

# South Africa Carbon Tax

Rethinking Decarbonisation Incentives – Policy Case Studies

**CATAPULT**  
Energy Systems

energy  
technologies  
institute



Prepared by



# South Africa Carbon Tax

This case study has been developed for the UK's Energy Systems Catapult under the *Rethinking Decarbonisation Incentives project*, aiming to draw lessons from international experience of policies to improve the framework of economic drivers for decarbonisation in the UK.

South Africa has undertaken a decade long journey to implement the ambitious multi-sectoral carbon tax with accompanying revenue recycling and offsetting mechanisms. In order to address the plethora of concerns about costs to the sectors covered, and the different impacts of these costs, a complex system of thresholds and exemptions has been developed. Also, the tax must sit alongside the carbon budget system, which raises questions about how the two will interact.

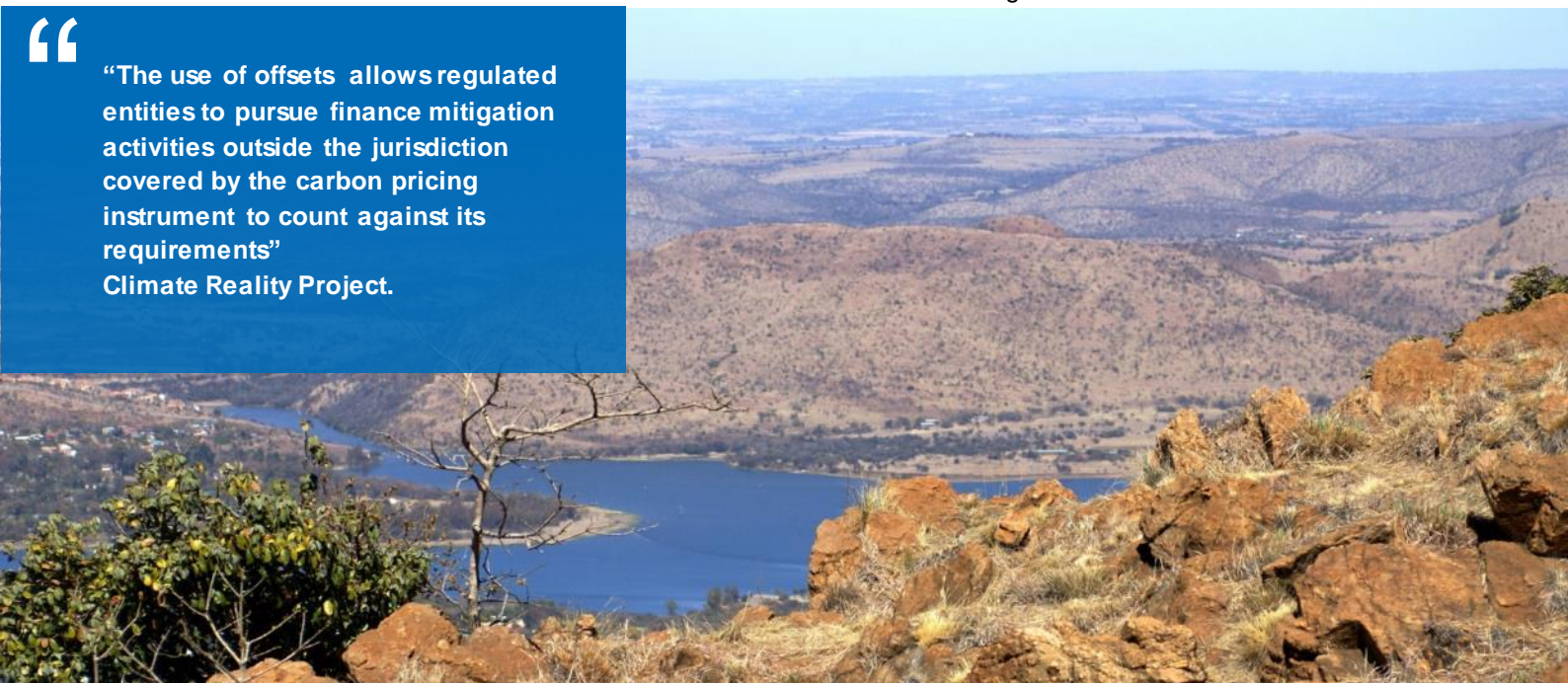
The case study provides findings on the extent to which such a broad-based policy can deliver a consistent carbon price signal throughout an economy, and the technical and political challenges faced. It explores the design of the tax, including its point of regulation, the exemptions or allowances granted to specific sectors, and rationale behind these. In addition, measures to deal with issues of international competitiveness, such as the use of offsets, are also examined.

## Key findings

- For the past decade, South Africa has sought to formulate a carbon tax that is effective in its operation, equitable in its impact across different sectors, and minimal in its adverse impacts. The design of the carbon tax is intended to balance South Africa's climate change mitigation goals with the need to reduce poverty and maintain trade competitiveness, while providing a price signal to encourage the transition to a low-carbon economy.
- As a result of the policy consultation process, numerous deviations from a uniform price signal reduce the effective tax rate significantly in the first phase. Political realities and sectoral differences have meant that the tax design has evolved significantly, incorporating a number of exemptions, phasing, offsetting and revenue recycling.
- Agriculture, forestry and other land uses (AFOLU) and waste are not included in first phase, but can be a source of offsets. These sectors were excluded due to difficulties in measuring and verifying their emissions. If in the future these sectors are covered by the tax regime, existing offsetting projects will be allowed to continue, however no new projects will be permitted.
- There is still uncertainty about how the overlapping carbon tax and carbon budget policy will be aligned going forward. The government has still to provide clarity on the alignment of the systems post 2020.
- While South Africa has the vision for a low carbon transition, the lack of coherence in mitigation policy creates uncertainty for stakeholders. Work is yet to be done to design policies with clear frameworks and timeframes to aid stakeholder decision making.



**“The use of offsets allows regulated entities to pursue finance mitigation activities outside the jurisdiction covered by the carbon pricing instrument to count against its requirements”**  
Climate Reality Project.



## Abbreviations

<b>AFOLU</b>	Agriculture, forestry and other land uses
<b>BAU</b>	Business as usual
<b>BEPS</b>	Base erosion and profit shifting
<b>CCBS</b>	Climate, Community and Biodiversity Standard
<b>CDM</b>	Clean Development Mechanism
<b>CIT</b>	Corporate income tax
<b>CPI</b>	Consumer price index
<b>DEA</b>	Department of Environmental Affairs
<b>DNA</b>	Designated National Authority
<b>DOE</b>	Designated operational entity
<b>ETS</b>	Emissions Trading Scheme
<b>GS</b>	Gold Standard
<b>IEP</b>	Integrated Energy Plan
<b>IMF</b>	International Monetary Fund
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>LTMS</b>	Long Term Mitigation Scenarios
<b>NAEIS</b>	National Atmospheric Emissions Information System
<b>NCCRP</b>	National Climate Change Response Policy
<b>NDC</b>	Nationally Determined Commitment
<b>NDP</b>	National Development Plan
<b>SARS</b>	South African Revenue Service
<b>VCS</b>	Verified Carbon Standard

## Nomenclature

<b>GHG</b>	Greenhouse gases
<b>tCO<sub>2e</sub></b>	Tonnes of carbon dioxide equivalent
<b>R</b>	South African Rand
<b>USD</b>	United States dollar

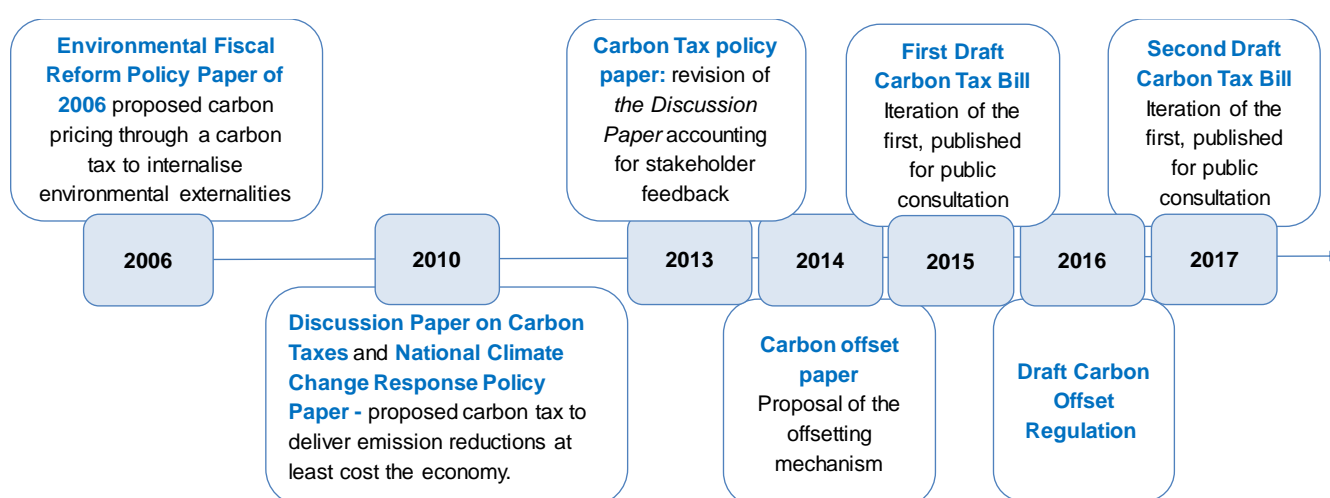
### Copyright statement and disclaimer

This report forms part of the Energy Systems Catapult project 'Rethinking Decarbonisation Incentives' co-funded by the Energy Technologies Institute. This report is the Copyright of Energy Systems Catapult and has been prepared by Ricardo Energy & Environment, a trading name of Ricardo-AEA Ltd under contract ESC1764 dated 19/02/2018. The contents of this report may not be reproduced, in whole or in part, nor passed to any organisation or person without the specific prior written permission of Energy Systems Catapult. Ricardo Energy & Environment accepts no liability whatsoever to any third party for any loss or damage arising from any interpretation or use of the information contained in this report, or reliance on any views expressed therein, other than the liability that is agreed in the said contract.

## Policy overview

### Policy narrative

A carbon tax in conjunction with the recycling of revenues has been designed by the South African National Treasury as one of the key mitigation instruments to help the country to meet its climate targets. The formal process to develop the tax began in 2006 with a Fiscal Reform Policy Paper. The tax rate and design were then established in the 2013 Carbon Tax Policy Paper. However, following significant consultation with stakeholders and in recognition of the need to provide taxed entities with flexibility, the 2014 budget review announced that a carbon offsets scheme would be introduced to complement the tax. In 2015, a new Draft Carbon Tax Bill was released for public consultation, including a gradual phasing in of the tax, followed by a second iteration in December 2017. The actual date of implementation is 1 January 2019, as announced in the 2018 Budget. This development timeline is illustrated in Figure 1.



**Figure 1 A summarised timeline of South Africa's key carbon policy updates. The expected implementation of the carbon tax is 2019.**

### Coverage, obligated entities and eligibility

The emissions profile in South Africa in 2014 is shown in Figure 2 (note that net land-use change and forestry emissions are excluded). The carbon tax will cover all energy emissions in South Africa (approx. 90% of overall emissions) by regulating the upstream fuel suppliers, however, phase one of the tax regime will exclude agriculture, forestry and other land uses (AFOLU) and waste due to difficulties in measuring and verifying emissions.

Targeted entities will be liable for: i) fossil fuel combustion emissions, ii) industrial processes and product use emissions and iii) fugitive emissions (i.e. from coal mining). Only entities with a thermal capacity of around 10 megawatt (MW) will be subject to the tax in the first phase (2019-2021). The GHGs covered by the scheme include Scope 1 emissions: carbon dioxide, methane, nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride.

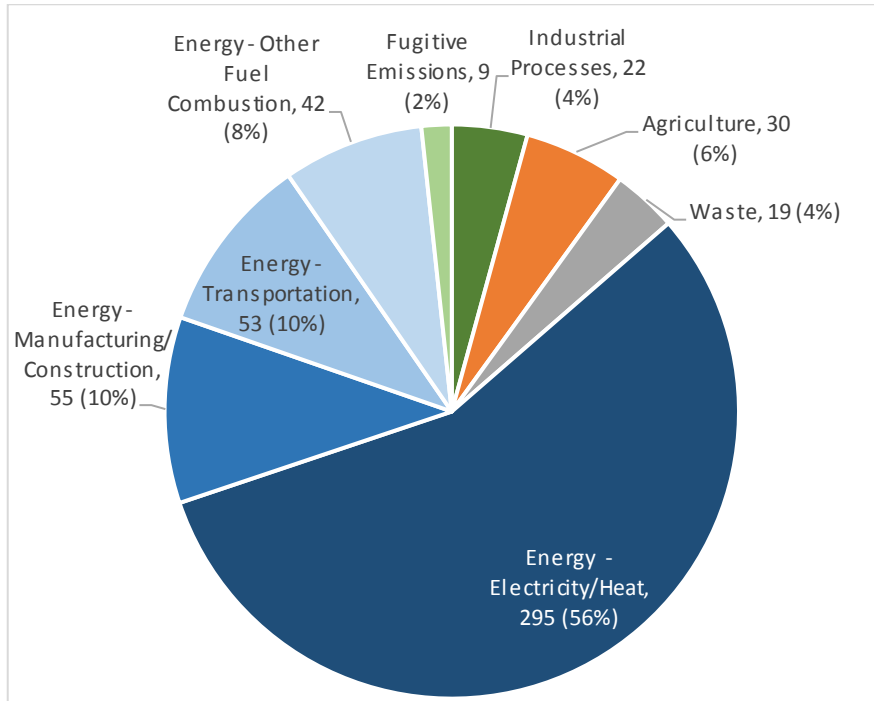


Figure 2 Total GHG emissions in South Africa 2014 (MtCO<sub>2e</sub>)<sup>1</sup>

**Mechanism and economic incentive**

The first phase of the tax will run from 2019 up to 2022 and will be introduced gradually to allow for a smooth transition in adopting cleaner and more efficient technologies and behaviours. The initial carbon tax rate will be set at R120 (\$8.32 USD) per tonne of CO<sub>2e</sub> (carbon dioxide equivalent) and will increase at consumer price index (CPI) + 2% up to 2022, after which it will increase at CPI. In the initial phase, obligated entities will have a basic tax-free allowance of 60%, but a number of additional tax-free allowances will also apply (for process emissions, trade exposed sectors; top performers, those subject to the carbon budget, and those included in the first phase). The combined effect of these tax-free allowances will be capped at 95% of total GHG emissions. Furthermore, offsets can be used by firms to reduce their carbon tax liability up to a set limit (5-10% of actual emissions of a taxable company). Taking into account tax-free allowances, the effective tax rate will be in the range between \$0.42 USD and \$3.33 USD (R6 and R48) per tonne. The features of the tax are illustrated in Figure 3.

<sup>1</sup> Based on data from CAIT Climate Data Explorer. 2017. Washington, DC: World Resources Institute. Available online at: <http://cait.wri.org>

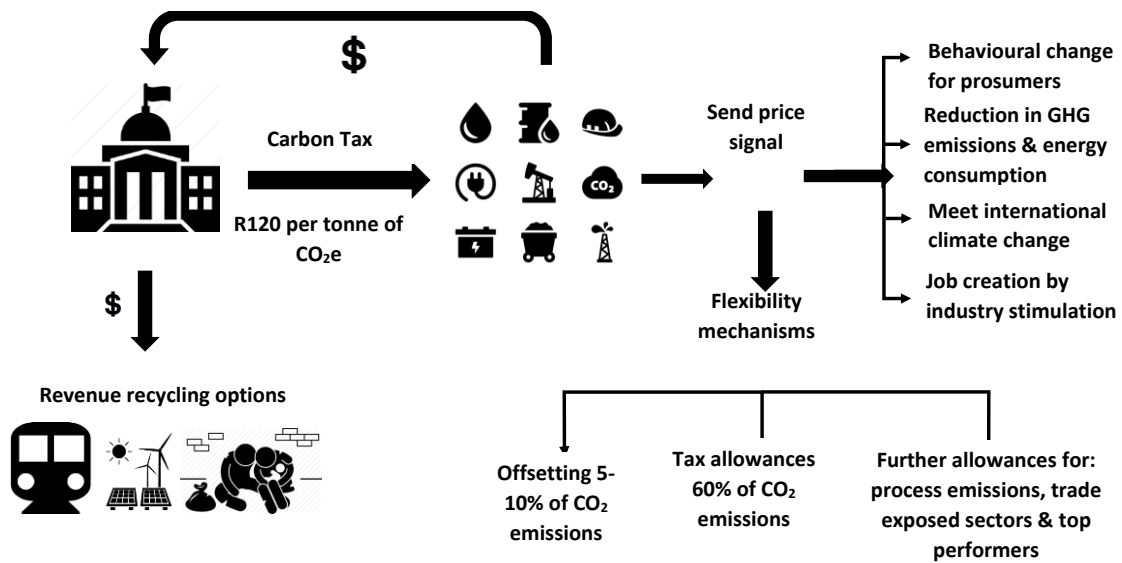


Figure 3 Conceptual model describing the key elements of the proposed carbon tax regime in South Africa

**Compliance**

The taxpayer must pay the carbon tax for every tax period. The tax will be based on appropriate emissions factors or a transparent and verified measuring and monitoring procedure as outlined in the 2017 Mandatory GHG Reporting Emissions Regulations. Under the regulation, entities are required to report all their GHG emissions based on a combination of Tier 1 emissions factors as per the IPCC 2006 Guidelines and Tier 2 and 3 approved emissions methodologies at a country or company level, respectively.

Tax on fuels will be imposed on fuel suppliers, as an addition to the current fuel taxes. For taxation on stationary emissions, reporting thresholds (equivalent to the tax rate threshold) will be determined by source category as stipulated in the National Environmental Air Quality Act. The proposed carbon tax regime includes tax avoidance and tax evasion provisions, together with monitoring and enforcement, in the design of the carbon tax.

**Institutional set-up**

The Minister of Finance is responsible for the final tax rate, exemptions, and the actual date of implementation through the annual Budget process. The South African Revenue Service (SARS) will be responsible for administering the Carbon Tax and accessing and monitoring the National Atmospheric Emissions Information System (NAEIS), which contains emissions information as reported by companies. The Department of Energy will be responsible for administering the carbon offset scheme. Energy use data reported to the Department of Energy could also be incorporated into the NAEIS, and strengthen the monitoring and verification system to support the implementation of the carbon tax.

**Effectiveness and cost effectiveness**

The tax has not yet been implemented so it is not possible to comment on its likely effectiveness.

**Point of regulation**

The regulated entity in a carbon tax can be the direct emitter or be upstream or downstream in the supply chain of the goods and services that result in those emissions. For instance, a direct emissions (commonly called a point of emissions) approach focuses on the facilities that are the chief sources of

CO<sub>2</sub> emissions such as motor vehicles, farms, industrial installations, power plants, and other stationary sources<sup>2,3</sup>. Such an approach can be suitable where there are a relatively small number of very large emitters, but the administrative costs would be very high if it were to be applied to very large number of small emitters, for instance in the residential or domestic transport sectors.

In an upstream approach, a carbon tax attributes responsibility for CO<sub>2</sub> emissions to the importer, producer or supplier of fuels. This approach has the greatest capacity to guarantee that all sources of energy related CO<sub>2</sub> emissions are targeted, as the focus is on the point in which carbon enters the economy. It is administratively simpler as there are far fewer suppliers of energy than there are consumers. Placing the carbon tax liability on fuel suppliers will likely result in an increase in fuel costs for consumers<sup>4</sup>. This essentially passes the tax down the producer-consumer chain, creating incentives for fuel alternatives and investments in energy-efficient technologies that decrease CO<sub>2</sub> emissions.

In a downstream approach a tax is imposed on the outputs whose production involves the combustion of fossil fuels. The most common example is electricity, although it could apply to heat products or in principal any product or service with embodied carbon. It is very challenging to consider this approach for complex end user products because of the need to attribute emissions to them, but is more straightforward for electricity, where the associated emissions can be calculated more accurately.

These are the main options available for the design of a carbon pricing system, and a mix could be employed to cover diverse sectors. For the South African carbon tax, the Discussion Paper on carbon tax published in 2010<sup>5</sup>, proposed three options for implementing a comprehensive carbon price via a tax system. These were: i) tax applied directly to measured GHG emissions; ii) fossil fuel input tax on coal, crude oil and natural gas, based on their carbon content; and iii) tax levied on energy outputs (electricity and transport fuels). Initially it was believed that the best option was to impose the tax on the direct emitter of GHGs or CO<sub>2</sub>-eq. However, at the time this approach was recognised to be administratively complex and costly, particularly regarding the implementation of a much needed transparent and effective institutional framework<sup>6</sup>.

In addition, financial risks and technical and administrative challenges associated with the measurement and monitoring of process emissions resulting from the chemical reactions of certain manufacturing processes such as cement, glass, aluminium and chemicals production as well as fugitive emissions deriving from coal mining raised further concerns. Following extensive consultations, a preference for a carbon tax with a mixed approach to the point of regulation emerged: taxation on fuel inputs (upstream) in combination with a tax on process and fugitive emissions at source (point of emissions) for some of the large industry players.

This combination of an upstream and point of emissions approach to carbon taxation offers key advantages including: i) fewer players involved (and therefore lower costs); ii) a simpler structure, minimising opportunity for abuse and risk, and; iii) a lower administrative burden by building on existing accounting systems<sup>7</sup>

---

<sup>2</sup> Newham, M., & Conradie, B. (2013). A Critical Review of South Africa's Carbon Tax Policy Paper: Recommendations for the Implementation of an Offset Mechanism, (334), 1, 5, 14. Retrieved from <http://cssr.uct.ac.za/pub/wp/334>

<sup>3</sup> Hughes, R., and Paterson, A. (2017). A Critical Review of South Africa's Future Carbon Tax Regime. Institute for Marine and Environmental Law University of Cape Town. MPhil Thesis, pp.89.

<sup>4</sup> Mansur, E. T. (2013). Upstream Versus Downstream Implementation of Climate Policy. NBER Working Paper, 53(9), 1689–1699. <https://doi.org/10.1017/CBO9781107415324.004>

<sup>5</sup> National Treasury. (2012). Discussion Paper for Public Comment: Reducing Greenhouse Gas Emissions, Carbon Tax Option December 2010: 30(March), 1026–1034.

<sup>6</sup> National Treasury. (2013). Carbon tax policy paper - reducing greenhouse gas emissions and facilitating the transition to a green economy. Pretoria, South Africa: Government Printer

<sup>7</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work

The carbon tax will primarily be administered by SARS together with the Department of Environmental Affairs (DEA). The collection costs for the carbon tax are expected to be minimised through the appropriate usage of economies of scale and the existing administrative structures. It is therefore favourable that these existing structures of SARS and the DEA are utilised to minimise the administrative burden.

## Revenue recycling

The National Treasury believes that implementing a carbon tax instead of a cap-and-trade system is the right choice due to the oligopolistic structure of industries (i.e. few large emitters) and given the high costs of setting up and enforcing a cap-and-trade scheme in South Africa. While a carbon tax will not guarantee that environmental targets are reached, it will provide the price stability needed to encourage firms to make long-term investment decisions and commit resources to research and innovation in emissions reduction.

However, there are concerns about the cost impacts of a carbon tax on the competitiveness of firms operating in international markets and on vulnerable individuals given the widespread poverty and inequality in South African society. In addition, supplementary measures may also be needed to fully support the transition to a lower carbon economy.

To address these concerns the Treasury announced that a revenue recycling system with a soft earmarking will be implemented to complement the carbon tax regime. This system utilises some of the revenue gained from the carbon tax which will flow into the National Revenue Fund for funding of efficiency investments and low-carbon projects and a tax incentive for energy efficiency<sup>8</sup> as well as other public systems (Box 1).

### Box 1 Key elements of the proposed revenue recycling system.

In the media statement which accompanied the first draft Carbon Tax Bill, the National Treasury has indicated that revenue recycling will be used to protect vulnerable households. The carbon tax will be revenue-neutral during the first phase and these revenue recycling measures will include:

- (i) Funding for the energy efficiency tax incentive already being implemented;
- (ii) A reduction in the electricity levy,
- (iii) Additional tax relief for roof top (embedded) solar photovoltaic (PV) energy as already provided for in the 2015 tax legislation;
- (iv) A credit for the premium charged for renewable energy (wind, hydro and solar, as per the Integrated Resource Plan);
- (v) Additional support for free basic electricity to low income households, and;
- (vi) Additional allocations for public transport. Measures to encourage the shift of some freight from road to rail will also be supported.

In the absence of a carbon tax, the electricity levy is currently fulfilling the twin objectives of promoting energy efficiency and indirectly pricing GHG emissions. To ensure the effective pricing of carbon without double taxation, upon the introduction of the carbon tax, a credit of the electricity generation levy is proposed for the first phase (up to 2022).

However, industry and some businesses were concerned whether the revenue recycling would be effective as the lack of ring-fencing provides no guarantees that the revenue will be used for the green

<sup>8</sup> Yu L and Lu Y. 2015. The Economic Impact of Different Carbon Tax Revenue Recycling Schemes in China: A Model-Based Scenario Analysis. (141) Applied Energy 97.



investment. As part of the consultation process of the 2015 Draft Bill, they sought assurances from the government that “*the carbon tax will be revenue-neutral and that clear guidelines be developed to inform how the revenue will be allocated to ensure transparency.*”<sup>9</sup> In addition, several respondents supported the explicit earmarking of funds.

In their response, the government explained that the rigid earmarking of specific tax revenue streams would not be in line with sound fiscal management practices. Instead, “soft” earmarking (on budget allocations) was proposed, such as the enhanced free basic energy / electricity programme and improved public transport. In addition, the government pointed out that some of the measures promised were already underway, such as tax shifting measures (the credit for the renewable energy premium is already incorporated in the Draft Carbon Tax Bill) and tax incentives (the energy efficiency savings tax incentive was implemented in November 2013 and is encoded in legislation as section 12L of the Income Tax Act.)<sup>10</sup>

Detail of how the revenue recycling will be divided amongst these measures is still pending. This will determine the scale of the distributional effects. The choice of revenue recycling, whether by specific programmed support or a reduction in corporate income tax (CIT), impacts on corporate decision making. It was the intention of the Policy Paper and the gradual implementation of the carbon tax to provide firms with clear signals. The same level of clarity does not yet exist for revenue recycling.

## Carbon tax allowances

The carbon tax was developed by the National Treasury to provide a price signal to producers and consumers of carbon-intensive products, creating an incentive to invest in cleaner technology and reduce emissions, where available. The phased approach should allow for a relatively smooth transition to a carbon pricing regime that provides the necessary policy and price signals to investors and consumers of the need to ensure that future investments are more climate resilient.

A number of tax allowances or rebates are defined in for the South African Carbon Tax Policy, as shown in Table 1. The following are provided for:

**Basic tax-free allowance for fuel combustion emissions.** Most sectors of the economy have a 60% tax free allowance for energy combustion emissions, meaning that they don't have to pay tax for that amount of their emissions. The basic tax-free allowance was a blanket technical threshold applied to all sectors as part of the phasing in of the tax, allowing participants to adapt to it and arbitrarily representing an allowable level of emissions space for sectors, above which the tax would apply<sup>11</sup>.

**Allowance for process and fugitive emissions.** As GHG emissions from many chemical processes occur in fixed stoichiometric ratios (e.g. coal gasification, crude oil cracking and the production of cement, iron, steel, glass, ceramic and certain chemicals, such as calcium carbide and titanium dioxide), there is limited potential for mitigation over the short to medium term<sup>12</sup>. Reductions in CO<sub>2</sub> would require completely novel processes to be developed, based on different chemical reactions, which in many cases is not possible. To address this, all manufacturing sectors which produce process emissions were granted a higher basic allowance of 70%<sup>13</sup> (e.g. iron and steel, cement, lime, glass). In addition, an allowance of 10% is available for fugitive emissions, exemplified by the coal mining sector.

<sup>9</sup> National Treasury, First Draft Carbon Tax Bill 2015: Response Document, December 2017

<sup>10</sup> National Treasury, First Draft Carbon Tax Bill 2015: Response Document, December 2017

<sup>11</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work.

<sup>12</sup> Davis Tax Committee. (2015). Report on a carbon tax for South Africa for the minister of finance, (November). Retrieved from [http://www.taxcom.org.za/docs/20171110\\_DTC\\_report\\_on\\_carbon\\_tax\\_-\\_on\\_website.pdf](http://www.taxcom.org.za/docs/20171110_DTC_report_on_carbon_tax_-_on_website.pdf)

<sup>13</sup> National Treasury, Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017

**Allowance for trade exposed sectors.** A further trade exposure allowance of 10% for all sectors except waste and AFOLU (which have been excluded completely from the initial scope of the tax, see below) has been granted, since trade-exposed firms will be at an initial disadvantage after the introduction of the tax. Trade intensity will be used as a proxy for trade exposure which will be determined at a sector or subsector level.

**Performance allowance.** The allowance for top performers (5%) is an incentive for early movers and for those who reduce their carbon intensity voluntarily. This will be calculated with reference to an agreed GHG emissions intensity benchmark (including both direct and indirect emissions) for the sector or sub-sector. Essentially, firms below the sector or subsector emissions intensity benchmark will be rewarded.<sup>14</sup>

---

<sup>14</sup> National Treasury, Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017

Table 1 Proposed emissions thresholds and offset allowances.<sup>15</sup>

Sector	Basic Tax-free allowance for fossil fuel combustion emissions%	Basic Tax-free allowance for process emissions%	Fugitive Emission Allowance %	Trade Exposure Allowance %	Performance Allowance %	Carbon budget allowance	Offsets allowance %	Max. total allowance%
Electricity	60	0	0	10	5	5	10	90
Petroleum refining	60	0	0	10	5	5	10	90
Manufacturing (heat and electricity)	60	0	0	10	5	5	10	90
Iron and steel (IPPU)	0	70	0	10	5	5	5	95
Cement, lime, glass (IPPU)	0	70	0	10	5	5	5	95
Agriculture, forestry and land use	100	0	0	0	0	0	0	100
Solid Waste	100	0	0	0	0	0	0	100
Fugitive emissions from coal mining	60	0	10	10	5	5	5	95
Civil aviation, road transport	60	0	0	10	5	5	10	90

<sup>15</sup> Adapted from - National Treasury, Draft Carbon Tax Bill 2017, December 2017

**Carbon Budget allowance.** An additional 5% tax-free allowance will be provided to companies participating in phase 1 of the carbon budget system as an incentive for participation.<sup>16</sup> The carbon budget allowance is described in Box 2. However, the government has still to provide clarity on the alignment of the carbon tax and carbon budgeting system post 2020, when the mandatory phase of the carbon budgeting system is expected to commence. At this stage, there is a high level in principle agreement that the tax will apply above the carbon budgets or absolute thresholds.<sup>17</sup>

After three years of implementation the impact of the carbon tax and budgets on emissions and the overall economy will be assessed, including an assessment of cost-effectiveness, to inform how the two instruments are aligned. One of the key considerations for the integration options will be the level of stringency of the carbon budgets. Although the budget provides flexibility to adjust the cost borne by companies, entities covered by the system may experience significantly higher cost than the tax rate.

#### Box 2 Carbon budget allowance

A series of carbon budgets designed by the DEA envisaged to provide a GHG emissions allowance (in other words, a cap), against which physical emissions arising from the operations of a company during a defined time period will be tracked. In the period to 2020, the carbon budgets will not be a compliance instrument but rather will be used to increase understanding of the emissions profile of participating companies, and to establish monitoring, reporting, and verification (MRV) processes. Beyond 2020, they are intended to become compulsory.

In the period to 2020, the integration between the two instruments is to be established. Firms that have been allocated carbon budgets by the DEA will be entitled to an additional 5% tax free allowance. This is in addition to a basic tax-free allowance of 60% plus other allowances that will be provided for firms if, for example, they are considered to be exposed to the risk of carbon leakage or if they have significant process emissions.

Carbon budgets define a maximum emissions allowance, however, their effectiveness depends on the tightness of the budget and the compliance mechanism used to enforce the budget (World bank, 2017). The costs to the companies involved will depend on the stringency of the allowance and entities within budgets may not face significant cost increases. By contrast, a carbon tax creates additional cost on liable entities in relation to their emissions although tax exemptions (as proposed in South Africa) can reduce this impact. Through the level of carbon budgets or use of tax free allowances the systems can respectively be designed to mitigate competitiveness concerns.

There are expected to be interactions between the carbon tax design and carbon budget system, however these are difficult to quantify in advance and uncertainty exist as to how they will affect each other and the economy. While both the carbon tax and carbon budget instruments have merits, economic theory would suggest that there could be risks associated with applying both instruments to the same emissions at the same time. Policy duplication would increase administration costs as well as duplicate participant compliance costs.

**Offset allowance.** The carbon tax provides for the use of carbon offsets by companies to reduce their tax liability by a maximum of 10% of their combustion emissions and 5% of their total fugitive emissions or 5% of their total process emissions.<sup>18</sup>

**Exclusion of waste and AFOLU sectors.** These sectors are excluded during the initial phase of the carbon tax due to difficulties in measuring and verifying their emissions. However, it should be noted

<sup>16</sup> National Treasury, Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017

<sup>17</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work

<sup>18</sup> National Treasury, Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017

that the Draft Carbon Tax Bill has included combustion related emissions (only) from the AFOLU sector as taxable, as these will be regulated upstream.<sup>19</sup> However, these sectors will be able to provide offsets to other liable entities, and a number of offset projects have been registered under Clean Development Mechanism (CDM), Verified Carbon Standard (VCS) and Gold Standard (GS) in these sectors.

In the medium term, and to the extent that the challenges mentioned are addressed, it has been suggested that the AFOLU and waste sectors may be brought into the carbon tax system. However, there is still uncertainty of whether or when this will happen. If in the future they were to be covered by the tax, then where offset projects overlap with the scope of the tax the existing projects would be allowed to continue until the crediting period of that project comes to an end. However, no new project would be eligible for offsets. This would preserve the incentive for current project developers to continue developing their offset projects.

**Allowance for electricity sector.** The sector has a maximum allowance of 90%. According to a government interviewee,<sup>20</sup> unlike other sectors, the electricity sector allowance is lower than other sectors (rather than 95%) as this takes into account the broader suite of mitigation opportunities available for electricity generation. According to the National Development Plan (NDP), the uncompetitive and monopolistic structure of the electricity sector means that an explicit carbon price could provide an incentive for the efficient use of the current fleet of power stations and thus maximise efficiency gains.<sup>9</sup>

The impacts of the tax rate on electricity prices is still uncertain. The National Treasury estimates that every effective R10 per ton CO<sub>2</sub> emissions tax translates into a 1.05 c/kWh addition to the electricity price. Hence, the impact on electricity prices will be between 5.5% (assuming only 60% tax free allowance) to less than 3%. However, during the first phase the carbon tax is expected to have a neutral impact on the electricity prices. This will be offset through a credit for the currently electricity generation levy (applied to coal, petroleum, natural gas and nuclear based electricity at R0.03/kWh) against the carbon tax liability of electricity producers and a credit for the renewable energy premium built into the current electricity price structures.

## Conclusions regarding tax allowances

The carbon tax policy proposal and draft carbon tax bill represent important schemes to drive a shift to a low carbon intensity economy. Their various elements are designed to protect industries against competition and trade exposure consequences as well as other sector specific disadvantages in the short term, through allowances and the use of offsets. There exist a number of concerns, however, with regard to the consistency of the price signals these combined measures generate. The deviation from having a single carbon price across the economy is due mainly to measures to mitigate potential adverse impacts of the tax on both industry and households in the short term. Over the medium to longer term, the different allowances could be reduced and even removed to ensure a consistent and stronger carbon price signal.<sup>21</sup>

Due to the use of tax-free allowances, the effective tax rates of all sectors will be significantly less than R120/t CO<sub>2</sub>e. Assuming zero offsets, the maximum effective tax rate in the electricity sector for example, would be R48/tCO<sub>2</sub>e or US\$ 4/tCO<sub>2</sub>e in the first year. This is about 4 % of that proposed in the Stern Review<sup>22</sup>. This effectively translates to a rebate from the “economic price signal” which the tax imposes.

---

<sup>19</sup> National Assembly. (2015). Draft carbon tax bill. Pretoria, South Africa: Government Printer.

<sup>20</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work.

<sup>21</sup> According to a representative of the private sector with a background in environmental consulting and sustainability, interviewed for this work.

<sup>22</sup> Stern, N. (2006). Stern Review on the Economics of Climate Change. London, UK: HM Treasury.

It is intended that, after 2020, the tax-free thresholds would be reduced and could ultimately be replaced by absolute emissions thresholds however whether this will be achieved is unclear.

To conclude, the proposed carbon tax rate is relatively low taking cognisance of the high level of tax free allowances. According to analysis undertaken by the International Monetary Fund (IMF), a carbon tax is likely to produce domestic environmental benefits (primarily health benefits from less local air pollution) equivalent to about R150 or US\$ 10 per ton of reduced CO<sub>2</sub>. If a carbon tax is the main instrument for reducing CO<sub>2</sub> emissions, the IMF suggests that the rate will need to be ramped up quite substantially by 2030 to meet the country's Nationally Determined Commitment (NDC) under the Paris Agreement<sup>23</sup>.

## Carbon offsetting scheme

Carbon offsetting is permitted within the carbon tax for south Africa. The section examines the reasons for this and how it will work in practice.

### Policy Rationale

Carbon offsetting entails the purchase of carbon credits that represent emissions savings from projects individually or programmes of projects. Firms and governments voluntarily wishing to reduce their carbon footprint for public relations or corporate social responsibility reasons may do so by acquiring offsetting credits, in effect funding the mission reducing activities. A voluntary market for such credits exists in South Africa and although growing it is small, covering less than 0.1% of country's total emissions in 2011<sup>24</sup>.

Alternatively, governments may permit carbon offsets to be used for compliance in mandatory carbon pricing regulations, such as carbon taxes or emission trading systems. This extends the scope of potential abatement options and allows for emission targets to be met more cheaply. For liable entities this is manifested in the opportunity to acquire cheaper emission reductions credits, when compared with the regulated carbon price. The Carbon Tax Policy Paper allows firms to offset 5-10 %of emissions based on their mitigation potential.

For a project to be eligible under the offset scheme, it requires certification of the emissions reductions achieved. this in turn means that emissions reductions need to be verified. This is undertaken by an independent designated operational entity (DOE). As of 2014, there was only one accredited DOE in South Africa although two other entities had expressed an intention to become accredited<sup>25</sup>. For the first phase of the carbon tax, it is proposed that projects registered under the CDM, VCS, and GS standards be considered for offsets. The Designated National Authority (DNA) within the Department of Energy has been appointed as the administrator of the carbon offset mechanism. Thus, the international carbon-offsets standard bodies will have to establish a memorandum of understanding/ contract with the DNA to ensure that the development of the carbon-offset projects would be aligned with requirements and criteria as set out in the Carbon Offsetting Regulations.<sup>26</sup>

---

<sup>23</sup> National Treasury . (2017). CARBON TAX BILL (Annexure 3): FIRST DRAFT CARBON TAX BILL 2015 Response Document, (December), 1–31. Retrieved from [http://www.treasury.gov.za/public comments/CarbonTaxBill2017/Annexure 3 Response Document to 2015 Draft Carbon Tax Bill.pdf](http://www.treasury.gov.za/public%20comments/CarbonTaxBill2017/Annexure%203%20Response%20Document%20to%202015%20Draft%20Carbon%20Tax%20Bill.pdf)

<sup>24</sup> Peters-Stanley, M., and K. Hamilton. 2012. State of the Voluntary Carbon Markets 2012, Vol. 6. USA: Ecosystem Marketplace & Bloomberg New Energy Finance.

<sup>25</sup> Davis Tax Committee. (2015). Report on a carbon tax for South Africa for the minister of finance, (November). Retrieved from [http://www.taxcom.org.za/docs/20171110 DTC report on carbon tax - on website.pdf](http://www.taxcom.org.za/docs/20171110%20DTC%20report%20on%20carbon%20tax%20-%20on%20website.pdf)

<sup>26</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work

## Offset projects in South Africa

It has been envisioned that investment in offsets could generate considerable sustainable development benefits in South Africa, including the channelling of capital to rural development projects, the creation of employment, restoration of landscapes, reductions in land degradation, protection of biodiversity, and the encouragement of energy efficiency and low carbon growth<sup>27</sup>. The use of carbon offsets to assist sectors to reduce their carbon tax liability was generally supported by stakeholders and is seen as a cost-effective measure to incentivise GHG emissions reduction in sectors not covered by the tax.

The principles of 'real, additional and permanent' are pivotal to ensuring the credibility of carbon offset projects. The carbon offset component of the carbon tax has a dual purpose: to serve as a flexibility mechanism that will enable industry to deliver least cost mitigation, i.e. mitigation at a lower cost to what would be achieved in their own operations, and thereby lower their tax liability; and to incentivise mitigation in sectors or activities that are not directly covered by the tax and/or benefiting from other government incentives, especially, transport, AFOLU, waste.

It has been proposed that, among other aspects:

- Credits for projects based only in South Africa be used for offsets. This would promote local sustainable development and job creation as well as supporting the efforts of the National Climate Change Response Policy (NCCRP).
- The projects are outside the scope of activities that are subject to the carbon tax. Only entities, not liable for the carbon tax would be permitted to implement emission reduction projects and sell carbon offset credits to entities liable to the carbon tax. These entities would initially include those in tax exempt sectors and those below the tax threshold in other sectors.
- An initial list of eligible projects would be used to stimulate an offsets market. This set would be expanded with time.

## International competitiveness considerations

The competitiveness effects on local industries and businesses as well as other facets of the economy (for example employment, inflation and international competitiveness) is critical when evaluating an environmental tax and is also affected by the tax base and tax rate<sup>28</sup>. The implementation of an environmental tax will result in economic effects as a policy intervention characteristically aims to change the behaviour of taxpayers. Garnering a sufficient understanding of the nature and magnitude of the economic knock-on effects is significant to reduce any unfavourable competitiveness consequences. This is particularly true for trade intensive industries in South Africa, a sector which accounts for 15 %of the country's GDP (Figure 4 and Appendices 2).

<sup>27</sup> Camco Clean Energy . (2012). Use of carbon off sets under a South Af rican carbon tax regime. Johannesburg, South Africa: Africa Clean Energy .

<sup>28</sup> Ekins and Speck (1999). National Treasury Market--Based Instruments: Draft Policy Paper. Environmental and Resource Economics 386: (13)62.

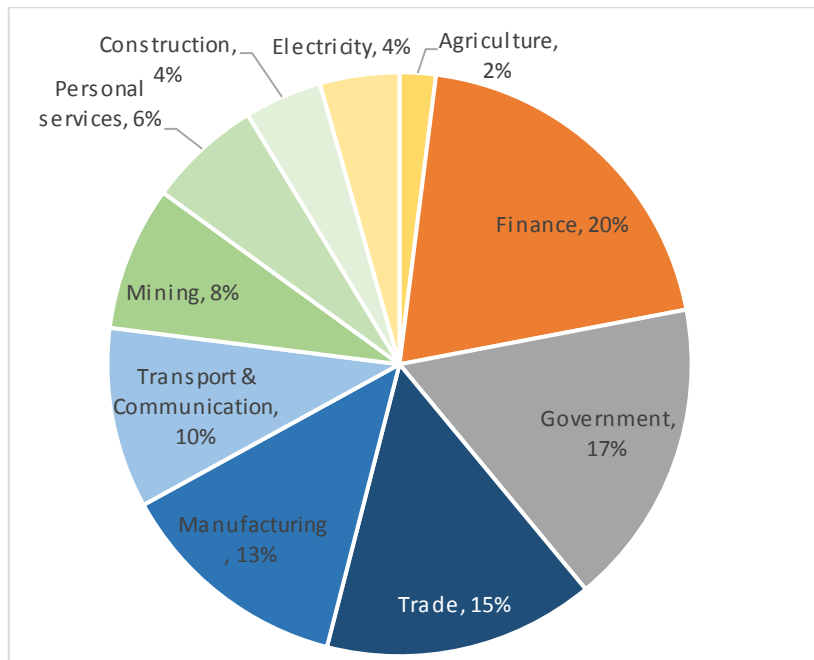


Figure 4 Contribution per industry to South Africa's nominal GDP in 2016.<sup>29</sup>

Trade intensive industries have been variously defined as those in which exports and imports combined represent more than 40% or 60% of their domestic output<sup>30</sup>. The competitiveness issues affecting these industries are mostly expected to occur in the instance whereby environmental taxes are imposed on products or key elements of production that are internationally traded. For the industries and firms that are subjected to international competition, the possibility to transfer the tax burden through the imposition of higher prices is largely limited<sup>31</sup>. This is due to the restricted sphere of influence that local industries have on international price control.

To address this, the National Treasury has proposed an additional tax-free allowance for trade-exposed industries rather than the use of border carbon adjustments (the imposition of a domestic tax on imported goods)<sup>18</sup>. The trade exposure allowance is sector-based including exports and imports. Trade intensity will be used as a proxy for trade exposure which will be determined at a sector or subsector level based on the World Customs Organisation - Harmonised System Convention classification and available national data for the corresponding production per sector.<sup>32</sup>

This scheme would reduce the risk of exports being subject to border carbon adjustment tariffs and would allow for the early development and/or implementation of cleaner technologies such as the development of technologies for carbon capture and storage.<sup>33</sup> Moreover, it should be noted that as the scope and coverage of carbon pricing increases globally, the impacts on competitiveness are likely to be less of a concern.<sup>34</sup>

<sup>29</sup> South Africa Market Insights, South Africa's trade industry looked at in more detail, November 2017, URL: <https://www.southafricanmi.com/blog-2nov2017.html>, [accessed 20/05/2018]

<sup>30</sup> Jooste, M., Winkler, H., Van Seventer, D., & Truong, P. (2009). The effect of response measures to climate change on South Africa's economy and trade. Final report to the Department of Environmental Affairs. Cape Town, South Africa: University of Cape Town.

<sup>31</sup> Davis Tax Committee. (2015). Report on a carbon tax for South Africa for the minister of finance, (November). Retrieved from [http://www.taxcom.org.za/docs/20171110\\_DTC\\_report\\_on\\_carbon\\_tax\\_-\\_on\\_website.pdf](http://www.taxcom.org.za/docs/20171110_DTC_report_on_carbon_tax_-_on_website.pdf)

<sup>32</sup> National Treasury, Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017

<sup>33</sup> National Treasury. (2013). Carbon tax policy paper - reducing greenhouse gas emissions and facilitating the transition to a green economy. Pretoria, South Africa: Government Printer.

<sup>34</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work



## Key findings

This case study has explored the proposed carbon tax policy in South Africa with the aim of assessing the consistency of the price signals that this tax is sending into the economy and to inform possible reform options for the UK.

**For the past decade, South Africa has sought to formulate a carbon tax effective in its operation, equitable in its impact across different sectors, and minimal in adverse impacts on the economy.**

Carbon taxes whether imposed directly on the emission of carbon or the use of products which generate carbon emissions<sup>35</sup> are receiving growing global attention. The design of the carbon tax is intended to balance South Africa's climate change mitigation goals with the need to reduce poverty and maintain trade competitiveness. While providing a price signal to encourage the transition to a low-carbon economy, the proposed policy is also intended to reduce the risk of negative competitiveness implications and leakage through special provisions for sectors considered to be at risk<sup>36</sup>. Although yet to be finalised, several policy documents have provided a clear indication of its anticipated form and 2015 saw the publication of the Draft Carbon Tax Bill with the second draft Bill released in 2017, for public comment, and submission to Parliament for processing in 2018.

**Political realities and sectoral differences have meant that the tax design has evolved significantly, incorporating a number of exemptions, phasing, offsetting, and revenue recycling.**

As one interviewee highlighted, the inconsistent treatment of these allowances is the result of policy consultation process. The tax will be implemented gradually over time in a series of phases, with the provision of a number of allowances and tax concessions made by the government, as well as offsetting provisions for greater flexibility. The allowances applied in the first phase include those for trade exposed economic sectors subject to international competitiveness, industry players responsible for fugitive and process carbon emissions and other economic sectors where monitoring, verification and measurement is challenging (e.g. AFOLU, waste). An important revenue recycling mechanism, involving soft earmarking (enhanced free basic energy, improved public transport) tax shifting, and tax incentive components, has been included to mitigate distributional impacts and aid political acceptance. In addition, it is proposed that revenues raised from the tax be recycled back into the economy to help address any potential negative impacts on the welfare of poorer households.

**Numerous deviations from a uniform price signal reduce the effective tax rate significantly in the first phase.**

In an idealised policy environment, a single price signal across the whole economy would in principle be the most efficient way to internalise the carbon externality, together with other instruments to address R&D market failures and other externalities<sup>37</sup>. In practice, decarbonisation incentives become mixed with other policy objectives such as addressing fuel poverty and protecting industrial competitiveness. Also, some sectors may be less responsive than others to carbon pricing; for example, if there are relatively few affordable decarbonisation options, or where carbon pricing is less salient to decision-making due to various non-price barriers. These factors can reduce the effectiveness of price direct economic signals on their own, and point to the need for other types of policy intervention.

In South Africa, although the tax rate is meant to be applied across all sectors at a consistent price level, in practice the many deviations mentioned above reduce the effective tax rates to significantly less than the original R120/tCO<sub>2e</sub>. For example, even assuming zero offsets, the maximum effective tax rate in the electricity sector after the allowance would be R48/tCO<sub>2e</sub> or US\$ 4/tCO<sub>2e</sub> in the first year.

<sup>35</sup> Hughes, R., and Paterson, A. (2017). A Critical Review of South Africa's Future Carbon Tax Regime. Institute for Marine and Environmental Law University of Cape Town. MPhil Thesis, pp.89.

<sup>36</sup> Ward, J., and de Battista, G. (2016). Modelling the Impact on South Africa's Economy of Introducing a Carbon Tax.

<sup>37</sup> Advani, A., Bassi, S., Bowen, A., Fankhauser, S., Johnson, P., Leicester, A., & Stoye, G. (2013). Energy use policies and carbon pricing in the UK IFS Report R84 Energy use policies and carbon pricing in the UK.

This is about 4 % of that proposed in the Stern Review. It becomes apparent that these factors will in turn significantly reduce the price signal which the system is designed to generate. This result contrasts with the intention of the Carbon Policy Paper for the tax to provide a strong price signal and certainty to both producers and consumers, acting as an incentive for more environmentally friendly behaviour over the long term. However, consideration should be given to the developing nature of South Africa's economy and the need to cushion poor and low income households and certain industries from potential adverse impacts of the carbon tax and, whilst providing incentives on the margin for changes in behaviour, allow for a gradual, structured transition to a low carbon economy.

**A mixed approach to the point of regulation was chosen to balance efficiency and robustness.**

The tax will be placed on fuel inputs (upstream) in combination with a tax on process and fugitive emissions at source (point of emissions) for some of the large industry players. It will be based on appropriate emissions factors and transparent and verified measuring and monitoring procedures. This combination of an upstream and point of emissions approach to carbon taxation offers key advantages including: i) fewer players involved (and therefore lower costs); ii) a simpler structure, minimising opportunity for abuse and risk, and; iii) a lower administrative burden by building on existing accounting systems.<sup>38</sup>

**AFOLU and waste are not included in first phase, but can be a source of offsets.** If in the future these sectors will be covered by the tax regime, and where offset projects overlap with the scope of the tax, existing projects will be allowed to continue until the crediting period of that project comes to an end. However, no new project will be allowed to be developed. This preserves the incentive for current project developers to continue developing their offset projects.

**There is still uncertainty about how the overlapping carbon tax and carbon budget policy will be aligned going forwards.** With the first trial phase of the carbon budget already underway, and the carbon tax planned for January 2019, the government has still to provide clarity on the alignment of the carbon tax and carbon budgeting system post 2020, when the mandatory phase of the carbon budgeting system is expected to commence. The two complementary tax and command and control instruments have very different rationales and mechanisms. There is a desire to understand how the instruments may be aligned to ensure that South Africa's mitigation policy is placed on a coherent footing in the longer term, so that it can help deliver the emissions reductions to which the country has committed. For the moment there is agreement that the tax will apply above the carbon budget threshold, however the threshold level is still to be agreed. Further design elements will depend on how the tax implementation ensues.

**While South Africa has the vision for a low carbon transition, the lack of coherence in mitigation policy creates uncertainty for stakeholders.** The vision is enshrined in high level policy documents (e.g. National Climate Change Response Policy, National Development Plan and South Africa's NDC). However, while the development of the carbon tax has sparked a cross-cutting debate about a uniform decarbonisation signal, the unforeseen overlap between the DEA's carbon budget's overlap and National Treasury's carbon tax reveals a lack of coordination. Addressing this will be crucial so stakeholders can understand how the South African economy is expected to evolve and the possible opportunities from a low-carbon future, as well as the framework and timeframe over which decisions particularly in emissions-intensive industries need to be taken. The government is aware of this, and work is underway to develop a Low Emissions Development Strategy, Mitigation Pathways and to review policies and measures, in line with global requirements and in light of the operationalisation of the Paris Agreement in 2020.

---

<sup>38</sup> According to a representative of the South African National Treasury, directly involved in the development of the carbon tax, interviewed for this work

## Bibliography

- Advani, A., Bassi, S., Bowen, A., Fankhauser, S., Johnson, P., Leicester, A., and Stoye, G. (2013). Energy use policies and carbon pricing in the UK. Institute for Fiscal Studies Report. Retrieved from: <https://www.ifs.org.uk/comms/r84.pdf> [Accessed on 13.03.2018].
- Bowen, A. (2015). Carbon pricing: how best to use the revenue? Policy Brief November 2015, (November).
- Camco Clean Energy. (2012). Use of carbon offsets under a South African carbon tax regime. Johannesburg, South Africa: Africa Clean Energy.
- Carbon Pricing Leadership Coalition. (2016). What Are the Options for Using Carbon Pricing Revenues? (September).
- Copeland, E. (2012). How South Africa's carbon tax may affect businesses. African Business Review. [Online]. Available from: [http://www.africanbusinessreview.co.za/money\\_matters/how-south-africas-carbon-tax-may-affect-businesses](http://www.africanbusinessreview.co.za/money_matters/how-south-africas-carbon-tax-may-affect-businesses) [Accessed on 13.03.2018].
- CRP. (2017). Handbook on Carbon Pricing Instruments. Retrieved from [https://www.climaterealityproject.org/sites/climaterealityproject.org/files/HandbookonCarbonFinancing\\_Final\\_May16.pdf](https://www.climaterealityproject.org/sites/climaterealityproject.org/files/HandbookonCarbonFinancing_Final_May16.pdf) [Accessed on 13.03.2018].
- Davis Tax Committee. (2015). Report on a carbon tax for South Africa for the minister of finance, (November). Retrieved from [http://www.taxcom.org.za/docs/20171110\\_DTC\\_report\\_on\\_carbon\\_tax\\_-\\_on\\_website.pdf](http://www.taxcom.org.za/docs/20171110_DTC_report_on_carbon_tax_-_on_website.pdf) [Accessed on 13.03.2018].
- Department of Environment and Natural Resources. (2010). National Climate Change Response White Paper, 1–56.
- Department of Environmental Affairs. (2011). National climate change response white paper. Pretoria, South Africa: Government Printer.
- Department of Mineral Resources. (2011). A Beneficiations Strategy for the Minerals Industry of South Africa. Pretoria, South Africa: Government Printer.
- DNA Economics. (2016). The proposed carbon tax Process to date. NBI Carbon Tax Public Seminar, (February).
- Ekins and Speck (1999). Environmental and Resource Economics 386–388; National Treasury Market-Based Instruments: Draft Policy Paper (13) 62.
- Fakoya, M. B. (2014). Carbon tax implementation in South Africa: Is it the right time?
- Hughes, R., and Paterson, A. (2017). A Critical Review of South Africa's Future Carbon Tax Regime. Institute for Marine and Environmental Law University of Cape Town. MPhil Thesis, pp.89.
- Janoska, P. (2014). Package of measures to deal with climate change and the role of a carbon tax GHG Emissions, megatonnes (Source: EIA), (May).
- Jooste, M., Winkler, H., Van Seventer, D., & Truong, P. (2009). The effect of response measures to climate change on South Africa's economy and trade. Final report to the Department of Environmental Affairs. Cape Town, South Africa: University of Cape Town.
- Lozynsky, Y., Neelis, M., Blinde, P., Lewis, Y., Cohen, B., van der Merve, A., & Patel, I. (2014). Emissions intensity benchmarks for the South African Carbon Tax: Technical support study, 273.
- Mansur, E. T. (2013). Upstream Versus Downstream Implementation of Climate Policy. NBER Working Paper, 53(9), 1689–1699. <https://doi.org/10.1017/CBO9781107415324.004>. [Accessed on 13.03.2018].
- National Assembly. (2015). Draft carbon tax bill. Pretoria, South Africa: Government Printer.

- National Treasury. (2005). Draft Explanatory Memorandum for the Carbon Tax Bill.
- National Treasury. (2006). Draft Policy Paper: A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa. Environment, (April). Retrieved from [http://www.treasury.gov.za/public\\_comments/Draft Environmental Fiscal Reform P%5Crolicy Paper 6 April 2006.pdf](http://www.treasury.gov.za/public_comments/Draft_Environmental_Fiscal_Reform_P%5Crolicy_Paper_6_April_2006.pdf)
- National Treasury. (2012). Discussion Paper for Public Comment: Reducing Greenhouse Gas Emissions, Carbon Tax Option December 2010: 30(March), 1026–1034.
- National Treasury. (2013). Carbon tax policy paper - reducing greenhouse gas emissions and facilitating the transition to a green economy. Pretoria, South Africa: Government Printer.
- National Treasury, (2017), Explanatory Memorandum for The Carbon Tax Bill 2017, December 2017
- National Treasury, (2017). CARBON TAX BILL (Annexure 3): FIRST DRAFT CARBON TAX BILL 2015 Response Document, (December), 1–31. Retrieved from [http://www.treasury.gov.za/public\\_comments/CarbonTaxBill2017/Annexure 3 Response Document to 2015 Draft Carbon Tax Bill.pdf](http://www.treasury.gov.za/public_comments/CarbonTaxBill2017/Annexure_3_Response_Document_to_2015_Draft_Carbon_Tax_Bill.pdf) [Accessed on 13.03.2018].
- Newham, M., and Conradie, B. (2013). A Critical Review of South Africa's Carbon Tax Policy Paper: Recommendations for the Implementation of an Offset Mechanism, (334), 1, 5,14. Retrieved from <http://cssr.uct.ac.za/pub/wp/334> [Accessed on 13.03.2018].
- OECD. (2013). Action plan on base erosion and profit shifting. OECD Publishing.
- Peters-Stanley, M., and K. Hamilton. 2012. State of the Voluntary Carbon Markets 2012, Vol. 6. USA: Ecosystem Marketplace & Bloomberg New Energy Finance.
- RSA. (2015). Publication of the Draft Carbon Tax Bill for public comment, 1–4.
- Sa, H., and Nell, L. (2016). Carbon Tax Offset Regulations: Carbon Tax offset potential supply and demand scenarios, (November), 1–14.
- South African Market Insights, (2018). Blog: 2 November 2017 (South Africa's trade industry looked at in more detail). Retrieved from <https://www.southafricanmi.com/blog-2nov2017.html>. [Accessed on 13.03.2018].
- Stern, N. (2006). Stern Review on the Economics of Climate Change. London, UK: HM Treasury.
- Stern, N. 2007. The Economics of Climate Change: The Stern Review. Cambridge: Cambridge University Press.
- Yu L and Lu Y. 2015. The Economic Impact of Different Carbon Tax Revenue Recycling Schemes in China: A Model-Based Scenario Analysis. (141) Applied Energy 97.
- Ward, J., and de Battista, G. (2016). Modelling the Impact on South Africa's Economy of Introducing a Carbon Tax.
- World Bank. (2016). Putting a price on carbon with a tax, (October 2013), 4.
- World Bank. (2017). Integration of the Carbon Tax and Carbon Budgets in South Africa. Retrieved from <https://openknowledge.worldbank.org/handle/10986/28406%0Ahttps://openknowledge.worldbank.org/bitstream/handle/10986/28406/120003-25-9-2017-15-48-32-CarbonBudgetWeb.pdf?sequence=1&isAllowed=y> [Accessed on 29.03.2018].

## Appendices

**Appendix 1 Timeline of relevant domestic policies and plans<sup>39</sup>**

Legislation	Year	Developer/ Issuer	Description
White Paper on the Energy Policy	1998	Department of Minerals and Energy	The paper concentrates on the necessity to decrease the cost of energy and improve its efficiency. This is canvassed in five policy objectives of: improving access to affordable energy provision; developing energy governance; promoting economic development; managing environmental and health impacts derived from energy-related activities and securing supply through the diversification of energy services. The paper creates the policy framework necessary for the energy sector to manage the challenges associated with mitigating against climate change impacts.
White Paper on the Renewable Energy Policy	2003	Department of Minerals and Energy	The paper aimed to provide certainty on the future energy trajectory of South Africa and argued for the investment of national resources in renewable technologies in order to provide for the long-term sustainable domestic renewable energy sector.
Draft Policy Paper	2006	Department of Minerals and Energy	This document is purposed to structure the necessary background of the potential role of MBIs, specifically environmental taxes, in furthering sustainable development and environmental objectives of South Africa. It outlines the avenues for environmental fiscal reform and importantly sets out specific tax elements to evaluate environmental tax proposals. Furthermore, it argues for carbon pricing by means of a carbon tax to internalise the external environmental costs.
Long Term Mitigation Scenarios (LTMS)	2007	The Department of Environmental Affairs and Tourism	The LTMS assesses the mitigation potential of South Africa's GHG emissions and creates a long-term climate mitigation policy. The focus is on mitigation options and their prospective costs. LTMS predicts that South Africa's GHG emissions will peak by 2020, stabilise between 2020-2030 and decrease from 2035.
National Strategy for Sustainable Development and Action Plan (NSSD)	2008	National Framework for Sustainable Development	The NSSD is based on the understanding that the economic growth of South Africa should be rooted in sustainability to ensure the protection of the environmental resource base to meet the needs of present and future generations, underpinned by integrated and efficient governance. This is in line with several principles such as: efficient and sustainable use of natural resources; integration and innovation; and consultation and participation.
Discussion Paper on Carbon Taxes	2010	National Treasury	Builds upon the understanding gained in the Draft Policy Paper of MBIs and concentrates on the economic rationale for the introduction of a carbon tax in South Africa. It is argued that the utilisation of a carbon tax can support the reduction of GHG emissions at least cost to the economy and encourage behaviour change of firms, industries and consumers

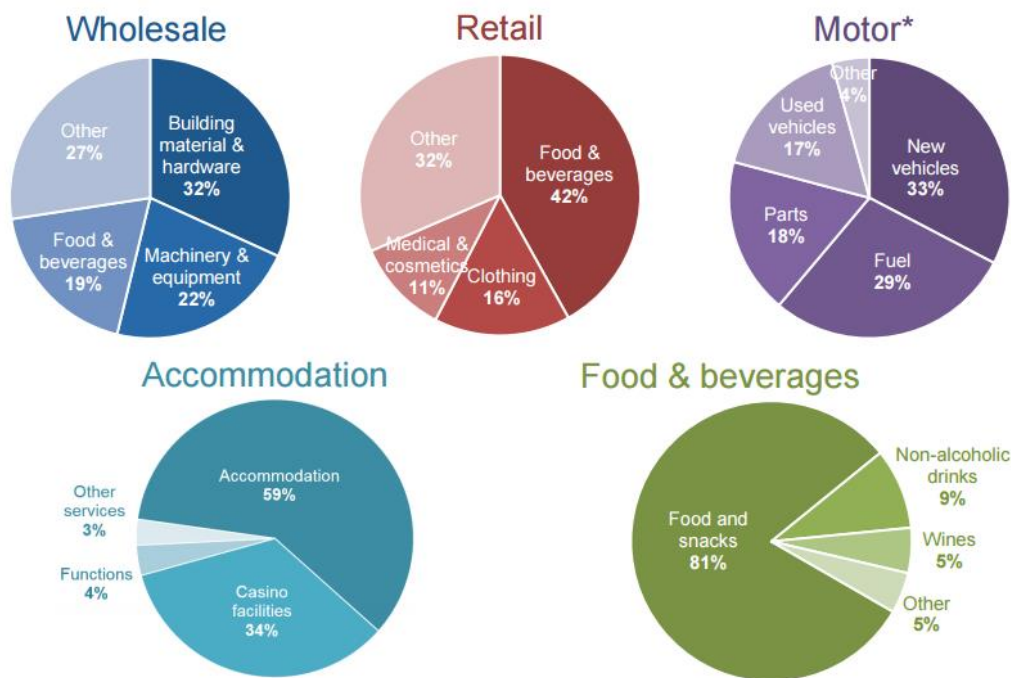
<sup>39</sup> Newham, M., & Conradie, B. (2013). A Critical Review of South Africa's Carbon Tax Policy Paper : Recommendations for the Implementation of an Offset Mechanism, (334), 1, 5, 14. Retrieved from <http://cssr.uct.ac.za/pub/wp/334>

National Climate Change Response Policy (NCCRP)	2011	Department of Environmental Affairs	Aims to ensure a synchronized and coherent policy framework to address climate change, as well as, to align and frame efforts in this respect across the different governmental spheres. the NCCRP outlines South Africa's plan to manage effective climate change response measures and the transition to a climate-resilient and low-carbon economy. The NCCRP along with the LTMS are designed to be complementary policy measures to the existing policy framework.
National Development Plan: Vision for 2030	2011	National Planning Commission	Focuses on a holistic development plan to transition to a low carbon and climate-resilient economy. <sup>209</sup> This is through various adaptation and mitigation policy measures that are focused upon poverty alleviation and equality. The NDP encourages the utilisation of carbon pricing, by means of a carbon tax to mitigate climate change.
National Strategy for Sustainable Development and Action Plan (NSSD)	2011	Department of Environmental Affairs	The NSSD creates a comprehensive roadmap for strategic sustainable development and supports the implementation of the NFSD. Five key priorities are focused upon in the NSSD: enhancing systems for integrated planning and implementation, sustaining our ecosystems and using natural resources efficiently, moving towards a green economy, building sustainable communities and responding effectively to climate change
Carbon Tax Policy Paper	2013	National Treasury	A revision of the Discussion Paper on Carbon Taxes, it accounts for the comments received on the Discussion Paper on Carbon Taxes from a broad range of firms, academics, non-governmental organisations and international institutions. The paper expands on and frames the particular carbon tax design elements briefly considered in the 2012 Budget Review such as tax revenue, competitiveness and distributional aspects.
Carbon Offsets Paper	2014	National Treasury	Contextualises a carbon offsets scheme as a complementary flexibility mechanism to carbon tax that addresses climate change and mitigates competitiveness and distributional concerns. The Carbon Offsets Paper largely focuses on eligibility criteria, carbon offset principles, standards and potential in South Africa
Modelling the Impact on South Africa's Economy of Introducing a Carbon Tax (Report)	2016	National Treasury	Assessed the potential consequences of a domestic carbon tax. The focus areas are environmental effectiveness, competitiveness concerns and distributional aspects
Integrated Energy Plan (IEP)	2016	Department of Energy	Related to the White Paper on Energy Policy It is a planning framework that sets the roadmap of South Africa's future energy mix which guides energy infrastructure investments and policy development. IEP is guided by a number of key objectives. These are: to ensure security of energy supply; minimise energy costs; promote the creation of jobs and localisation; minimise negative environmental impacts from the energy sector; promote the conservation of water; diversify supply sources and primary sources of energy; promote energy efficiency and increase the access to modern energy

Integrated Resource Plan Update (IRP)	2016	Department of Energy	Focuses on the electricity-related features of the IEP. It outlines South Africa's expected long-term energy demand and sets out how this demand can be met with supply through capacity generation in the context of climate change and the need to reduce GHG emissions.
Draft Post-2015 National Energy Efficiency Strategy	2016	Department of Energy	Aims to balance the increasing energy demand with the improvement of resource use and the reduction of associated GHG emissions. Furthermore, the focus is on energy efficiency improvement by employing fiscal and financial incentives, a comprehensive legal and regulatory framework and enabling processes.
Draft Carbon tax Bill	2017	National Treasury	Iteration of the first Carbon Bill, published for public consultation. Following industry comments it seems that reporting on GHG emissions will be required on an annual basis both for inventory purpose and also to check what data companies are submitting in terms of their GHG emissions reporting

**Appendix 2 Sources of income per industry within trade in South Africa. Source: South African Market Insights, 2018**

What are the most popular sources of income in each industry (2015)?



\*New and used vehicles includes both retail and wholesale sales

Largest contributors to each industry within trade is as follows:

- Wholesale: Building materials and hardware (32%)
- Retail: Food and beverages (42%)
- Motor Trade: New vehicles (33%)
- Accommodation: Accommodation (59%)
- Food and beverages: Food and snacks (81%)



Ricardo  
Energy & Environment

The Gemini Building  
Fermi Avenue  
Harwell  
Didcot  
Oxfordshire  
OX11 0QR  
United Kingdom  
t: +44 (0)1235 753000  
e: [enquiry@ricardo.com](mailto:enquiry@ricardo.com)

[ee.ricardo.com](http://ee.ricardo.com)