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South Africa's carbon tax: Balancing climate action and economic development

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Executive summary

South Africa has committed to becoming a low-carbon and climate-resilient nation by signing the UN Framework Convention on Climate Change (UNFCCC). The country set greenhouse gas (GHG) emission reduction targets of 34% and 42% by 2020 and 2025, respectively. While these are ambitious, the gesture is commended. A carbon tax was introduced in 2019 and is expected to increase costs to many companies that rely on electricity to generate economic activities. More than 70% of South Africa's electricity is produced using coal, the main polluting source in the country. This means that there are few alternatives for those that wish to avoid the carbon tax and use cleaner energy in their economic activities. The tax will thus increase production costs, and will effectively be passed on to consumers. Overall consumer welfare will be negatively affected by the increase in prices arising from the carbon tax.

Another challenge is that the policy applies to domestic products, but there is no equivalent policy to address imported products that may have been produced using similar methods. This will make domestic products uncompetitive, while imported products may undermine the whole policy. Producers of domestic products that directly compete with imports will also be negatively affected. This is a point where international treaties on trade and the environment are likely to be in conflict. If South Africa and others that implement environmental policies introduce measures to discourage imports produced via polluting means, they may contravene the World Trade Organization (WTO) principle of non-discrimination. This is despite such measures being supported under the UNFCCC.
In addition to this potential conflict, the implementation of environmental policies tends to place short-term restrictions on the use of resources that can drive economic growth. In the case of South Africa, coal is an important resource that anchors the entire economy.

Developing countries that still struggle with modest economic growth, high unemployment and other socio-economic challenges can hardly afford such restrictions. It is therefore important to find a balance between international treaties and domestic policies. Developing countries that wish to implement environmental policies must be allowed a period of transition. They must also be supported by building their capacity to deal with the impacts of climate, and ensuring that they are climate resilient.

Introduction

The Sustainable Development Goals (SDGs) of the UN require global action for a better future, in the interests of both humanity and the environment. In particular, SDG 13 calls for urgent action to combat climate change impacts.[1] This is primarily because of the

1 UN Climate Change Secretariat, *Yearbook of Global Climate Action 2019: Marrakech Partnership For Global Climate Action* (Rome: UNCCS, 2019), https://unfccc.int/sites/default/files/resource/GCA_Yearbook2019.pdf.

increasing frequency and intensity of extreme weather events such as heatwaves, droughts, floods and tropical cyclones, water management problems, and other challenges. One of the targets requires that countries that have committed to achieving these goals integrate climate change measures into their national policies, strategies and planning. This is also the target to which South Africa has committed itself.[2]

South Africa's commitments in the Paris Agreement are to reduce emissions by 34% below the baseline by 2020, and another 42% by 2025.[3] South Africa committed to become low carbon and climate resilient by signing the UNFCCC (commonly referred to as the Paris Agreement). It also passed the Carbon Tax Act 15 of 2019, which became effective on 1 June 2019.[4] The Carbon Tax Act is thus the instrument that will be used to achieve these targets. The tax will be phased in over a period of time to allow for a smooth transition in adopting cleaner and more efficient technologies and behaviours.

South Africa's carbon tax will be imposed on primary producers and processors that use polluting means in their activities.[5] This is based on the principle of 'polluter pays', which basically means the tax is levied at the source of emission.

The country has committed itself to pursuing SDG 13's climate change goals while remaining compliant with WTO principles. It must therefore observe key principles and commitments to ensure there is no discrimination against other WTO members and must practise fair trade.[6] However, it seems that pursuing the institutional goals (trade, climate and growth) of both the SDGs and the WTO will result in the violation of at least one of them.

According to the National Treasury, South Africa has not made provisions to adjust the border prices of those products targeted by the carbon tax.[7] It is a given that a carbon tax is easy to implement and that the government generates revenue from the policy. The border adjustment is cumbersome, as it has to be done on a product basis (depending on the carbon content of the product) and according to origin (depending on whether the exporter implements environmental policies). If similar imported products do not face similar adjustments, the objectives of the Paris Agreement are rendered moot through cheaper imports. Retailers can import substitutes at a competitive price if those products do not face an equivalent tax at their point of origin. This is a risk that most developing countries cannot afford, even if they meet their climate action targets. So far there has been no policy pronouncement to address this risk.

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2 UN, 'Goal 13: Take Urgent Action to Combat Climate Change and its Impacts', https://www.un.org/sustainabledevelopment/climate-change/.

3 World Bank, *Tax Guide: A Handbook for Policy Makers* (Washington: World Bank Group, 2017), http://documents.worldbank.org/curated/en/728421535605566659/pdf/129668-V1-WP-PUBLIC-Carbon-Tax-Guide-Main-Report.pdf.

4 Government of South Africa, *National Treasury, Expiatory Memorandum on Carbon Tax Bill* (Cape Town: Government Gazette, 2019), https://www.gov.za/sites/default/files/gcis_document/201905/4248323-5act15of2019carbontaxact.pdf.

5 Government of South Africa, *Expiatory Memorandum*.

6 World Trade Organization (WTO), *Principles of the Trading System*, https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm.

7 Government of South Africa, National Treasury, *Expiatory Memorandum on Carbon Tax Bill* (Cape Town: Government Gazette, 2019), https://www.gov.za/sites/default/files/gcis_document/201905/4248323-5act15of2019carbontaxact.pdf.

South African greenhouse gas emissions by sector and type

South Africa's global contribution to GHG emissions was estimated at more than 500 metric tonnes of carbon dioxide equivalent ($MtCO_2$-eq) in 2015. These emissions had increased by 23% from 2000.[8] Emissions thus increased by an average of about 1.4% per year. South Africa accounts for 1.2% of global emissions and is ranked 14th in terms of emissions. Even though the 1.2% contribution is small by global standards, the country is one of the top emitters in the developing world. In fact, South Africa is ranked the leading polluter among non-petroleum-producing countries in the group of developing economies.[9] It is also the leading GHG emitter in Africa. However, given that its emissions are relatively small by global standards, some argue that the country's climate change targets are exceptionally ambitious. As a result, South Africa's climate change targets will require a substantial shift in technology and production methods in most parts of its economy. Figure 1 shows that the energy sector is the leading emitter of GHG, both globally and in South Africa. This is an indication that while energy plays a key role in the economic development of industrialised nations, many developing and least developed countries are still struggling to generate sufficient energy. Therefore, the commitment creates a challenge in the form of trade-offs between climate action and developmental goals.

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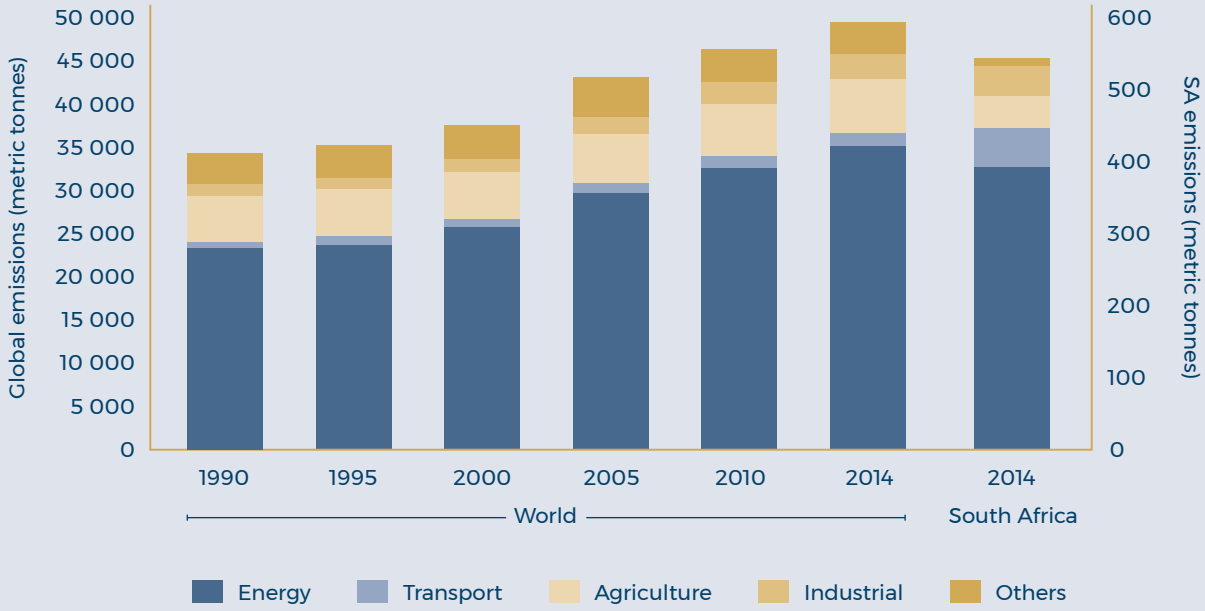
In the South African economy, the energy sector is responsible for about 80% of total GHG emissions. Agriculture, forestry and land use contribute about 9% while industry and product use contribute about 8%. The remainder comes from the waste sector. Most of the gas emitted by the energy and industry sectors is carbon dioxide (CO_2), owing to the use of coal. This makes CO_2 the largest contributor to South Africa's GHG emissions, accounting for more than 85% of GHG emissions in both 2000 and 2015. Methane accounted for about 9.5% of emissions while nitrous oxide contributed 4.5% in 2015. The rest was contributed by fluorinated gases. It is for this reason that CO_2 has been targeted.

8 Government of South Africa, Department of Environmental Affairs, *South Africa's 2nd Biennial Update Report 2014–2016* (Pretoria: DEA, 2017), https://unfccc.int/files/national_reports/non-annex_i_parties/biennial_update_reports/application/pdf/south_africa_2nd_bur.pdf.

9 Climate Watch, 'Climate Analysis Indicator Tools – South Africa', https://www.climatewatchdata.org/ghg-emissions.

South Africa's climate change targets will require a substantial shift in technology and production methods in most parts of its economy

Figure 1 Global (1990–2014) and South African (2014) GHG emissions by sector



Sources: Government of South Africa, Department of Environmental Affairs, *South Africa's 2nd Biennial Update Report 2014–2016* (Pretoria: DEA, 2017), https://unfccc.int/files/national_reports/non-annex_i_parties/biennial_update_reports/application/pdf/south_africa_2nd_bur.pdf; Intergovernmental Panel on Climate Change, *AR5 Climate Change 2014: Mitigation of Climate Change* (Geneva: IPCC, 2014), https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policymakers.pdf

The targeting of CO_2 has implications for the energy generation industry, which is the primary source of emissions. South Africa's electricity is generated mostly by coal-powered stations. Since most industrial activities depend on energy for their production, industries are also affected. The industries most affected include mining, chemicals, iron and steel, and cement.

Carbon tax policy option

At the international level, there is a potential conflict between trade obligations and environmental agreements, particularly when it comes to the instruments of choice to deal with climate change. Firstly, a carbon tax policy requires that such taxes be set too high

to be effective. (While high taxes will discourage the use of production methods that are polluting, they will also reduce the competitiveness of those companies that do not switch to cleaner production methods.) If the taxes are set too low, the result is likely to be carbon leakage – a situation where the cost of climate policies results in production moving to countries with more lenient environmental policies. On the other hand, in terms of trade regulations a carbon tax is actually a non-tariff measure.[10] The WTO wants to reduce such measures in order to enhance trade flows, and thus benefits.

Secondly, the WTO principle of non-discrimination is premised on the equal treatment of imported products and similar domestically manufactured products, and prohibits a distinction on the basis of production and processing methods.[11] However, climate change-related policies target process and production methods that are often not product based. Instead they focus on broader variables such as sector, industry or installation.[12] Thus there is a divergence in terms of policies and regulations in international agreements, which creates a challenge in the concurrent implementation of such policies.

Thirdly, there is a conflict with regard to developing countries' need to compromise on some of their developmental goals in order to pursue climate change targets. These climate targets are likely to result in wholesale changes to the structure of their economies. For example, carbon tax commitments in the energy sector in South Africa – which is largely dependent on coal fired-power stations – imply the need to shift to cleaner sources of energy such as wind, hydro and solar.

SDG 13 calls for urgent action to deal with the devastating impacts of climate change. South Africa and 56 other signatories (including all BRICS countries) have responded by implementing market-based policies to deal with gases that contribute to global warning. While South Africa has opted for a carbon tax policy, there were other options, such as emissions trading, carbon border adjustment and regulatory measures.

Examples of price-based environmental policies

Several countries started implementing market price measures earlier than South Africa. Finland was the first country to introduce a carbon tax in 1990, followed by Denmark, Sweden, Chile, Australia, Scotland and others.[13] A carbon tax offers a cost-effective means of reducing GHG emissions and is the most preferred option, in comparison with carbon-

10 Institute of International Law and Justice (IILJ), *Non-discrimination and the pillars of international economic law*, A sub-series of IILJ Working Papers (Zurich, 2010). http://iilj.org/wp-content/uploads/2016/08/Diebold-Non-Discrimination-and-the-Pillars-of-International-Economic-Law-2010.pdf.

11 IILJ, *Non-discrimination and the pillars*.

12 WTO, *The Interface between Trade and Climate Change Regimes: Scoping Issues*, Staff Working Paper ERSD 2011-1 (Geneva: WTO, 2011), https://www.wto.org/english/res_e/reser_e/ersd201101_e.pdf.

13 WTO, *The Interface*, 2.

trading schemes and carbon border adjustments. It is popular because it compels economic agents to take energy-related decisions that lead to cuts in GHG emissions.

The Finnish carbon tax originally covered fuel oil, natural gas, coal and peat at a rate of EUR[14] 1.12/tCO_2 ($1.34/t$CO_2$). It has since undergone various changes, with several increases in the tax rate and the inclusion of refund systems.[15] In 2008 a CO_2 component was also added to vehicle taxation through the annual motor vehicle tax paid to the Finnish Transport Safety Agency for vehicle usage and a one-time car tax paid to Finnish Customs to register a vehicle. Since the 2011 energy tax reform, the taxation of heating and transport fuels has been based primarily on the CO_2 emissions associated with their combustion. The current excise tax on fossil fuels has three components: an energy component, a CO_2 component and a strategic stockpile fee.[16] The outcomes of the Finnish policy are interesting, as they are not directly attributable to the actions taken. Initially, the Finnish CO_2 tax was difficult to measure, as it was combined with energy taxation. It is difficult to say whether the emission reductions achieved were derived from the CO_2 tax or other factors (such as energy taxation).[17] A study estimated that between 1990 and 1998 carbon and energy taxes reduced CO_2 emissions by approximately 7% and fuel use by 4.8%.[18] Furthermore, Finland's GHG emissions dropped by 13.3% between 1990 and 2012.[19]

Chile has a relatively new policy and offers a developing country example that could be a useful reference point for emerging markets.[20] It adopted a carbon tax as part of larger tax reforms in 2014. The tax targeted plants with boilers and turbines whose emission sources were 50MW or more of nominal thermal power generation (emissions from biomass are exempt). The tax rate was set at $5/t$CO_{2e}$ in 2017. In addition, Chile imposed a tax on sulphur dioxide, nitric oxide and particulate matter for the same sources. Although no concrete plans have been developed yet, it is considering the introduction of emission trading schemes (ETS) in the future. This means the implementation of the tax and monitoring, reporting and verification system will be ETS compatible.[21]

There is not enough evidence to evaluate the performance of the policy yet. However, what is interesting about Chile is the way it plans to use the tax revenue. The government expects to collect approximately $160 million from the carbon tax and roughly $8.3 billion in revenue from the broader tax reform. Taxes are to be paid to the General Treasury, and it has been proposed that the largest share of the revenues be spent on improving the education system.[22]

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14 Currency code for the EU's euro.
15 Carbon Tax Center, 'Where Carbon is Taxed', Figure 3, https://www.carbontax.org/where-carbon-is-taxed/.
16 Carbon Tax Center, 'Where Carbon is Taxed'.
17 Carbon Tax Center, 'Where Carbon is Taxed'.
18 S Withana et al., *Evaluation of Environmental Tax Reforms: International Experiences – Annexes to Final Report* (Brussels: Institute for European Environmental Policy, 2013), http://minisites.ieep.eu/assets/1282/ETR_study_by_IEEP_for_the_Swiss_Government_-_Annexes_-_21_June_2013.pdf.
19 UNFCCC, "Greenhouse Gas Inventory Data: Detailed by Party", https://di.unfccc.int/detailed_data_by_party..
20 UNFCCC, "Greenhouse Gas Inventory Data".
21 UNFCCC, "Greenhouse Gas Inventory Data".
22 UNFCCC, "Greenhouse Gas Inventory Data".

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Several developing countries are implementing environmental policies, for example Mexico, India, Kenya, Côte d'Ivoire and Ethiopia. However, it is difficult to find case studies that can be used as a benchmark to compare South Africa's policy initiative. For example, India introduced its carbon tax policy in 2016, while Mexico's carbon tax levy was introduced in 2014.[23] While these case studies are helpful to understand what was done by other countries, South Africa will be one of the first developing countries to implement such policies as a direct response to climate change.

On the African continent, no other country besides South Africa is currently implementing market-based policies to combat climate change or has set nationally determined contributions (NDCs). While Côte d'Ivoire has developed a carbon tax policy that aims to reduce GHG emissions by 28% by 2030,[24] this is yet to be ratified by its Parliament.

On the African continent, no other country besides South Africa is currently implementing market-based policies to combat climate change or has set nationally determined contributions

It is important to note that not having signed the Paris Agreement or having set NDCs does not mean a country is failing to take action to combat climate change. For example, Ethiopia has committed to reforestation by planning to plant more than 4 billion trees in the near future with the ultimate goal of carbon sequestration.[25] It is reported to have planted 200 million trees in August 2019. Kenya has not set any NDCs and therefore has no domestic carbon commitments. As a member of the vulnerable group (a global partnership of countries that are disproportionately affected by the effects of climate change), it has until 2025 to put carbon-pricing mechanisms in place.[26] Nevertheless, the country has the

23 UNFCCC, "Greenhouse Gas Inventory Data".

24 Carbon Pricing Leadership Coalition, 'Launch of the PMR Project on Carbon Taxation in Côte d'Ivoire', July 12, 2018, https://www.carbonpricingleadership.org/calendar/2018/7/12/launch-of-the-pmr-project-on-carbon-taxation-in-cte-divoire.

25 Federal Democratic Republic of Ethiopia, Office of the Prime Minister, '#GreenLegacy', https://pmo.gov.et/greenlegacy/.

26 UNFCCC, 'Carbon Pricing Approaches in Eastern and Southern Africa', https://unfccc.int/sites/default/files/resource/Summary%20of%20East%20Africa%20carbon%20pricing%20report.pdf.

largest wind power plant on the continent, supplying 310MW to the national grid.[27] Kenya aims to supply 100% of its energy from renewable sources in the future.

It is crucial that African countries start developing environmental policies and aligning them with regional integration efforts. This is in the context of the African Continent Free Trade Agreement (AfCFTA) that was signed recently. As explained below, if the various international and regional agreements are not aligned, it can lead to more protectionism and poor implementation of some agreements. This also applies to existing trade agreements such as the SADC Free Trade Area and COMESA. These individual efforts need to be coordinated with other regional agreements.

The South African Carbon Tax Act

Market-based tools of combatting climate change

Although South Africa is currently implementing its climate action policy using tax as an instrument, it was not the only available option to address GHG emissions.[28] There are three other price-related measures that could have been considered:

- carbon border adjustment (CBA);
- ETS; and
- regulatory measures.

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These measures have had varying degrees of success, and target emission reductions differently. Each has its own advantages and disadvantages. The advantage of CBAs is that they differentiate between the carbon embodied in domestic and in imported products.[29] They introduce measures or penalties for imported products, and therefore target emissions

27 Abdi Latif Dahir, 'Africa's Largest Wind Power Project Is Now Open in Kenya', *Quartz Africa*, July 22, 2019, https://qz.com/africa/1671484/kenya-opens-africas-largest-wind-power-project-in-turkana/.

28 World Bank, 'Carbon Pricing Dashboard', https://carbonpricingdashboard.worldbank.org/what-carbon-pricing.

29 Aaron Cosbey, 'Border Carbon Adjustment' (Background paper, Trade and Climate Change Seminar, Copenhagen, Denmark June 18–20, 2008) https://www.iisd.org/pdf/2008/cph_trade_climate_border_carbon.pdf..

at the product level. The disadvantage is that, by targeting a product on the basis of origin, they conflict with the WTO non-discrimination principle. CBA is also costly, as products have to be identified from all suppliers and taxed according to carbon content.

South Africa also had the option of an ETS, ie, capping the amount of GHG emissions and then creating a market to sell permits. While this option allows a country to set a target, the South African market is concentrated in that there are few firms operating in this space. The oligopolistic nature of the energy sector – the largest emitter of GHG – makes an emissions trading measure an inappropriate option in the South African context.

The third option consists of product-specific rules for activities that create emissions. These have to be set, designed and enforced.[30] This can be costly, and adds to the government's administrative and regulatory burden.

Carbon taxes, on the other hand, provide firms with a flexible mechanism, incentivising them to transform production technologies by focusing on green investments. The National Treasury says that the design of the carbon tax is informed by both its administrative feasibility and its practical applications. It was thus also the easiest option to implement.

Tax allowances and exemptions

South Africa's carbon tax policy provides some allowances (excluded from taxable income) for various purposes during its transitional phase.[31] These allowances are meant to help stakeholders and society to absorb the tax shock. They are categorised into three groups: caring for vulnerable members of society, basic exemptions, and performance-related incentives and others.

- In the first five years of implementation, vulnerable members of society are considered through the full exemption of the agricultural, forestry, waste handling and land-use sectors.[32] However, food-manufacturing activities are not fully exempted. The exemption of the agricultural sector is understood to minimise the impact of the policy shock on the poorest members of society, ensuring that basic needs such as food do not become unaffordable. As for forestry and land use, these contribute to carbon sequestration, ie, they remove CO_2 from the atmosphere. In the long term they slow or reverse atmospheric CO_2 pollution and can mitigate or reverse global warming.
- The basic tax allowance is set at 60%. This is claimable by all industries.
- There are several tax allowances related to the performance of the industry, such as trade exposure and fugitive emissions, of up to 10% each. There is also 5% for above-

30 Cosbey, 'Border Carbon Adjustment'.

31 Government of South Africa, *Reducing Greenhouse Gas Emissions*, 2.

32 Government of South Africa, National Treasury, *Explanatory Memorandum on the Carbon Tax Bill, 2018* (Pretoria: National Treasury, 2018), http://www.treasury.gov.za/public%20comments/CarbonTaxBill2019/Explanatory%20Memorandum%20to%20the%202018%20Carbon%20Tax%20Bill%20-%2020%20Nov%202018.pdf.

average performance and for companies that have introduced a carbon budget, which is the amount of permissible emissions with a periodic accounting. There is also an allowance of up to 10% for carbon offsetting (investing in activities outside their normal scope that result in quantifiable and verifiable GHG emission reductions). Carbon offset projects should also generate sustainable development co-benefits and employment opportunities in South Africa.

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The combined tax allowances in the first five years can be as high as 95%. All these tax allowances are meant to protect vulnerable members of society and consider the performance and competitiveness of South African industries. However, it is not clear that they will address the carbon leakage problem.

Trade-exposed industries are defined as those that have exports and imports with a combined value of more than 40% of domestic output value.[33] This is seen as a half measure that has elements of CBA, as it tries to address the competitiveness of domestic products. The eventual carbon tax rate is set at ZAR[34] 120 (about $8) per tonne of CO_{2e} on emissions above the tax-free thresholds, going up to 95%. However, when one considers all the available tax allowances, the initial effective carbon tax rate is between ZAR 6 ($0.40) and ZAR 48 ($3.20) per tonne of CO_{2e}.[35] Whether this will be enough to meet the NDC targets (of reducing GHG emissions by 42% by 2025) remains to be seen.

These allowances and the overall performance of the policy will be reviewed after the first phase (first five years) and benchmarked against the reduction targets. Furthermore, economic circumstances, as well as progress on GHG emissions and the NDC commitments, will be considered. After all these reviews have been concluded, the government will determine further options, ie, identify which incentives will be phased out or continued, and whether new measures should be introduced.

It is not yet known what will happen to the tax allowances after the first phase of implementation. This will depend on the outcome of the review of the policy. There are two main guidelines that will be used as a benchmark for the review. The first is economic

33 Government of South Africa, *Explanatory Memorandum*, 9.
34 Currency code for the South African rand.
35 Government of South Africa, *Explanatory Memorandum*, 9.

performance – whether or not the economy has been affected negatively as a result of the carbon tax. The second is performance in terms of emissions reduction. This will consider whether the set targets can be made more ambitious without negatively affecting the economy or whether some targets must be relaxed, for example with a longer timeframe.[36]

Carbon tax vs socio-economic goals

The intentions of a carbon tax policy cannot be questioned when it comes to addressing climate change. However, its implementation may have various socio-economic impacts on society, both direct and indirect. The main effects of the carbon tax will first be felt by industries and companies that rely mostly on energy for their production. This is because, as stated earlier, in South Africa the main emitter of CO_2 is coal, which is used in the generation of more than 80% of the country's electricity.[37] The secondary effects will be felt by those industries that either use inputs from energy or extend their production activities from such products. Other secondary effects may be seen in shifts in investment as investors move away from the GHG-emitting industries that are made expensive by the tax to renewable sources of energy.[38] The latter is, in fact, the objective of the policy – to encourage a shift away from polluting activities to cleaner sources. However, there is no guarantee that these investors will remain in South Africa. Ideally, these investors would shift their resources from carbon-emitting production methods towards renewable sources such as solar, wind and others. Yet even if this ideal outcome were attained, there would still be the challenge of moving employees to the new, cleaner industries. This challenge is about training and re-skilling workers to work in the new sectors. If this does not happen, the new technologies will be designed to use minimum labour resources. Thus, there is a threat of unemployment either way.

Another direct impact of the tax policy is on poverty through increased prices. All taxes are eventually passed on to consumers, irrespective of where the tax is introduced. Given that every citizen is a consumer of energy, there will be a general price increase. Although tax allowances, such as exemptions on agriculture and other sectors, attempt to keep negative impacts on the poor as low as possible, the effects of the tax may still make it more difficult for them to overcome their circumstances.[39] At the same time the carbon tax policy could inadvertently widen the inequality gap, as it will have little effect on the rich.

When addressing the effects of climate change, market-based policy tools are preferable, as they introduce potential efficiencies in resource allocation. South Africa's choice, while

36 Government of South Africa, *Explanatory Memorandum*, 9.

37 Government of the Republic of South Africa, *Explanatory Memorandum*, 9.

38 Sifiso M Ntombela, Heinrich R Bohlmann and Matlou W Kalaba, 'Greening South Africa's Economy Could Benefit the Food Sector: Evidence from a Carbon Tax Policy Assessment', Environmental and Resource Economics 74 (2019): 891-910, https://link.springer.com/article/10.1007%2Fs10640-019-00352-9.

39 Ntombela, Bohlmann and Kalaba, 'Greening South Africa's Economy'.

having some weaknesses, is a first step towards fully addressing these effects.[40] One such weakness is the fact that the policy does not provide clarity on tax allowances and how they evolve after the first phase.

Finally, there are certain trade-offs between climate action steps and the socio-economic goals of employment, income distribution and poverty reduction. These trade-offs can be observed in international agreements.

Implications for developing countries

South Africa's commitments to the Paris Agreement and to the WTO imply that it must comply with two international treaties while implementing domestic policies. International and domestic issues must thus be aligned. Such an alignment ensures that the WTO commitments and the Paris Agreement's objectives are filtered through the economy via domestic policy adjustments. However, according to the National Treasury, South Africa has not made provisions to adjust border prices for those products that will face the carbon tax.[41] This is confirmed by the fact that the CBA option was not adopted as an instrument in pursuing climate action. The tax-free allowances available under the policy for trade-exposed sectors are capped at 10%.[42] Furthermore, the trade allowances are subject to exposure calculations.

> The tax-free allowances available under the policy for trade-exposed sectors are capped at 10%

If no further adjustments are made to similar imported products, the objectives of the Paris Agreement can be undermined by cheaper imports. Retailers can import cheap foreign goods, and domestic firms will suffer as result of their inability to compete. In some cases, the 10% tax-free allowance for trade exposure will not protect domestic products, if the competitiveness margin is higher than that. This is a risk that most developing countries cannot afford, even if they meet their climate action targets. As a result, countries will need to develop domestic policies to deal with polluting imports. This will have to happen in the context of dealing with other national policy issues. The key national socio-economic priorities in South Africa include improving economic growth and addressing the high unemployment rate, unequal income distribution, poverty and food insecurity. These

40 Ntombela, Bohlmann and Kalaba, 'Greening South Africa's Economy'.
41 Ntombela, Bohlmann and Kalaba, 'Greening South Africa's Economy'.
42 Ntombela, Bohlmann and Kalaba, 'Greening South Africa's Economy'.

priorities and challenges are set out in the country's National Development Plan (NDP), which aims 'to eliminate poverty and reduce inequality by 2030'.[43]

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In pursuing poverty elimination and reducing skewed income distribution, South Africa needs a consistently high economic growth rate of 5% per year or more, as stated in the NDP. Such economic growth appears to be unlikely, as South Africa's economic performance has not recovered fully from the global economic crisis of more than a decade ago. In this period, South Africa's economic growth rate averaged about 2%, from an annual average growth rate of more than 4% in 2004–2008.[44] The NDP's goals may thus not be achieved. Figure 2 shows South Africa's economic growth, which has been on a downward trend over the past decade, while unemployment is on an upward trend.[45] The rising unemployment rate is one of the contributing factors to poverty and income inequality in the country. The official unemployment rate in South Africa increased from 20% in 2008 to 29.1% in 2019.

It is also because of poverty and unemployment that the agriculture sector is exempted from the carbon tax. The poor typically face food insecurity, which is exacerbated by high food prices. Agriculture, as a source of food production and employment, is viewed as one of the main sectors that can deal with poverty and food insecurity. In addition, the agricultural sector is also a critical industry in the context of climate action.[46] It is increasingly vulnerable to climate change events such as flooding and drought.[47] This vulnerability is elevated when dealing with smallholder farmers who lack the resources to mitigate or adapt to the effects of climate change.

43 Government of South Africa, The Presidency, National Planning Commission, N*ational Development Plan 2030: Our Future – Make It Work* (Pretoria: The Presidency,) 14. https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf.

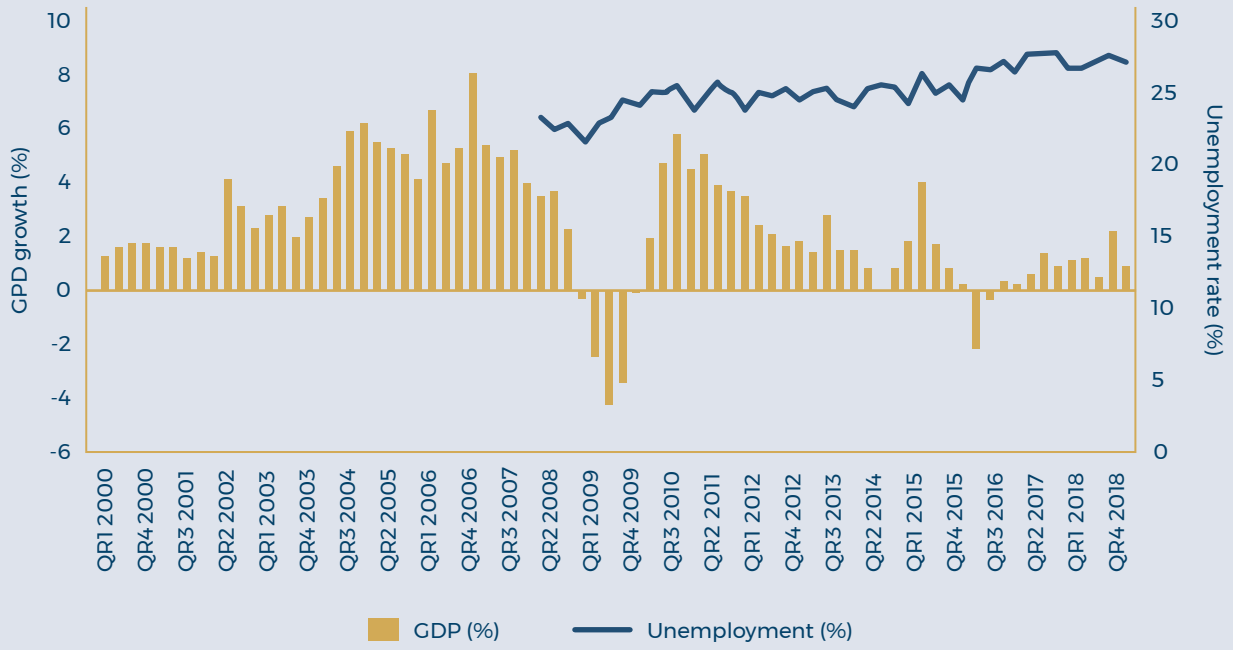
44 Statistics South Africa (StatsSA), *Gross Domestic Product: Fourth Quarter 2018* (Pretoria: StatsSA, 2018), http://www.statssa.gov.za/publicat ions/P0441/P04414thQuarter2018.pdf.

45 StatsSA, *Quarterly Labour Force Survey: Fourth Quarter 2018* (Pretoria: StatsSA, 2018), http://www.statssa.gov.za/publications/P0211/P02114thQuarter2018.pdf.

46 StatsSA, *Quarterly Labour Force Survey*, 13.

47 Sunday Y Hsou, EN Cishe and PN Luswazi, 'Vulnerability to Climate Change in Eastern Cape Province of South Africa: What Does the Future Hold for Smallholder Crop Farmers', *Agrekon Agricultural Economics Research, Policy and Practice in Southern Africa* 55, no. 1-2 (2016).

Figure 2 South African economic performance and unemployment rate



Sources: Statistics South Africa, *Gross Domestic Product: Fourth Quarter 2018* (Pretoria: StatsSA, 2018), http://www.statssa.gov.za/publications/P0441/P04414thQuarter2018.pdf; StatsSA, *Quarterly Labour Force Survey: Fourth Quarter 2018* (Pretoria: StatsSA, 2018), http://www.statssa.gov.za/publications/P0211/P02114thQuarter2018.pdf

Given the significance of the agricultural sector, its failure to perform optimally often leads to declining economic performance and more unemployment. Primary agriculture in South Africa used to employ more than 15% of the labour force, but in recent years that number has dropped to 2%.[48]

Development and trade implications for South Africa

The most industrialised nations in the world achieved their developmental status by using energy – mostly derived from GHG-emitting sources – to power their economies. The main challenge for South Africa is that coal is abundantly available. The country reportedly has coal reserves of more than 50 billion tonnes; enough for another 200 years.[49] However,

48 Hsou, Cishe and Luswazi, 'Vulnerability to Climate Change', 13.

49 Government of South Africa, Department of Energy, *South African Coal Sector Report* (Pretoria: Department of Energy), http://www.energy.gov.za/files/media/explained/South-African-Coal-Sector-Report.pdf.

South Africa's commitment to climate action requires that this resource be used sparingly owing to its GHG-emitting attributes.

Other developing countries, especially those in the SADC region, are also affected by these developments even though they are not signatories to the Paris Agreement. For example, members of the SADC Power Pool rely on South Africa for some of their energy demands. Zimbabwe depends on South Africa for about 40% of its electricity supply.[50] When South Africa has shortages or prices start to rise, there will be spillover effects in these countries. In order to understand the sectors that will be affected, it is important to know which of them emit CO_2 or rely on electricity for their production methods.

South Africa has one of the most energy-intensive economies in the world

South Africa has one of the most energy-intensive economies in the world.[51] The energy consumption per unit of gross domestic product (GDP) is more than twice the global average. To produce one unit of GDP, South Africa uses more than 0.4 units of energy calculated in tonnes of oil equivalent (toe), compared with about an average of 0.2 units globally.[52] Mining relies heavily on electricity. The sector is the fifth largest in the world and contributes about 8% of global GDP.[53] Emissions also come from the production of steel and cement, with the latter responsible for about 8% of global emissions.[54] There is thus a high correlation between industrialisation and carbon emissions through steel and cement. In order to develop, a country needs infrastructure to support economic activities. And in providing that infrastructure, GHG emissions increase.

Most South African sectors associated with energy-intensive industries will be affected by the carbon tax. For example, the 2019 second quarter employment statistics showed that about 460 000 workers were employed in the mining sector, with a decrease of about 30 000 jobs over the past decade. The basic metal industry employed about 272 000 people, with a decrease of about 20 000 jobs over the past decade. While these job losses are not related to the carbon tax, it is expected to have a direct impact in these sectors, with a negative effect on employment figures. There is no conclusive data on the number of direct number of jobs in cement and steel production, but some inferences can be drawn from looking at construction jobs. The 2019 second quarter employment numbers showed

50 Viktor Bhoroma, 'Revisiting the Power Situation', *Zimbabwe Independent*, August 23, 2019, https://www.theindependent.co.zw/2019/08 /23/revisiting-the-power-situation/.

51 Carbon Brief, 'The Carbon Brief Profile: South Africa', https://www.carbonbrief.org/the-carbon-brief-profile-south-africa.

52 Carbon Brief, 'The Carbon Brief Profile', 14 (printed version).

53 Martin Creamer, 'Global Mining Drives 45%-plus of World GDP – Cutifani', Creamer Media's Mining Weekly, July 4, 2012, http://www.miningweekly.com/article/global-mining-drives-45-plus-of-world-gdp-cutifani-2012-07-04/rep_id:3650.

54 Martin Creamer, 'Global Mining Drives 45%-plus'.

that the construction industry employed about 611 000 people, while electricity, gas and water supply employed about 60 000.[55] Most of these workers will need some kind of re-orientation if the targets for GHG emissions are to be attained.

It is expected that there will be a shift from coal-generated energy to renewable energy sources. This implies that some workers may also have to move to the renewable sectors. However, there is no guarantee that these workers will have the necessary skills for the jobs that are created in new sectors. This is because the new jobs are likely to rely on technological advances and may require high skill levels. These jobs may thus suit young and educated workers, at the expense of the unemployed, particularly those who used to work in highly polluting industries. Reskilling programmes will have to be initiated to enable other workers to move to the new sectors of energy generation. This will minimise the potential job losses associated with the adoption of renewable energy technologies.

'Winners' (ie, innovators and investors in the renewable energy) can also compensate 'losers' by working with smaller companies. It is unlikely that the new energy-generating companies will be as big as Eskom. At the same time, the government should consider introducing competition in the energy market. This will allow medium- and small-sized energy-generating companies to enter the market. In doing so, not only will the big companies sub-contract but they may also transfer skills and technologies. This may have to form part of the incentive schemes – encouraging big firms to work with their smaller counterparts, passing on skills and technologies. It is known globally that small and medium enterprises create relatively more jobs than their larger counterparts.[56] At the same time, large companies tend to mechanise, and thus reduce the number of workers. Countries and regions need to be aware of these impacts on various stakeholders in the economy and start considering appropriate policy actions.

Policy considerations for climate action and trade programmes

The policy issues discussed in this policy insight may be divided into two groups. The first group relates to alignment in country-specific or domestic policies, as in the case of South Africa. The second category relates to global and regional coordination. At a country level, domestic policies need to be adjusted to support carbon tax, and to serve as a model for other developing countries, particularly on the continent. Domestic policies can be summarised as follows:

55 Martin Creamer, 'Global Mining Drives 45%-plus'.

56 International Labour Organization, *Small Matters: Global Evidence on the Contribution to Employment by the Self-Employed, Micro-Enterprises and SMEs*, Report (Geneva: ILO, 2019), https://www.ilo.org/global/publications/books/WCMS_723282/lang--en/index.htm.

- There is a need for incentives to encourage shifts to renewable sources of energy. The current tax allowances focus more on penalties and little on rewarding performance or initiating renewable energy options.
- Currently, the only incentives are in the form of tax-free allowances, but additional support for investments in renewable sources of energy could be considered. This could take the form of training and re-skilling people who will work in clean energy generation. In addition, the policy measures could focus on targeted assistance to rural and low-income communities to adopt these technologies.
- Higher compliance costs related to the carbon tax could lessen the competitiveness of those sectors that emit CO_2 that have no alternative sources of energy. This will also have negative implications for industry/sectors' ability to create jobs, especially in light of competitively priced imports. Therefore, some form of adjustment is needed beyond trade-exposed allowances. Currently, tax allowances of up to 10% are provided, but there is no limit on the competitive margin of foreign goods.
- The fact that Phase Two of the carbon tax policy has not been announced creates uncertainty. Since the government has not committed its own resources to create incentives to support investments in alternative energy sources, the best option would be to provide specific guarantees to investors. A second phase is necessary to ensure policy continuity and consistency, even if it is conditional on certain outcomes such as economic performance or emission reductions.
- South Africa, and other developing countries, can take steps to align domestic developmental goals with the Paris Agreement. This process ensures that the resources that are allocated to poverty reduction, for example, are also environmentally friendly.

At the global and regional level there are other options to reduce South Africa's GHG emissions, including the following:

- Align trade rules and environmental policies by facilitating the trade in environmental goods. The WTO and the UNFCCC have yet to find common ground on this area, as well as other related areas.
- At the regional level, harmonise and fully implement trade agreements such as COMESA and the AfCFTA in order to address member states' propensity for protectionism, which they might attempt to justify on the basis of environmental goals.
- Take a balanced approach in aligning and implementing both domestic policy and trade agreements.

Conclusion

The objectives of the Paris Agreement are to limit global warming to 2°C above pre-industrial levels, and then to reduce temperatures by 1.5°C. The main driver of these targets is NDCs, with countries setting policies and targets to mitigate and adapt to climate change. While NDCs are not legally binding, their aim is to boost transparency and build momentum through positive peer pressure.

The actions of countries such as Kenya and Ethiopia on climate change are commendable. However, such actions need to be supported by other countries across the region through deeper regional and global integration. A delay in regional and global integration will increase the risk of carbon leakage, which will likely happen on a large scale, and thus reverse the initial gains made. In the case of South Africa, the hope is that the carbon tax policy will encourage other countries, particularly developing ones, to commit to market-based instruments to combat climate change. A failure to make progress in regional and global integration in the carbon tax space will result in outcomes that negate the WTO's principles (reducing the cost of trade and allowing freer and fairer trade) and the Paris Agreement's objectives (addressing climate change as a result of global warming).

Africa thus needs to align national environmental policies with regional and continental trade agreements. Pursuing this strategy will entail finding a balance between the WTO regulations and the Paris Agreement to ensure that there are no conflicts between them at the global level. In addition, countries must be able to support renewable energy sources through domestic policies that are aligned with international rules.

There are serious concerns that jobs will be lost during the transitional period of implementing a carbon tax. To mitigate this, the labour force has to be re-skilled through training and capacity building, and workers must be shifted to new and emerging sectors that use and draw on clean energy technologies. Support can also be provided to mitigate the negative impact of carbon tax policies on vulnerable groups.

Getting countries and regions to agree on these measures will be complex and difficult. Widespread adoption of clean energy alternatives in some countries is technically and politically challenging owing to the negative impacts on jobs and important sectors of the economy (ie, the energy sector and users of that energy, such as mining and agriculture). While acknowledging these challenges, it bears repeating that the status quo of production under the current climate situation is unsustainable.

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Cover image

Emissions rise from the cooling towers of the Eskom Holdings SOC Ltd. Matla coal-fired power station in Mpumalanga, South Africa, December 2019. The level of sulfur dioxide emissions in the Kriel area in Mpumalanga province only lags behind the Norilsk Nickel metal complex in the Russian town of Norilsk, the environmental group Greenpeace said in a statement, citing 2018 data from NASA satellites (Waldo Swiegers/Bloomberg via Getty Images)

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