

Case Study: South Africa Carbon Tax

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With emissions of 460 MtCO₂e in 2015 and one of the world's most energy-intensive economies, South Africa is the 14th largest emitter of greenhouse gases (GHGs). The majority of its emissions are power and heat applications, particularly electricity production (see the Sankey diagram in the appendix). With the African Continent's second largest economy (after Nigeria), its GDP was growing rapidly around the turn of the 21st century but has slowed in the last decade.

The South Africa government's first comprehensive statement of the potential utilization of a carbon tax was published in 2006, catalyzing thirteen years' of policy and regulatory development leading to the adoption and implementation of the Carbon Tax Act (CTA) of 2019. This extensive period of study, debate, and refinement of the regime is attributable to several factors.

First, the concept of the carbon tax itself underwent substantial evolution, from being part of a broader consideration of market-based instruments under an environmental fiscal reform initiative,³ to a focus on carbon taxes with vociferous debate around ring-fencing revenues for clean energy investment, to a mechanism to promote progress toward South Africa's Nationally Determined Contribution (NDC) under the Paris Agreement.

Second, the carbon tax is just one part of a complex "post-2020 mitigation system", which includes a "peak, plateau and decline" national GHG emissions trajectory articulated under the Long Term Mitigation Scenarios (2008 and 2010) and adopted into national climate change policy 2011; National GHG Emissions Reporting Regulations adopted in 2017 that lay out requirements for facility-level reporting of emissions; and an expected program for the allocation of facility-level carbon budgets linked to punitive levels of carbon tax for exceedances of allocated budgets.⁴

And third, South Africa has a rich tradition of public discourse, including on matters of environmental policy. From the start of the discussion in 2006, the government has issued many studies and proposals related to the carbon tax. The government proposed and postponed implementation of a carbon tax several times, starting with a 2013 document⁵ that announced a 2015 start, a 2014 national budget review that pushed the start date to 2016, a 2014 announcement that the carbon tax would include a carbon offset scheme (now a significant driver of the local carbon market), a draft carbon tax bill in 2015, draft carbon offsets regulation in 2016, a 2017 announcement that the tax would commence in 2018, and a 2018 announcement that the tax would be promulgated in January 2019.⁴ Ultimately the draft Carbon Tax Bill was subject to a final round of public comment and revision before coming into effect on 1 June 2019, and was subsequently amended late that same year.

Jurisdictional Context/Background

- Per-capita GDP (USD): \$6,001 (2019)
- Population: 58.5 million (2019)
- Major GHG emissions sources: energy (84%)
- Human development index: 0.705 out of 1.0 (2019)
- Government capacity (out of 100; 2014)²
 - Voice & accountability: 69.0
 - Political stability and absence of violence/ terrorism: 40.0
 - Government effectiveness: 65.9
 - Regulatory quality: 63.0
 - Rule of law: 64.42
 - Control of corruption: 54.8

¹ We are particularly indebted to Andrew Gilder of Climate Legal, South Africa, for valuable comments on this case.

² World Bank (2021)

³ South Africa National Treasury (2006)

⁴ Gilder et al. (2020)

⁵ South Africa National Treasury (2013)

The series of starts and stalls led to understandable skepticism on the certainty of government’s intentions from many corners but was also interpreted by some as commendable caution. The array of intertwining, co-evolving programs meant that the carbon tax had to be crafted with great precision to ensure alignment across several initiatives implemented by a series of government agencies. Even as enacted, it is necessary to refer to several documents to properly interpret the CTA.⁶

The carbon tax is designed to be implemented in two phases, the first (essentially a pilot phase) running from June 2019 through December 2022 and the second to run 2023 to 2030. While not being expected to deviate fundamentally from the first phase, the specific requirements of the second phase will emerge from a review and revision process anticipated for the second half of 2022, so the description below focuses on the first phase.

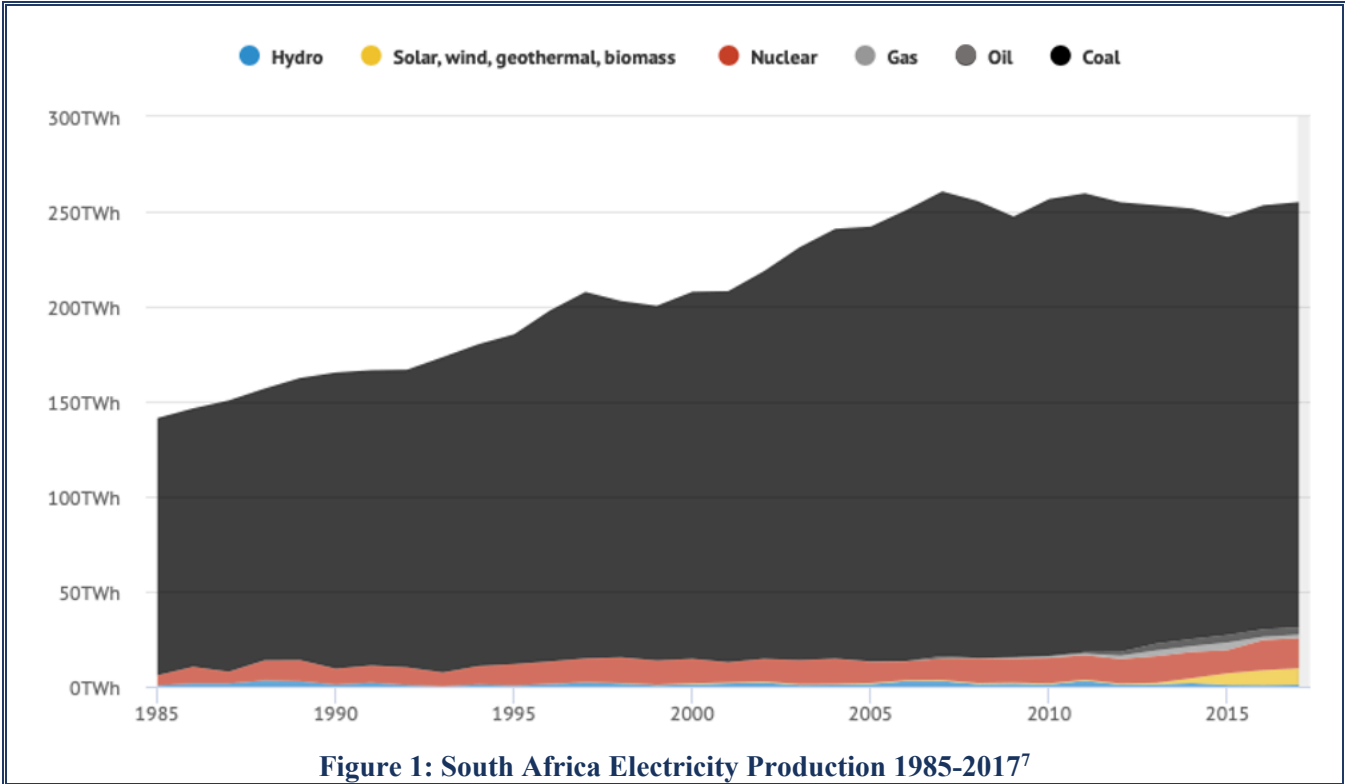


Figure 1: South Africa Electricity Production 1985-2017⁷

Basic Design: The South Africa carbon tax is an activity-based (downstream) system, meaning that it focuses on end-users and GHG emitters as the base of carbon taxpayers. It covers the original Kyoto-basket of six GHGs: CO₂, CH₄, N₂O, C₂F₆, CF₄, SF₆. The base rate for the carbon tax, in 2019, was set at USD \$8 per ton CO₂e, subject to modest increases over the next few years linked to the national Consumer Price Index.⁸ As explained below, however, this “headline” rate bears little resemblance to the actual rate to which taxpayers are subject.

⁶ These include: Explanatory Memorandum on the Carbon Tax Bill, November 2018; Response Document from the National Treasury and SARS, presented to the Standing Committee of Finance, February 2019; Media Statement by the National Treasury accompanying the publication of the Carbon Tax Act, 26 May 2019; and Explanatory Memorandum accompanying the Bill preceding the Taxation Laws Amendment Act 34 of 2019. For further discussion of the history of the CTA, see (Gilder et al., 2020).

⁷ Carbon Brief (2018)

⁸ The basic rate is scheduled to increase to USD \$8.50 and \$9 in the 2020 and 2021, respectively.

The CTA system, which covers 80 percent of GHG emissions,⁹ recognizes five broad sectors that are nominally covered by the tax:

1. Energy;
2. Industrial Processes and Product Use (IPPU);
3. Agriculture, Forestry, and Other Land Use (AFOLU);
4. Waste; and
5. Other.

These five sectors are then broken down into further categories based on the Intergovernmental Panel on Climate Change (IPCC) code system.¹⁰ For example, Energy is further disaggregated into Fuel Combustion Activities (1A); Fugitive Emissions from Fuels (1B); and Carbon Dioxide Transport and Storage (1C). Each of these categories is then broken down into several sub-activities. Across all sectors, the system identifies 167 separate activities that are subject to the carbon tax and must report emissions.

To calculate emissions, parties apply a complicated set of sector-, fuel-, gas-, and activity-specific emissions factors provided by the CTA. For example, the fuel combustion category (1A) involves emissions factors (kg/TJ) for CO₂, CH₄, and N₂O, which are differentiated by stationary and non-stationary/mobile sources.¹¹ The CTA also provides another calorific conversion value (TJ/tonne) for each fuel. For non-combustion activities, the CTA provides default emissions factors per unit of taxable activity expressed, for example as Gg/10³M³ total production or tonne emissions/tonne product.¹²

Deductions and Allowances: Perhaps the most notable features of the carbon tax are the measures designed to limit its initial impact and to permit taxpayers some time and flexibility to familiarize themselves with the administrative and other requirements of the regime. It provides a series of deductions and allowances that reduce the effective tax rate by as much as 100 percent for some activities in the first phase. These include:

1. A basic tax-free allowance for fossil fuel combustion of 60 to 75 percent for energy and industrial applications, 100 percent for AFOLU activities, and some solid waste management activities;
2. A basic tax-free allowance for process emissions of 70 percent;
3. A fugitive emissions allowance of 10 percent;
4. A trade exposure allowance of 10 percent;
5. A performance allowance of five percent for certain companies that lower their emissions intensity;
6. A carbon budget allowance of five percent for participating in the voluntary carbon budgeting scheme; and
7. A carbon offsets allowance of five to 10 percent.

The net effect of the allowances is to eliminate the tax on AFOLU activities and reduce the effective initial tax rate to between USD \$0.40 and USD \$3.2 per ton CO₂e for other sectors. It is expected that the effect of the

⁹ World Bank (2020)

¹⁰ IPCC Guidelines for National Greenhouse Gas Inventories (2006).

¹¹ Notably, the emissions factors for CH₄ and N₂O are negligible (or nearly so) for all fuels. Since the only differences between stationary and non-stationary emissions factors for various fuels are on those two gases, the distinction appears to gain little precisions in application of the tax, while substantially increasing the complexity.

¹² Notably, there are no emissions factors for the IPCC code 1C, Carbon Dioxide Transport and Storage. The factors provided for the 1B1 category of activities, Fugitive Solid Fuels, are in M³/tonne, which requires further conversion from M³ of gas to tonnes of gas. That conversion factor appears to be missing.

deductions and allowances will decrease substantially during the second phase of the tax scheme, which will significantly increase levels of carbon tax revenue and the effect on taxpayers.

The Role of Politics: To pass and implement the CTA, the South Africa government had to navigate a complex set of institutional, legal, and political factors.

As mentioned above, South Africa has developed a rich tradition of public debate. During the development of the carbon tax there was significant and competing pushback on aspects of the tax from business, labor organizations, and civil society related to competitiveness, duplication and overlap with existing policies, effects of a sudden energy price shock on the economy and on low-income households.⁴ The coal industry, which supplies more than 90 percent of the fuel for electricity, and organized labor, with substantial employment in the coal industry, were particularly energetic in protecting coal interests.

The state-owned electricity provider, ESKOM, was also heavily engaged in the public debate about the carbon tax. ESKOM, which provides approximately 90 percent of the nation's electricity, has experienced a combination of both financial challenges and supply shortages leading to frequent regional load shedding to protect the system from blackouts. To deal with concerns over the effect of the carbon tax on the electricity price, the regime is designed to be revenue-neutral in relation to electricity in the first phase. This is achieved in part by the 60 percent basic tax-free allowance coupled with a credit for payment of the electricity generation levy and a credit for the renewable energy levy (imposed on fossil fuel generated electricity).

Even the structure of the carbon tax and its many allowances was arguably a concession to concerns about potential impacts. By announcing a higher carbon tax rate and then providing many allowances, the government reduced the shock of the initial carbon tax. At the same time, however, by cultivating the general impression that the deductions and allowances will decline in the second phase, the government has signaled an intent to increase the bite of the tax.

Revenue Handling: The carbon tax is expected to generate revenues on the order of USD \$200 million, of which 60 percent will be raised from fuels, according to estimates from the National Treasury.¹³ The South Africa Constitution requires that all funds received by the national government go to the National Revenue Fund. This precluded earmarking¹⁴ of funds for specific uses such as renewable energy or other green projects.

However, as mentioned above, the CTA protects electricity consumers from increases in prices despite the cost increases associated with the levy on fossil fuel and shifts toward renewable energy. This means that some of the revenue in the carbon tax is making up for lost revenue from the suspended charges. Any residual gains in tax revenue will likely be consumed by increases on spending for energy efficiency, the specifics of which will be worked out through the budget process.¹⁵

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¹³ De Wet and Daniel (2020)

¹⁴ Hypothecation or ring-fencing

¹⁵ Cloete (2020)

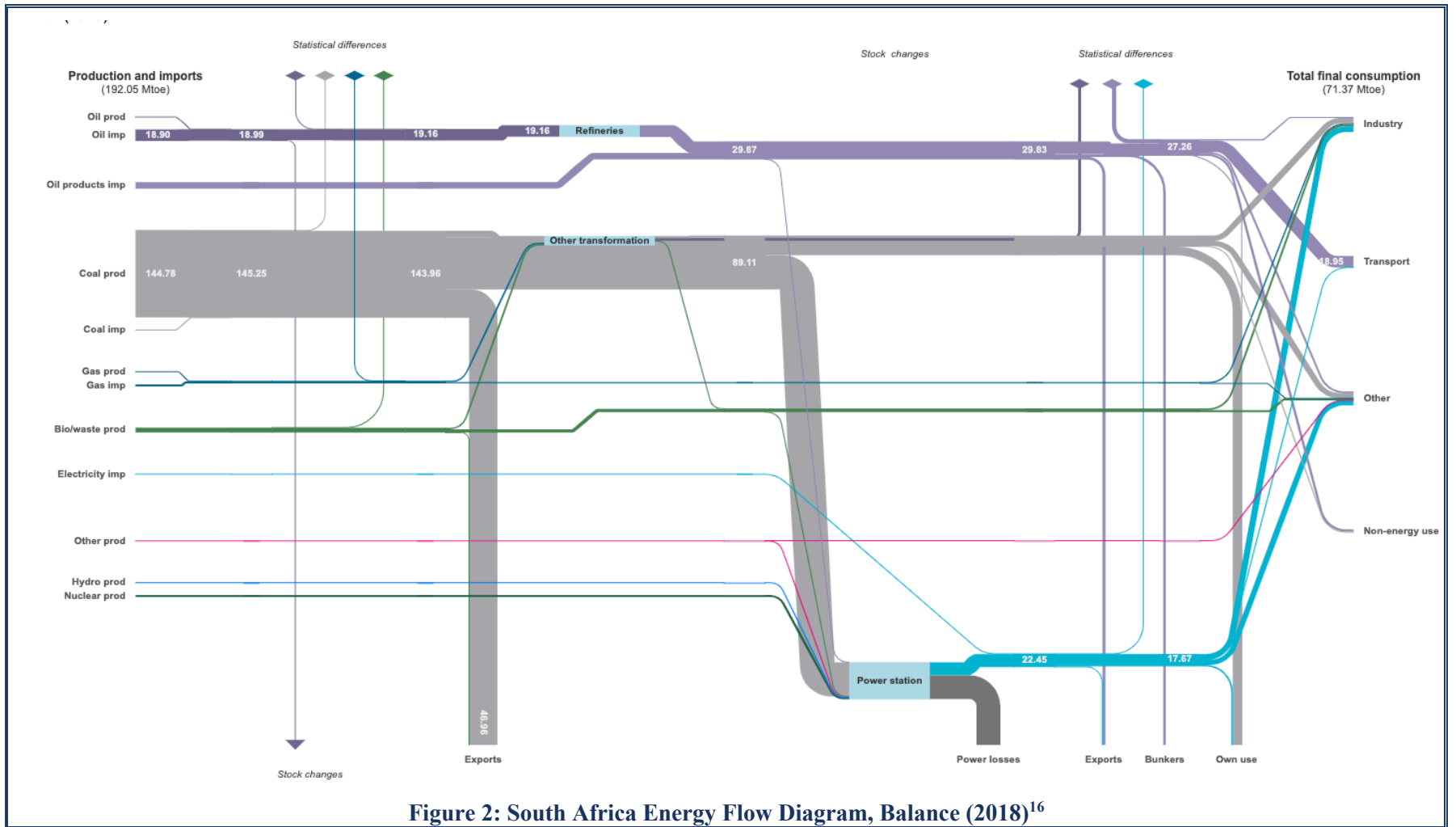
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¹⁶ IEA (2021)