Proved reserves of fossil fuels. In 2018, South Africa’s proved coal reserves accounted for 1.3 per cent of the world’s total (BP, 2019). These coal reserves are equivalent to 26.1 GtCO₂, or 77 per cent of the global carbon dioxide emissions from energy sources in 2018 (see Figure 1 in the main report). The country does not have major proved reserves of oil and gas.

Fossil fuel extraction and use. South Africa was the world’s seventh largest producer of coal in 2018 (BP, 2019). In 2016, 93 per cent of domestic energy production and 92 per cent of total energy supply in South Africa came from fossil fuels (see Annex A in the main report). South Africa remains a net exporter of coal, exporting around a third of production in 2017, which makes it the fifth largest exporter of coal in the world after Australia, Indonesia, Russia and the United States (BP, 2019; Republic of South Africa Department of Energy, 2018a). The remainder of coal production is used domestically for the generation of electricity as well as coal processing technologies, including coal to liquids and coal to chemicals (Caldecott et al., 2016; Republic of South Africa Department of Energy, 2018b). South Africa is one of only a small number of countries that produces and consumes liquid fuels derived from coal: approximately 30 per cent of transport fuels consumed are derived from coal.

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](#).
With very little oil and gas production, South Africa imported 90 per cent of its crude oil and 74 per cent of its gas to cover its consumption needs in 2015 (Republic of South Africa Department of Energy, 2018b). South Africa’s energy demand has remained fairly stable, with an average annual growth rate of 0.4 per cent from 2001 to 2018 (BP, 2019).

**The role of the fossil fuel sector in the economy.** The energy sector is concentrated around a single energy source: coal. In 2017 coal provided 76 per cent of total energy supply and 89 per cent of South Africa’s electricity (International Energy Agency [IEA], 2019). According to the Republic of South Africa Department of Energy (2018b), the coal mining industry accounted for 1.75 per cent of GDP in 2016. Taxes and other fees on fossil fuel production and consumption generated 6.8 per cent of the general government revenue in 2017 (i.e., the joint budget of the central government, state governments and social security funds) with the majority of these revenues coming from a general fuel levy on petroleum product consumption (see Table 1 in this brief). At the end of June 2015, mining of coal and lignite was the third largest source of mining employment, employing 97,952 people, approximately 1 per cent of total national employment (Stats SA, 2017a, 2017b). As of June 2019, the electricity industry employed around 59,000 people, accounting for 0.6 per cent of total employment (Stats SA, 2019).

**State-owned enterprises (SOEs) in the fossil fuel sector.** The South African government is an owner of fossil fuel assets. Therefore, various drivers, including the clean energy transition, could expose it to the risk of asset stranding. SOEs have key roles in the South African energy sector. Eskom, the vertically integrated public electricity utility, is wholly government owned and supplies around 90 per cent of the electricity in South Africa (Republic of South Africa Department of Energy, 2018b; Eskom, 2018). Similarly PetroSA, a producer of oil and gas and an operator of gas-to-liquid facilities, is also wholly state owned (PetroSA, 2018). Finally, the South African government continues to hold a 22 per cent stake in Sasol, the world’s largest producer of liquid fuels from coal and a leading company in the development of gas-to-liquid technologies (Caldecott et al., 2016; Sasol, 2019). According to their annual reports, no dividends were declared for the SOEs Eskom or PetroSA in 2017 (Eskom, 2018; PetroSA, 2018), and the total corporate income tax revenue from coal and petroleum companies was minimal (see Table 1 in this brief).

**Government plans for energy and climate.** South Africa’s Nationally Determined Contribution (NDC) highlights the government challenges to prioritizing poverty reduction and inequality concerns, as per the National Development Plan 2030, while meeting climate change needs. Carbon emissions are expected to follow a “peak, plateau and decline” trajectory, with emissions reaching between 398 and 614 MtCO$_2$e between 2025 and 2030, as per national policy (Republic of South Africa, 2016). A number of measures to promote the deployment of renewable energy were included in the NDC, including USD 3 billion per year to support the procurement of renewable energy, the decarbonization of the electricity sector by 2050 at an estimated cost of USD 349 billion, and plans to deploy carbon capture and storage for coal-to-liquid processes (Republic of South Africa, 2016). Recognizing the long-term trend of switching energy systems from fossil fuels to renewables, South Africa is one of the very few countries that states the need for “a just transition” for workers in its NDC (Republic of South Africa, 2016).

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1 One study by the Climate Policy Initiative (2019) estimated that the downside risk to South Africa of a low-carbon transition would be USD 124 billion in present value terms between 2018 and 2035.
Despite its NDC commitments, overall the political direction of energy policy appears to be in a state of flux in South Africa (Baker et al., 2015; Steyn, Burton, & Steenkamp, 2017). The country has made efforts to explore for more fossil fuels, particularly shale\(^2\) and offshore gas, in a drive to diversify its energy supply (Baker et al., 2015). However, since 2016 the electricity industry has seen an impasse between the government, Eskom and renewable energy developers that led to a refusal to sign power purchase agreements\(^3\) from independent power producers for new renewable energy (Steyn et al., 2017). Following the transition of the presidential office from Jacob Zuma to Cyril Ramaphosa in February 2018, President Ramaphosa has announced the intention to unbundle the vertically integrated and heavily indebted utility, Eskom, in an attempt to improve system and financial performance (President Cyril Ramaphosa, 2019). In addition, the government has introduced a carbon tax that will take effect in 2019.

**Fossil fuel production and fiscal space.** Revenues to the South African government from fossil fuel production are modest at only 0.13 per cent of GDP and 0.4 per cent of general government revenue in 2017 (see Figure 1 and Table 1 in this brief). These revenues are made up of royalty and corporate income tax contributions. Since 2010, South Africa has charged the Mineral and Petroleum Resources Royalty to compensate the state for the permanent loss of non-renewable commodities. Royalty rates vary between 0.5 per cent and 5 per cent on refined minerals and 0.5 per cent and 7 per cent on unrefined mineral resources (South African Revenue Service, 2019a). Total royalties from coal accounted for 0.04 per cent of GDP or 0.1 per cent of general government revenue. Only royalties for coal are included because those for other fossil fuel production activity (i.e., for oil and gas) were not reported in detail.\(^4\) Corporate income tax contributions from coal and petroleum companies accounted for a larger amount at 0.09 per cent of GDP or 0.3 per cent of general government revenue. However, corporate income tax for electricity and gas companies, and personal income tax relating to fossil fuel production activities, were not reported in the government-reported tax statistics data in detail.\(^5\) Hence this estimate is incomplete and most likely underestimates the full contribution of fossil fuel production to government revenues.

**Fossil fuel consumption and fiscal space.** Overall, the bulk of government fiscal revenues from fossil fuels come from taxes on consumption, making up 1.8 per cent of GDP or 6.4 per cent of general government revenue in total (see Table 1 in this brief). Value-added tax (VAT) is currently zero rated for gasoline, diesel and electricity, so unlike in other BRICS countries, VAT on energy products is not a significant source of government revenue. The greatest contribution was from the fuel levy, followed by the electricity levy. The fuel levy\(^6\) is applied to petrol at ZAR 3.39–3.54 per litre (in 2019) (South African Revenue Service, 2019d). In 2017 the fuel levy made the highest contribution to fossil fuel revenues at 1.55 per cent of GDP or 5.5 per cent of general government revenue.

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\(^2\) Shale production has been delayed, as AfriForum and the Treasure the Karoo Action Group won an appeal to set aside the regulations on petroleum exploration and production (Engineering News, 2019a).

\(^3\) Government is currently seeking to renegotiate power purchase agreements to lower the prices paid to renewable energy projects (Engineering News, 2019b).

\(^4\) Oil and gas royalty data was reported in aggregate with other sectors in the government-reported tax statistics data and hence was not included in the estimates in this report.

\(^5\) Corporate income tax for electricity and gas companies and personal income tax for fossil fuel production activities were reported in aggregate with other sectors in the government-reported tax statistics data and hence were not included in the estimates in this report.

\(^6\) The customs levy (import duty) on imported fuel is reported in aggregate under the “fuel levy” category in the government-reported tax statistics.
revenue. The electricity levy was introduced as a charge on electricity generated from non-renewable sources in 2009 and now stands at ZAR 0.035 per kWh (South African Revenue Service, 2019b). It contributes revenues of 0.18 per cent of GDP or 0.7 per cent to general government revenue. As of 2019, the Road Accident Fund (RAF) levy is applied at a rate of ZAR 1.98 per litre to petroleum products (RAF, 2019; South African Revenue Service, 2019e). The carbon dioxide tax on motor vehicle emissions ranges between ZAR 110 and ZAR 150 per gCO$_2$/km depending on the size of the vehicle (South African Revenue Service, 2019c). The RAF and carbon dioxide tax on motor vehicle emissions make minimal contributions to consumption revenues. Finally, as of 2019 South Africa is the first African country to introduce a carbon tax. As part of its global exercise, the IMF estimated the value of undertaxing fossil fuel consumption in South Africa in 2017 at USD 20 billion in terms of climate change effects$^7$ and USD 17 billion in terms of air pollution impacts on human health. The IMF estimates of fossil fuel undertaxation are roughly equivalent to just under half of total general government revenue (Coady, Parry, Nghia-Piotr, & Shang, 2019; IMF, 2018).

**Fossil fuel subsidies.** The South African 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 and other measures (Bast et al., 2015). Two subsidy estimates are included in Table 1. The first estimate of fossil fuel subsidies comes from the Organisation for Economic Co-operation and Development (OECD). 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 0.7 per cent of GDP or 2.4 per cent of South Africa’s general government revenue (see Figure 1 and Table 1 in this brief). The predominant consumption subsidy is to provide free basic electricity access. This can be considered an indirect subsidy for the consumption of coal, because increased demand for electricity, driven by the free basic electricity policy, increases demand for South Africa’s coal-dominated electricity system, potentially increasing coal industry revenues. The remaining consumption subsidies include the VAT exemption for sales of gasoline, diesel and illuminating paraffin, and refund of the fuel levy and RAF levy for diesel consumed in specific sectors.$^8$ The small production subsidies account for income tax deductions for expenditure and losses relating to exploration, budgetary transfers for training for PetroSA, coal-related water transport projects and exploration activities for oil, gas and shale gas.

The second subsidy estimate originates from the IEA and captures subsidies to South African consumers via prices (tariffs) regulated below international benchmark levels. These subsidies do not affect the government budget directly but are still substantial, at 1.5 per cent of the GDP or 5.3 per cent of general government revenue (IEA, 2019). Again the IEA estimates are due to subsidies to consumption of coal through the free basic electricity access.

**Earmarked funds.** The RAF is funded partially by the general fuel levy and the RAF levy on fuel consumption. The fund is effectively part of the social security system and provides appropriate cover (via personal insurance and indemnity) to road users to ensure the rehabilitation and compensation of those injured as a result of motor vehicles, and it promotes the safe use of South African roads (RAF, 2019).

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$^7$ The estimate is based on an illustrative value of roughly USD 40/tCO$_2$.

$^8$ Note: The imposition of a levy on fuel to pay for road accident insurance or for general taxation does not constitute a subsidy. However, the policy of providing a refund to certain sectors is effectively foregone government revenue, a type of subsidy to those sectors.
Figure 1. Government revenues versus subsidies to fossil fuels in South Africa as a percentage of GDP

Source: Authors’ calculations based on Eskom, 2018; IEA, 2019; OECD, 2019; PetroSA, 2018; Sasol 2018; South African Revenue Service, 2018; World Bank, 2019.
Table 1. Government revenues versus subsidies to fossil fuels in South Africa in 2017

<table>
<thead>
<tr>
<th></th>
<th>ZAR billion</th>
<th>USD billion</th>
<th>Percentage of GDP</th>
<th>Percentage of general government revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>4,652</td>
<td>349</td>
<td>100.0%</td>
<td>352.5%</td>
</tr>
<tr>
<td>Total general government revenue</td>
<td>1,320</td>
<td>99</td>
<td>28.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td><strong>Fossil fuel revenues:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total revenues from fossil fuel production</td>
<td>89</td>
<td>7</td>
<td>1.9%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Mineral extraction royalties on coal</td>
<td>1.6</td>
<td>0.1</td>
<td>0.04%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Corporate income tax on coal and petroleum companies</td>
<td>4.0</td>
<td>0.3</td>
<td>0.09%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Total revenues from fossil fuel consumption</td>
<td>83.7</td>
<td>6</td>
<td>1.8%</td>
<td>6.4%</td>
</tr>
<tr>
<td>Fuel levy</td>
<td>72.1</td>
<td>5</td>
<td>1.55%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Electricity levy</td>
<td>8.5</td>
<td>1</td>
<td>0.18%</td>
<td>0.7%</td>
</tr>
<tr>
<td>RAF levy</td>
<td>1.8</td>
<td>0</td>
<td>0.04%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Carbon dioxide tax on motor vehicle emissions</td>
<td>1.3</td>
<td>0</td>
<td>0.03%</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Fossil fuel subsidies:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OECD estimate (direct transfers and tax expenditure):</td>
<td>32</td>
<td>2.1</td>
<td>0.7%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Fossil fuel production subsidies</td>
<td>11</td>
<td>0.1</td>
<td>0.02%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

9 The fiscal year in South Africa 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.

10 General government revenue includes the central government, state governments and social security funds (IMF, 2019).

11 Total revenues from production may be underestimated because some types of revenues are missing, as they are reported in aggregate in the government-reported tax statistics data (e.g., personal income tax associated with fossil fuel production activities). According to their annual reports, no dividends were declared for SOEs Eskom or PetroSA in 2017 (Eskom, 2018; PetroSA, 2018; South African Revenue Service, 2018).

12 Only royalties for coal are included because those for other fossil fuel production activity (i.e., for oil and gas) are aggregated in the government-reported tax statistics data as “other,” which includes a range of commodities (chrome, fluorospar, nickel, oil and gas, phosphates, vanadium and unspecified) (South African Revenue Service, 2018).

13 Only corporate income tax for coal and petroleum are included because data for minerals and electricity companies is aggregated with other sectors in the government-reported tax statistics (South African Revenue Service, 2018).

14 The customs levy (import duty) on imported fuel is reported in aggregate under the “fuel levy” category in the government-reported tax statistics (South African Revenue Service, 2018).
<table>
<thead>
<tr>
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<th>Percentage of GDP</th>
<th>Percentage of general government revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fossil fuel consumption subsidies</td>
<td>31</td>
<td>2</td>
<td>0.68%</td>
<td>2.3%</td>
</tr>
<tr>
<td>IEA estimate ( regulated prices):</td>
<td>69</td>
<td>5</td>
<td>1.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Subsidies to consumption of fossil fuel-based electricity</td>
<td>69</td>
<td>5</td>
<td>1.5%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

*Source: Authors’ calculations based on Eskom, 2018; IEA, 2019; IMF, 2019; OECD, 2019; PetroSA, 2018; Sasol 2018; South African Revenue Service, 2018; World Bank, 2019.*
References


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