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Navigating the fiscal implications of a just transition

The case of three coal-producing states in India

- *As India transitions to a low-carbon economy, coal-producing states like Odisha, Jharkhand and Chhattisgarh will need to navigate the challenge of declining fossil fuel revenues while increasing expenditure on economic diversification and social protection programs to ensure a just transition for coal workers and communities.*
- *These states lag on infrastructure and human capital development compared to other states, highlighting the need for increased public expenditure in these areas and building resilience to the impacts of climate change.*
- *Early action on three fronts can help create fiscal space for the critical public expenditure needed to support a just transition. These are: mobilisation of new sources of public revenue; building state capacity in leveraging green financing instruments; and developing a just transition expenditure framework to prioritise spending.*

As India's clean energy transition gathers pace, declining revenue from fossil fuels could disproportionately affect its coal-producing states. At the same time, state governments that depend on fossil fuel revenue will face increased budgetary pressures to ensure an equitable and just transition. This briefing note assesses the potential fiscal implications of the transition in India's top three coal producing states – Odisha, Jharkhand and Chattisgarh – and suggests approaches for economic diversification away from coal, identifying a need for early action on three fronts to help prioritise and create fiscal space for critical public expenditure needed to support a just transition. These include stepping up efforts to mobilise additional public revenue, building state capacity in leveraging new financing instruments, and developing a just transition expenditure framework to help prioritise public investment into emerging sectors where it creates maximum impact.

India's clean energy transition will create budgetary pressures for coal-producing states

At the 28th Conference of the Parties (COP28) in December 2023, Prime Minister Narendra Modi reiterated India's commitment to reaching [net-zero emissions by 2070](#). Today, coal and oil comprise the bulk of the country's primary energy supply at [58% and 29%, respectively](#), highlighting the scale of the transition to clean energy sources.



The shift away from fossil fuels will have several fiscal implications. As revenue from fossil fuels declines over time, India’s central and state governments will likely face additional demand for public expenditure to support the uptake of green technologies, help workers move from high-emitting to green sectors and protect communities that depend on income from fossil fuels. In the financial year (FY) 2021, revenue from fossil fuels (petroleum and coal) comprised about 27% of the total revenue receipts of the central government and 8% for all states and union territories, with petroleum comprising the major share of [fossil fuel revenues](#).

On a pathway aligned with India’s net-zero target, the central government’s tax revenue losses could amount to 0.2% of projected gross domestic product (GDP) by 2030 and almost 1% [by 2050](#). The scale of government revenue losses in India’s coal-producing states is likely to be even greater, given the coal dependence of their economies. At the same time, these states will have a higher relative need for public investment to ensure an equitable and just transition. The two factors, taken together, will create significant pressure on state government budgets.

In this briefing note, we look at the potential fiscal implications of the transition for three such states: Odisha, Jharkhand and Chhattisgarh. These are India’s top three states in terms of both coal reserves and coal production, which comprise 69% and 63% of the respective national totals (Table 1).

Table 1: Coal Reserves and Production

State	Estimated Coal Reserves (MT)	Coal Production in FY2022-23 (MT)
Odisha	88,105	219
Jharkhand	86,660	156
Chhattisgarh	74,192	185
% contribution of the three states to the national total	69%	63%

Source: [Ministry of Coal](#).

Coal contributes significantly more to the economic output of all three states than the national average, indicating a relative lack of economic diversification (Table 2). While state-level employment numbers in the coal sector are not available, the three states provide the majority of direct employment in coal production and its supply chain, estimated at around [2.6 million workers](#) nationally, of which 70% are informal workers.

We begin by quantifying these states’ dependency on fossil fuel revenue, followed by analysing the components of government expenditure needed for a just transition. We conclude with a discussion of possible actions that can help states navigate the fiscal implications of the transition.

Table 2: Relative Contribution of Coal Production to Total Economic Output

State	% Contribution of Coal Production to Economic Output
Odisha	5%
Jharkhand	14%
Chhattisgarh	12%
India	1%

Source: Authors’ calculation based on data published by the [Ministry of Statistics and Program Implementation](#) and [Reserve Bank of India](#).

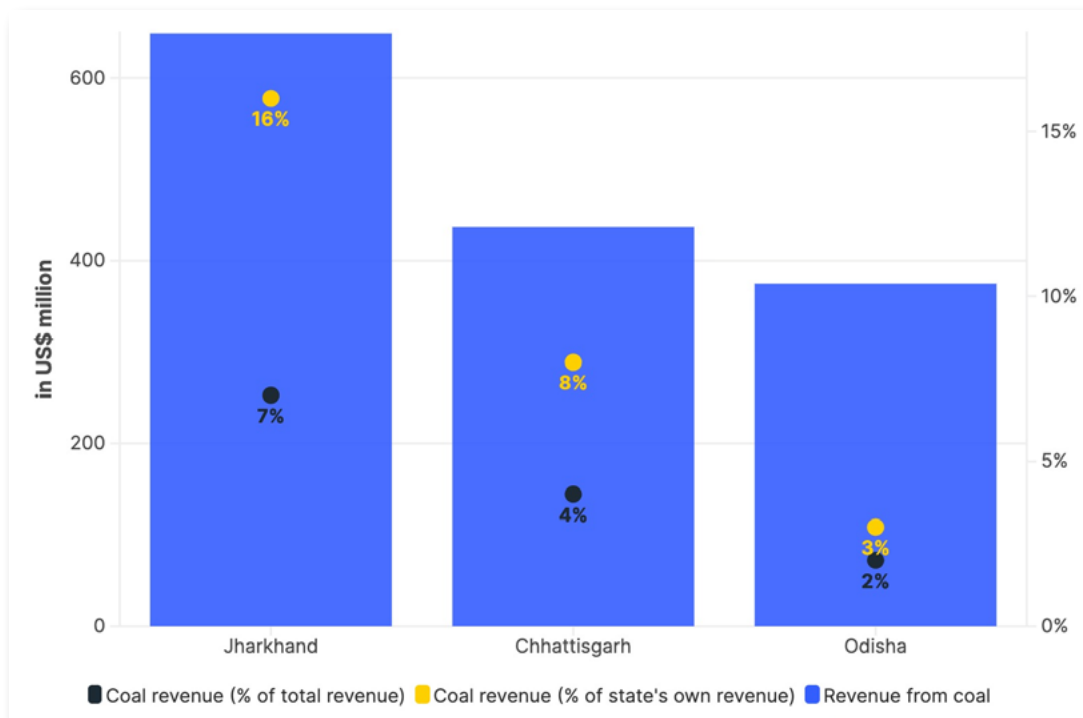


Jharkhand and Chhattisgarh are highly dependent on fossil fuel revenues

States derive their revenues from three primary sources: the state’s share of central taxes, grants from the central government for various centrally sponsored schemes, and the state’s own revenue. Among these, the state’s own revenue holds particular significance as it is intricately linked to the state’s individual economic performance. In our analysis, we try to understand the dynamics of the state’s own revenue.

Jharkhand emerges as particularly dependent on coal-generated revenue, with coal contributing 16% to the state’s own revenue, while Chhattisgarh also shows significant dependence at 8%. Odisha, despite its high coal production, demonstrates a markedly lower dependency, with coal contributing 3% of the state’s own revenue (Figure 1). This indicates that Odisha has a more diversified economic portfolio and relies less on coal-generated income than Jharkhand and Chhattisgarh.

Figure 1: Revenue from Coal in FY2021-22 (US\$ million)

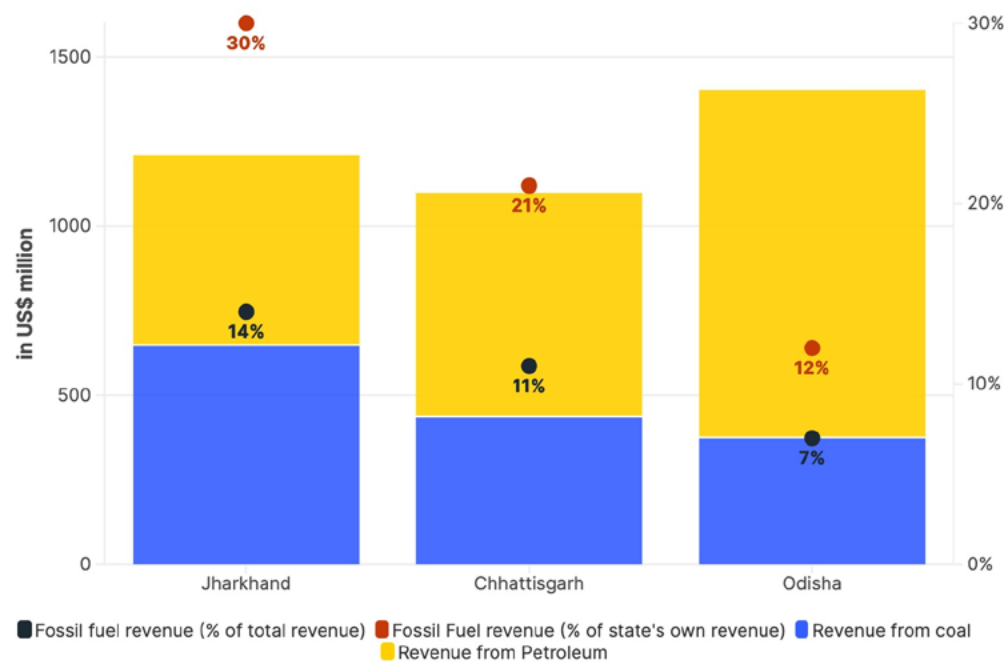


Source: Authors’ calculation based on data published by [Coal India Limited](#), [Niti Aayog](#) and [States’ Finance Accounts](#).

Furthermore, when considering revenue from both petroleum and coal, Jharkhand’s dependency is remarkably high, with 30% of the state’s own revenue coming from these fossil fuels. Chhattisgarh also exhibits a high level of dependency at 21%. In contrast, Odisha has a relatively lower dependency, with 12% of its own revenue sourced from fossil fuels. On analysing the contribution of fossil fuels to total revenue receipts, Jharkhand (14%) and Chhattisgarh (11%) also exhibit a higher dependency than the all-state average of around 8% (Figure 2).



Figure 2: Revenue from Fossil Fuel in FY2021-22 (US\$ million)



Source: Authors' calculation based on data published by the [Ministry of Petroleum and Natural Gas](#), [Coal India Limited](#), [Niti Aayog](#) and [States' Finance Accounts](#).

This comparative analysis underscores the pronounced reliance of Jharkhand and Chhattisgarh on fossil fuel revenue, even though these states produce less coal than Odisha. The potential loss of approximately 30% of Jharkhand's and 21% of Chhattisgarh's own revenue in the transition away from fossil fuels would exert extreme pressure on their fiscal health. This underscores the urgent need for early planning to mitigate the impact through economic diversification strategies.

All coal-producing states will need to increase public expenditure for a just transition

As state government revenues from fossil fuels take a hit as the transition unfolds, there will be additional demand for public expenditure to support a just transition. All three states, particularly Jharkhand, lag on most economic and social development indicators compared to other states, further underscoring the need for public expenditure in the context of a just transition.

As an example, South Africa's [Just Energy Transition Investment Plan \(JET-IP\)](#) – a first-of-its-kind plan drafted in 2022 – identifies an investment requirement of around US\$3.25 billion from 2023-27 to support a just transition in Mpumalanga, the country's main coal-producing region. Mpumalanga produces about 200 million tonnes of coal annually, which is comparable to the amount produced by the three Indian states.

The JET-IP splits the total investment requirement for Mpumalanga into repurposing coal mining lands and power plants (27%), infrastructure development and economic diversification (60%), supporting the transition of workers and communities (11%), and creating an enabling institutional and policy framework for the transition (2%). While the quantum of just transition investment is likely to differ in Indian coal-producing states, the actions requiring investment will be similar.

We present a comparative analysis of relevant indicators of state government expenditure in these areas for the three Indian states, where available, and discuss the potential implications of the transition going forward.



- Repurposing coal mining lands and power plants:** The existing national [Mine Closure Guidelines](#) in India require coal mine owners to submit a plan for restoring mined-out land to its pre-mining state and bear all expenses related to implementing it. As no state government-owned coal mines exist in Jharkhand, Chhattisgarh and Odisha, the guidelines would not directly affect state government expenditure. However, the Ministry of Coal acknowledges that the guidelines are still evolving and it is developing a robust [mine closure framework](#) that integrates aspects of institutional governance, community participation, environmental reclamation and land repurposing. This proposed framework could have implications for state government expenditure when funding certain activities that typically fall outside the purview of mine owners, such as land repurposing. Unlike for mining land, presently, there are [no national or state-level guidelines](#) for decommissioning or repurposing thermal power plants. Yet, over time, state governments will likely need to provide fiscal support for decommissioning and repurposing state-owned thermal capacity (Table 3). While most investment in new renewable energy capacity is likely to come from the private sector, state support for repurposing privately owned thermal plants can be an effective strategy to attract such investment, given that it would circumvent the challenges of land acquisition and creation of new transmission and distribution infrastructure. This could be an opportunity for the three states, which lag behind the national average in renewable energy penetration (Table 3), to create favourable conditions to accelerate the deployment of renewable energy.

Table 3: Share and Ownership of Installed Capacity of Coal Power in 2023

State	Installed Capacity of Coal Power (GW)	Share of State Government-Owned Capacity in Coal Power	Total Installed Capacity (GW)	Share of Coal in Total Installed Capacity
Odisha	5	34%	8	65%
Jharkhand	2	18%	3	86%
Chhattisgarh	12	15%	14	88%
India	207	-	426	49%

Source: [Central Electricity Authority](#)

- Infrastructure development and economic diversification:** The development of basic infrastructure, such as roads and communications systems, improves market and digital connectivity. This is critical for attracting private investment in emerging productive sectors to facilitate the economic diversification of coal-dependent regions. The same will be true for India’s coal-producing states, particularly because they lag behind other states’ public infrastructure development. For example, Jharkhand and Odisha sit well below the all-state average in developing state highways (Table 4).

Table 4: Length of State Highways Per Capita in 2019 (km / million people)

Odisha	99
Jharkhand	37
Chhattisgarh	164
Average (all states and UTs)	148

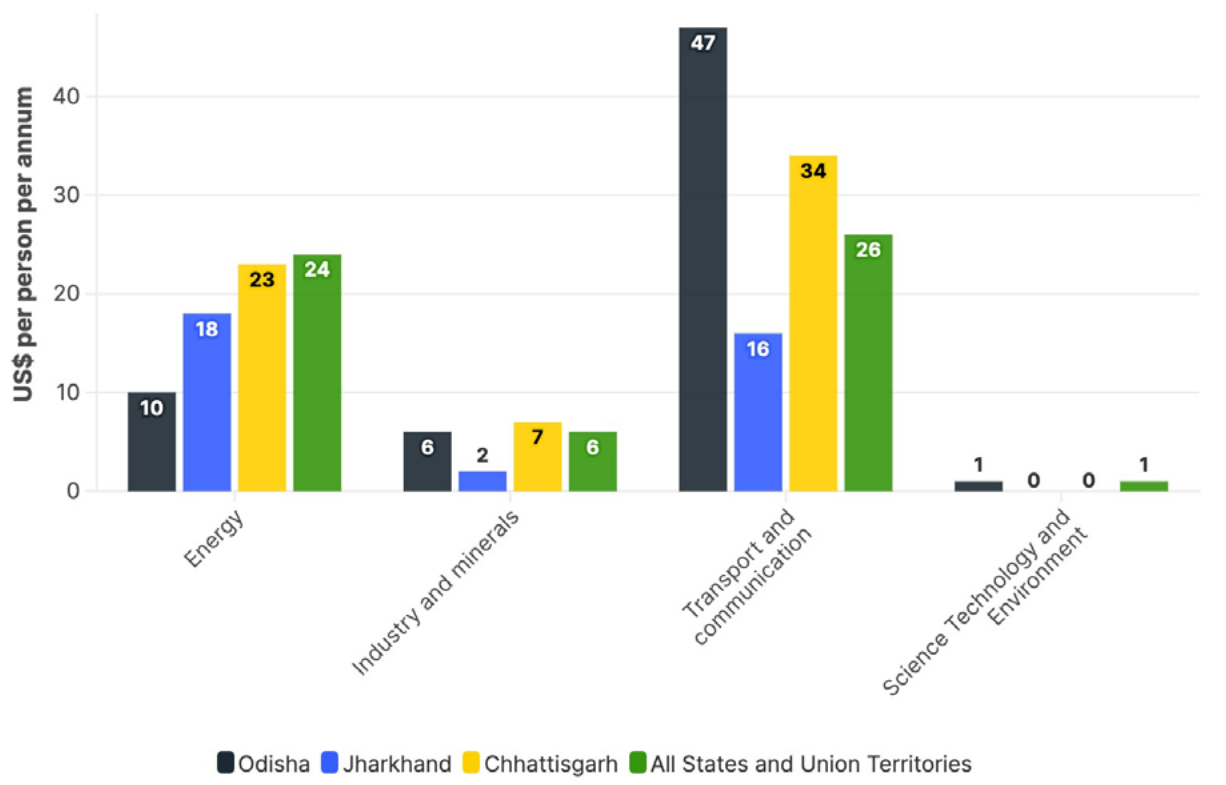
Source: Authors’ calculation based on data published by the [Reserve Bank of India](#).



In addition, targeted public investment will be needed to help develop local comparative advantage in specific emerging sectors and to support affected businesses, especially small enterprises, to pivot towards opportunities in green sectors. Sectors to consider could include manufacturing and supply chain developments for new energy technologies, circular economy, and biodiversity and ecotourism.

Currently, public development expenditure on key economic services in Chhattisgarh and Odisha is on par with the respective all-state averages (barring transport and communication in the case of Odisha). Jharkhand, however, lags on all indicators (Figure 3). All three states will have to scale up expenditure to well above average levels, considering their economies will be disproportionately affected by the transition and need to close the gap with other states on economic development indicators.

Figure 3: State Governments’ Per Capita Expenditure in 2022-23 on Key Economic Services



Source: Authors’ calculation based on data published by the [Reserve Bank of India](#).

Note: Capital and revenue expenditure, including loans and advances extended by state governments for development

- Supporting the transition of workers and communities:** State governments will also need to invest in caring for the coal workforce and preparing local youth for the transition. The emerging clean energy industries are projected to [create a shift](#) towards more specialised manufacturing jobs requiring skilled workers. Moreover, the new jobs may not be created where the workers are. Coal workers will need reskilling and training programs to transfer to these jobs. They could also require support for relocation and temporary income support. [To prepare the youth](#), improvement in public education programs will be key, alongside opportunities to gain work experience in transition pilot projects, work placement programs and platforms to encourage participation and agency in the transition process.



As with infrastructure, Jharkhand, Chhattisgarh and Odisha face the additional challenge of catching up with other states on human capital indicators. For example, Jharkhand and Odisha have a considerably lower enrolment ratio in higher secondary education than the national average (Table 5).

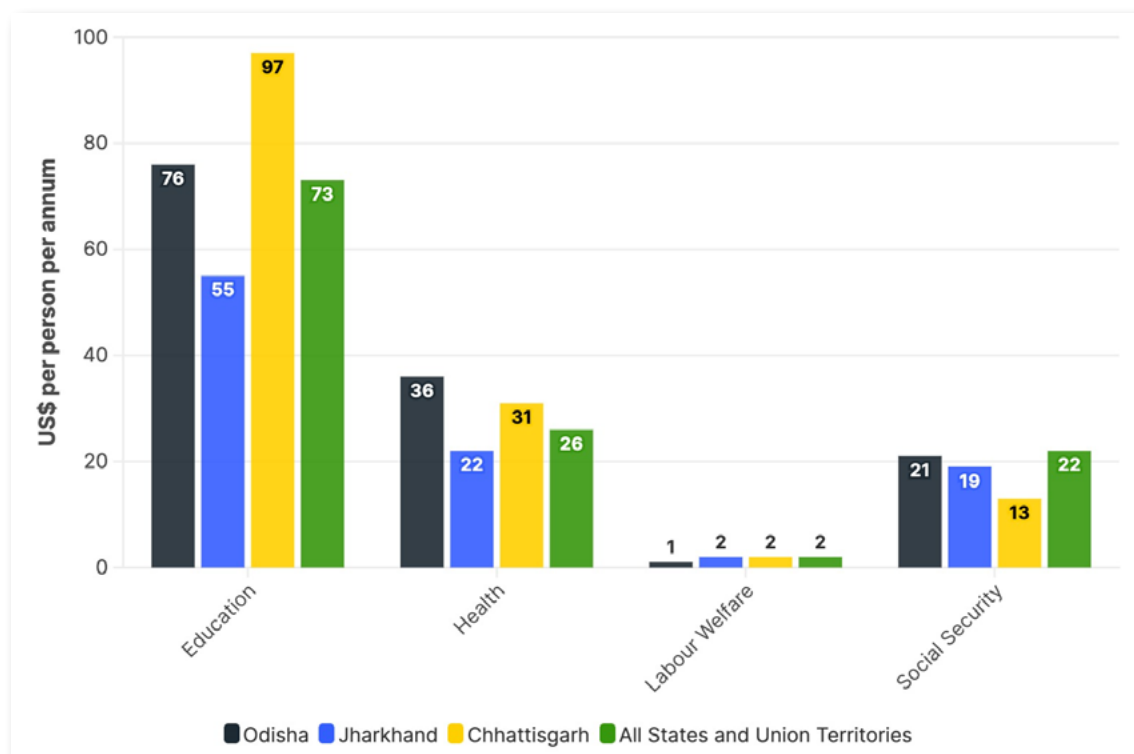
Table 5: Gross Enrolment Ratio in Higher Secondary Education in 2021-22 (%)

Odisha	44
Jharkhand	46
Chhattisgarh	68
Average (all states)	58

Source: [Reserve Bank of India](#).

A comparative analysis of present public development expenditure on key social services indicates Chhattisgarh and Odisha are on par with all-state averages (barring education in the case of Chhattisgarh), while Jharkhand lags on all indicators (Figure 4). These three states are already under pressure to increase social expenditure to improve outcomes and reach the level of other states. This demand will only grow in the context of the transition, especially on labour welfare and social security.

Figure 4: Per Capita Expenditure in 2022-23 by State Governments on Key Social Services



Source: Authors' calculation based on data published by the [Reserve Bank of India](#).

Note: Capital and revenue expenditure, including loans and advances extended by state governments for development purposes.



- **Creating an enabling institutional and policy framework for the transition:** Finally, as identified in South Africa’s JET-IP, these states may need to budget for the creation of new positions and/or institutions within local governments to plan and implement just transition policies and for building capacity within different levels of local government. This would create additional demand on state governments for non-development expenditure.

State governments dependent on fossil fuel revenue can manage the risk with early action

Shrinking revenue from existing taxes, coupled with several additional sources of demand on public expenditure, is likely to put significant fiscal pressure on governments of coal-producing states in the low-carbon transition. The case of Jharkhand is particularly stark, given its dependency on fossil fuel revenue coupled with its significant need to increase public expenditure on key economic and social services.

Early action on three fronts can help these states prioritise and create the fiscal space for critical public expenditure needed to diversify their economies and support a just transition for workers and communities. First, states need to step up efforts to mobilise additional public revenue. Second, state governments need to build their capacity to leverage new financing instruments. Finally, states need to develop a just transition expenditure framework that helps prioritise public investment in sectors with maximum impact.

- **Stepping up efforts to mobilise additional public revenue:** The three coal-producing states run fiscal deficit to GDP ratios more than or close to the [15th Finance Commission’s recommended limit of 3%](#) for states for the period 2023-26 (Table 6), which underscores the need to mobilise additional public revenue.

Table 6: Ratio of Gross Fiscal Deficit to State GDP 2022-23

Odisha	2.8%
Jharkhand	2.9%
Chhattisgarh	3.2%
Average (all states)	2.8%

Source: [Reserve Bank of India](#).

In the short term, additional taxes on fossil fuels, such as a [carbon tax increased in a phased manner over time](#), may be considered to help mobilise additional public revenue. The phased increase in tax rate can help compensate for revenue losses as fossil fuel use declines with time. Moreover, such taxes can provide a signal to private investors to shift new investments into green sectors and help reduce the risk of creating stranded assets. Taxes on renewable energy and/or emerging sectors can create disincentives for economic diversification and may be considered in the medium to long term once these states establish a comparative advantage in emerging sectors.

- **Building state capacity in leveraging new financing instruments:** As these states explore alternative sources of public revenue, innovative financing instruments can also play a role in helping governments navigate the shift towards more sustainable and inclusive economies. Blended financing instruments, for instance, represent a dynamic approach that combines various forms of capital, such as grants, concessional loans and private investments,



to fund initiatives that are otherwise unable to attract private investment. This approach could enable state governments to leverage public and private resources effectively to ensure adequate support for vulnerable sectors, enterprises and workers, but will require building states' capacity for accessing different forms of blended finance.

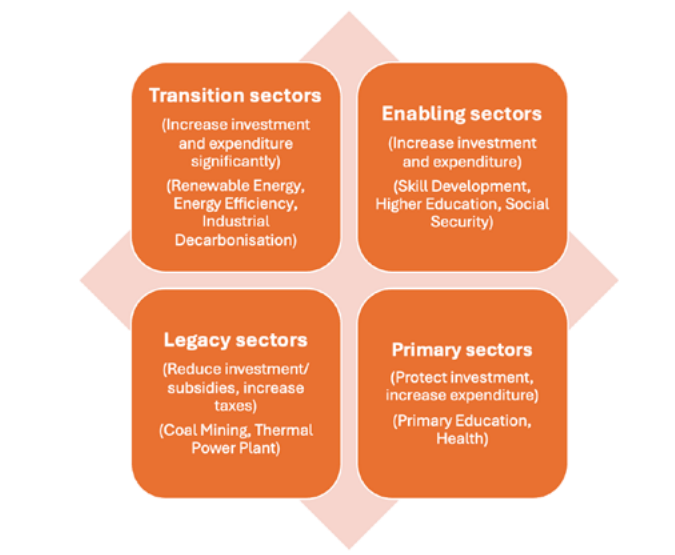
In addition, new instruments of deficit financing like green, social or sustainability (GSS) bonds provide another potential avenue for state governments to mobilise funds for just transition initiatives. These bonds are specifically designed to finance projects with positive environmental and/or social outcomes, aligning with the principles of a just transition. Sustainability-linked bonds offer another innovative financing mechanism, tying the cost of capital to the achievement of predefined sustainability targets by the issuer.

However, the market for these instruments is still at a nascent stage in India, especially when it comes to government issuances – the central government issued its first [green bond](#) only in 2023, with no issuance yet by any state government.

Building the capacity of state governments and public sector entities to leverage these diverse financial instruments will be critical to enabling the transition of the three coal-producing states to sustainable and equitable low-carbon economies.

- Prioritising public expenditure into critical sectors through a just transition expenditure framework:** Finally, states need to channel scarce public investment into emerging sectors. Within this context, developing a systematic classification system for sectors in the state economy would enable states to make informed decisions on resource allocation and policy focus to maximise impact. We propose a framework (Figure 5) that categorises sectors into four distinct groups as follows:

Figure 5: A Proposed Just Transition Expenditure Framework



Source: Authors.



- » **Transition Sectors:** These are low-carbon sectors characterised by their potential to create a high positive impact and opportunities in the context of a just transition. They encompass renewable energy, electric transportation, industrial decarbonisation and waste management, among others. Investment in these emerging sectors is imperative to propel the shift towards a low-carbon economy and has the potential to create new employment opportunities, fresh revenue streams and safeguard the environment.
- » **Enabling Sectors:** Investing in these sectors, which include public infrastructure, technical education and skill development, will be critical for attracting private investment and enabling the workforce to capitalise on new opportunities in the transition sectors. While these sectors may have a lower immediate impact compared to transition sectors, they are likely to play a crucial supporting role in the medium term in the context of a just transition. Without investment in these foundational areas, the effectiveness of the transition sectors in creating new opportunities may be compromised.
- » **Legacy Sectors:** These sectors have a significant historical footprint and can be categorised based on their common trait of exerting high (primarily negative) impact while offering limited opportunities in the context of a just transition due to their reliance on coal and petroleum. However, there are opportunities for positive change. For instance, repurposing thermal power plants (TPPs) can lead to economic and livelihood benefits. From a just transition point of view, new investment in these sectors should be discouraged to reduce the further degradation of the environment. Similarly, the subsidies given to the sector should also be phased out without affecting vulnerable populations. Taxes on these sectors should be augmented to fund the investment in other priority sectors.
- » **Primary Sectors:** These include primary education and public health and are indispensable for long-term development, even outside the context of just transition. While the direct impact and the opportunities they present in the overall transition process can be relatively modest, they create the foundation for the success of investments in enabling sectors like programs for higher education and skilling. It is imperative to recognise that investments in these foundational sectors serve as the backbone of human development and must be safeguarded for sustained progress.



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