

Monitoring the fossil fuel subsidies indicator SDG 12.c.1

A Case study of India

Summary

India is the world's third largest economy. With an aspiration to reach a double-digit growth, coupled with the objective of eliminating energy poverty by providing access to clean energy for cooking and electricity for lighting, energy consumption is expected to grow exponentially to meet the unmet needs of the Indian population. India is currently a major energy importing country, especially crude oil, but is also investing massively in other forms of energy production, for example in solar energy.

India is currently subsidizing kerosene, natural gas and electricity. A progressive rationalisation has been made for most energy subsidies over recent years especially taking advantage of falling crude prices. In fact, for some of the fuels like gasoline and diesel, tax now comprises a substantial proportion of retail selling prices.

The following points have been identified on the current state of monitoring and reporting of fossil fuel subsidies:

Capacity for SDG monitoring

- India is already monitoring the SDG targets and a mapping¹ of India's programmes and schemes with SDG targets has been carried out. Different nodal ministries have been assigned responsibilities pertaining to different SDG targets. For SDG 12.c.1 Ministry of Environment Forest and Climate Change (MoEFCC) has been designated as the nodal Ministry.
- Several institutions are involved in the data collection for energy subsidies. The central institutions are the Ministry of Finance, the Comptroller and Auditor General, Ministry of Petroleum and Natural Gas, Ministry of Coal, Ministry of Power, Central Electricity Authority, Power Finance Corporation.
- Capacity for data collection on fossil fuel subsidies in the individual ministries involved seems to be adequate to fulfil the current requirements of domestic reporting on subsidies.
- A conclusive assessment on whether this capacity would be sufficient for monitoring of SDG indicator 12.c.1 could not be achieved due to the dispersed nature of data collection involving several ministries and the uncertainty about what monitoring of this indicator would entail.

Data availability

- India has comprehensive data collection systems on fossil fuel subsidies and energy prices.
- Information on subsidies can be retrieved from publicly available documents, for example the Union Budget published by the Ministry of Finance, several reports

¹http://niti.gov.in/writereaddata/files/SDGs%20V22-Mapping_August%202017.pdf

published monthly by the Comptroller General of Accounts, and annual publications on the prices, taxes and subsidies on petroleum products, natural gas and electricity by the respective sectoral Ministries and associated agencies.

- The subsidies that Government of India explicitly reports in the budget document include direct transfers and various forms of income and price support both on consumption and production.² Other items that could be categorised as subsidy according to the WTO definition include investment in state owned enterprises, concessional loans and loan guarantees which are reported in budget and other official documents.
- Information on energy subsidies is available for petroleum and natural gas and electricity, and some production subsidies on coal.
- No disaggregation is being made for electricity according to whether it is generated from fossil fuels.
- No explicit categorisation is made between producer and consumer subsidies. This distinction could be made for each individual subsidy based on the information in the budget documents.
- Sub-national subsidies exist at the state level. They are reported in the State budgets and State Finance accounts maintained by State Finance Department and Comptroller Accounts General respectively

Methods of measurement

- India follows its own approach of reporting on direct and indirect subsidies that are being identified in government documents.
- No international methodology such as the inventory approach by the OECD is being used, but many of the items that have been identified as subsidies could be brought under the ambit of an OECD-type inventory.
- The price-gap is not calculated by the Indian government.
- Several assessments of fossil fuel subsidies have been produced internationally: the OECD has established a detailed inventory; IEA assesses fossil fuel subsidies; studies have been conducted by GSI and organisations like the Asian Development Bank.

Lessons learned for global monitoring

- ⇒ In countries with high monitoring capacity and an open-data approach, national data monitoring systems and national data that is publicly available can provide an excellent basis for SDG monitoring.
- ⇒ Countries with good monitoring capacity might not require considerable inputs to be able to monitor data for SDG Indicator 12.c.1. Some short-term assistance on specifics of the methodology might be considered.
- ⇒ National governments tend to have a narrower definition (mostly budgetary transfers as well as some indirect subsidies) of what constitutes a fossil fuel subsidy than the WTO definition.
- ⇒ Information on subsidies that are not captured by the definition of the Government of India can be found in official government documents.
- ⇒ The subsidies reported by the Government of India could be classified according to the subcategories of the WTO definition.

² <http://indiabudget.nic.in/ub2017-18/eb/sbe72.pdf>

Institutional set-up

The SDG process is overseen by Niti Ayog, the premier policy 'Think Tank' of the Government of India, chaired by the Prime Minister, Mr. Narendra Modi. All SDG targets and indicators have been assigned to different nodal ministries. The details of the SDG indicator and target mapping with the government schemes and nodal ministries could be seen in the following link:

http://niti.gov.in/writereaddata/files/SDGs%20V22-Mapping_August%202017.pdf

Ministry of Statistics and Programme Implementation (MoSPI) has been entrusted with the responsibility of framing the indicators pertaining to the SDGs

The first voluntary review of select SDG indicators of India brought out by Niti Ayog in July 2017 can be found here: <http://www.niti.gov.in/content/voluntary-national-review-report>

- The Ministry of Environment Forest and Climate Change (MoEFCC) is the nodal ministry for SDG Indicator 12 in general and hence is also the nodal ministry pertaining to 12.c.1.
- Other relevant ministries at the Central (Federal Level) are Ministry of Finance and Ministry of Petroleum and Natural Gas

Institutions involved in data collection of fossil fuels

Besides the Ministry of Environment Forest and Climate Change, the following institutions are relevant for monitoring fossil fuel subsidies:

- Ministry of Finance reports on budgetary subsidies which are part of non-plan (non-developmental) revenue expenditure. <http://finmin.nic.in/>
- Ministry of Petroleum and Natural Gas (MoPNG), the lead ministry for deciding on the policy and strategy with respect to oil and gas sector. <http://petroleum.nic.in>
Within this Ministry, Petroleum Planning and Analysis Cell (PPAC) provides information and report on petroleum and natural gas pricing and subsidies. <http://ppac.org.in/>

Other relevant ministries or agencies on the national level are:

- Comptroller and Auditor General of India (CAG), which maintains audited finance accounts of both Union (Centre) and States and reports on revenue expenditure that includes budgetary subsidies, in general, and energy subsidies, in particular. <http://cag.gov.in/>
- The Ministry of Coal, which is the lead ministry responsible for deciding on the strategy and policy of the exploration and production of coal and lignite reserves and reports on data and information on coal sector <http://coal.nic.in/>
- The Ministry of Power (MoP) for data and information with respect pricing and subsidies on electricity. <http://powermin.nic.in>
- The agencies that are relevant are Central Electricity Authority (CEA) (<http://cea.nic.in>) and Power Finance Corporation (PFC) (<http://pfcindia.com>) for gathering data and information on electricity sector
- Rural Electrification Corporation (REC) for data and information on rural electrification <http://recindia.nic.in>
- The Central Electricity Authority (CEA), a statutory organisation under the aegis of Ministry of Power.
- The National Institute of Public Finance and Policy, an independent research institute that is partially funded by the Ministry of Finance and the State Governments, is involved in the calculation of subsidies. <http://www.nipfp.org.in/home-page/>

For fossil fuel subsidies on the sub-national level, the following institutions are relevant:

- State Planning and Development Departments acts as focal points for monitoring of SDGs at sub-national (state) level.
- Ministry/Department of Finance; Ministry/Department of Energy/Energy Directorates at the State level.
- State Electricity Regulatory Commissions (SERCs) of various states brings out tariff orders and the State Power Utilities Issue Tariff Notices that could also be used to cull out information on

electricity at the state level but no distinction is available as such between thermal power and power generated from renewable energy resources.

No information on cooperation with international bodies around fossil fuel subsidies or related issues was identified.

Capacity and staffing

As reported by the lead ministry MoEFCC, there is a team dedicated on SDGs at the Ministry. Although MoEFCC is the designated Ministry for coordinating the specified SDG, the data collection is done by other Ministries. A number of employees are working on monitoring fossil fuel subsidies, but they are spread across multiple ministries. So, it is not being possible to infer on the total number of people involved in reporting the data and information that could be relevant for a specific SDG indicator as it.

Ministry of Finance, another key ministry, also reported that they get the data and information from other ministries and do not collect data by themselves.

Because of the difficulty in ascertaining the human resources involved in gathering data and information on SDG 12.c.1, none of the key ministries could comment on whether this capacity would be sufficient for the SDG monitoring for this indicator.

Current monitoring and reporting

India is reporting on subsidies in publicly available budget documents. The term 'fossil fuel subsidy' is not used in the government documents. The term 'energy subsidy' is usually used in budget documents/finance accounts of Centre and States and that includes the subsidies on fossil fuels as well as non-fossil ones. However, the break-up between fossil and non-fossil fuels can be culled out from union and state budget or from union and state finance accounts under the head revenue expenditure.

Sources

The Union Budget document brought out by Ministry of Finance every financial year contains detailed information and break-up of the energy subsidies item-wise (<http://indiabudget.nic.in>).

The 'Review of Union Government of Accounts' by the Comptroller General of Accounts (CGA) (<http://cga.nic.in>), a part of the Ministry of Finance contains information on budgetary subsidies (of which energy subsidies are a part) and is reported every month.

The monthly update on the centre and state finance accounts by the Comptroller and Auditor General of India (CAG) (<http://cag.gov.in/>) also provides contains information on subsidies for both centre and states, of which energy subsidies are a part.

Ministry of Petroleum and Natural Gas in their annual publication 'Petroleum and Natural Gas Statistics' reports on the data on prices, taxes and subsidies on petroleum products and natural gas.

The 'Ready Reckoner' that is brought out by the Petroleum Planning and Analysis Cell (PPAC) within this Ministry every month provides a snapshot of oil and gas data including information on prices, taxes, import, export and subsidies. Besides detailed and updated information on current and historical subsidies on oil and gas are reported in the website: http://www.ppac.org.in/content/150_1_Subsidy.aspx

The Central Electricity Authority (CEA) publishes an annual compilation titled "Electricity Tariff & Duty and Average Rates of Electricity Supply in India" that reports on electricity taxes leviable on different consumer categories and tariff for special power supply schemes of government of India. It also provides information broken down by state where agriculture and non-agriculture power is free and where unmetered power is at a fixed rate. However, no categorisation is made in the retail power tariff between power generated from fossil fuels and renewables.

The Power Finance Corporation comes out with a periodic compilation on 'Performance of State Power Utilities' that contains information on subsidy booked and received and the gap between Average Cost

of Supply (ACS) and Average Revenue (based on energy input in the system) that reflects on the subsidy. It also reports on the cross subsidies across different categories of consumers.

For an overview of the sources used, please see Table 1.

Subsidies reported

The energy subsidies that are reported in the government documents include those on petroleum and natural gas and electricity. No distinction is made between electricity produced from fossil fuels and non-fossil fuels. The subsidies include direct transfers, investment in SOEs, concessional loans and loan guarantee, tax revenue foregone and induced transfers.

Among the fossil fuel subsidies, the petroleum subsidies for LPG and Kerosene are particularly significant. They are reported in the Union Budget: <http://indiabudget.nic.in/ub2017-18/eb/sbe72.pdf> . These include consumption subsidies in the form of Direct and Indirect Transfer of Funds like price support and Liabilities. At present, the government is providing a targeted subsidy in the form of Direct Benefit Transfer on LPG and on Kerosene (SKO), and also subsidy on LPG meant for Below Poverty Line (BPL) population known as Ujjwala Scheme.

Besides these, there is reporting on under-recoveries. These under-recoveries have been met largely through budgetary support provided by the government and price support by State-owned Enterprises (Public Sector Undertakings, PSUs). As indicated by National Institute of Public Finance and Policy (NIPFP), investment in PSUs is largely subsidies provided by the government to PSUs from the Budget. They are production subsidies. There are other production subsidies like Oil Industry Development Board (OIDB) grants and subsidies on oil and gas, Expenditure towards ISPRL towards strategic petroleum reserves as well. All these are reported in the Union budget.

Some of the subsidies/support that are reported include:

Oil and Gas: Several direct subsidies (budgetary support) have been identified. All these data are available either from the Union Budget Documents for last 5 years and from the subsidy section in the website of Petroleum Planning and Analysis Cell.

- Fiscal and freight subsidies on select petroleum products and natural gas.
- Direct transfer of funds in the form of direct benefit transfer on LPG and Kerosene, subsidies on LPG for the poor (Ujjwala Scheme).
- Investment for strategic petroleum reserves, Oil and Industry Development Board (OIDB);
- Financial Assistance in the form of Grants and Subsidies;
- Capital Outlay for Exploration and Production and investment in SOEs.

Electricity: Several direct subsidies (budgetary support) have been identified. Data and information was obtained from Budget documents of centre and states as well as the finance accounts of centre and states. Besides Central Electricity Authority and Power Finance Corporation also reports on select indicators on tariffs, duties and performance of state utilities.

- Support to transmission and distribution utilities like support for extending the transmission and distribution network in rural areas under Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY), Integrated Power Development Scheme (IPDS) for improving and strengthening the transmission and distribution network;
- Power System Development Fund (PSDF) program that was created to aid in construction of transmission networks of strategic importance and Ujwal Discom Assurance Yojana (UDAY) for improving the health of the discoms at the state level.
- Financial support by State Governments to T&D utilities through a range of mechanisms, including lower electricity duties, compensation for losses incurred by selling electricity at prices lower than the cost of service [gap between average cost of supply (ACS) and average revenue requirement (ARR)] and support for securing low-cost financing from multilateral and bilateral funding agencies.

Coal: Several measures for direct and indirect support provided by the government to mining

companies are being reported. All these data and information are largely available from outcome budget of Ministry of Coal for various years, Annual Reports and Financial Accounts of Coal India Limited:

- Funds provided for conservation and safety of coal mines and development of transport infrastructure under Coal Conservation and Development Advisory Committee (CCDA);
- Assistance for exploration in difficult areas;
- Special benefits to employees and concessional duties on mining equipment;
- Government guarantees for loans from multilateral banks.

Scope

Data is reported on gas, oil and petroleum periodically, but distinction is not always available in electricity generated from fossil fuels and renewables.

Sub-national subsidies: Some figures on subsidies that exist at the state level are reported in the State budgets and State Finance accounts maintained by State Finance Department and CAG respectively.

External Cost from combustion of fossil fuels and Greenhouse Gas emission are not included as no official documents exist on estimation of social cost and is a contentious issue. Besides as India does not participate in any emission trading schemes, assigning of carbon price is also ridden with problems. So, these are not included in energy subsidy estimation

No comments were received on whether these items should be included.

No explicit categorisation is made between producer and consumer subsidies, but such categorisation could be possible based on support to producers or consumers.

Approach

India does have the data to report following OECD approach, but India does not officially follow any of these approaches and follow its own methodology of reporting on the subsidies, as mentioned above.

Furthermore, as reported by the government officials, going by pure national accounting sense, the net taxes (taxes net of subsidies) on all the petroleum products, except LPG and Kerosene, turns out to be positive. Particular mention has been made on gasoline and diesel where tax comprises a very high proportion of the retail selling prices (RSP) of these products. Also, many of other products like aviation turbine fuel and crude enjoys Declared Goods Status and enjoys a concessionary excise and customs duties but considering all the taxes and cess levied on these products, they cannot be considered as subsidised. So with the exception of LPG and Kerosene, none of the products are actually considered to be subsidised.

International monitoring

Several sources for information on subsidies in India exist.

- A detailed inventory on budgetary and tax support measures as of 2014 is available at: http://www.oecd.org/site/tadffss/IND_27MAR2014.pdf
- An updated version of the data up to 2015 is available at: http://stats.oecd.org/Index.aspx?DataSetCode=FFS_IND
- IEA's compilation on fossil fuel subsidies that includes India: <http://www.worldenergyoutlook.org/resources/energysubsidies/fossilfuelsubsidydatabase/>
- A report on oil, gas and coal production subsidies by ODI, Oil Change International and Global Subsidies Initiative (GSI): <https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/9959.pdf>
- A detailed documentation on India's Energy Subsidies and progressive reforms is available at

- the website <http://www.iisd.org/gsi/energy-subsidies-india>
- A document on Fossil Fuel Subsidies in Asia: Trends, Impacts and Reforms is available in the Asian Development Bank's website in the link below: <https://www.adb.org/sites/default/files/publication/182255/fossil-fuel-subsidies-asia.pdf>

All these compilations primarily rely on data from Union Budget Documents and other relevant Ministry websites and sources pertaining to Government of India.

Additional material

A paper titled "Fossil Fuel Subsidies: Three Questions, Evidence and way Forward has been produced by Department of Economic Affairs, Ministry of Finance, Government of India, the link to which is provided below. The document has been published in 14 December 2015 <http://dea.gov.in/sites/default/files/FossilFuelSubsidies.pdf>

Three documents on India's fuel subsidies produced by IISD, TERI and National Institute of Public Finance and Policy are provided below <https://earthtrack.net/documents/fuel-subsidies-india>

A citizen's guide to energy subsidies in India is available at: http://www.iisd.org/gsi/sites/default/files/ffs_india_czguide.pdf

Understanding Fossil Fuel Subsidy in India: Questions and Answers is available at https://www.iisd.org/gsi/sites/default/files/ffs_india_comic.pdf

A more recent document produced by IMF on energy subsidies that mentions India is available in the link below: <https://www.imf.org/external/pubs/ft/wp/2015/wp15105.pdf>

What data sets do you use to measure these fossil fuel subsidies?	
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Benchmarks for price-gap calculation

Coal: The pricing of coal was fully deregulated after the Colliery Control Order, 2000 was notified with effect from 1st January 2000. Under this Order, the Central Government (Ministry of Power) has no power to fix the prices of coal and Coal India Limited (CIL) has an absolute monopoly in deciding on the coal prices (see-http://www.coal.nic.in/sites/upload_files/coal/files/curentnotices/pricing_1.pdf)

In India, raw coal is supplied in accordance with long-term fuel supply agreements (FSAs) or through EAuction. The price of raw coal supplied under FSAs is determined by CIL and are not reflective of market prices for coal either in India or in international coal markets. Coal India limited is having an absolute monopoly in the supply of coal in the domestic market and can determine the prices. On the other hand, the price of coal sold through E-Auctions based the market price. Therefore, the price of raw coal sold under the E-Auction scheme is substantially higher than the price of raw coal supplied through FSAs.

For non-coking coal, however, CIL has migrated to a new system for pricing based on Gross Calorific Value (GCV) w.e.f. from January 01, 2012. Until December 2011, the company used to follow the Useful Heat Value (UHV) based method to price its NC coal. The revised mechanism is more in line with the international system as against the previous mechanism of UHV which was an old method and depended on the moisture and ash content through the application of an empirical formula. (See http://coal.nic.in/sites/upload_files/coal/files/coalupload/wp101014.pdf)

However, no official estimate is available on true cost or full cost based pricing of coal after accounting for social cost that arises out of combustion of coal.

Petroleum Products: The price build-up of supply of four petroleum products namely gasoline, diesel, LPG and Kerosene are given below.

The link below provides the price build-up of Kerosene and LPG from FOB price till the retail stage and includes all taxes, charges and commissions

http://ppac.org.in/WriteReadData/userfiles/file/PP_8_C_PriceBuildupSensitive_Products.pdf

Similarly, the link below provides the retail price build-up of gasoline and diesel specified by oil marketing companies

http://ppac.org.in/content/149_1_PricesPetroleum.aspx

The determination of crude prices domestically is provided below

http://ppac.org.in/content/149_1_PricesPetroleum.aspx

Natural gas: Prior to 2014, there were broadly two pricing regimes for natural gas in the country – one for the gas priced under the Administered Pricing Mechanism (APM), and the other for the non-APM or free-market gas. The price of APM gas is set by the Government principally on a cost-plus basis. As regards non-APM/free-market gas, this could also be broadly divided into two categories, namely, (i) imported Liquefied Natural Gas (LNG), and (ii) domestically produced gas from New Exploration Licensing Policy (NELP) and pre-NELP fields.

The Government fixed APM gas price in the country, with effect from 1.6.2010, is \$ 4.2/mmbtu (inclusive of royalty), excepting in the Northeast, where the APM price is \$ 2.52/mmbtu, which is 60% of the APM price elsewhere, the balance 40% being paid to NOCs as subsidy from the Government Budget. Natural gas produced domestically from joint-venture fields generally indexes their prices to international rates. LNG prices are market-driven and are usually determined either based on spot or forward market rates.

However, in 2014 a new domestic gas pricing evolve based on the formula as provided in the link below

<http://ppac.org.in/WriteReadData/CMS/201501270457045609772DatasourcesforpricecalculationNov14-March-15.PDF>

On 10th March 2016, the government announced 'freedoms for marketing and pricing gas produced from geologically difficult, high risk and high cost areas, with a provision of a ceiling price based on the landed cost of alternate fuels' (PIB, 2016). Under this system, natural gas in India began to be priced as an average of imported liquefied natural gas (LNG) and benchmark global gas rates. The gas prices are also supposed to be revised every six months by the government.

Electricity: There are two tariff systems, one for the consumer which they pay to the DISCOMS and the other one is for the DISCOMS which they pay to the generating stations. Considering the tariff of electricity for the consumer i.e the cost the consumer pay to the DISCOMS, the total cost levied on the consumer is divided into 3 parts usually referred as 3 part tariff system and comprises a fixed cost, a semi-fixed cost and a variable cost. The fixed cost is independent of the maximum demand and energy consumed. This cost includes the cost of land, labor, interest on capital cost, depreciation etc. The semi-fixed cost considers the size of power plant as maximum demand determines the size of power plant. The variable cost includes the cost of fuel consumption in electricity sector.

For details on tariff determination of thermal power plants please find the link below

<http://www.npti.in/Download/Distribution/Tariff%20Determination%20-%20Write%20up.pdf>

How are subsidies reported (e.g. as a percentage of budget expenditure, GDP or as a nominal figure)?

As percentage of GDP and as percentage of expenditure and published in Union Budget and Economic Survey brought out by Ministry of Finance annually.

<p>Is data available on Gross Domestic Product (GDP) and total national expenditure on fossil fuels</p>	<p>Yes (from National Accounts Statistics published by Central Statistical Organisation (CSO), Ministry of Statistics and Programme Implementation Yes (from Union Budget Document for various years)</p>
<p>Which of the fossil fuel subsidies outlined by the OECD are included (<i>For consultant: please refer to Annex II</i>)?</p>	<p>Government does not follow an inventory approach of OECD. But some of the items that are identified as budgetary support and/or subsidies could be potentially brought under the ambit of OECD Definition. These items largely include direct transfer, investment in SOEs, concessional loans and loan guarantee, tax revenue foregone and induced transfers. But the government does not follow this classification and there could also be potential differences or disagreement in accepting OECD definition as the context may vary.</p>
<p>Fossil fuel subsidy reform</p>	
<p>A major element of subsidies that India was having historically was on petroleum products. However, because of low international crude prices, petroleum product prices have been largely deregulated except for LPG and kerosene and the subsidies have also been progressively rationalised and the reform process is still ongoing.</p> <p>Similarly, by moving to a pricing based on Gross Calorific Value (GCV) for coking coal, the pricing of coal is also progressively moving to international coal prices. The tariff rationalisation process is also on for the natural gas sector through a formula based pricing.</p> <p>Reallocation of savings from fossil fuel subsidies to other sectors relevant for the SDGs is difficult to assess. There is no system as such to track the reallocation of government expenditure from one head to another within the budget, unless a policy or programme is earmarked for reallocating the same. Most of the savings that could be made from fossil fuel subsidy reforms get deposited in the Consolidated Fund of Government of India. As a result, it is difficult to determine exactly where money has gone. The allocations of the budget in the last few years however, indicate significant increases in expenditure on electricity T&D and renewables and expenditure on rural development. These may be the potential areas that may have registered budgetary increases because of the fiscal space created by subsidy savings.</p> <p>Discussion with MoEFCC reveals reallocation of LPG subsidies for the poor through Ujjwala Scheme or generating surplus fund for Climate Finance Unit are some of the avenues through which this money get spend.</p>	

Table 1 Relevant data for the calculation of fossil fuel subsidies

Data	Agency in charge of data collection
Annual financial accounts	Comptroller and Auditor General Of India
Government budget	Ministry of Finance, Comptroller General of Accounts
SOE accounts	<p>The SOEs come out with their Annual Reports.</p> <p>Coal: There are three main SOEs, namely Coal India Ltd (CIL), Singareni Collieries Co. Ltd (SCCL) and Neyveli Lignite Corporation Limited (NLC). CIL is the main coal mining company. CIL operates through its subsidiaries and accounts for nearly 84% of total coal production in the country.</p> <p>For Power: The Ministry of Power governs the centrally owned power companies that include National Thermal Power Corporation Limited which is responsible for the lion's share of the thermal power generated in India. Another entity namely Power Grid Corporation of India is entrusted with the responsibility of inter-state transmission of electricity and the development of national grid. Besides these there are power generating corporations that are owned by the state governments.</p> <p>Petroleum and Natural Gas ONGC, OIL, GSPC in the upstream sector, IOCL, HPCL, BPCL in the downstream sector For natural gas- GAIL, IGL</p>
Volumes and prices of fossil fuels imported, exported and consumed	<p>For Coal: Coal Controller of India, Ministry of Coal</p> <p>For Oil and Gas: Ministry of Petroleum and Natural Gas and Petroleum Planning and Analysis Cell</p>
Volumes and prices of electricity imported, exported and consumed	Ministry of Power, Central Electricity Authority, POSOCO
Greenhouse gas emissions from fossil fuel combustion	Ministry of Environment Forest and Climate Change (MoEFCC)
Tax expenditure	Ministry of Finance and Comptroller and Auditor General of India
Government loans and other financial instruments relating to fossil fuel industries	Ministry of Finance

Table 2: List of Officials who have been consulted in the process of carrying out the case study

	Name of the Official	Designation	Ministry /Agency
1	Anil Jain	Additional Secretary	Ministry of Environment, Forest and Climate Change
2	R. Vyasani	Deputy Secretary	Budget Division, Ministry of Finance
3	Dr. Somit Dasgupta	Ex officio Additional Secretary and Member (Economic and Commercial)	Central Electricity Authority (CEA)
4.	Prof. Kirit Parikh	Former Member, Planning Commission, Government of India, and Former Chairman of the Expert Group on determination of the petroleum prices	Integrated Research and Action for Development (IRaDE)
5.	Mr. Indranil Bhattacharya	Director	Reserve Bank of India
6	Mr. Vinod Bhoi	Assistant Adviser	Reserve Bank of India
7	Mr. James Mathew	Deputy Director General	Social Statistics Division, Ministry of Statistics and programme Implementation
8	Mrs. Avneet Kaur	Deputy Director	Social Statistics Division, Ministry of Statistics and programme Implementation
9	Dr. Mukesh Anand	Associate Professor	National Institute of Public Finance and Policy
10	Dr. H K Amarnath	Associate Professor	National Institute of Public Finance and Policy