Climate FIGS

Speaker brief
2026:5

Mapping India's Energy Transition

A data dive into the strategic role of state-owned enterprises in the energy sector

By Deepak Sharma, 5th May 2026

Summary

State-owned enterprises (SOEs) are central actors in the energy systems of many emerging economies, often accounting for the majority of energy production, transmission, and distribution. India exemplifies this: nine strategic central public sector undertakings dominate the country's energy system, mining most coal, producing and refining most oil, piping most gas, and generating most electricity, while increasingly developing large clean energy projects. They are among India's largest employers, significant contributors to government revenues, and major trade actors. This research conducts a systematic data-driven assessment of these nine enterprises across four dimensions: their strategic role in India's energy system, their economic and social footprint, their greenhouse gas emissions, and their clean energy ambition and progress. From this assessment, it identifies the scope for these institutions to accelerate India's energy transition, with implications for any country where state-owned enterprises are central to the energy system.

Motivation

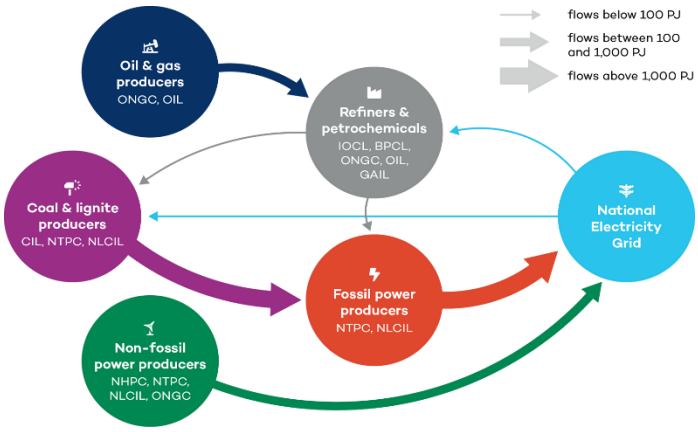
SOEs occupy a central position in the energy systems of many emerging economies, yet systematic, multi-dimensional assessments of their role in the energy transition remain limited. The analytical literature has tended to focus on individual companies or sectors rather than examining a group of interconnected enterprises as a whole. My PhD research on national oil companies and early career experience within an Indian SOE left me with a strong sense that this gap matters. The Indian case, with nine enterprises, a common government owner, and deep operational interdependence across coal, oil, gas, power, and refining, offers a rich empirical setting for such an assessment.

Approach and methods

The analysis draws on publicly available financial year (FY) 2024-25 data across four dimensions: the strategic role of the nine SOEs in India's energy system, their economic and social footprint, their greenhouse gas emissions, and their clean energy ambition and progress. Enterprise-level data come from company annual reports and mandatory Business Responsibility and Sustainability Reporting (BRSR) disclosures. India-level denominators are drawn from official government statistical publications and Emissions Database for Global Atmospheric Research (EDGAR) for national emissions totals. SOE's indirect emissions are estimated by applying standard emissions factors to the volume of fuels sold, rather than relying on figures self-reported by companies, to ensure consistency across the nine enterprises. The approach is descriptive and diagnostic, intended to identify where the key gaps and opportunities lie.

Key findings

- **Scale and strategic role:** Nine SOEs generate revenues equivalent to 7.7% of GDP, transfer INR 6 trillion (Euro 73 billion) annually to government, employ over 760,000 people directly, and collectively account for the majority of India's coal, oil, gas, and refining output.
- **Emissions and interdependence:** The nine SOEs' own operational emissions account for approximately 11% of India's national total, rising to approximately 44% when emissions from burning the fuels they sell are included. Coal, gas, electricity, and refined products flow across the group in ways that create both a significant emissions challenge and a distinctive opportunity for coordinated reduction.



- **Ambition, progress and investment opportunity:** The nine SOEs have announced collective renewable energy targets of 123 gigawatts (GW) by 2030 — roughly a quarter of India's national 500 GW renewable energy target for the same year — with 21 GW commissioned as of FY 2024-25. However, fossil fuel investment in FY 2024-25 was nearly eight times larger than clean energy investment. The 2022 global energy price shock did not close this gap; import dependence rose afterwards, suggesting that crisis stabilisation and structural transition are genuinely different policy challenges.

Insights and interpretation

The empirical assessment points to several analytical observations. The principal-agent framework, which dominates SOE governance analysis, focuses on aligning each enterprise with its owner's objectives. But when multiple SOEs share a common principal and are physically interdependent, the more important question is how to coordinate action across the portfolio. The unit of analysis for SOE climate governance could usefully be the portfolio, not the individual enterprise. SOEs also have structural advantages that the transition literature has not fully recognised: they can absorb low returns on long-gestation projects, share transition costs, and act simultaneously as implementors and facilitators of the transition through offtake agreements that reduce risk for private investors. After the 2022 global energy price shock, India's SOEs increased their dependence on fossil fuel imports rather than accelerating the shift to clean energy. This is consistent with what researchers call carbon lock-in — where performance targets focused on energy security and financial returns tend to reinforce existing investment patterns even when external conditions create pressure for change, unless an explicit climate mandate is also in place.

Recommendations

Four interventions could help align SOE investment with national climate goals:

1. A formal climate mandate aligning each SOE's corporate plan with India's 2030 and 2070 goals, coordinated across ministries
2. Climate key performance indicators (KPIs) integrated into the performance evaluation system alongside financial metrics
3. Targeted incentives for SOEs investing a minimum defined share of capex in clean energy
4. Comprehensive just transition plans for fossil-intensive SOEs and dependent communities

Key takeaways:

- India's nine SOEs are central actors in the energy system across fossil fuels and increasingly in clean energy, making them directly relevant to any assessment of the country's energy transition
- Common government ownership creates conditions for coordinated portfolio-level action that dispersed private investment cannot easily replicate
- SOEs function simultaneously as implementors and facilitators of the transition, a dual role that has received insufficient analytical attention
- The gap between stated clean energy ambitions and current capital allocation appears to reflect policy expectations rather than a lack of institutional capacity or financial resources
- A governance framework of mandate, metrics, incentives, and just transition planning could help close that gap, with lessons that extend beyond India

Acknowledgements

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https://www.iisd.org/publications/digital-story/mapping-india-energy-transition

Attribution: This Research Brief is an output associated with the ClimateFiGS Speaker Series. It was shared in relation to the session "**Public Ownership and the Politics of India's Energy Transition**" on 2nd June, 2026; ClimateFiGS did not fund, commission, or substantially edit the underlying paper.

ClimateFiGS is funded primarily by the European Union (ERC, ClimateFiGS, 101117670). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them