ST.GALLEN SYMPOSIUM

Global Essay Competition 2025

Title: Alternate Development for a Warming World: India as a Case Study for Emerging Economies

Essay: Climate Risks

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Introduction

The defining feature of the global world order in the twenty first century has been multipolarity (Kumaraswamy, 2024). Many countries in the world especially from the erstwhile colonised regions of Asia, Africa and South America have begun to assert themselves in the global order. Their rise has been underpinned by rapid economic growth and industrialisation. India as one of the fastest growing economies over the past two decades (TRADING ECONOMICS, n.d.) is emblematic of this rise. The country's economic growth has led them to be the fifth largest economy in the world (India, 2025) while enabling them to take up influential positions in various multi-lateral organisations while carving out their own spaces in regional dynamics. This can be seen in their presence in organisations like BRICS+ (Brazil, Russia, India, China), membership in the Quadrilateral Security Dialogue (QUAD) as well as in hosting the G-20 presidency.

However, this powershift in the global arena coincides with a rise of the accelerating threat of climate change. This risks in not only upsetting the carbon intensive development pathway that India has adopted but also the developmental gains it has achieved (Dell et al., 2012). Furthermore, India is one of the biggest countries affected by climate change with rising heatwaves (Coleman, 2024), irregular monsoons (Arasu, 2024), water scarcity (Vaidya Mahadevan & Priyam Mathur, 2024) and worsening air quality (Pandey et al., 2013). The impact of climate change on India's GDP could be catastrophic with a report by the Asian Development bank suggesting 24.7% of the country's GDP could be lost by 2070 (PTI, 2024). Additionally, a working paper published with the Madras School of Economics highlights how economic growth could be negatively impacted by climate change (Sandhani et al., 2020). Therefore, India faces an existential question*: How can it develop in a manner that enhances our global economic and political power while also mitigating the climate crises?*

However it is important to note that these challenges are not unique to India alone and many emerging economies such as Brazil and Indonesia face similar dilemma. Therefore, while the primary focus of the essay is on India's risk, the solutions suggested

could be adapted due to the commonality of the developmental pathway risk faced by emerging economies.

The essay analyses the risks arising from dependency on coal for India's development which according to the latest data contributes 72% of the CO_2 emissions (*India - Countries & Regions - IEA*, n.d.) and provides multi-pronged solution that includes breaking monopolistic control, empowering local communities, transitioning to sustainable energy, and redefining growth paradigms.

Jharia-India's Coal Sector in Action

Jharia is a microcosm of India's coal sector. It is one of the largest coking coal mines in India. The coking coal mined from Jharia is used in steel production. These mines provide a livelihood for thousands of people. However, the working and living conditions in Jharia are unbearable with underground coal fires plaguing the coalmines for over a century and causing subsidence to the land. (The Quint, 2023) However, many refuse to leave it due to their dependence of coal for their livelihood and lack of alternative. While the steel industry benefits from Jharia's coal the people involved in mining suffer.

Risks posed by the India's coal driven carbon intensive economic development pathway—

The mines in Jharia showcase the risk India's coal driven economic poses. Jharia reveals three main risks

1. **Monocultural Dependency**

A monocultural economy relies on single product and creates deeply entrenched pattern of dependencies (Mitra et al., 2023). Since India's independence coal has been identified as one of the key drivers of development and was nationalised in order to achieve to national developmental objectives (Lahiri-Dutt, 2014, p. 16). This welded the economy to coal with the country's economic activities deeply integrated to it. Coal has not only created dependencies at the national level, with the railways, power generation and state government revenue, but also local impact with people diverse economies disappearing at the local level following the arrival of coal. In many rural areas traditional livelihoods such as agriculture has disappeared following the arrival of the coal mines.

2. **Socio-Economic Exploitation**

Coal Mining was initially seen to be the modernising sector that would transcend the social hierarchies present in traditional industries, however the transition to it was accompanied by the replication of the previous social relations(Goyal, 2018),. Therefore, while the coal sector provided widespread employment in India, it perpetuates socio-economic exploitation (Goyal, 2018), particularly affecting lower-caste workers who face job insecurity and lack of social benefits.

3. **Environmental Degradation**

From the perspective of the environment and climate change coal mining depletes forests (increasing CO_2 emissions) contaminates water sources and contributes to air pollution and climate change—as seen by the increasing heat waves (which can lead to lower economic growth) (Dell et al., 2012) disrupted monsoon patterns. Though India aims to enhance living standards through economic growth, this coal-dependent trajectory threatens to undermine development gains while worsening environmental and climatic challenges. (Dell et al., 2012)

Alternate Development Pathways to Carbon-Intensive Growth

In order to meet the above challenges, the following alternate pathway needs to be undertaken

- **Break-up of the National Monopoly over resources**

Coal India Ltd (CIL) is the world's largest coal company in terms of production and is a monopoly in the coal sector. (*Coal Companies Global Production Ranking 2023*, n.d.) Its operations have been often framed as vital to energy security and national development. The idea to break up and restructure CIL has been floated around government and policy circles but that oriented towards increasing coal production and market efficiency rather than sustainability (Tongia & Sehgal, 2019).

The decentralisation strategy of breaking up CIL, into local autonomous entities, would enable local governance and diversified economic growth, reducing dependency on a single resource.

The restructuring can take place with CIL converted to local autonomous entities can be in the form of cooperative, partnerships, community-owned company-repurposed to meet the local needs of an area. The revenue generated will be shared among the stakeholders, based on community considerations as well as internal decisions. The District Mineral Foundations(DMF) (Press Trust of India & Business

Standard, 2023) will be opened up to the communities and people of the district for local community initiated development plans.

In a project studying the impact of community renewable project in Eskdale a rural community the UK the research found that it can provide the foundation necessary for transitioning to low carbon economy. (Rogers et al., 2011).

While CIL represents a government monopoly in India, other countries may enforce similar control through legislation. Regardless of the form it takes, the key takeaway remains the same: breaking government monopolies is essential, and localisation must be the driving force of this transition.

- **Communitarian Extraction – Local Resource Management**

The concept of communitarian extraction aims to reorient extractivism toward the multidimensional development of local communities. This approach is rooted in the principle that the communities suffering from the extractivism have a strong bond with nature which enables them to be caretakers rather than wealth accumulators. (Barkin & Napoletano B.M, 2023) In this model, the government returns previously acquired land to its original inhabitant communities, granting them full autonomy to manage and utilize it according to their needs and priorities. This ensures that local populations become key stakeholders in the extraction process, allowing them to implement methods that safeguard both their well-being and the environment (McDuie-Ra & Kikon, 2016).

In undertaking Community-Based Natural Resource Management.(CBNRM) (Roka, 2020) communities are empowered to determine how their land is used, fostering a sustainable and decentralized approach to resource usage. While coal may not be entirely phased out, communitarian extraction emphasises localised, need-based resource management rather than large-scale exploitation. Establishing these principles in mining lays the groundwork for de-commodifying natural resources, shifting their purpose from profit-driven extraction to community-centred development.

- **Eco-Social Transition to Alternate livelihood**

The concept of Eco-Social Transitions critiques the global shift to renewables, arguing that it often replicates extractivist and exploitative practices from the fossil fuel economy (Lang et al., 2024, pp. 40–49). While renewables are seen as sustainable, they

are often based upon resource-driven displacement and marginalization of communities under the guise of sustainability (Lang et al., 2024, pp. 52–62).

An eco-social transition prioritizes local needs and prevent renewables from becoming another tool of exploitation. They advocate for community-led energy solutions that decentralize power generation, ensuring both sustainability and social welfare(Lang et al., 2024, pp. 230–238). In a large developing country, a hybrid model can integrate large-scale renewables with community ownership and benefit-sharing mechanisms. For instance, wind farms and solar fields on community-owned land could generate rent and revenue shares for local populations who might transitioned from their traditional livelihood.

In urban areas, municipalities could partner with local communities to co-own and operate renewable systems. This model is successfully being implemented in Germany, Denmark and Ireland, which has seen financial benefits as well as greater participation from the local communities (Maitre, 2024). This approach fosters equitable energy transitions by aligning sustainability with local empowerment, embedding social justice in energy policy to create a renewable future that benefits both people and the environment.

- **Investment in Skilling and Reskilling**

Energy transitions, even when localised could result in job losses. Therefore, in order to ensure that there is no loss of livelihood, there should be reskilling and skill development programmes for workers in the coal sector. (Bhushan et al., 2023) dependencies. Skill development programs should equip the younger demographic with expertise in renewable energy, steering them away from entering the coal industry and reducing monocultural dependencies.

Firstly, a coal-dependency census to identify the formal and informal labour in the sector. *Secondly*, re-skilling should be focussed on leveraging existing knowledge and skills and re-orienting them to the needs of the emerging sectors. The RES-SKILL project facilitates workers' transition by leveraging coal workers' skill complementarities to perform renewable energy jobs can be model that can glocalised and replicated (OECD, 2024).

For many people who will be potentially involved in re-skilling and skill development programmes, the transition encompasses a significant occupational and

livelihood shift. Therefore, there should be re-assurance to them promising a better livelihood in renewable sector. (Gurzu, 2024) This enables the local communities to be cooperative as well engaging with the programmes. These programmes will enable security of livelihood and enable people be free from monocultural nature of the coal industry

- **Multi-Dimensional Development-Transition from Traditional Growth**

A universal redefinition of development is needed—one that is decoupled from economic growth (Zheng & Chen, 2024). While growth has traditionally been seen as essential for national well-being, it has led to unsustainable industrialisation and resource exploitation, worsening ecological and climatic crises (Lang et al., 2024, pp. 118–127). Despite these realities, development models remain rigid, causing many developing nations to adopt exploitative economic strategies—as seen in Brazil's approach to the Amazon Rainforest under Bolsonaro (Watts, 2021).

Rather than prioritising growth-driven policies, emerging economies should emphasise qualitative development, focusing on environmental sustainability, social welfare, and economic equity. Existing alternatives like Green Gross Domestic Product (Green GDP) attempt to integrate environmental costs (Stjepanović et al., 2024) but remain insufficient. A more refined model would assess growth at local and regional levels, adjusting national metrics based on pre-existing socio-economic conditions. This would ensure that development reflects genuine well-being rather than abstract economic figures.

Additionally, negative growth indicators should account for inequality and environmental degradation, discouraging unsustainable expansion. This alternative framework would shift the focus from endless economic expansion to sustainable, equitable development, benefiting local populations while preserving ecological integrity. Achieving this requires policy reforms embedding social and environmental accountability into economic planning.

Conclusion

India stands at a critical juncture: its coal dependency must evolve into a climate-resilient, community-driven economic model. By breaking monopolistic control of resources by the state, enabling local governance, investing in renewables, and redefining development itself, India can transition towards sustainable

prosperity without sacrificing its economic ambitions. However, the applicability of this model is not only limited to India. Emerging economies like Brazil (mining) and Indonesia (palm oil) face similar crossroads, where resource dependence threatens both long-term growth and environmental stability. India's approach can serve as a template for alternative development models that attempt to reconcile economic aspirations with environmental imperatives. For emerging economies instead of viewing climate action as a constraint, it can become the catalyst for a more equitable and decentralized global economy. By embracing a just and inclusive transition, India and the emerging economies have an opportunity to reshape global development discourse on development demonstrating that the alternative development practices are needed to ensure comprehensive economic development without consequential ecological and climatic impact.

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