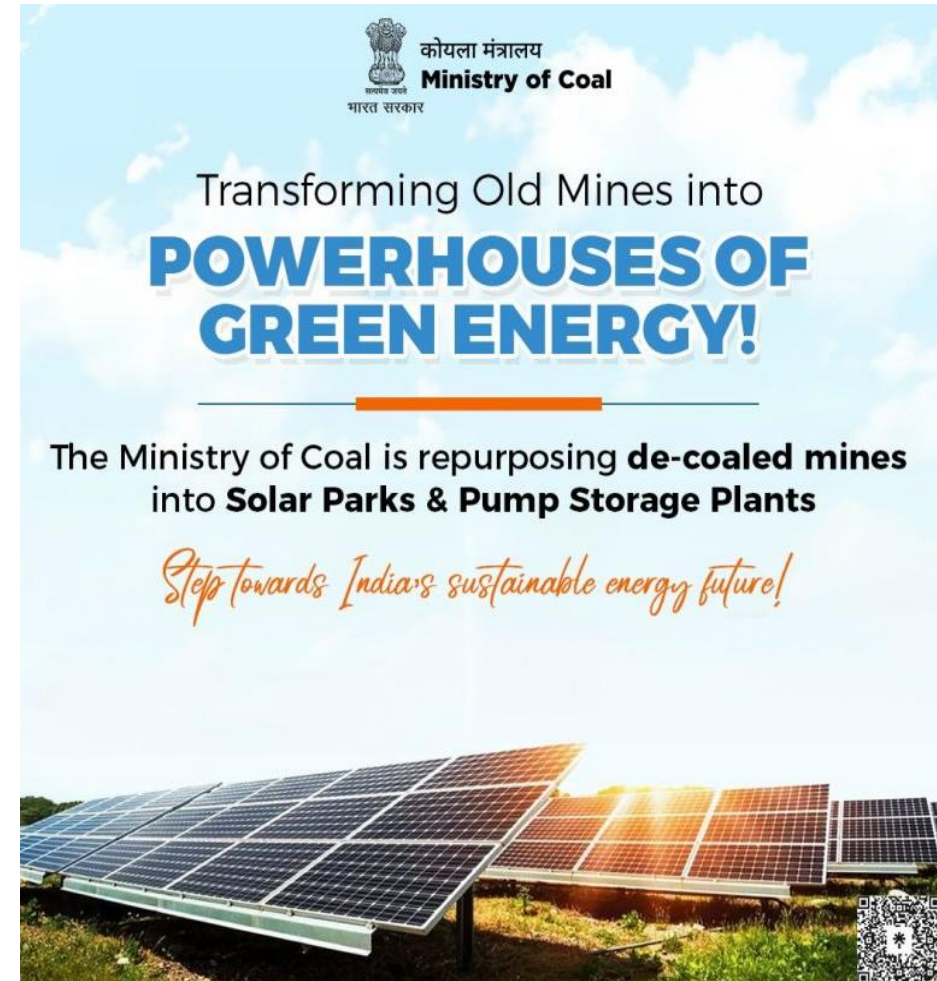


Recommendations

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/>