

## CASE STUDY: INDIA

# Beyond Fossil Fuels: Fiscal Transition in BRICS

November 2019

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### India's dependence on fossil fuels at a glance (2017 data)

**\$7,169**

GDP per capita,  
purchasing power parity in  
current international \$  
(World Bank, 2019)

**75%**

Share of fossil fuels in total  
primary energy supply  
(Annex A in the  
main report)

**17.8%**

Share of revenue from  
fossil fuel production and  
consumption in general  
government revenue  
(Table 1 in this brief)

**Proved reserves of fossil fuels.** In 2018, India's proved reserves accounted for 15 per cent of the global total for coal, 0.7 per cent for gas and 0.3 per cent for oil (BP, 2019a). These reserves are equivalent to 266 GtCO<sub>2</sub>, which is more than seven times higher than global carbon dioxide emissions from energy sources in 2018 (see Figure 1 in the main report).

**Fossil fuel extraction and use.** India was the world's sixth largest producer of coal, the 22nd largest producer of oil and 28th largest producer of gas in 2018 (BP, 2019a). In 2017, 61 per cent of domestic energy production and 75 per cent of total energy supply in India came from fossil fuels (see Annex A in the main report). India is the world's fourth largest importer of crude oil and gas and the third largest coal importer (BP, 2019a); however, it is a net re-exporter of petroleum products (Ministry of Petroleum and Natural Gas [MPNG], 2019). The power sector is the largest consumer of coal, accounting for an estimated 80 per cent of coal consumption in 2017 (Ray, 2017). The transport sector is the largest consumer of oil and petroleum products, followed by industry, buildings and agriculture (International Energy Agency [IEA], 2015). Gas has largely been used as a substitute for coal for electricity generation, for liquefied petroleum gas (LPG) and for other petroleum products in

*Note: This country brief accompanies and refers to a main report: Gerasimchuk, I., Kühne, K., Roth, J., Geddes, A., Oharenko, Y., Bridle, R., & Garg, V. (2019). Beyond fossil fuels: Fiscal transition in BRICS, which can be found [here](#)*



the fertilizer and other sectors. India was self-sufficient in gas supply until 2004, but due to domestic infrastructure bottlenecks, it increasingly relies on imported liquefied natural gas (Energy Information Administration, 2016). India's energy demand is growing at a fast rate, with a primary energy consumption growth rate of 7.9 per cent in 2018 (BP, 2019a).

**The role of the fossil fuel sector in the economy.** Fossil fuel re-exports accounted for 15 per cent of India's export value in 2018 (Rastogi, 2019). Taxes, duties and other fees on fossil fuel production and consumption generated 17.8 per cent of the general government revenue in 2017 (i.e., the joint budget of the federal [central] and state governments) with a large share of these revenues coming from producer excise duty on oil, gas and petroleum products, as well as the consumer value-added tax (VAT) and the Goods and Services Tax (GST) on fossil fuel products (see Table 1 in this brief). Coal India Limited (CIL), one of India's largest employers, employed more than 450,000 (4.5 lakh)<sup>1</sup> permanent employees and 100,000 (1 lakh) additional contractual employees (Chandra, 2018) and the oil and gas sector employed 100,000 (1 lakh) people in 2017 (Abdi, 2017).

**State-owned enterprises (SOEs) in the fossil fuel sector.** Majority SOEs play a key role in India's fossil fuel sector. CIL<sup>2</sup> is 71 per cent government owned, operates in various states through its subsidiaries and accounted for 84 per cent of total coal production in 2016 (CIL, 2017; Money Control, 2019a). Singareni Collieries Co. Ltd (SCCL), a joint undertaking by the Government of Andhra Pradesh and the Government of India, accounted for 9 per cent of total coal production. The Oil and Natural Gas Corporation (ONGC) is 63 per cent government owned and accounted for approximately 61.5 per cent of the country's total oil output (Directorate General of Hydrocarbons, 2017; Money Control, 2019b). SOEs ONGC and Oil India Limited (OIL) account for nearly three quarters of the total domestic gas production, whereas the remaining gas consumption is met through liquefied natural gas imports (India Brand Equity Foundation, 2017). Indian Oil Corporation Limited (IOCL) operates nearly 30 per cent of the total oil and gas pipeline network in the country (Ernst & Young, 2016; IBEF, 2017). Finally, 18 of the 23 refineries that are currently in operation in India are state-owned and comprise the large chunk (55.8 per cent) of the nation's refining capacity (Ernst & Young, 2016). All of India's fossil fuel SOEs, in particular CIL, ONGC and OIL, contribute to the central and state budgets via corporate income tax, dividends, royalties, the Clean Energy Cess and the cess on coal and crude oil (see Table 1 in this brief).

As an owner of fossil fuel assets, the Indian government can be exposed to the risk of asset stranding. Worrall et al. (2019) have identified various current drivers of asset stranding in India, including coal shortages and the inability of energy distribution companies to pay for supply, as well as future drivers, including cost competitiveness of renewables, water shortages and pollution regulations. In India, around 40 GW of coal-fired power plant capacity has been identified as “non-performing”<sup>3</sup>—this is about 21 per cent of India's total installed capacity as of the end of 2018 (Standing Committee on Energy, 2018). Of this 40 GW, 12 per cent is either wholly or partly government owned (Worrall et al., 2019). In addition, 25 GW of gas-fired power capacity is largely stranded, operating at just 23 per cent of average utilization rates, mainly due to lack of cost competitiveness or an inability to secure fuel (Down to Earth, 2019; Nijhawan, 2019).

<sup>1</sup> The Indian economy employed over 462.5 million people above the age of 14 years in 2016 (IMA, 2017).

<sup>2</sup> While the coal sector is largely government owned, in recent years, some parts of the value chain have been deregulated to increase private sector participation, particularly in generation.

<sup>3</sup> In India “non-performing assets” or “stressed” assets refer to assets where overdue debt repayments remain unpaid for a period of more than 90 days, but where there is a chance that the debt may still eventually be serviced in the future. A “stranded” asset is one where the debt cannot be serviced and bankruptcy must be declared in order to partially or fully write off its value (Worrall et al., 2019).



**Government plans on energy and climate.** Under its Nationally Determined Contribution within the framework of the Paris Agreement on climate change, India committed to reducing the emissions intensity of its GDP by 33–35 per cent by 2030 from 2005 levels and to achieving about 40 per cent cumulative electric power installed capacity from non-fossil-fuel-based energy resources by 2030 (United Nations Framework Convention on Climate Change, 2015). The government has set an aggressive target of renewable energy of 175 GW by 2022 under its 2018 National Electricity Plan and has already installed around 81 GW of renewables as of August 2019 (Central Electricity Authority [CEA], 2019). At the UN Climate Action Summit in 2019, India also committed to further increasing its renewable energy capacity to 450 GW (Climate Action Summit, 2019). However, coal will continue to be a mainstay of the energy mix. As per the National Energy Policy (NEP) 2017, coal-based power generation capacity is likely to go up to more than 330–441 GW by 2040 (192 GW in FY 2017) from 125 GW in 2012. Coal is estimated to account for 48 per cent of total energy consumption by 2040 (BP, 2019b). The scenario considers sustained levels of high domestic coal production to meet India's growing demand, increase energy security and reduce reliance on imported fuels. The 2018 National Electricity Plan also considers retirement of 22.7 GW of coal-based plants during 2017–22 and of 25.5 GW during 2022–27, which will be completing 25 years of operation by March 2027 (CEA, 2018). The plan has, however, discounted the effect of electric mobility on the electricity demand in the coming years, indicating no significant change in government policy for promoting of electric vehicles. In the oil and gas sector, the share of oil of 29 per cent in total energy consumption in 2017 is likely to drop to 23 per cent by 2040, and the share of gas is likely to rise from 6 per cent in 2017 to 8 per cent by 2040 (BP, 2019b).

**Fossil fuel production and fiscal space.** In 2017 revenues to the Indian government from fossil fuel production stood at 2.3 per cent of GDP or 11.3 per cent of general government revenue (see Table 1 in this brief for methodology and sources). The government collects revenue from the fossil fuel production sector through a variety of tax and non-tax instruments. Excise duty is the main form of government revenue from fossil fuel production, with the vast majority of this duty coming from the manufacture of goods in the oil and gas sector. The clean energy cess, corporate income tax and SOE dividends are the next main forms of production revenue. The majority of corporate income tax and SOE dividends comes from the oil and gas sector. Also, up until the end of the 2017/18 financial year, revenue was also collected in the form of the Clean Energy Cess on coal production. While the Clean Energy Cess has now been abolished, a new cess, the GST Compensation Cess, is to be levied on coal at INR 400 per tonne. Still, coal revenues as a percentage of general government revenue are lower than those for oil and gas, on a national scale. This estimate is not complete, as there are some revenue types missing (e.g., personal income taxes related to fossil fuel production), only central and state government level revenues were captured (no local- or municipal-level revenues were included) and only the largest fossil fuel companies have been captured in this estimate (e.g., only CIL and its subsidiaries were used to estimate revenues from coal sector SOEs).

**Fossil fuel consumption and fiscal space.** In 2017 revenues from taxes on fossil fuel consumption amounted to 1.4 per cent of India's GDP or 6.5 per cent of the general government revenue (see Table 1 in this brief). The Indian VAT (sales tax) was levied at the state level and constitutes a significant source of fossil fuel revenue on consumption in India. The VAT varied from 5 per cent to 33 per cent, depending on the type of product and the state where that product was sold. Revenues from VAT on oil, gas and petroleum products far outweighed VAT revenue from coal in 2017. From July 1, 2017, a new GST taxation regime was introduced, superseding a central tax and VAT for



certain products. Hence 2017 was a transition year for India in terms of taxation. The GST on coal has been kept low at 5 per cent instead of the standard GST rate of 18 per cent. Under the new GST, the oil and gas industry may have to comply with dual compliance costs because GST is levied only on select petroleum products like LPG, naphtha, kerosene and fuel oil, whereas other petroleum products—crude oil, natural gas, motor spirit (petrol), high-speed diesel and aviation turbine fuel—have not been brought under the ambit of GST. For the exempted set of petroleum products, the existing tax system—namely VAT—continues at the state and central levels (Press Trust of India, 2017). As part of its global exercise, the International Monetary Fund (IMF) estimated the value of undertaxing fossil fuel consumption in India in 2017 at USD 88 billion in terms of climate change effects<sup>4</sup> and USD 127 billion in terms of air pollution impacts on human health. In other words, the IMF estimates of total fossil fuel undertaxation are roughly equivalent to 45 per cent of India's general government revenue (Coady, Parry, Nghia-Piotr, & Shang, 2019; IMF, 2018).

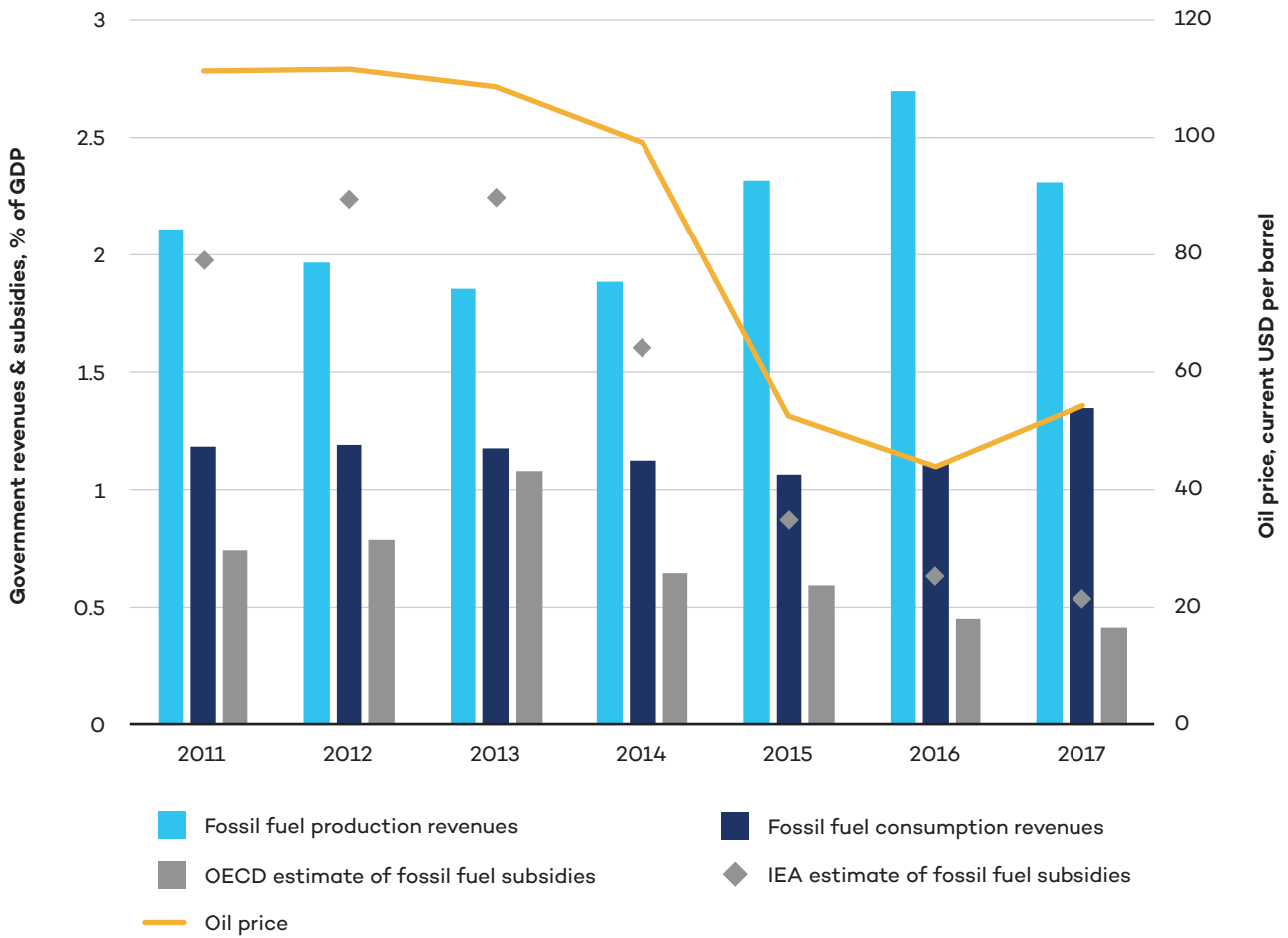
**Fossil fuel subsidies.** The Indian government provides support to both production and consumption of fossil fuels in the form of direct budgetary transfers, foregone government revenue, regulated prices and tariffs, subsidized finance, preferential access to government-owned infrastructure as well as other measures (Bast et al., 2015; Garg & Bossong, 2015). The first estimate of fossil fuel subsidies in India in the table below comes from the Organisation for Economic Co-operation and Development (OECD) and is based on reporting in government budgetary documents. It captures the two types of subsidies that directly affect the budget: budgetary transfers and government revenue foregone due to tax breaks (OECD, 2019). These two types of subsidies amount to 0.4 per cent of GDP or 2 per cent of India's general government revenue (see Figure 1 and Table 1). They predominantly benefit fossil fuel consumption, especially through customs duty reductions on mineral fuels and mineral oils and direct benefit transfer schemes on LPG. The second estimate originates from the International Energy Agency (IEA) and captures subsidies to Indian consumers via prices (tariffs) regulated below international benchmark levels. These subsidies do not affect the government budget directly but are still substantial at 0.5 per cent of the GDP or 2.6 per cent of general government revenue (IEA, 2019).

**Earmarked funds.** The National Clean Energy and Environment Fund (NCEEF) was created in 2010 to earmark part of the revenues of the Clean Energy Cess on Coal to fund research and development (R&D) in clean energy technologies. The cess was levied on the dispatch of lignite and coal with the aim to reduce coal consumption by increasing its cost. Since the inception of the fund in 2010, it has been increased three times, from INR 50 per tonne in 2010 to INR 200 per tonne in March 2015 and INR 400 per tonne in March 2016. The fund grew sharply from INR 1,066 crore in FY 2011 to a cumulative collection of INR 49,313 crore in FY 2017 (Centre for Science and Environment, 2017). However, due to competing development demands, only part of the coal cess was allocated to the NCEEF, with only 25 per cent being redirected to clean energy projects in 2015/16, for example (Gerasimchuk et al., 2018). The Clean Energy Cess has been effectively subsumed in the GST, introduced in July 2017.

Under the Coal Mines (Conservation & Development) Act, an excise duty (commonly called the Stowing Excise Duty or SED) is levied on the coal dispatched for supporting the conservation activities of coal companies—for example, stowing operations, protective works and the development of transport infrastructure in coalfield areas. The Ministry of Coal disburses the net proceeds from SED collection for execution of stowing and other related operations.

<sup>4</sup> The estimate is based on an illustrative value of roughly USD 40/tCO<sub>2</sub>.

**Figure 1. Government revenues versus subsidies to fossil fuels in India as a percentage of GDP**



Source: Authors' calculations for years the 2011–2017 based on Central Electricity Regulatory Commission, 2018; CIL, 2013, 2016, 2018; IEA, 2019; Ministry of Coal, 2019; Ministry of Mines, 2019; MPNG, 2018, 2015; OECD, 2019; World Bank, 2019.

**Table 1. Government revenues versus subsidies to fossil fuels in India in 2017<sup>5</sup>**

	INR billion	USD billion	Percentage of GDP	Percentage of general government revenue
<b>GDP</b>	<b>170,950</b>	<b>2,625</b>	<b>100%</b>	<b>487.85%</b>
<b>Total general government<sup>6</sup> revenue</b>	<b>35,042</b>	<b>538</b>	<b>20.50%</b>	<b>100%</b>
<b>Fossil fuel revenues:</b>	<b>6,237</b>	<b>96</b>	<b>3.7%</b>	<b>17.8%</b>
<b>Total revenues from fossil fuel production<sup>7</sup>:</b>	<b>3,941</b>	<b>61</b>	<b>2.3%</b>	<b>11.3%</b>
Mineral extraction tax, royalties and other taxes and fees on natural resource use	273	4	0.2%	0.8%
Clean Energy Cess on fossil fuel products	232	4	0.1%	0.7%
Customs duty on oil, gas and petroleum products	112	2	0.05%	0.3%
Excise duty on oil, gas and petroleum products <sup>8</sup>	2,289	35	1.3%	6.5%
Excise duty on coal	7	0.1	0.0%	0.0%
Corporate income tax on oil and gas companies	330	5	0.2%	0.9%
Corporate income tax on coal companies	74	1	0.04%	0.2%
Other federal (central) taxes and fees	23	0.4	0.01%	0.1%
Other state taxes and fees	87	1	0.05%	0.3%
SOE dividends from the oil and gas sector (ONGC, OIL, GAIL, etc., and subsidiaries) <sup>9</sup>	267	4	0.2%	0.8%

<sup>5</sup> The fiscal year in India runs from April 1 to March 31 of the following year. Data are allocated to the starting calendar year, so that data covering the period April 2017 to March 2018 are allocated to 2017.

<sup>6</sup> General government includes central and state government revenues.

<sup>7</sup> The total for revenues from fossil fuel production is a conservative estimate, as certain types of revenues were not reported (e.g., personal income tax related to fossil fuel companies, etc.). Note that 2017 was a transition year, as India implemented a new GST system on July 1, 2017, where GST superseded a central tax and VAT for certain products. Therefore 2017 reports revenues from both the old and new tax systems.

<sup>8</sup> Excise duty applies to the manufacture of high-speed diesel, motor spirit (commonly known as petrol), natural gas and aviation turbine fuel and is paid by manufacturers (Ernst & Young, 2019). It is therefore categorized in this work as production revenue rather than a consumption revenue.

<sup>9</sup> The total SOE dividend estimate is conservative as it only includes India's largest coal company, CIL, and its subsidiaries.



	INR billion	USD billion	Percentage of GDP	Percentage of general government revenue
SOE dividends from the coal sector (CIL and subsidiaries)	80	1	0.05%	0.2%
<b>Total revenues from fossil fuel consumption:</b>	<b>2,296</b>	<b>35</b>	<b>1.4%</b>	<b>6.5%</b>
VAT on oil, gas and petroleum products	1,841	28	1.1%	5.3%
VAT on coal	11	0.2	0.0%	0.0%
GST on oil, gas and petroleum products	295	5	0.2%	0.8%
GST on coal <sup>10</sup>	149	2	0.1%	0.4%
<b>Fossil fuel subsidies:</b>				
<b>OECD estimate (direct transfers and tax expenditure):</b>	<b>703</b>	<b>11</b>	<b>0.4%</b>	<b>2.0%</b>
Fossil fuel production subsidies	18	0.3	0.0%	0.1%
Fossil fuel consumption subsidies	684	11	0.4%	1.9%
<b>IEA estimate (regulated prices):</b>	<b>922</b>	<b>14</b>	<b>0.5%</b>	<b>2.6%</b>
Subsidies to oil consumption	827	13	0.4%	2.3%
Subsidies to gas consumption	95	1	0.1%	0.3%

Source: Authors' calculations based on Central Electricity Regulatory Commission, 2018; CIL, 2013, 2016, 2018; IEA, 2019; IMF, 2019; Ministry of Coal, 2019; Ministry of Mines, 2019; MPNG, 2018, 2015; OECD, 2019; World Bank, 2019.

<sup>10</sup> GST for coal estimated by the authors, based on India's total imported and domestically produced coal. GST on imported coal was calculated using the net import value of imported coal (Ministry of Mines, 2019) and applying a 5 per cent GST rate. GST on domestically produced coal was calculated using gross domestic production volume (Ministry of Coal, 2019), CERC's prices for CIL's base rate plus CERC's estimation of levies and taxes on the base rate (CERC, 2018) and applying a 5 per cent GST rate.



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