



SOUTH AFRICA: AN EMISSIONS TRADING CASE STUDY



South Africa

The World's Carbon Markets: A Case Study Guide to Emissions Trading

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Environmental Policy Overview

Date	Event
2002	Kyoto Protocol ratified
2006	Environmental Fiscal Reform Policy paper submitted
2010	Target to reduce emissions 34% by 2020 submitted to the UNFCCC
2010	Discussion paper on Carbon Tax submitted
2013	Carbon Tax Policy Paper released
2014	Carbon Offsets Paper released
2015	Legislative Process & Alignment with Carbon Budgets
2016	Implementation of Carbon Tax (mid 2016)

Table 1: Key Dates

South Africa is the 12th largest emitter of carbon dioxide (CO₂) in the world and is responsible for nearly half the CO₂ emissions in the entire African Continent¹ Total GHG emissions in 2010 amounted to 579 256 Gigatonnes of carbon dioxide equivalent (GtCO₂e) , a 29.7% increase since 2000. CO₂ accounts for approximately 80% of total GHG emissions in South Africa.² The country is categorized as a major emerging economy and was ranked third among the BRICS economies in the World Economic Forum's (WEF) 2012 Global Competitiveness Index.³ Its most prominent economic sectors include mining, transport, energy, manufacturing, tourism, and agriculture. Since the South African economy is highly dependent on its abundant natural resources, the country is particularly vulnerable to the effects of climate change.⁴ Consequently, the South African government has recognized the need to take mitigation actions in order to ensure the continued growth and development of the economy, and further South Africa's international leadership on this issue.

In 2010, energy industries (67.8%), transport (9.3%) and manufacturing industries and construction (8.5%).⁵ were responsible for the largest share of emissions, accounting for more than 80% of total emissions.⁶ In South Africa, coal predominates fossil fuel demand (by about 75%) and accounts for over 92% of fuel input in electricity generation.⁷ Over 90% of total electricity generation in South Africa is produced by the public electricity utility Eskom.⁸

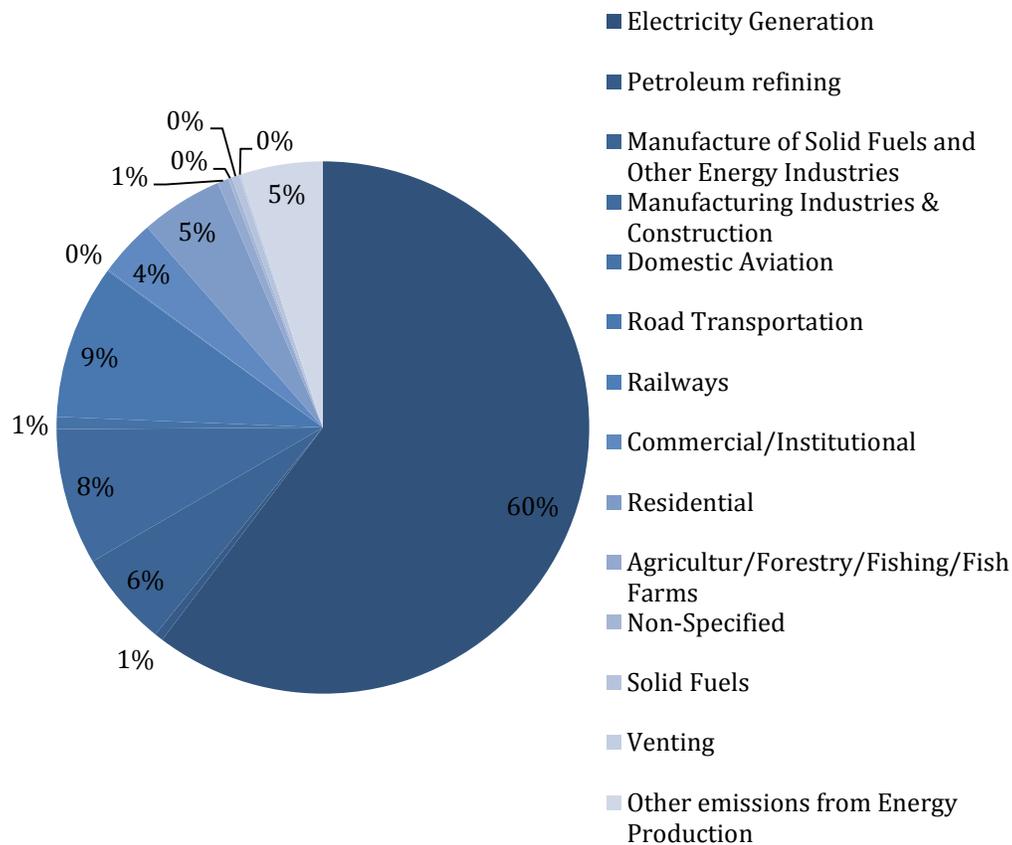


Figure 1: Contribution of Various Sources to Total Energy GHG Emissions 2010.¹

Source: UNFCCC, 2013. Available at: environment.gov.za

South Africa signed the **Kyoto Protocol** under the United Nations Framework Convention on Climate Change (UNFCCC) on 31 July, 2002 as a non-annex I party, and therefore does not have specific targets ascribed under the protocol. At the 15th Conference of the Parties (COP) negotiations in Copenhagen in 2009, South Africa pledged to undertake mitigation actions to **reduce emissions 34% by 2020, and 42% by 2025**, below the business as usual trajectory. However, this voluntary pledge is subject to the provision of adequate financial, technological and capacity-building support from developed countries.⁹ These targets were officially submitted to the Copenhagen Accord on 29 January, 2010. South Africa is a participant of the World Bank's Partnership for Market Readiness (PMR), a capacity building program supporting the development of market-based policies.¹⁰

The South African government began reforming and assessing fiscal measures to address environmental issues in 2006 with the release of an Environmental Fiscal Reform Policy Paper. The 2006 paper lays out South Africa's environmental initiatives, including sustainable development, and the use of market-based instruments to address climate change mitigation.¹¹ The government implemented a number of different fiscal measures, including taxes and various incentives with the aim of moving the country toward a greener economy. These fiscal measures include a fuel levy on petrol and diesel, an electricity generation levy, an energy efficiency tax incentive, a renewable energy depreciation allowance, a depreciation allowance for biofuels production, and a research and development tax incentive, among others. The electricity generation levy was implemented in 2009 and includes the production of electricity from non-

¹ Figures rounded to the nearest whole number

renewables, including coal, petroleum-based fuels, natural gas, and nuclear. The implementation of this levy was meant to initiate a starting framework for the development of a carbon tax.¹²

South Africa’s main experience with carbon markets has been through the **Clean Development Mechanism (CDM)**. The projects submitted to the designated national authority (DNA) for initial review and approval cover the following project types; bio-fuels, energy efficiency, waste management, cogeneration, fuel switching and hydro-power, and cover sectors like manufacturing, mining, agriculture, energy, waste management, housing, transport and residential.¹³ Revenues from these projects have been exempt from taxation. To date, there are **360 CDM projects** from South Africa submitted to its Designated National Authority – **222 Project Idea Notes (PINs)** and **138 Project Design Documents (PDDs)**. Out of the 138 PDDs, the CDM Executive Board (EB) has registered 90 projects – including 35 Program of Activities (PoAs). **12 have reached CER issuance**, and **48** are at different stages of the CDM project cycle – DNA approval, validation stage, and/or request for review.¹⁴

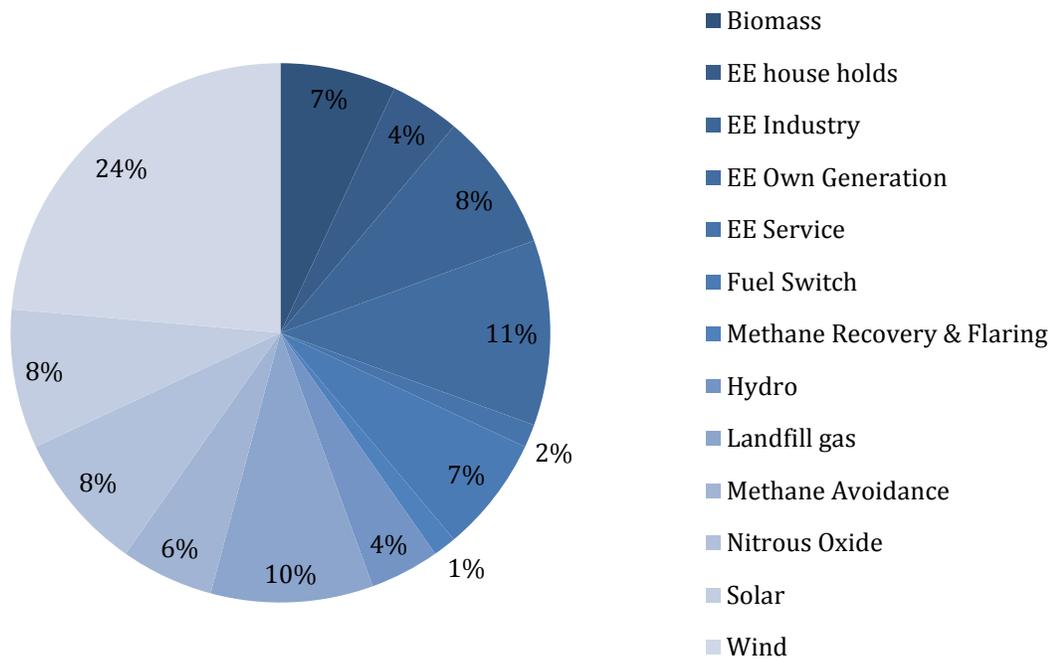


Figure 2: CDM Project Distribution in South Africa (registered only)

Source: CDM Pipeline, 2015: Available at: cdmpipeline.org

Following its 2009 Copenhagen pledge, the South African government began researching and analysing ways to best achieve the goals the country set forth. An analysis of a carbon tax was first presented in a discussion paper released for public comment in 2010 by the South African National Treasury.¹⁵ The 2010 paper examined the implementation of a carbon tax and the advantages and disadvantages of a carbon tax versus an emissions trading scheme. The discussion paper was updated in May 2013 and includes a final argument supporting the implementation of a carbon tax.

Three options for implementing a comprehensive carbon price through a carbon tax were proposed in the 2010 carbon tax discussion paper:^{16,17}

1. Tax applied directly to measured GHG emissions
2. Fossil fuel input tax on coal,
3. Crude oil and natural gas, based on their carbon content

4. Tax levied on energy outputs (electricity and transport fuels)

The Carbon Tax was originally scheduled to begin January 1, 2015, however, in early 2014, the government announced a delay in implementation until 2016.¹⁸

SCOPE & COVERAGE: The carbon tax will cover only emissions that result directly from fuel combustion and gasification, and from non-energy industrial processes (Scope 1 emissions). These emissions include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), perfluorocarbons (PFCs), hydrofluorocarbons (HFC), and sulphur hexafluoride (SF₆).¹⁹ The tax will be applicable to all stationary and mobile direct and process emission sources including; electricity generation, gasification, glass, cement, crude oil refining, mining, paper & pulp, iron & steel, aluminium, chemicals and transport.²⁰ During the first implementation phase (2016-2020) Agriculture, Forestry and Other Land Use (AFOLU) will be exempt until appropriate measuring methodologies are established. The carbon tax is expected to cover 1,000-1,500 companies, and 75% of national emissions.²¹

Due to complicating factors affecting the implementation of a tax directly on actual emissions, a ***fuel input tax*** was the best agreed upon option by the South African government as a proxy for a direct tax on emissions. Instead of measuring and taxing emissions directly, CO_{2e} emissions will be quantified based on the carbon content of fuels at the point at which they enter the economy using appropriate and accurate emissions factors and procedures that are approved by the Department of Environment Affairs (DEA), and comply with information published by the Intergovernmental Panel on Climate Change (IPCC).²²

The goal is to phase the tax in gradually to smooth the adjustment period for covered companies. The tax rate will start at 120R (South African Rand)/ton CO_{2e} (US\$10/€8.96)/tCO_{2e} from 2016 and increase by 10% per year until 2019. Economic modelling suggests that the rate can possibly deliver between 35%-44% of GHG mitigation towards South Africa's voluntary target.²³ This initial tax rate will be revisited and revised before the February 2019 budget to assess carbon tax policy after 2019.

COMPENSATION & FLEXIBILITY MECHANISMS: As an emerging economy, South Africa faces various socioeconomic challenges; the carbon tax incorporates measures to ensure the continued competitiveness of South African industries. As a result of these concerns, the initial proposal for the carbon tax mandates to introduce the tax at a modest price and also to incorporate tax free thresholds (Table 2) which mimic the allocation of free allowances.²⁴ Response measures to leakage and competitiveness issues will require further analysis to ensure the protection of market-exposed sectors.²⁵

Tax Free Thresholds

The proposed carbon tax policy will include a percentage-based tax-free threshold, for which companies will not have to pay for a fixed percentage of their emissions. From 2016-20, the tax-free threshold will be fixed at 60%. Additional relief will be given to trade-intensive sectors and sectors where the *potential to reduce emissions is limited*, such as process emissions the cement, iron, steel, aluminum and glass sectors. The basic threshold of 60% for emissions from fuel combustion and 70% for process emissions will effectively reduce the tax rate to R48/tCO_{2e} and R36/tCO_{2e} respectively (trade exposure also merits exemption from the tax) during the first phase. A tax free threshold of 60% implies that 40% of emissions will be taxable. If offsetting is taken into account the tax free threshold can increase to 90% meaning that 10% of emissions will be taxable. Proposals for recycling revenue derived from the carbon tax are currently under discussion and will likely focus on providing incentives to facilitate the transition to a low carbon economy. The maximum tax-free threshold for those sectors included in the first five-year period is 80% (including offsets). Agriculture, forestry, land use and waste sectors will not be included during the first five-year period, due to the complexity in measuring and verifying emissions from these sectors. After the first five-year period the percentage tax-free thresholds will be reduced and could potentially be replaced with absolute emissions thresholds, subject to

alignment with other initiatives.²⁶ The estimated revenue to be collected from the carbon tax for the 2015/2016 fiscal year is around R18billion.²⁷In the second phase (2020-25) tax-free thresholds will be reduced or replaced by absolute emission thresholds that align with other initiatives.²⁸

Sector	Basic Tax Free Threshold	Trade Exposure (Max.)	Process Emissions	Total	Offset Allowance (Max %)
Electricity	60	-	-	60	10
Petroleum (coal/gas to liquid)	60	10	-	70	10
Petroleum (Refinery)	60	10	-	70	10
Iron and Steel	60	10	10	80	5
Cement	60	10	10	80	5
Glass and Ceramics	60	10	10	80	5
Chemicals	60	10	10	80	5
Pulp and Paper	60	10	-	70	10
Sugar	60	10	-	70	10
Agriculture/Land-Use/Forestry	60	-	40	100	0
Waste	60	-	40	100	0
Fugitive Emissions	60	10	10	80	5
Other	60	10	-	70	10

Table 2: Proposed Tax-Free Thresholds by Sector, including Trade Exposure and Process Emission Thresholds

Source: Treasury Department of South Africa, 2014. Available at: treasury.gov.za

Offsetting emissions

Offsets may also be used to reduce a firm's carbon tax liability up to a sector specific limit determined by the mitigation potential of that sector. This has the dual purpose of:²⁹

- enabling industry to achieve carbon mitigation at a lower cost than standard operation and therefore lower their tax liability, and
- incentivizing mitigation activities in sectors that are not directly covered by the tax.

Carbon offset projects will also help to generate additional sustainable development benefits to the tax by channelling capital to rural development projects, providing jobs, regenerating landscapes, reducing land degradation and by protecting biodiversity.³⁰

The specifics of the offset mechanism and design features, including carbon offset standards, project types and methodologies, and origins of offset projects have yet to be finalised and published. In the meantime, an initial idea of what the offset program will look is based on existing international offset programs. Potential offset project types (see Table 2) could include agriculture, forestry, land-use, waste, community-based, municipal energy efficiency and renewable energy, electricity transmission and distribution efficiency, small-scale renewable energy (up to 15 MW) and transport projects. Projects will be located in South Africa only.³¹ A number of verification standards outside of South Africa, including the UN Clean Development Mechanism (CDM), Verified Carbon Standard (VCS), and CDM Gold Standard (GS), will be used until the country establishes its own standards.³² Demand for offset credits is estimated at

20 to 25 million credits per year.³³ The allowance for carbon offsets will be set at 5-10% of an installations' carbon tax liability.³⁴

Eligible Offset Projects under the SA CO ₂ Tax
<u>Energy & Energy Efficiency</u> ; Energy efficiency in the residential and commercial sector; Energy efficiency in buildings; Community based and municipal energy efficiency and renewable energy; Fuel switching projects; Small scale renewable energy projects; Electricity transmission and distribution efficiency
<u>Public Transport</u> ; Transport energy efficiency
<u>Agriculture, Forestry & Other Land Use (AFOLU)</u> ; Restoration of sub-tropical thicket, forests and woodlands; Restoration and management of grassland; Small scale afforestation; Biomass energy; Anaerobic biogas digesters; Reduced tillage
<u>Waste</u> ; Municipal waste projects
Ineligible Projects
Projects that receive benefits from other government incentives
Energy efficiency for projects that benefit from the Energy Efficiency Savings Tax Incentive.
Cogeneration of renewable energy for companies owned or controlled operations that are covered by the carbon tax.
Fuel switch projects in companies owned or controlled operations that are covered by the carbon tax.
Renewable energy projects developed under the Renewable Energy Independent Power Producers Purchase Programme (REIPPPP).

Table 3: Proposed Eligible and Ineligible Project Types in South Africa's Offset Market

Source: National Treasury, Republic of South Africa, 2015. Available at: theprm.org

Entities liable for the carbon tax can implement a carbon offset purchasing strategy which could help to reduce their carbon tax duty payable by 25% (depending on the sector and the price of CERs). While offsets are currently trading at low prices, it is expected that once the carbon tax bill is passed, the value of eligible CERs under the South African carbon tax will increase sharply, trading between R80/t-R100/t.³⁵

MARKET REGULATION & OVERSIGHT: Mandatory reporting requirements are currently under development by the DEA through the National Atmospheric Emissions Information System (NAEIS), which is a key MRV tool for the carbon tax and should begin in January 2016. Entities that produce Scope 1 emissions by engaging in tax liable activities will be required to assess their own emissions and report them in their tax return to the South African Revenue Service (SARS). The tax liability and the mandatory GHG reporting will follow a NAEIS Licensing system developed by the DEA. This approach has been designed in a way that companies reporting for tax liability will largely be the same as companies who already have mandatory air quality reporting under NAEIS regime, creating consistency in the overall carbon tax MRV system.³⁶ To this end, licensing activities related to the carbon tax (including reporting) will be fully regulated under the 2010 Air Quality Act³⁷ and cover 75% of emissions.³⁸

There are two mandatory reporting protocols which correspond to either energy or process emission sources.³⁹

- *Energy-related data* is to be reported, verified and managed by the Department of Energy (DoE) according to their stipulated guidelines and sent to the NAEIS
- *Process emissions data* is to be reported and verified using NAEIS and managed by the Department for Environmental Affairs (DEA)

NAEIS data will be used to verify and audit tax returns meaning that both reporting pathways will need to be complimentary. The DEA and DoE aim to help coordinate harmonization through a memorandum of understanding (MOU); however, details about this are still unclear.⁴⁰

COMPLEMENTARY MEASURES: South Africa's government has put in place a number of support measures to ease the transition into the carbon tax regime. The policy is designed not to increase the total tax burden, and thus will include tax shifting, rebate or other assistance measures for households. For coal combustion and gasification processes, there will be a specific tax rebate for Carbon Capture and Storage (CCS).

The government identified a number of flagship programs as part of its 2011 White Paper⁴¹ across a number of areas, including:

Climate Change Response Public Works: The program will consolidate and expand the Expanded Public Works Program and its sector components such as the Non-State Sector's Community Works Program and Environment and Culture Sector program including Working for Water, Working on Fire, and Working for Energy, which have been effective in promoting climate resilience and poverty relief.⁴²

Water Conservation and Demand Management: The program will accelerate the implementation of the National Water Conservation and Water Demand Management Strategy in the industry, mining, power generation, agriculture and water services sectors. Additionally, the program will accelerate the establishment of rainwater harvesting tanks in rural and low-income settlements.⁴³

Renewable Energy: The program will scale up the renewable energy program in line with the 2010 Integrated Resource Plan, and enhance the deployment of renewable energy technologies.⁴⁴

Energy Efficiency and Energy Demand Management: The program will build on existing energy efficiency programs that support energy efficiency improvements in industry and expand coverage beyond electricity. The program will include the development of energy efficiency programs for key government buildings and residential buildings, targeting low-income housing and commercial buildings.⁴⁵

Transportation: The program will focus on the development of an enhanced public transport program to promote low-carbon mobility and a rail recapitalization program that will shift freight and passenger travel from road to rail. An Efficient Vehicles Program will also be created to improve the average efficiency of the country's vehicle fleet by 2020.⁴⁶

Waste Management: The program will develop a waste-related GHG emission mitigation action plan and explore opportunities for waste-to-energy conversion practices, as well as the production and capture of methane or landfill gas from waste sites.⁴⁷

Carbon Capture and Storage (CCS): The program will be led by DoE and will focus on the development of a Carbon Capture and Sequestration Demonstration Plant.⁴⁸

Adaptation Research: Led by the South African National Biodiversity Institute (SANBI), the program will scope sectoral adaptation requirements and costs, identify adaptation strategies with cross-sector linkages and benefits, and assess climate change vulnerabilities to define potential sub-regional response strategies.⁴⁹

Furthermore, South Africa has in place other support measures to manage energy costs. For example, the Integrated National Electrification Program (INEP) aims to ensure electricity supply for all households, schools and clinics. There is also a free basic energy policy, which provides 50KWh per month to indigent households – and this may be reviewed and strengthened moving forward.

Renewable energy is promoted through the Renewable Energy Independent Power Producer (REIPP) procurement initiative. This assists Independent Power Producers (IPPs) to bid for renewable energy on the national grid. The government is considering the potential to receive international climate finance to support this initiative.

What Distinguishes This Policy?

UNIQUE ISSUES

1. The energy sector in South Africa is dominated by two large entities in the oil & gas and power sectors respectively. As a result, two entities represent a large share of covered emissions and poses a challenge to the creation of an ETS in South Africa.
2. South Africa will be the first national government to implement a multi-sector carbon tax, and will allow for carbon offsets to be used as a form of the tax payment.

CHALLENGES

1. Despite the intention to establish an inclusive and interactive policy design process, the first carbon policy proposal was met with significant resistance particularly by businesses that would have been affected by the tax in 2015. As a result, decision was taken to delay the proposal until 2016. The main challenge for the government will be to overcome public resistance to allow the bill to succeed in 2016 and to address the key issues that have been raised by stakeholders in relation to the carbon offset mechanisms; MRV, Eligibility Criteria, Administration in addition to managing international competitiveness issues.
2. Implementation of a carbon tax at a domestic level without equally robust carbon mitigation strategies implemented in other countries could lead to decreased competitiveness of emission intensive sectors in the South African economy. Additionally, the tax could displace domestic emissions, leading to carbon leakage and decreased effectiveness of the tax.
3. The development of the carbon tax in South Africa comes during a critical time for the South African economy and indirectly poses a challenge to the traditional state-owned and state-planned energy sector to reduce emissions while at the same time continuing to grow the energy sector.

Author Acknowledgements

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Disclaimer: The authors encourage readers to please contact the CDC Climat Research, EDF and IETA Contacts with any corrections, additions, revisions, or any other comments, including any relevant citations. This will be invaluable in strengthening and updating the case studies and ensuring they are as correct and informative as possible

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