

Mapping India's Energy Policy 2022 (Update)

Tracking government support for energy

December 2022



Objectives

Aim:

Improve transparency on the Indian governments' support for the energy sector

Ultimate objective:

Energy that is more equitable, secure, and aligned with the government's target to achieve net zero emissions by 2070.

Why:

Public support and taxes help shape the energy sector

- Influencing prices that determine consumption patterns, affordability of energy
- Influencing private sector investments in fossil and clean infrastructure
- Fossil and clean energy have very different societal benefits and costs
- Better information on support = better informed policy = better outcomes

How:

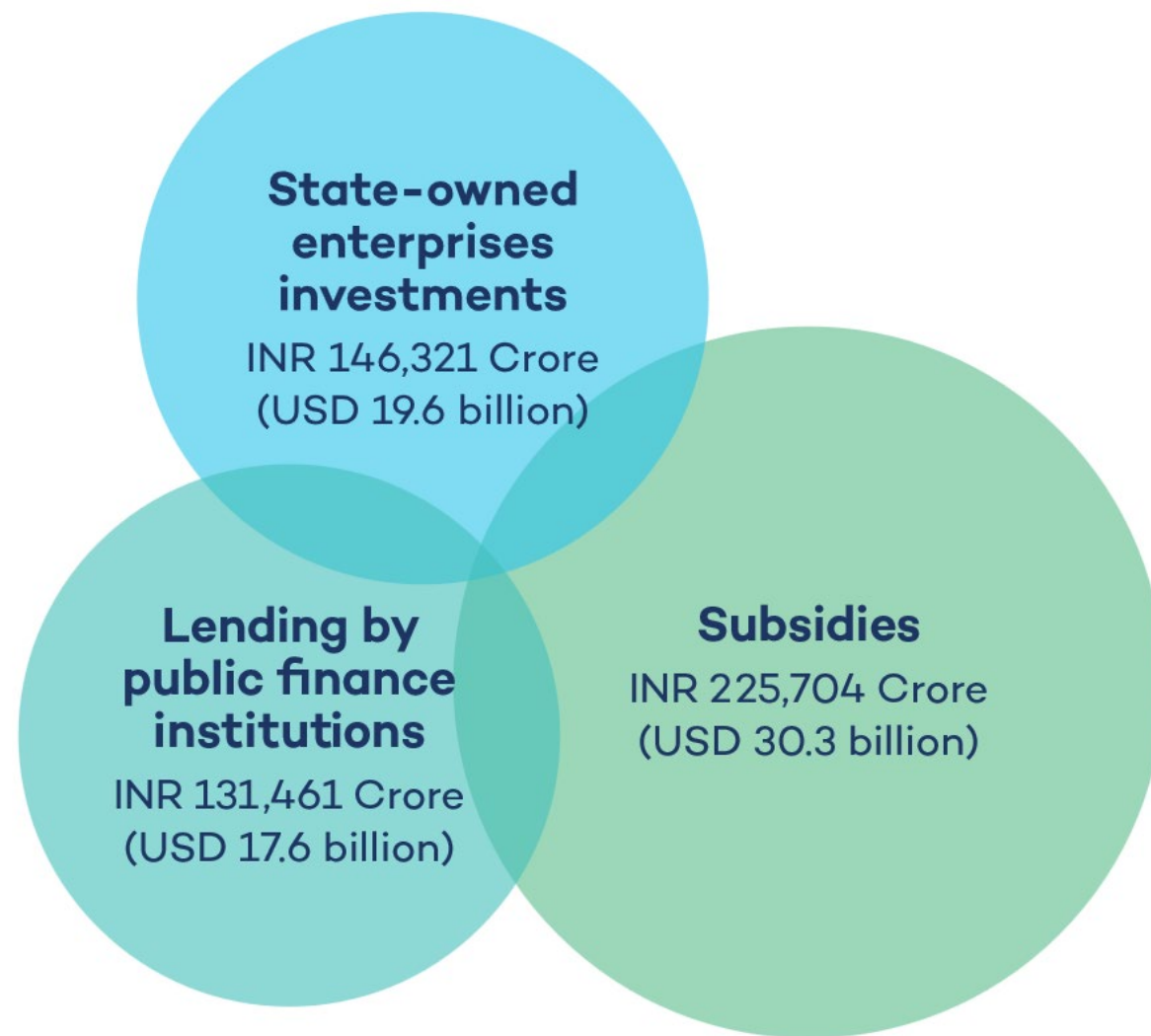
The study gathers and analyzes the best available data (FY 2014–FY 2022) on:

- Subsidies, PSU investments, and public finance for fossil fuels, renewables, and electric vehicles (EVs)
- Tax and non-tax revenues raised from fossil and clean energy
- Key externalities (social cost) of fossil fuels and renewables

SUMMARY OF KEY RESULTS

Government support for energy is estimated to be at least INR 5 lakh crore (USD 68 billion) in FY 22

- Growing support for renewable energy (RE) but needs to increase to align with the 2030/2070 targets
- Oil and gas (O&G) subsidies fell, but fuel tax cuts shielded consumers from soaring oil prices
- Coal and electricity subsidies remain stubbornly high



*Note: *SOE stands for state-owned enterprises also known nationally as public sector undertakings*

SUMMARY OF KEY RESULTS

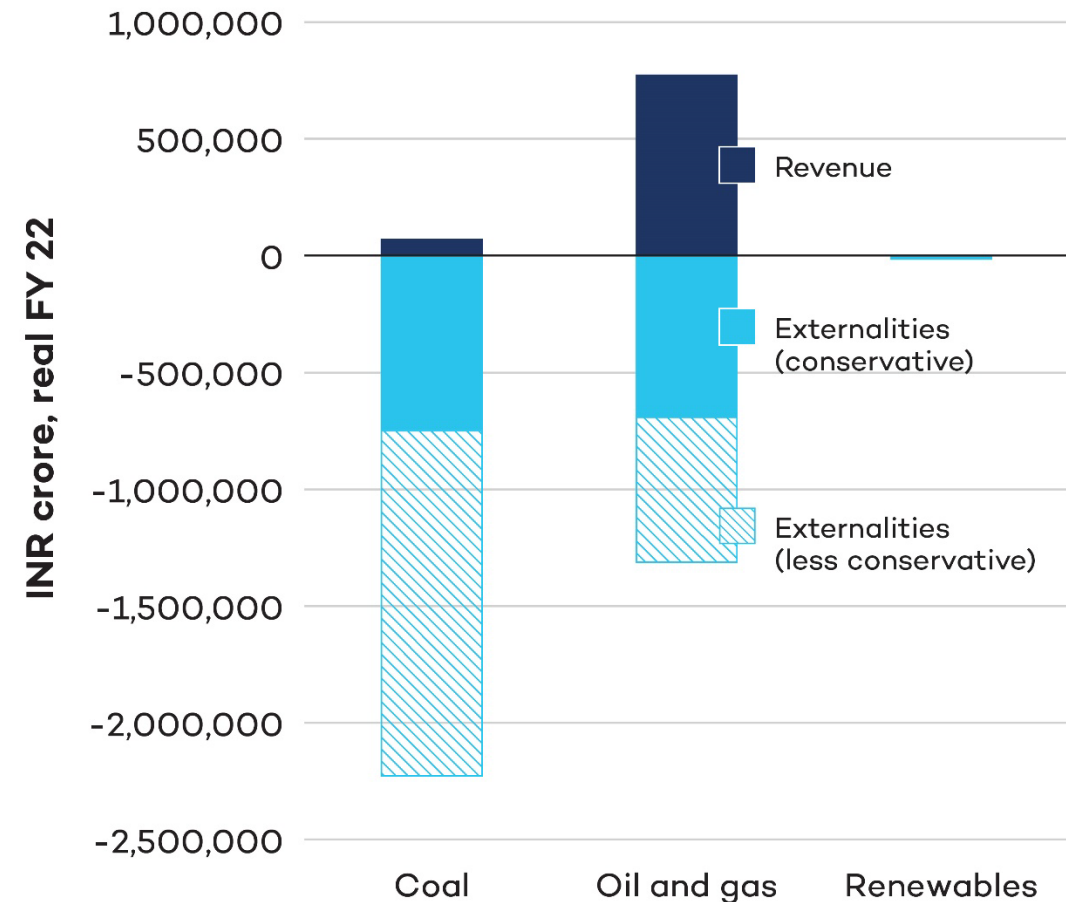
**Energy revenues* totaled
INR 9 lakh crore (USD
120 billion) in FY 22, up
7% from FY 21**

- The majority (69%) of energy revenues were derived from two measures: Central Government excise and state-level VAT on diesel and petrol
- Social costs of energy** were at least four times higher than government revenues

Notes: *from the Centre, State and Union Territories

** from air pollution; climate change; road damage, traffic accidents and congestion; and integrating renewables into the power system.

Social costs of energy, FY 22



Energy Subsidies

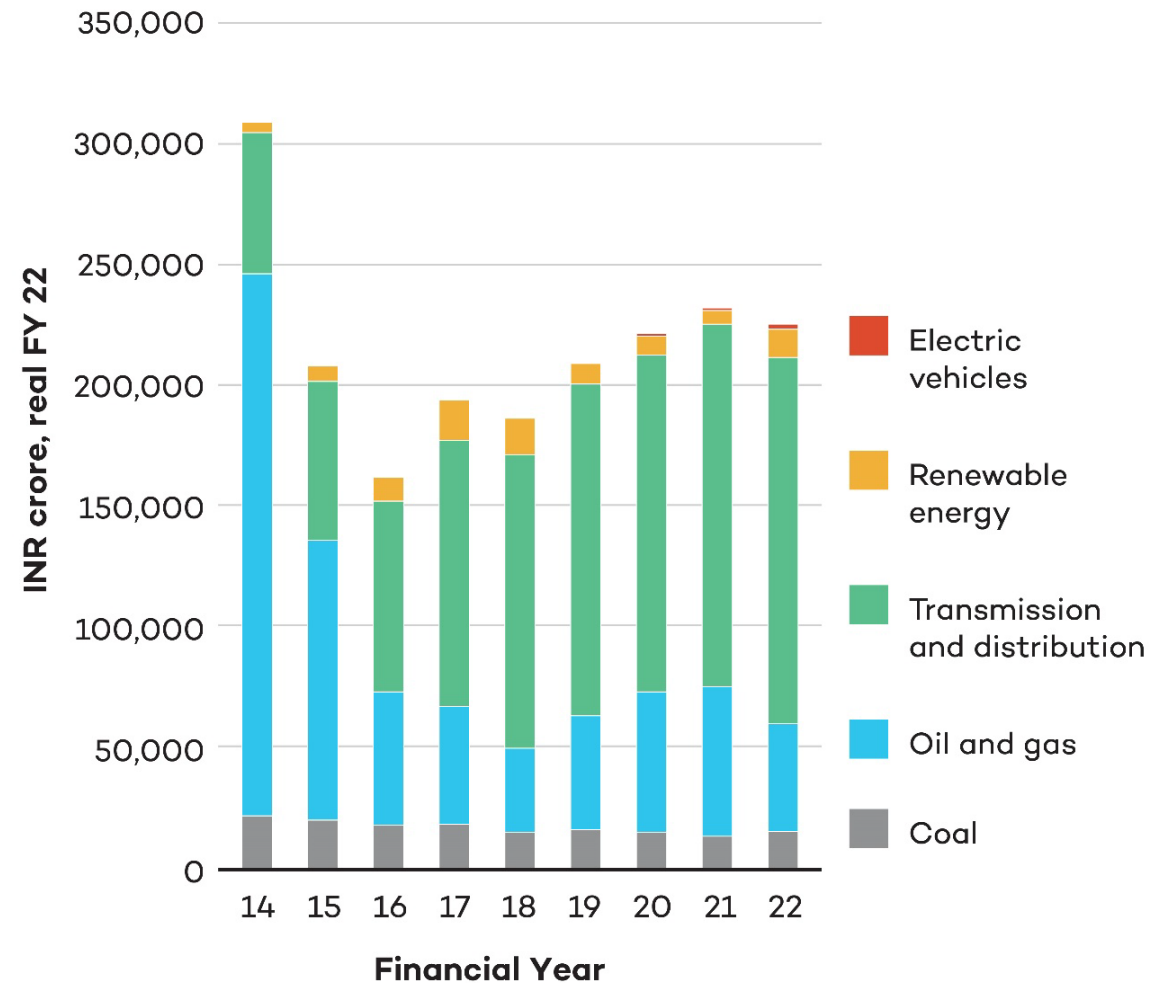


KEY MESSAGES

Energy Subsidies

1. Total energy subsidies have fallen since 2014; they fell a further 3% in FY 22.
2. Post-COVID-19 recovery evident in higher uptake of RE and EV subsidies.
3. Fossil fuel subsidies remain four times higher than clean energy (RE and EVs) in FY 22.
4. O&G subsidies fell by 28% in FY 22, but this does not account for foregone revenue from cuts in excise and VAT on fuel.

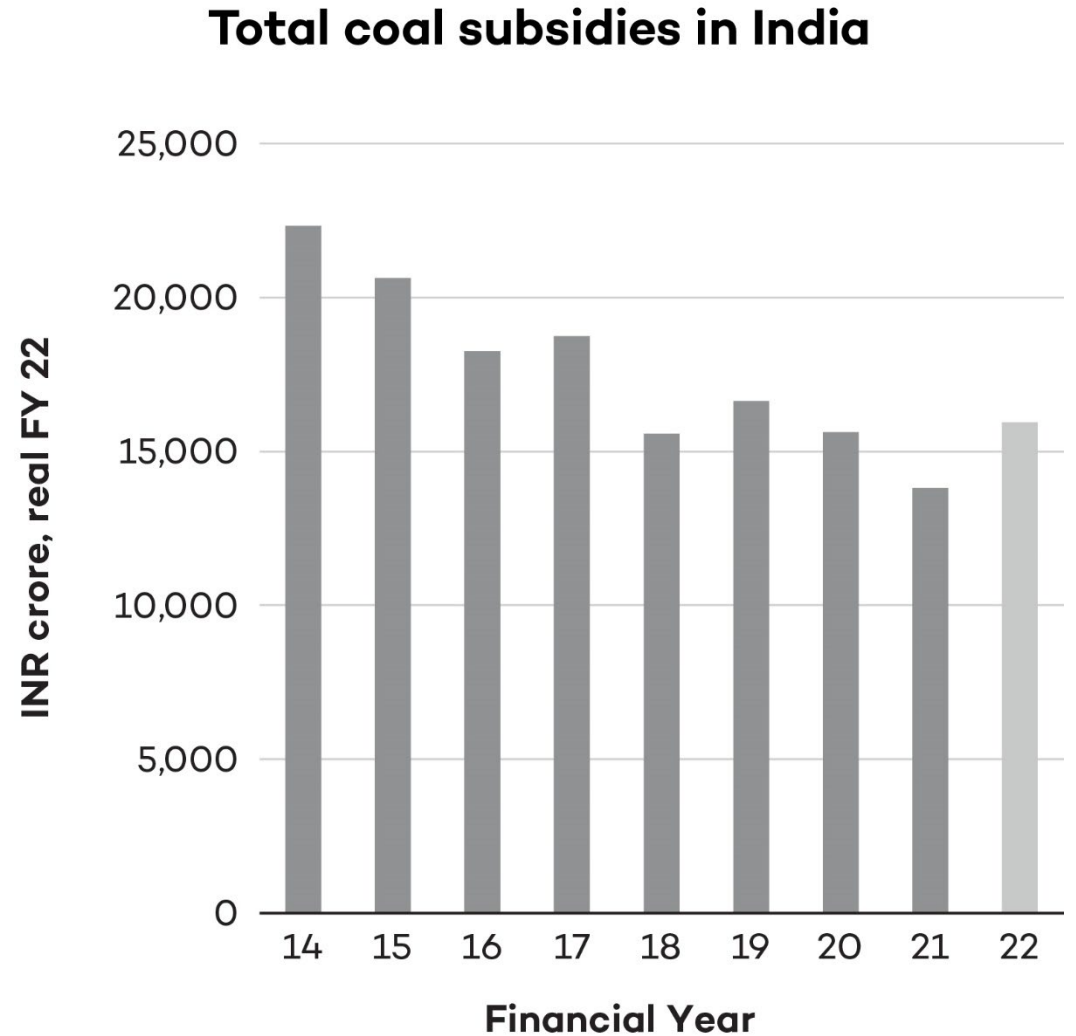
Total quantified energy subsidies in India



KEY MESSAGES

Coal Subsidies

1. Coal subsidies increased by 15% in FY 22 to INR 15,933 crore (USD 2.1 billion)
 - Largely due to GST concessions on coal sales.
2. Coal India Limited (CIL) has not raised its coal prices for 4 years, despite rising international coal prices and input costs, such as diesel.
3. This has capped input costs for thermal power generation during a period of high inflation.

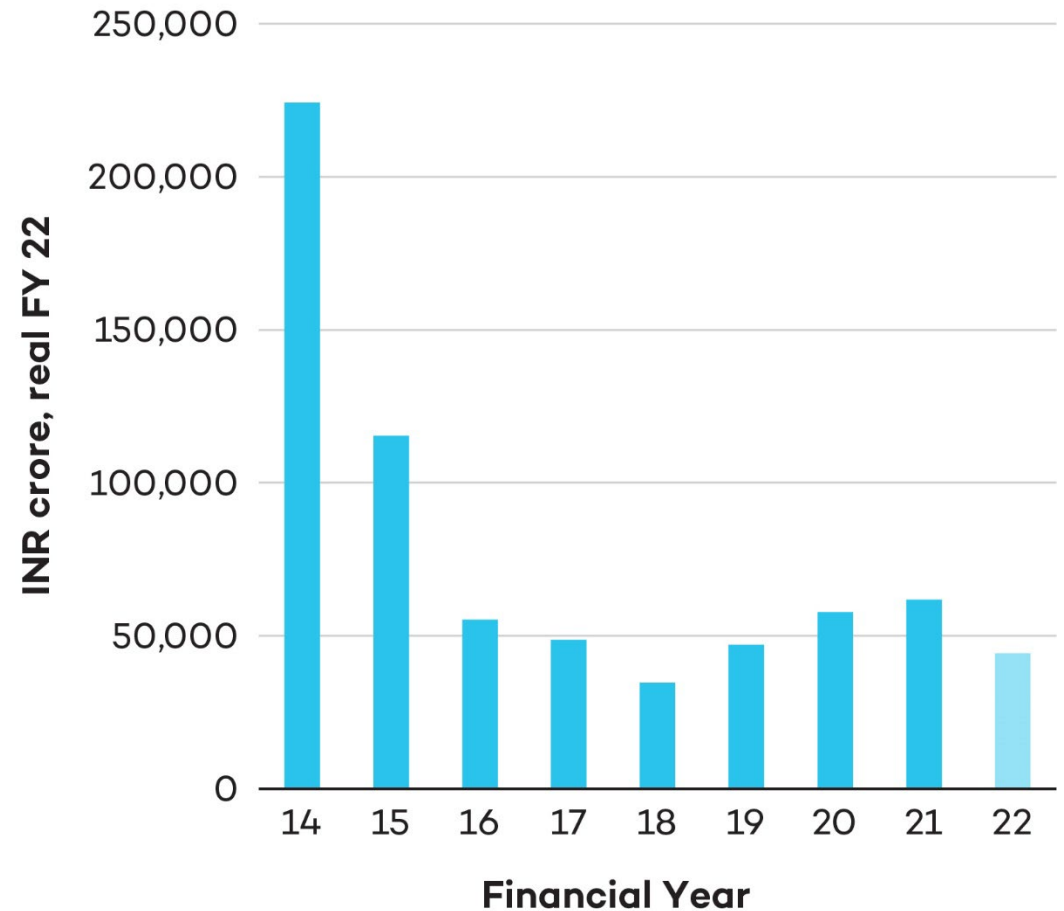


KEY MESSAGES

Oil & Gas Subsidies

1. O&G subsidies fell by 28% in FY 22 to INR 44,383 crore (USD 5.9 billion)
 - Primarily due to lower funding for consumer liquefied petroleum gas (LPG) programs (DBTL-PAHAL and Ujjwala).
2. Estimates do not include foregone revenue from excise and VAT cuts
 - Due to India's use of an informal variable tax regime.
3. Revenue loss from excise duty cuts at INR 49,559 crore (USD 6.65 billion) in FY 22
 - Using October 2022 as benchmark rate.

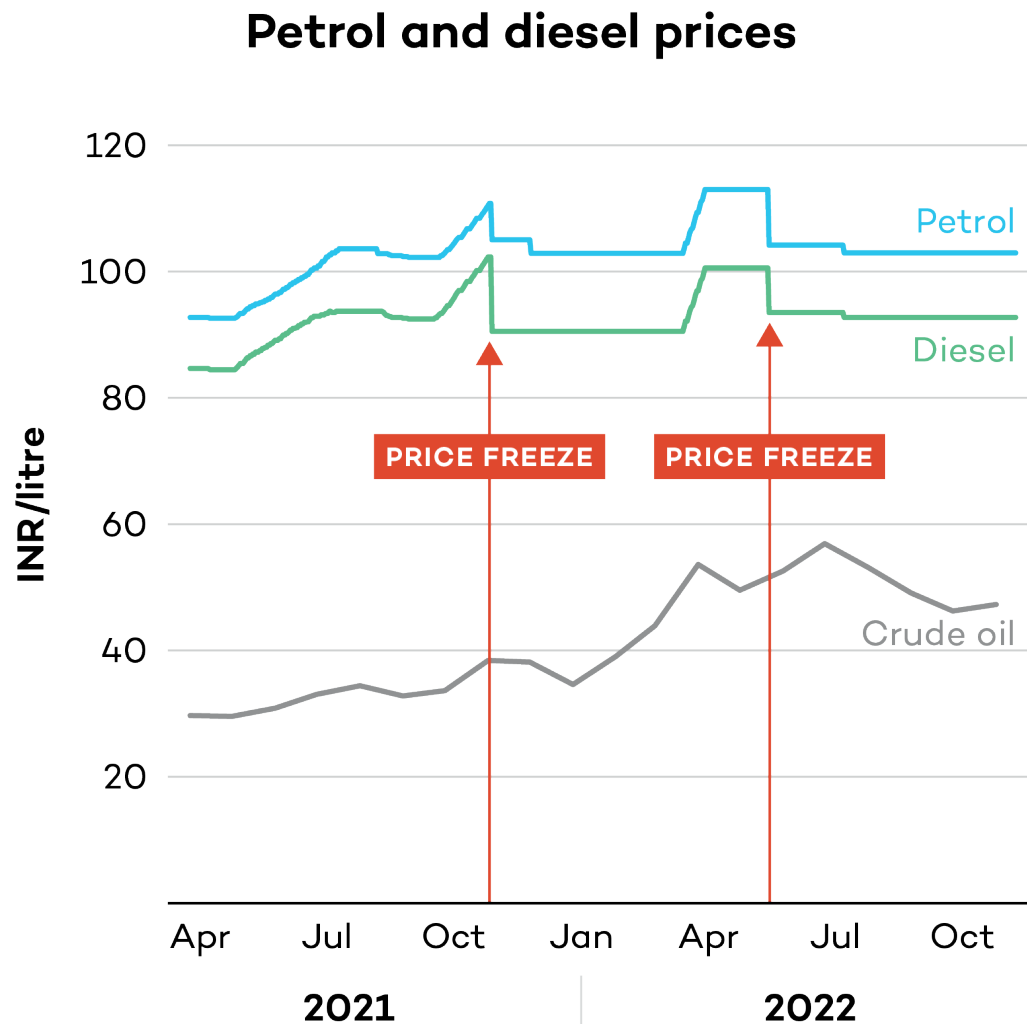
Total oil and gas subsidies in India



SPOTLIGHT ISSUE

Price control of petroleum products

- Retail selling price (RSP) of petrol and diesel largely frozen from November 2021.
- Retail prices did not reflect large increases in the international oil price.
- Could have resulted in large losses by oil marketing companies (OMCs).
- Instead, fuel price freezes absorbed in FY 22 by cuts in excise and VAT.



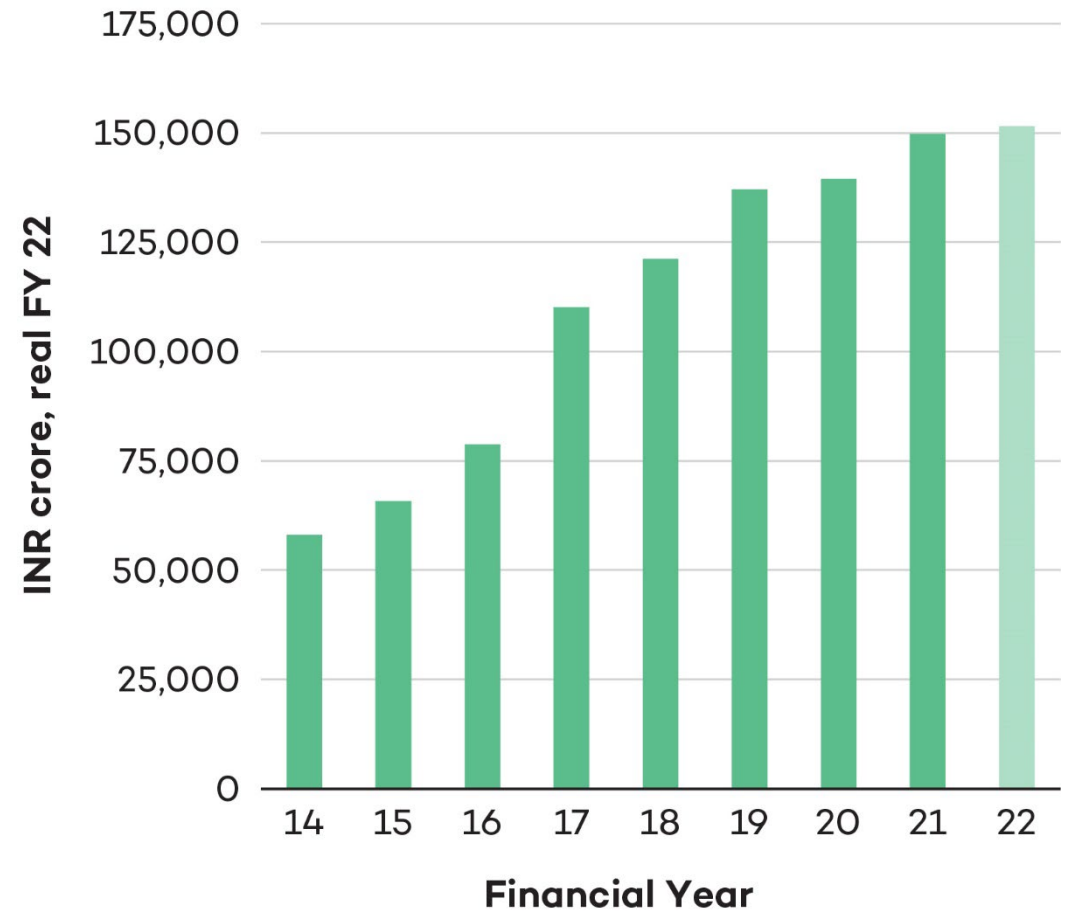
Source: Petroleum Planning & Analysis Cell, Ministry of Petroleum & Natural Gas, Government of India, 2022

KEY MESSAGES

Electricity Subsidies

1. Electricity transmission & distribution (T&D) subsidies remained about the same as FY 21.
2. Consistent with the FY 17 to FY 22 average of INR 1.3 lakh crore (USD 17.6 billion) per year.
3. Largest subsidy was below-cost electricity pricing to support consumers.
4. Without reform and targeting, these will add pressure on government budgets as demand increases.

Total T&D subsidies in India

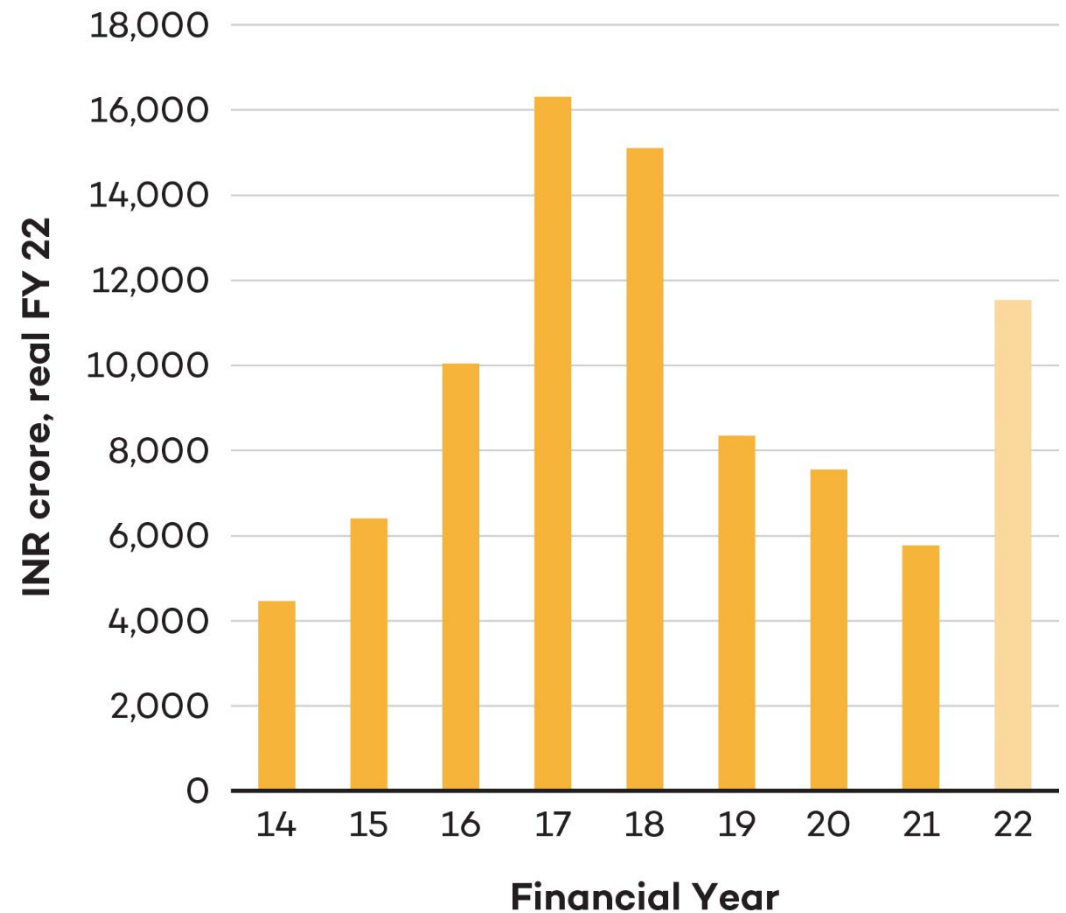


KEY MESSAGES

Renewable Energy Subsidies

1. RE subsidies doubled in FY 22—first increase since FY 17—driven by a 155% jump in solar photovoltaic (PV) installation.
2. 28 policies provided by the Central Government totaled INR 11,529 crore (USD 1.5 billion).
3. Subsidies declined from FY 18 to FY 21 due to lower program outlays and an increase in duties and taxes.
4. Stable policy regime is needed to support RE growth, support nascent technologies and reach government targets.

Total renewable energy subsidies in India

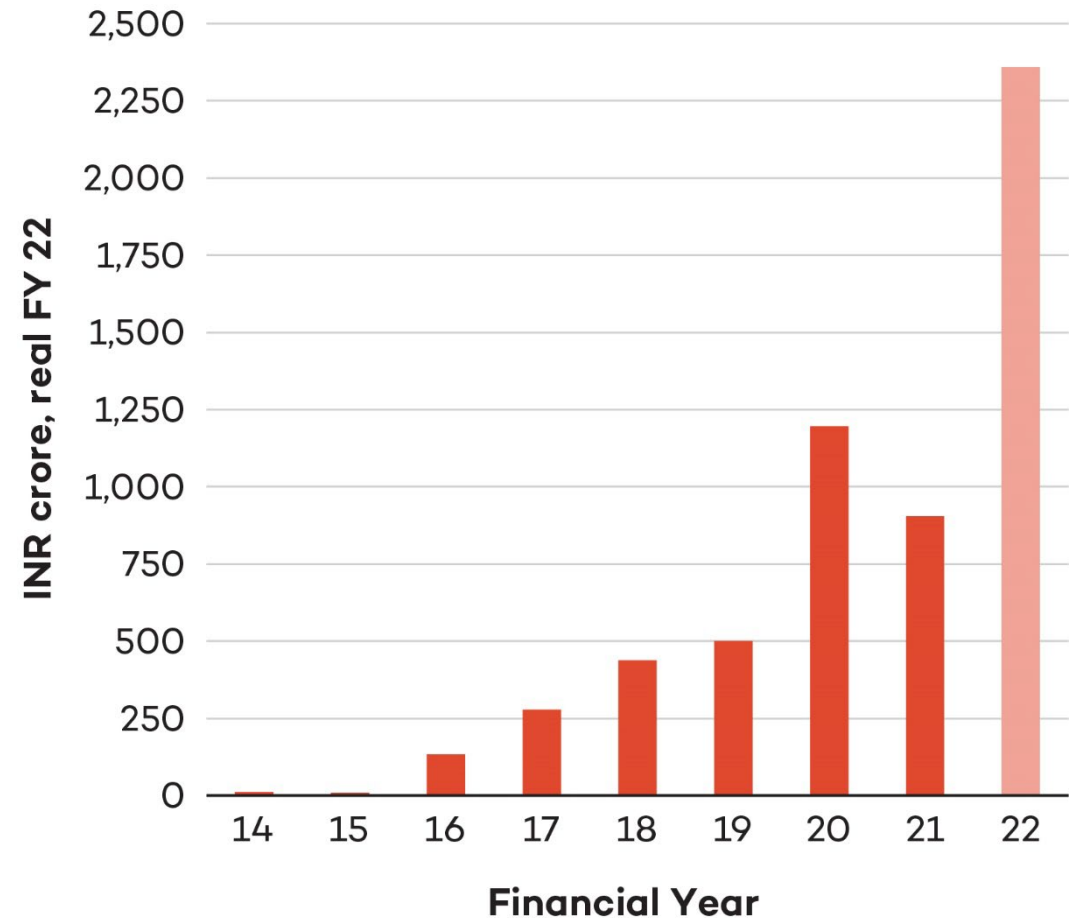


KEY MESSAGES

Electric Vehicle Subsidies

1. EV subsidies increased 160% from FY 21
 - Reached record high of INR 2,358 crore (USD 0.3 billion) in FY 22.
2. In 2021, EVs accounted for 1.1% of total vehicle sales
 - 95% were 2- and 3-wheelers.
3. Subsidies for domestic manufacturing of EVs and advanced batteries likely to increase from FY 23
 - Central Government's Production Linked Incentive Scheme.

Total subsidies to EVs in India



Public Sector Undertakings

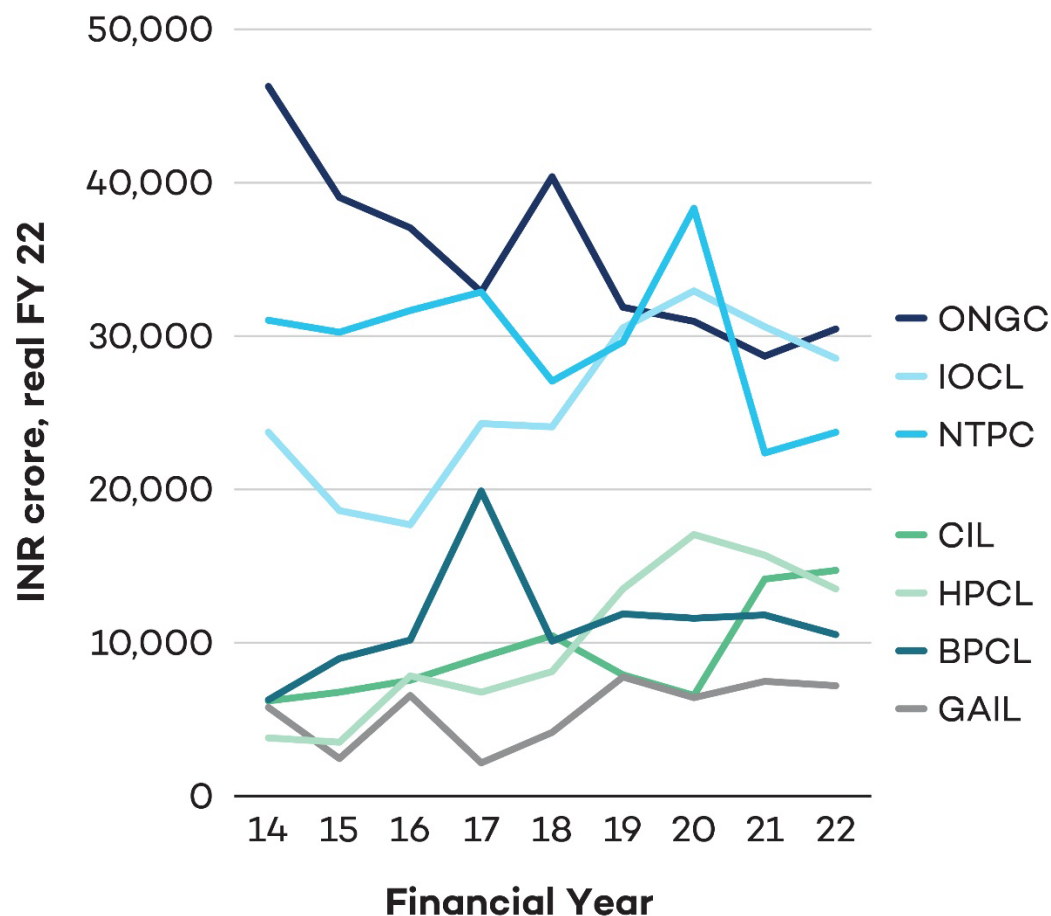


PSU INVESTMENTS

PSUs are ramping up their capital expenditure, which provides an historic opportunity to diversify into clean energy

1. Despite, the post-COVID economic stimulus strategy, capex by energy-sector PSUs remained below pre-COVID levels at INR 146,321 crore (USD 19.6 billion) in FY 22.
2. Seven biggest PSUs accounted for 88% of the capex.
3. Opportunity for the fossil-dominated PSUs to diversify into clean energy and capture new markets.

CAPEX trends of seven major PSUs in India



Public Finance Institutions

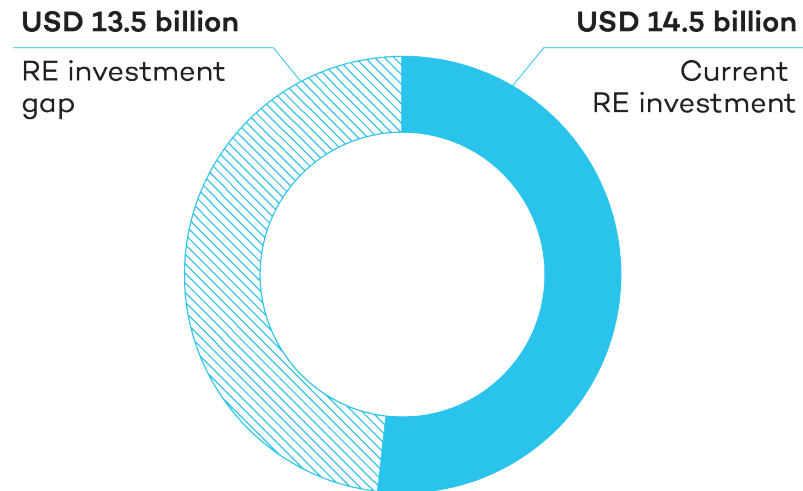


INDIA'S INVESTMENT NEEDS

Public sector financing needs to increase to crowd in private investments in clean energy

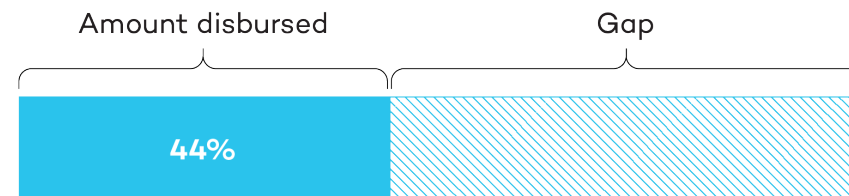
1. India needs INR 2.1 lakh crore (USD 28 billion) per year in investments to meet 2030 RE targets
 - Double current levels.
2. To date, multilateral climate funds pledged to provide INR 8,700 crore (USD 1.2 billion) toward energy projects in India
 - Less than half (44%) of that amount has been received.

India's investment needs



Source: [BNEF \(2022\)](#); [IEEFA \(2022\)](#)

Cumulative financing for energy projects by multilateral climate funds

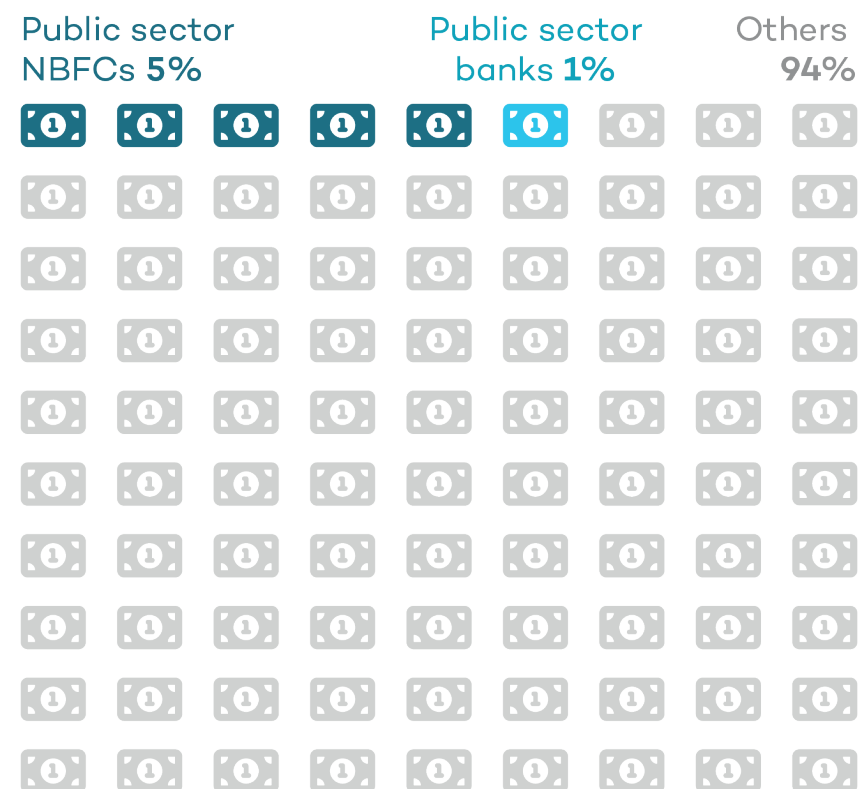


Source: [Climate Funds Update](#), updated as of January 2022

Lending by Domestic PFIs

1. Only 6% of total debt financing for new-build RE projects in India between 2019–2021 came from domestic public finance institutions.
2. Public sector lending for RE received a boost in FY 22 after a slowdown in FY 21, mainly due to fresh equity infusion by GoI in IREDA.

Debt financing for renewable energy projects

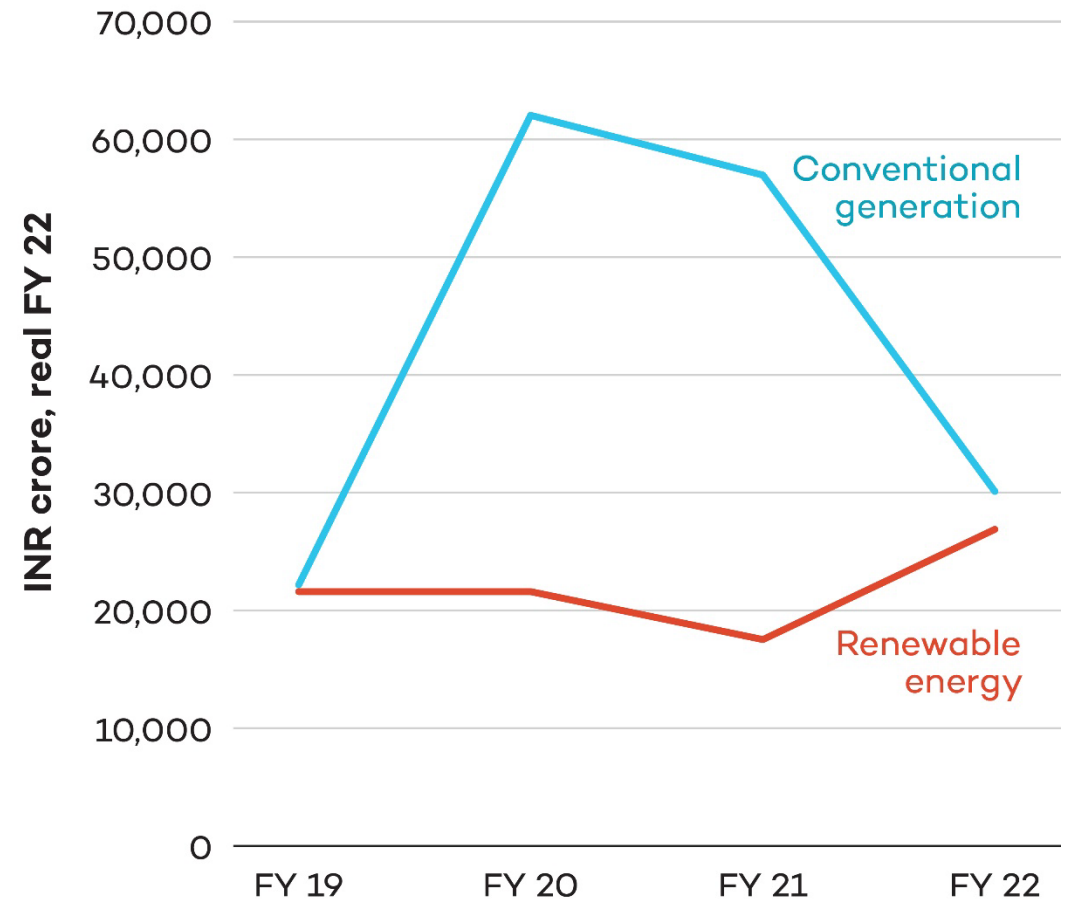


Source: [BNEF \(2022\). Financing India's 2030 Renewables Ambition.](#)

Lending by Domestic PFIs

- Public sector banks (PSBs) continue to have the lowest asset portfolio share towards clean energy compared to other financial institutions.
- PSBs need to improve data transparency and reporting on financial flows for fossil fuels and clean energy.

Lending by three major NBFCs



Note: Includes annual disbursements by top three state-owned power financiers—namely PFC, REC and IREDA.

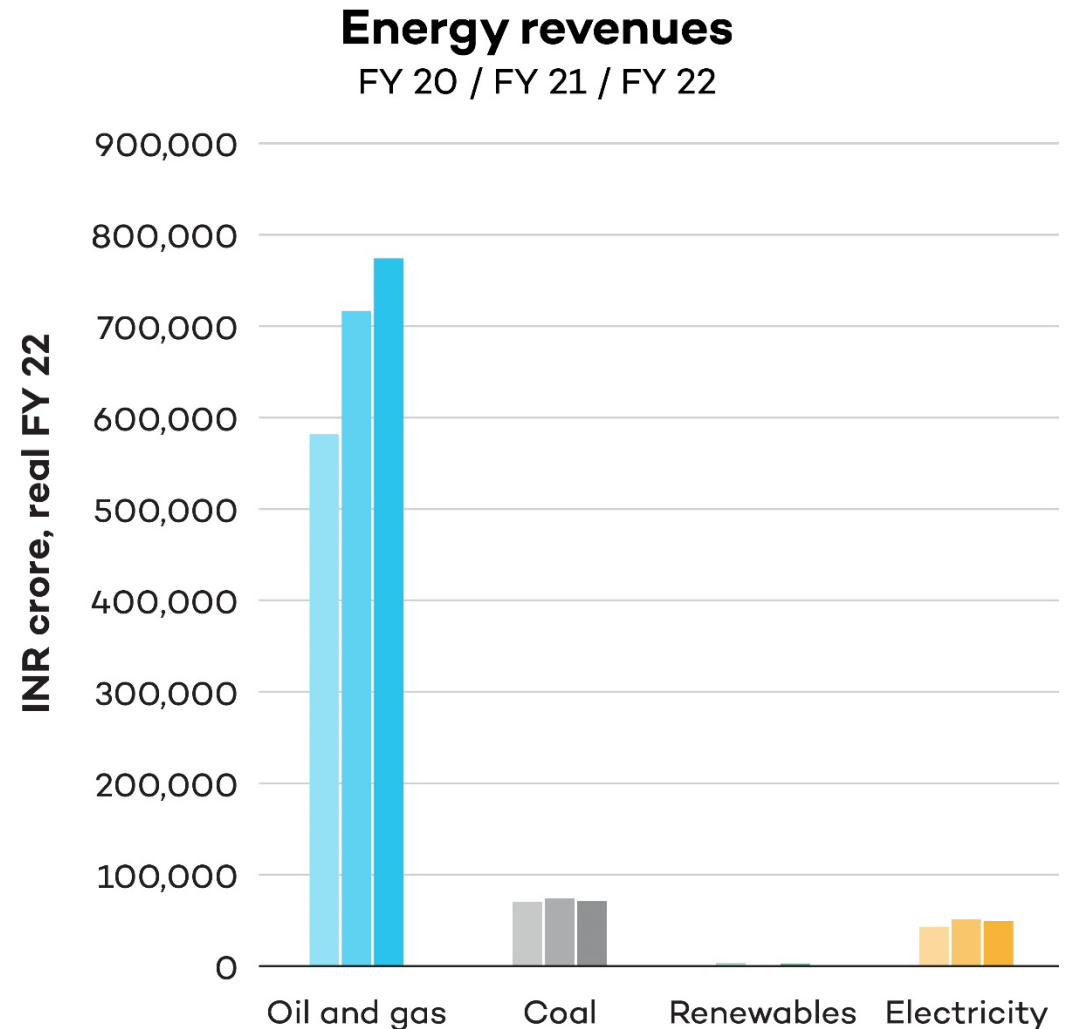
Revenues & externalities



KEY MESSAGES

Revenues From Energy

1. Energy revenue in FY 22 from Centre, states, & union territories was INR 899,140 crore (USD 120 billion), 19% of all government revenue.
2. Fuel consumption generated most revenue: excise and VAT on petrol and diesel accounted for 69% of energy revenues.
3. Windfall tax revenue could be in the range of INR 30,000–40,000 crore (USD 40–53 billion) in FY 23.

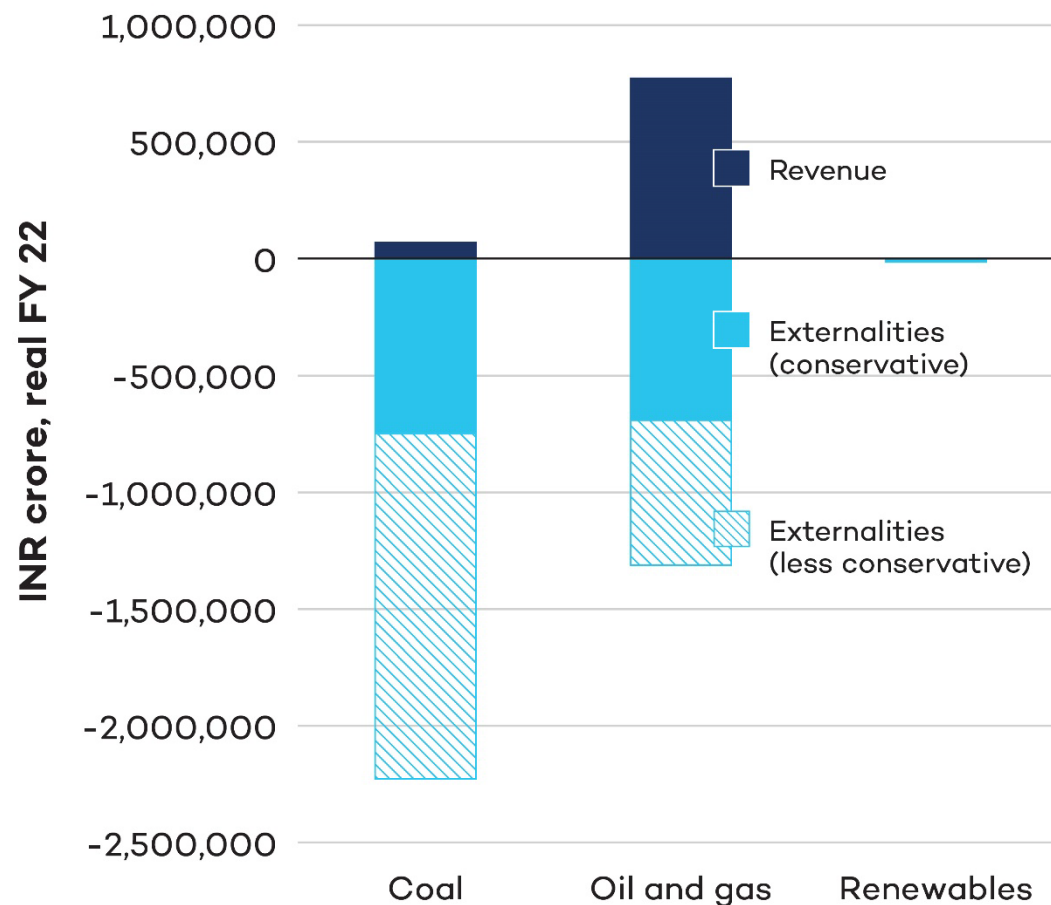


KEY MESSAGES

Externalities

1. Fossil fuel externalities in FY 22 estimated between INR 14–35 lakh crore (USD 200–500 billion)
 - Largest were costs of climate change.
2. RE externalities estimated between INR 12,900–17,900 crore (USD 1.8–13.7 billion)
 - Mostly grid integration costs.
3. Range reflects uncertainty about the extent and cost of impacts
 - See [Mapping India's Energy Policy 2022](#) for assumptions and methods

Social costs of energy, FY 22



Recommendations

3 KEY STEPS

for India to achieve
net-zero emissions
by 2070



Shift support
from fossil fuels
to clean energy



Use windfall profits to help
people and businesses
transition to clean energy



Mandate state energy
companies and financial
institutions to implement
net-zero plans

Thank You!

For more information:

Email: info@iisd.org

Methodology



Subsidies

- The review of subsidies follows ([Garg et al., 2017](#)), using a definition of “subsidy” agreed by all 164 World Trade Organization members.
 - It includes: 1) direct and indirect transfers, 2) foregone revenue, 3) provision of goods or services below market value and 4) income and price support through regulations.
- We aimed to identify and quantify all central government subsidies in T&D, renewable energy, and EVs.
- The one state-level subsidy in our database is underpriced electricity, which we included because it exists in almost all states and is very large, so its exclusion would be a serious misrepresentation of the energy subsidy landscape in India.
- Nuclear and large hydropower are excluded due to a lack of data.
- Wherever possible, estimates are based on official government data.
- Some subsidies are identified but “non-quantified” due to a lack of data.

Public Sector Undertakings

- Our review of PSUs follows the approach in [Viswanathan et al. \(2021\)](#), covering 14 central-level energy PSUs and the seven energy Maharatnas.
- Wholly owned subsidiaries of the PSUs are included, but joint ventures are not considered. PSUs that primarily operate as investors are classified as PFIs.
- Capital expenditure (CAPEX) data are taken from the Expenditure Budget provided by the Ministry of Finance.



Public Finance Institutions

- Our review of PFIs focuses on central government-owned entities (with more than 51% government shareholding) that are engaged in direct lending to energy projects in India, collectively referred to as “central PFIs.”
- This includes 12 scheduled PSBs) (as classified by the Reserve Bank of India and three other public companies and non-banking financial companies [NBFCs])
- Data on their lending are drawn from annual reports, investor presentations, and a review of Basel III framework disclosures, in the case of PSBs.
- Due to low reporting on lending, we also refer extensively to data on energy financing in India that have been collected by [Oil Change International \(2022\)](#), the [Centre for Financial Accountability & Climate Trends \(2022\)](#), [Fair Finance India \(Sreedhar Ramamurthy & Singh, 2019\)](#) and [Bloomberg New Energy Finance](#).

Tax and Non-Tax Revenues

- Our discussion of taxes follows the Organisation for Economic Co-operation and Development (OECD), which defines them as unrequited payments to the general government budget enforced through legislation ([OECD, 2001](#)). “Unrequited” means that the benefits provided by the government to taxpayers are not normally in proportion to their tax payments ([OECD, 2001](#)). Compulsory payments, duties, and statutory levies are also considered taxes.
- Non-tax revenues are all other government revenues not classified as taxes, such as royalties and rents from fossil fuel extraction.
- The data include revenues from the consumption and production of fossil fuels, renewable energy and electricity, including corporate income tax, tax on dividends, and the goods and services (GST) tax.

Tax and Non-Tax Revenues

- Given data constraints, for renewables it was only possible to account for revenue related to capital installation of equipment (wind farms and grid-scale solar PV), while fossil revenue covers fuel production and consumption, but not CAPEX.
- We believe the review nonetheless captures the largest share of revenue linked to each type of energy: CAPEX makes up the largest share of generation costs from renewables (60%–70%) and fuel is the main generation cost (around 75%) for coal-fired generation ([Solar Bay, 2020](#); [Soman et al., 2019](#)).



Energy Externalities

Estimating externalities is complex because they arise throughout the value chain, and quantification requires assigning financial values to non-financial impacts. We quantified only a limited number of energy externalities:

- Petroleum products: Climate change, air pollution (mortality and morbidity), and traffic congestion, deaths, injuries, and vehicle damage (see Box ES1. In [Mapping India's Energy Policies 2022](#) for an explanation of why traffic externalities are allocated to fossil fuels).
- Natural gas: Climate change impacts.
- Coal: Climate change impacts, air pollution (mortality and morbidity).
- Solar PV and wind: Climate change impacts and grid-balancing costs.

Energy Externalities

Most externalities were estimated using a two-step process.

1. We reviewed literature for estimates of impacts (such as deaths or GHG emissions) caused by each energy type and for estimates of an average cost for a unit of each impact.
2. The two data points were then multiplied to estimate an externality.
 - We used conservative and less conservative values to reflect uncertainty. The “less-conservative estimate” is not an upper bound due to the large number of externalities that were not assessed. Preference was given to Indian data and sources. The underlying data were collected across a range of years, with 2020 preferences where available, and taken as a proxy for FY 2020.