Low-carbon policy inputs

WWF

POLICY BRIEF

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Carbon trading in South Africa:

providing flexibility or escape route?

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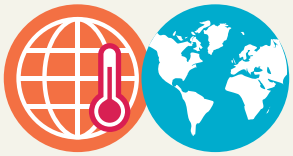
SUMMARY

Economists often describe climate change as the greatest market failure. They argue that putting a price on carbon is the most cost-effective mechanism to reduce greenhouse gas (GHG) emissions and thereby address climate change.[1] Once priced, the possibility of trading carbon arises.[2]



This paper investigates whether the inclusion of carbon trading in South Africa's Mitigation System provides **flexibility to the major emitters** in reducing their emissions, **or serves as an escape route from achieving meaningful GHG emissions reductions**. We present both theoretical and practical challenges that can reduce the effectiveness of carbon trading as a climate change mitigation tool in the South African context.

1 South Africa's Climate Change Mitigation System

The Department of Environmental Affairs (DEA) is developing a post-2020 Climate Change Mitigation System that aims to create the necessary framework for the country to meet its domestic mitigation ambitions and international commitments. Carbon budgets are a feature of the Mitigation System being developed. They are allowances to emit a certain amount of greenhouse gases, to be allocated to those entities required to report their greenhouse gas emissions.

Carbon trading is under consideration as a flexibility mechanism in the Mitigation System. Proposed is an *absolute baseline-and-credit trading scheme*. Entities emitting less than their carbon budget could sell carbon credits.

In parallel, Treasury is putting a carbon tax in place at a proposed rate of R120/tCO_2e before up to 95% rebates are allowed. This includes allowing up to 10% of a company's tax liability to be reduced through carbon offsets.

2 The theory

Economists argue that putting a price on carbon is the most cost-effective mechanism to reduce carbon emissions, and to address climate change. Trading carbon emissions allows sectors with poor mitigation potential to fund deeper emissions reductions in sectors with better mitigation potential. It therefore helps to achieve overall emissions reductions across the economy at least cost.

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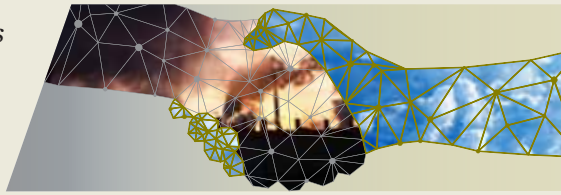
1 Carbon Pricing Leadership Coalition (CPLC), 2017. *Report of the high-level commission on carbon prices*. International Bank for Reconstruction and Development and International Development Association/The World Bank. Available at: https://www.carbonpricingleadership.org/report-of-the-highlevel-commission-on-carbon-prices/.

2 Greenhouse gases (GHG) are the gases that cause climate change. To be able to compare their global warming effect, they are converted to 'carbon dioxide equivalent', CO_2e. Shorthand, they are collectively referred to as 'carbon emissions'. They are measured in tonnes, so we write tCO_2e.



3 The reality

The international experience with implementing carbon trading has seen varying degrees of success. The global carbon market has failed to account for all the external costs of carbon emissions and has therefore failed to deliver economic efficiency and sustainable behaviour.

The European Union Emissions Trading Scheme (EU ETS), for example, has failed to achieve adequate emissions reductions commensurate with the targets required by science. This is because of an historically weak carbon price signal, resulting from weak demand for carbon permits and over-allocation of free emissions permits.

4 WWF-SA position

We strongly recommend that carbon trading be excluded from South Africa's Mitigation System, because:

- The South African economy is highly concentrated, even monopolistic in some sectors, and thus not suitable for a carbon trading system.
- It is welcomed that firms producing electricity for sale are excluded from the carbon trading system, and the emissions of parastatal Eskom can be managed through electricity supply policy. Since electricity generation accounts for the bulk of South Africa's emissions, that leaves a limited spectrum of emissions to be covered by the carbon trading system. The result could be low demand for trading and risks market failure.
- There is high emissions uncertainty because of high flexibility in the medium to long-run in the proposed carbon budgets.
- The carbon tax rate will act as an effective carbon price ceiling in the carbon credits marketplace. The currently proposed carbon tax of R120/tCO_2e is too low to drive mitigation action.
- The carbon tax must at least be enforced as a regulatory carbon credit price floor to ensure price stability and prevent carbon credit prices from dropping to insufficiently low levels as was the case in the EU ETS.[3]
- The over-determination of flexibility mechanisms within the carbon tax design and Mitigation System presents loopholes for firms to avoid meaningful emissions reductions, and is likely to result in perverse outcomes for the economy and climate change mitigation.
- Establishing and running a carbon trading system will carry a significant administrative burden.

Should carbon trading be included in the South African Mitigation System, it is recommended that it meet the criteria outlined in the table entitled 'Necessary conditions for using cooperative approaches that involve the use of ITMOs' in this paper. In addition, the weak price signal provided by the carbon tax at R120/tCO_2e, can at best be used only to provide a price floor and therefore the rate needs to be increased substantially.

Contents

3 CPLC, 2017.

ROLE OF CARBON PRICING IN CARBON TRADING

Within a competitive market economy, economic actors make decisions based on the price of goods or services. We talk of a price signal influencing these decisions for the efficient allocation of scarce resources.[4] However, if there are external costs in the production or consumption of a particular good that are imposed onto a third party, which producers and/or consumers have not taken into account and internalised in the price, then the free market will fail.[5]

Unregulated production of carbon emissions is an example of this. Unregulated carbon emissions impose a significant external cost onto the global society, for example in the form of climate change and health impacts. When carbon-intensive goods are produced (or consumed) without factoring in the cost of the carbon emissions to society and the economy as a whole, neither the producer nor the consumer pays for the damages caused by carbon emissions. This results in a market failure leading to climate change.[6]

THE SOCIAL COST OF CARBON

"the present value of future damages associated with an incremental increase in carbon emissions (or carbon equivalent) in a particular year"

Government interventions in the form of carbon pricing policies are identified as effective and cost-efficient tools to correct such market failure and to mitigate climate change.[7] Establishing a carbon price provides the necessary price signal for producers and consumers to internalise the social cost of carbon emissions by increasing the price of carbon-intensive goods. This is expected to encourage a behavioural change in producers and consumers to move towards low-carbon alternatives, such as renewable energy generation and energy-efficient technologies.[8]

An important condition to ensure the efficacy of the carbon price is that it should be set at a level that is high enough to encourage meaningful behavioural change to collectively keep average global warming well below 2 °C in order to avoid catastrophic climate change.[9]

4 National Treasury (NT), 2013. *Carbon Tax Policy Paper – Reducing greenhouse gas emissions and facilitating the transition to a green economy.* Pretoria: Republic of South Africa. National Treasury. Available at: http://www.treasury.gov.za/public%20comments/Carbon%20Tax%20Policy%20Paper%202013.pdf.

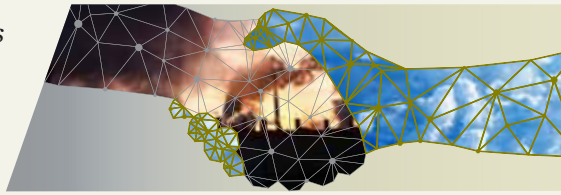
5 Kaufam, N., Obeiter, M. & Krause, E., 2016. *Putting a price on carbon: reducing emissions.* Available at: https://www.wri.org/sites/default/files/Putting_a_Price_on_Carbon_Emissions.pdf.

6 Kaufam, *et al.*, 2016.

7 World Bank and Ecofys, 2018. *State and trends of carbon pricing* 2018, Washington, DC: World Bank.

8 NT, 2013; Kaufam, *et al.*, 2016.

9 OECD, 2015. *Adapting transport policy to climate change: carbon valuation, risk and uncertainty.* Available at: http://dx.doi.org/10.1787/9789282107928-en.



GLOBAL CARBON MARKET

the various national and regional carbon trading systems are collectively referred to as the global carbon market

ABSOLUTE BASELINE-AND-CREDIT TRADING SCHEME

carbon credits earned from reducing carbon emissions below an absolute emissions ceiling can be traded with firms that exceed their absolute emissions ceiling

Carbon pricing: advantages and disadvantages[10]

Advantages	Disadvantages
Behaviour change: Encourages behavioural change all along supply and consumption chains towards a low-carbon economy by establishing the necessary price signal to correct a market failure.	**Inadequate price:** An ineffective carbon price can have perverse effects on marginalised communities. For example, weak carbon prices may lead to higher electricity prices, with limited reductions in carbon emissions. This has a relatively greater impact on the poor without the benefit of meaningful emissions reductions.
Cost-effective emissions reductions: Encourages the most cost-effective emissions reductions wherever and however they can be achieved across the economy.	**Unintended consequences**: While carbon pricing may successfully incentivise emissions reductions, the mitigation initiatives that are actioned can have harmful impacts. For example, the UN's carbon credit programme has driven the increased production of a coolant with harmful waste gas by-products.
Generates government revenue: Can generate additional government revenue that can be reinvested back into the economy for further climate change mitigation or for minimising negative impacts of climate change policy on marginalised communities.	**Risk of losing international competitiveness:** In the absence of global carbon prices, countries with carbon pricing policies may risk losing international competitiveness in the short-term. Once the cost of carbon is included, the price of carbon-intensive goods may go up, thus leading to a loss in price competitiveness for those goods and markets.
Transparent and efficient: Carbon pricing is more transparent and administratively efficient than subsidies, which are often subject to political interference.	

10 Based on Kaufam, *et al.*, 2016; NT, 2013; Markoff, 2012.

CARBON MARKETS AND CARBON TRADING – IN THEORY

EMISSIONS CAP / CARBON BUDGET

quantity-based instruments used to define an upper limit for carbon emissions

EMISSIONS INTENSITY BENCHMARK

process-based instrument used to define expected efficiency in a production process

A carbon price can be determined by two policy instruments – a carbon tax and/or a carbon market.

A **carbon tax** is a price that government charges entities for every tonne of CO_2e emitted. A **carbon market** is where demand and supply forces establish the price as happens in the market for any other commodity. Within a carbon market, an entity's emissions are capped or limited, in line with the overall emission reduction commitment of the country or region. If an entity emits less than its limit, the unused allowance is converted into an equivalent amount of tradable allowances or credits.[11]

Depending on the policy design, carbon emissions can be restricted through the implementation of a hard emissions cap, an absolute emissions reduction target, emissions intensity benchmark, or through carbon budgets. Imposing a restriction on carbon emissions converts it into a scarce resource which can be traded like any other commodity.[12] Entities that emit below their cap, benchmark, or allocated carbon budget, are eligible to trade their unused carbon allowances or credits ('carbon space') to other entities that emit over their emissions allowance.

Existing global carbon prices

In 2018, 45 national and 25 sub-national jurisdictions had established a carbon price, covering approximately 20% of global carbon emissions.[13] Existing carbon prices within various carbon trading systems globally, range from R15/tCO_2e to R352/tCO_2e. On the other hand, existing carbon prices introduced as a carbon tax, range from R15/tCO_2e to R2 056/tCO_2e.[14]

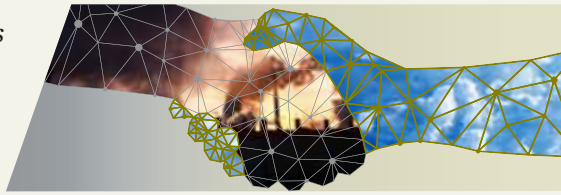
The decision to either reduce emissions through mitigation or to trade emissions credits is up to the individual entity, and is influenced by the carbon price and the company's Marginal Cost of Mitigation (MCM). MCM is the cost incurred for achieving an additional reduction of 1 tCO_2e. If it is cheaper for the entity to mitigate instead of purchasing excess carbon space, then it will increase its mitigation effort to a point where its MCM is equal to the carbon price, indicated by point A_{ii} in the graph on the next page.

11 Vivid Economics, DNA Economics & Tyler, E., 2016. *Integrating the carbon tax and carbon budgets in South Africa*. Available at: https://www.caia.co.za/wp-content/uploads/2016/09/14-july-2016-alignment.pdf.

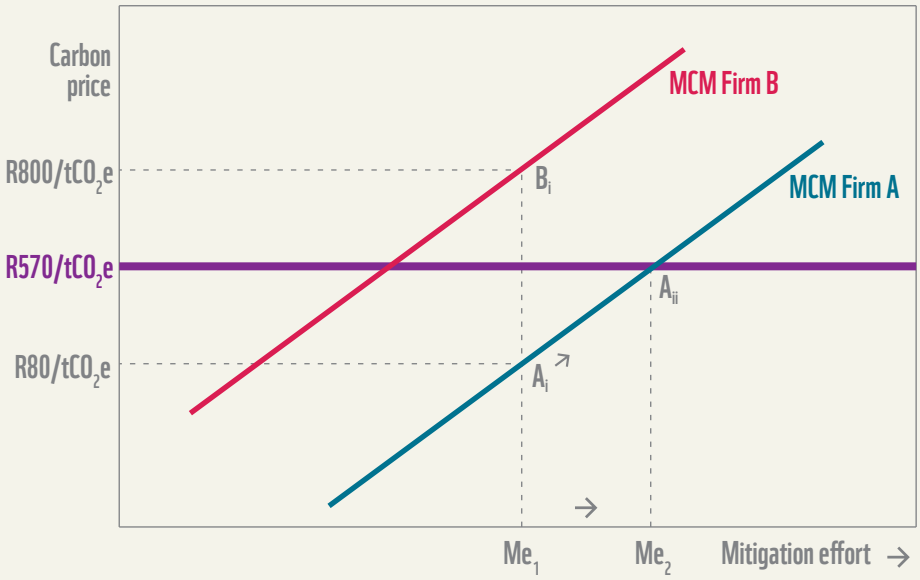
12 Cloete, *et al*., 2013.

13 World Bank and Ecofys, 2018.

14 Haites, E., 2018. Carbon taxes and greenhouse gas emissions trading systems: what have we learned? *Climate Policy*, 18(8): 955–966.



Carbon trading in theory: MCM vs carbon price[15]



Carbon trading in theory

Literature indicates that an effective carbon price lies in the range R570–R1140/tCO_2e.[16] Let us choose R570/tCO_2e as the carbon price for illustrative purposes.

Suppose that Firm A faces a lower MCM (R80/tCO_2e) relative to the carbon price. It will therefore increase its mitigation efforts from Me_1 to Me_2 until the MCM is equal to the carbon price (indicated by the shift from point A_i to A_{ii}).

In contrast, Firm B, faces a higher MCM (R800/tCO_2e) relative to the carbon price. It will therefore purchase excess carbon space from Firm A at a relatively cheaper price of R855/tCO_2e, resulting in an overall reduction of emissions at the lowest cost across the economy. Thus, carbon trading, in theory, can serve as the most economically-efficient mitigation instrument.

Some economists regard carbon trading as a cost-effective and economically-efficient mitigation instrument, that achieves greater emissions reductions across the economy at the lowest cost to society (per unit of CO_2e) relative to other policy instruments.[17] In reality this may not be the case, as a trading system may only cover sectors that provide easy mitigation opportunities[18] – referred to as the low-hanging fruits in literature. In addition, a carbon tax is simpler to administer and, on average, provides a stronger carbon price relative to a free carbon market where the carbon price is left to demand and supply forces.[19]

15 The Climate Reality Project, 2017. *Handbook on Carbon Pricing Instruments.*Available at: https://www.climaterealityproject.org/sites/climaterealityproject.org/files/HandbookonCarbonFinancing_Final_May16.pdf.

16 CPLC, 2017

17 Vivid Economics, DNA Economics & Tyler, E., 2016. *Integrating the carbon tax and carbon budgets in South Africa.* Available at: https://www.caia.co.za/wp-content/uploads/2016/09/14-july-2016-alignment.pdf.

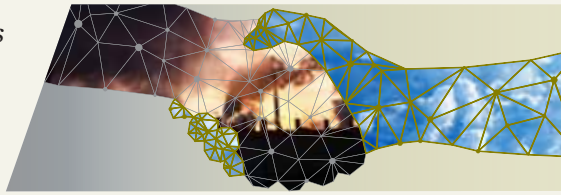
18 Narassimhan, E., Gallagher, K., Koester, S. & Alejo, J., 2018. Carbon pricing in practice: a review of existing emissions trading systems. *Climate Policy,* 18(8): 967–991.

19 Haites, E., 2018. Carbon taxes and greenhouse gas emissions trading systems: what have we learned? *Climate Policy,* 18(8): 955–966.

Carbon trading: advantages and disadvantages[20]

Advantages	Disadvantages
Emissions certainty: Providing an absolute emissions quantum cap creates certainty in the level of emissions reductions that can be achieved through carbon trading mechanisms.	**Price uncertainty and volatility:** In a free carbon market, the carbon price is determined by market dynamics, which can lead to uncertainty, price volatility (or market fluctuations), and a weak carbon price.
Cost-effectiveness and economic efficiency: Trading carbon emissions should allow sectors with better mitigation potential to recoup the cost of their mitigation initiatives by selling the emissions reduction credits that they have achieved. This can make such initiatives financially viable. Therefore, at the economy-wide level, emissions reductions can be achieved at the least-cost options.	**High administrative and transaction costs:** Conducting background research, allocating allowances, establishing an emissions cap or emissions intensity benchmark, and facilitating carbon trading is administratively burdensome, operationally complex, and results in relatively high transaction costs.
Environmental effectiveness: Assuming there is a high enough carbon price, carbon trading may incentivise companies to do extra emissions reductions (below emissions caps or carbon budgets) than they might otherwise, because these emissions reductions can be traded.	**Environmentally ineffective:** Market forces can drive the carbon price down to ineffective/weak levels. The weak price signal fails to provide an incentive to drive behavioural change towards lower-carbon alternatives and reduced emissions.
	Turning past high emissions into an asset: In South Africa, the method for allocating carbon budgets will start with past levels of emissions as the baseline. Companies with high past emissions that are able to do substantial emissions reductions will thus get the benefit of turning past emissions into an asset in the form of tradable carbon credits. The social cost of carbon already paid by others in the economy becomes a double financial reward to the high emitter.

20 Based on Vivid Economics, *et al.*, 2016.



CARBON TRADING IN THE MITIGATION SYSTEM

The proposed post-2020 Mitigation System includes mandatory carbon budgets to be allocated to companies and other entities. These budgets are a maximum amount of emissions that the entity is allowed to emit.

It is envisaged that a company can participate in the setting of its budget, and its historical levels of emissions will be taken into account. The only time a company's carbon budget will be managed against the country's overall emissions targets is when the aggregate of all budgets exceeds the overarching targets. In this case all carbon budgets will be reduced pro rata.

In parallel, Treasury is putting a carbon tax in place at a proposed rate of R120/tCO_2e before up to 95% rebates are allowed, which includes allowing up to 10% of a company's tax liability to be reduced through carbon offsets.[21]

In the face of lobbying by high emitters, two flexibility mechanisms are proposed, carbon trading and carbon offsets. These mechanisms are not by definition essential to the carbon budgets system, not are offsets essential in the tax system. The stated intention is to minimise socio-economic impact of the carbon budgets or tax, and achieve emissions reductions at lowest economic cost.

CARBON OFFSETS

Company A pays for emissions reductions to be done by entity B. Company A chooses to do this as it costs A less than doing its own reduction, or it can do no more reductions itself. Company A is then allowed to deduct the amount of emissions reduced by B from A's own emissions reductions.

- **Carbon trading** isproposed in DEA's draft Mitigation System. Only non-electricity generating entities will be allowed to trade, to avoid carbon leakage.[22]

- **Carbon offsets** are proposed in the Mitigation System and by Treasury. Offsets, allowed up to a maximum of 10% of its carbon budget, can keep a company within its carbon budget or reduce the overshoot, and in any case will reduce its carbon tax liability. In the tax system, 5--10% of emissions can be rebated by the use of carbon offsets. WWF supports carbon offsets which satisfy the Gold Standard and other criteria, since they are meant to lead to additional mitigation. There must be only one carbon offsetting system, which needs to be rationalised across both the Mitigation System and operation of the carbon tax to ensure no double-crediting of the same emissions reductions. Offset certificates cannot be used both against a company's carbon budget (which then in itself reduces tax liability) and again as a rebate against tax payable.

This proposed carbon trading system establishes an absolute emissions baseline (in the form of entity level carbon budgets) as a maximum emissions limit.[23] Carbon

21 Cloete, *et al.*, 2017.
22 Cloete, *et al.*, 2017.
23 MMA, 2009. *Baseline and Credit versus Cap and Trade Emissions Trading Schemes, Policy Brief. The Climate Institute – Australia.*

credits are earned from reducing carbon emissions below the baseline level and can be traded with other firms that exceed their baseline level.

The draft Mitigation System envisages the carbon tax rate as a price floor/ceiling for trading, to prevent carbon credit price volatility, and in doing so, to promote effectiveness of the carbon trading system. Should carbon trading be included in the Mitigation System, it is highly recommended that the carbon tax be used as a price floor – serving as a minimum price determinant for carbon trading.

However, the stability of the carbon price is irrelevant in two cases:

- When the carbon price is not strong enough to encourage meaningful mitigation action
- Where there is not enough demand for carbon credits.[24]

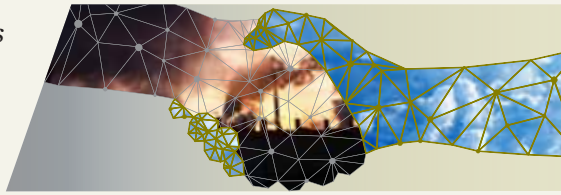
The proposed carbon price

South Africa's proposed carbon price of R120/tCO_2e, places it well below the existing median global carbon price of R192/tCO_2e and world average of R351.39/tCO_2e.[25] In South Africa, under the maximum tax-free allowances, the effective carbon price drops to **R6/tCO_2e,** making it amongst the **weakest carbon price signals** in the world, likely to result in perverse outcomes and nominal emissions reductions. Thus, WWF-SA recommends a higher carbon tax rate of between R570 and R1 140/tCO_2e (in 2020 prices), in line with what is required to meet the 2 °C temperature target.

Baseline and credit trading systems: advantages and disadvantages[26]

Advantages	Disadvantages
Price stability: Employing the carbon tax as a price floor/ceiling promotes price stability and environmental effectiveness.	**Environmental ineffectiveness:** If emissions thresholds are not ambitious enough, then the mitigation incentive is reduced, and there is a risk of generating windfall profits even for weak performance.
Cost-effective and economically-efficient: Carbon trading allows for the lowest-cost emissions reduction to be undertaken, and provides flexibility for trade-exposed sectors by allowing them to purchase carbon space and remain price competitive.	**Administrative burden:** Establishing baselines requires more administrative and technical infrastructure than simply imposing a carbon tax, and carries additional transparency and accountability concerns.
Emissions certainty: Establishing emissions baselines and providing well-defined targets promotes emissions certainty.	**High transaction costs, on account of additional Measurement, Reporting and Verification (MRV) requirements:** A robust and well-functioning MRV system is needed to ensure firms report emissions in line with the emissions baseline. This creates high transaction costs in the system.
Promotes structural change: Policy-makers can target certain sectors or firms that are important for the long-run decarbonisation of the economy.	**Limited government revenue generation:** Allocating free allowances, in the form of emissions benchmarks or carbon budgets, and allowing firms to trade carbon credits instead of paying carbon tax, reduces the potential to generate government revenue.

24 Vivid Economics, *et al.*, 2016.
25 MMA, 2009; Cloete, et al., 2013.
26 Based on Vivid Economics, et al., 2016; World Bank and Ecofys, 2018; and CPLC, 2017.



INTERNATIONAL EXPERIENCE

Two key carbon trading approaches that have been deployed to reduce carbon emissions are the Emission Trading Schemes (ETS) and offset mechanisms. While a number of regional and national ETS are under operation, a primary offset mechanism developed under the UNFCCC was the Clean Development Mechanism (CDM).

Emission Trading Schemes

Emissions trading for reducing carbon emissions began in 2005 with the European Union Emissions Trading Scheme (EU ETS). In 2005, it provided 5% coverage of global emissions (2.1 $GtCO_2e$). Since then, ETSs have spread across many countries, regions, provinces and cities. As of 2018, they cover 15% of global emissions (7.4 $GtCO_2e$).[27] Apart from Europe, different jurisdictions in North America, Asia and Pacific have ETSs in force, scheduled or under consideration. Colombia, Brazil and Chile in Latin America are also considering ETS as a policy option. Some of these jurisdictions have started to cooperate by linking their systems. For example, ETSs in California, Ontario and Quebec are linked, so is the EU ETS with Switzerland. Talks are ongoing on linking various other ETSs as well.

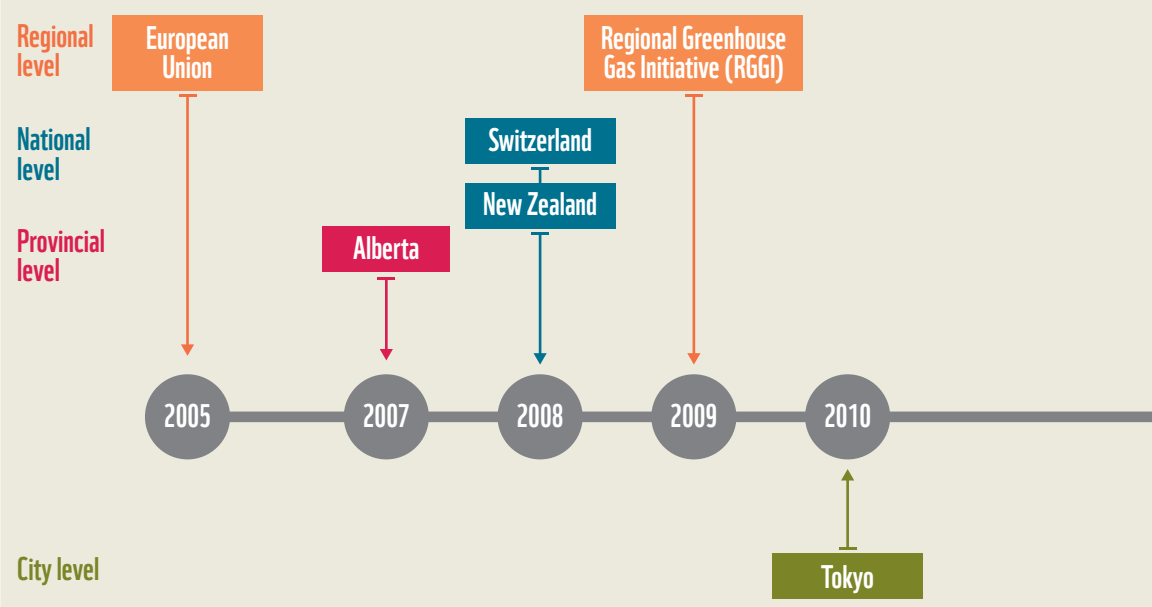
Comparisons amongst five ETSs – EU ETS, Regional Greenhouse Gas Initiative (RGGI), Korean ETS, New Zealand ETS and Western Climate Initiative, are available on four key metrics: carbon price; share of allowances not provided freely; cap trajectory; and coverage.[28] Key findings are:

- The average price for allowances in 2017 ranged from R52.2 to R254.4/tCO_2e.
- Jurisdiction's emissions coverage ranged from 20%–85%.
- Rate of decline in newly available allowances ranged from 1.8%–3.52%.
- Share of allowances that are not provided free of cost, ranged from 0–100%.

27 ICAP, 2018. *Emissions trading worldwide: Status Report 2018*. Available at: https://icapcarbonaction.com/en/?option=com_attach&task=download&id=547.

28 ICAP, 2018.

ETS development (2005–2018)[29]



Another study found that in 2015, ETS covered 4 280 million tCO_2e ($MtCO_2e$). The average ETS allowance price is put at R109.2 and the revenue generated (in 2013) is estimated to be R115.18 billion in 2018 prices.[30] In comparison, carbon taxes generated twice the revenue. However, of the revenue generated from carbon tax, only 14% is used for 'green' spending, whereas the corresponding figures for ETSs stands at 70%, so there is greater allocation of revenue generated through ETSs for 'green' spending.

An important aspect about ETS performance is that it is difficult to estimate the share of emissions reductions that are exclusively attributable to ETS. Rather they seem to be more effective when operating in conjunction with other supporting policies, such as renewable portfolio standards, energy-efficiency measures, and low-carbon fuel standards.[31] However, overall, jurisdictions subject to ETS with in-built emissions caps have witnessed a decline in emissions.[32]

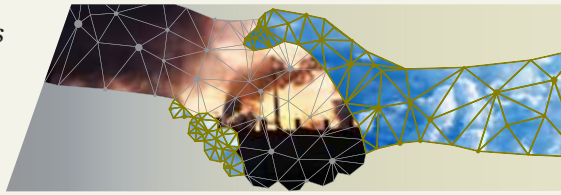
Clean Development Mechanism

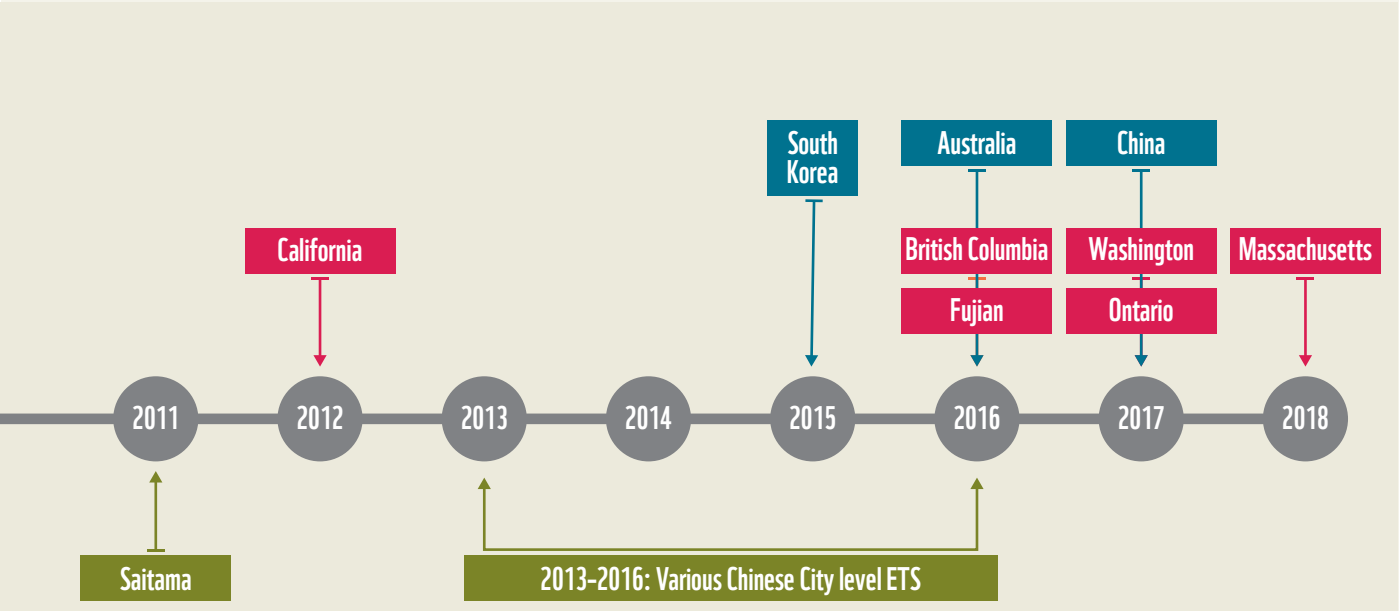
7 805

The number of carbon reduction projects registered through CDM

Developing countries have participated in carbon markets primarily through the Clean Development Mechanism (CDM) under the Kyoto Protocol, as suppliers of Certified Emission Reductions (CERs). These CERs are bought by developed countries to meet their emissions reduction targets. Since it came into being in 2004, CDM has approved (registered) 7 805 carbon reduction projects. A total of 1 904 million CERs have been issued so far. China, India, South Korea and

29 Based on ICAP, 2018.
30 Haites, 2018.
31 Bang, G., Victor, D. & Andersen, S., 2017. California's cap-and-trade system: Diffusion and lessons. *Global Environmental Politics,* 17(3): 12–30.
32 Haites, 2018.





Brazil account for 84.3% of the CERs issued.[33] It is estimated that CDM led to an investment of more than R4 169 billion in sustainable development projects. African countries, including South Africa, did not benefit much from CDM.

The biggest demand for CERs came from the EU ETS during the first five-year commitment period under the Kyoto Protocol. The CDM market has sharply contracted since the first commitment period of EU ETS ended in 2012.[34] For example, out of the registered projects, 4 214 are now considered dormant as they have had no contact with the UNFCCC Secretariat since 2013.[35] Clearly the significance of CDM and its relevance under the Paris Agreement is in decline. However, the experience gained from its operation should be used to design future mechanism for involving developing countries, such that their exposure to volatility in developed countries can be minimised.

The role of developing countries in carbon trading has been dependent on offset demand from developed countries which has remained insufficient and volatile. This lead to the price signal being ineffective and demand being unreliable.

33 UNEP DTU, 2018. *CDM pipeline overview. United Nations Environment Programme.* Available at: http://www.cdmpipeline.org/.

34 UNFCCC, 2017. *CDM value clear, future cloudy. UN Climate Change News.*Available at: https://unfccc.int/news/cdm-value-clear-future-cloudy.

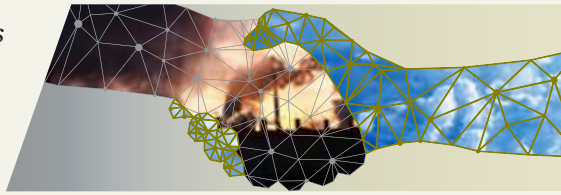
35 UNEP DTU, 2018.

Takeaways for South Africa

From the South African perspective five considerations make it difficult to consider carbon trading as a policy intervention in its current form.

1. In any given jurisdiction, carbon trading should include a large number of entities. The EU ETS, for example, operates in 31 countries and accounts for emissions from more than 12 000 stationary installations, and 1 400 aircraft operators.[36] This creates a dynamic system that is not captive to monopolistic behaviour. Given **the oligopolistic market structure of the energy industry**, the country's emissions profile is heavily determined by one or two major emitters, such as Eskom and Sasol. This increases the threat of the carbon price being captive to vested interest. Partly to deal with Eskom's role in the economy, and because the mitigation potential for electricity generation is high and affordable, electricity-generating entities will not be allowed to trade.
2. There is **not enough experience with ETS in developing countries**. Other than South Korean ETS and city level ETS in China, almost all other ETSs have operated in developed countries. There is very little experience of actual ETS implementation to argue for ETS as a suitable policy intervention for a developing country operating under financial and capacity constraints.
3. Due to low demand, **the price signal provided by EU ETS up until now has not been strong enough** to drive mitigation commensurate with the targets required by science. As a result, it may not generate enough resources for the state to run an administratively complicated system. Demand for carbon credits in South Africa is unpredictable and thus at this stage, it is unknown whether the trading system will generate enough funds to run the system.
4. In 2018, all the jurisdictions that have ETS also have a carbon tax in place, apart from Japan.[37] While carbon tax and carbon budgets can operate simultaneously, having carbon tax and carbon trading for addressing emissions reductions from the same emission sources can lead to institutional complexities and financial constraints. We therefore suggest having a high carbon tax to enhance institutional and financial effectiveness.
5. As a developing country, South Africa's proposed carbon trading system may possibly overcome some of these constraints if its carbon trading system is linked to developed countries' ETS – either as an ETS or as an offset provider. However, as experience with CDM suggests, such an option will hold the **carbon price in the South African system captive to the policy and price preferences of the demand centres.**

36 EEA, 2018. *EU Emissions Trading System (ETS) data review.* Available at: https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1.
37 Haites, 2018.



ENSURING AN EFFECTIVE CARBON TRADING MECHANISM

Post-2020, any future approaches for reducing carbon emissions must meet the criteria set forth in the Paris Agreement.

Article 6 of the Paris Agreement recognises that some signatory countries would use cooperative mechanisms to facilitate emissions reductions, including market-based mechanisms. Article 6 paragraph 2 sets the basis for engaging in voluntary "cooperative approaches that involve the use of internationally transferred mitigation outcomes (ITMOs) towards Nationally Determined Contributions (NDC)". Article 6 paragraph 4(c) indicates that trading emissions reductions from Party A to Party B is allowed as a means to fulfil the NDCs of Party B.

Conditions of ITMOs

ITMOs must meet certain conditions, including: being voluntary; promoting sustainable development; ensuring environmental integrity; and transparency – including in the governance of ITMOs – and they must apply robust accounting to avoid double counting. Any new mechanism must embody these characteristics.

In addition, Article 6 paragraph 4, sets up a mechanism for reducing carbon emissions through mitigation efforts and for supporting sustainable development. The mechanism will be supervised by a body that will report to the countries that are party to the Paris Agreement. The aims of the body will be:

(a) To promote the mitigation of carbon emissions while fostering sustainable development.

(b) To incentivise and facilitate participation in the mitigation of carbon emissions by public and private entities authorised by a country within its national boundaries.

(c) To contribute to the reduction of emission levels in the host country, which will benefit from mitigation activities resulting in emissions reductions that can also be used by another country to fulfil its Nationally Determined Contributions (NDCs).

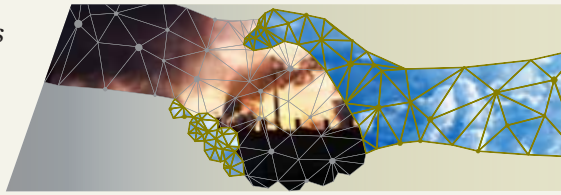
(d) To deliver an overall mitigation in global emissions.

Based on these guidelines, below we propose the bare minimum conditions that a South African carbon trading system should meet for it to be eligible to be considered as an ITMO. It is important to highlight that Article 6 paragraph 4 does not prescribe carbon markets as the only channel for ITMOs. Paragraph 8 "recognize[s] the importance … [of] nonmarket approaches being available to Parties to assist in the implementation of their NDCs, in the context of sustainable development and poverty reduction".

Suggested necessary conditions for using 'cooperative approaches that involve the use of ITMOs'

Conditions for South Africa's carbon trading mechanism	Current status/Recommendation
The aforesaid mechanism should only be open to the signatory parties to the Paris Agreement.	South Africa is a signatory party to the Paris Agreement.
The mechanism should lead to net atmospheric benefits.	To be seen.
South Africa's mitigation targets under its NDC should reflect its fair contribution to the global mitigation effort required for a 1.5 temperature goal, and be well below its business-as-usual (BAU) levels.	South Africa's **current NDC does not reflect its fair contribution.** The emissions commitments in the NDC are based on those in domestic policy. South Africa's national 'peak-plateau-decline' emissions trajectory range is established and can be reviewed as enabled by the National Climate Change Response Policy. Only the mid to low end of the range can be said to match South Africa's fair share as calculated using the Climate Equity Reference Calculator. The draft Mitigation System speaks of a Benchmark National Emissions Trajectory, which is yet to be determined. The draft Climate Change Bill enjoins the Minister to set and revise the Benchmark Trajectory.
South Africa's mitigation efforts are not primarily dependent on making use of cooperative approaches. Cooperative approaches are only used as a supplementary means to support its domestic mitigation action.	A carbon trading system is proposed to be employed as one flexibility mechanism, in the face of carbon budgets and a carbon tax. However, this will increase the administrative burden. More importantly, it provides an escape route for firms to avoid meaningful emissions reductions. Therefore, **WWF-SA recommends carbon trading be omitted from South Africa's Mitigation System**.
Institutional arrangements to realise South Africa's national emissions trajectory or targets are operational by means of clearly defined and recognised climate change law.	South Africa's Climate Change Bill is **currently being developed** and will determine the institutional arrangements for facilitating its implementation.
The carbon price should reflect the true (social and environmental) cost of carbon. The price floor for such a carbon price level may be defined by the carbon tax.	While South Africa's carbon tax will be used as a price benchmark, the carbon price does not reflect the true social cost of carbon. The carbon tax rate should be **increased from the currently prescribed R120/tCO_2e to be within the price range of R570-R1 140/tCO_2e by 2020.**[38]
To ensure environmental integrity, emission units should: • Be real, measurable, additional, permanent • Avoid leakage • Be measurable, reportable, and verifiable, in a transparent manner • Comply and go beyond national, social and environmental safeguards.	Institutional arrangements need to be put in place to ensure these conditions are met.
South Africa must ensure robust accounting of emission units in the following ways: • Use IPCC defined metrics for carbon accounting, as it does. • Verify whether the credits will be accounted in South Africa or in another jurisdiction in terms of meeting NDC targets. • Set up robust MRV systems domestically. • Make sure there is no double counting. • Ensure transparent and real-time tracking of the ITMOs. • Make the host country attestation/approval process stringent. • Provide oversight for international transfers.	A transparent accounting system to track ITMOs in real-time needs to be set up.

38 This price is based on the minimum global carbon price required to achieve the 2 °C target (IEA, 2015. *World Energy Outlook 2015. International Energy Agency. Paris, France*. Available at: http://www.worldenergyoutlook.org/weo2015/; Kolstad, C. *et al*., 2014. *Chapter 3: Social, Economic and Ethical Concepts and Methods. In: IPCC, Climate Change 2014: Mitigation of Climate Change. Cambridge University Press*. Available at: http://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_chapter3.pdf.



WWF-SA POSITION

WWF-SA does not support including carbon trading in South Africa's proposed Climate Change Mitigation System due to a variety of challenges.

In theory, carbon trading systems are said to be the most economically-efficient and least-cost mitigation instruments. Trading carbon emissions should allow sectors with poor mitigation potential to fund deeper emissions reductions in others with better mitigation potential and, therefore, achieve emissions reductions across the economy at least-cost options.

In reality, however, the experience with implementing carbon trading has been quite arbitrary. The EU ETS has failed to achieve adequate emissions reductions due to a consistently weak carbon price, resulting from weak demand and over-allocation of free emissions permits.[39] However, the EU has taken up some initiatives recently to reform the EU ETS – including setting up a €12 billion (roughly R170 billion) fund for assisting industry to innovate and invest in low-carbon technology.[40] A developing country like South Africa cannot afford to pump such a huge sum of money into reforming its carbon trading scheme if it fails to meet its desired objectives, especially considering the current macro-economic climate.

Therefore, the exclusion of carbon trading from South Africa's Mitigation System, at least in the initial phase (2020–2025), is recommended for the reasons that follow.

Over-generous budgets and benchmark

The weakness of any *cap-and-trade* or *baseline-and-credit* carbon trading system lies in the ambition of the cap/baseline. If the cap/baseline allows for a large volume of emissions that does not reflect the ambitious emissions reductions required, entities can continue to emit with little need to cut emissions or desire for carbon credits. Termed 'lack of demand' this can equally be called inadequate target setting by policy-makers. In the absence of targets that squeeze, the need for flexibility through carbon trading is not warranted.

In South Africa, it looks like the company-level carbon budgets will accommodate past high emissions and be set too generously. The only curb is if the aggregate of all budgets exceeds the emissions cap the country sets itself. We must not allow the country's emissions goal to creep to the top of the peak-plateau-decline emissions trajectory range. The Mitigation System will have a 'Benchmark National Emissions Trajectory' that is yet to be determined, which provides an opportunity to set an adequate emissions limit.

39 Lubbeke, I. & Van den plas, S., 2016. Last chance for Europe's carbon market. Time to rescue the EU ETS from redundancy. *WWF-Europe*.

40 The Guardian, 2017. *Reform of EU carbon trading scheme agreed.* Available at: https://www.theguardian.com/environment/2017/feb/28/reform-of-eu-carbon-trading-scheme-agreed.

A highly concentrated carbon market

The structure of the South African economy does not lend itself favourably to carbon trading. Treasury has argued that carbon trading is not suitable for the oligopolistic nature of the economy, particularly where a few significant emissions producers (such as Sasol) can manipulate the carbon market to their benefit.

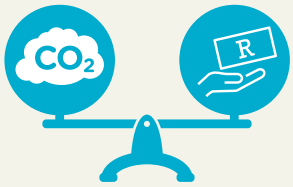
While it is recognised that Eskom (as an electricity-producing firm) will not be afforded the opportunity to trade carbon credits under the current Mitigation System, the rest of the South African economy and emissions sources is still highly concentrated and will undermine the objective of carbon trading.

Limited coverage of carbon emissions

Eskom accounted for 45% of South Africa's total carbon emissions in 2010. Since the idea is that electricity-producing entities will not be eligible for carbon trading under the proposed Mitigation System, this leaves only about half of South Africa's emissions to be covered by the carbon trading scheme. Further subtract emissions from entities emitting an amount below the threshold at which reporting becomes mandatory, which may be not insignificant in aggregate. Given the high administrative costs involved, it won't be a judicious use of available resources.

Supply and demand issues

The bulk of South Africa's carbon emissions come from a limited number of companies. This raises supply and demand issues, and speculation may be rife. There could be a limited supply of credits, because emissions reductions at scale can mostly only come from the highest emitters with inertia in their business models, who are unlikely to set less than their carbon budget as their own target for their mitigation efforts. Heavy emitters with little or pricey mitigation potential will seek to buy up and even stockpile carbon credits, not only to remain within their carbon budgets and reduce their exposure to penalties, but as a hedge against a rise in the future price of carbon, whether by an increased carbon tax rate or global trade dynamics.



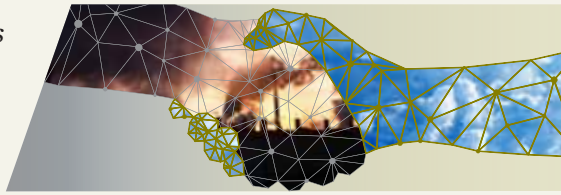
Ineffective price signal

In an attempt to prevent carbon credit price volatility in the proposed carbon trading system, we propose that at a minimum, the Mitigation System should use the carbon tax rate as a price floor. However, if the carbon tax rate is set at an ineffective price level, then the market will fail to drive enough mitigation to meet temperature targets commensurate with science. The currently proposed carbon price of R120/tCO_2e is inadequate and at best can only act as a weak price floor. We strongly recommend increasing the carbon tax significantly to be within the price range of approximately R570–R1 140/tCO_2e by 2020.

Emissions uncertainty

In theory, implementing an emissions cap is said to provide emissions certainty. However, if emissions caps (carbon budgets in the domestic context) are made variable, then there is limited traction on total emissions reduction objectives.

While carbon budgets are fixed in the short-term (over five years), in the medium- to long-term, they can be varied. This is evident in the Mitigation System allowing for carbon budgets to be adjusted upwards or downwards after each five-year rolling period. While it is encouraged that carbon budgets be ratcheted downwards in line with science-based targets, it is strongly recommended that they not be allowed to be adjusted upwards.



The system is unlikely to achieve the required emissions reductions to meet South Africa's international commitments, if carbon budgets are not informed and guided by what is required by science to achieve the 2 °C target, let alone the 1.5 °C target, and instead are established according to historical emissions.

Over-determination of flexibility mechanisms

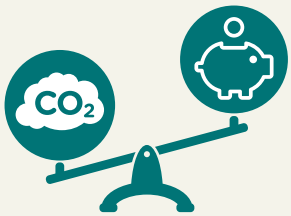
Several factors may allow high carbon emitting entities to avoid implementing meaningful emissions reductions:

(a) Inclusion of a carbon trading system in the proposed Mitigation System

(b) Numerous tax-free allowances provided for in the Draft Carbon Tax Bill

(c) Allowing the use of carbon offsets to meet carbon budgets.

These flexibility mechanisms increase the environmental and emissions uncertainty in the system, and risk setting it on a pathway that may be perverse in its outcome.



Turning emissions into an asset

The idea is that a company's carbon budget will be set based on its past emissions. A company's past emissions constitute its historical responsibility for the social cost of carbon, the price society and the economy has been, and is paying for the damage caused by fossil resource extraction, processing and combustion, and other high-emitting activities. Basing a company's carbon budget on past emissions perpetuates the legacy. If a company then reduces emissions below its budget, it turns the past debt to society into a tradable asset and windfall profits for the company – an asset the Mitigation System gave it for free. This is the very opposite of recouping the social cost of carbon and the 'polluter pays' principle. Uncompetitively, new entrants do not get such a free asset.

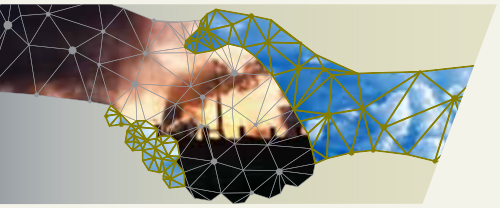
Ensuring level playing field for new entrants

The EU ETS employed the free allocation of allowances during its first two phases, which resulted in a weak and volatile carbon price and limited revenue generation. The free allocation of allowances, in the form of (free) carbon budget allowances in the South African context, is similarly not an optimal design.

Carbon budgets (or carbon space) should be auctioned from the very beginning of each five-year rolling period, which will generate much needed revenue. In doing so there will be increased buy-in and commitment from firms to remain within their carbon budget, and greater incentive to avoid taxes on emissions in excess of their budget (should that be the final design of the carbon budget-carbon tax interface).

High administrative burden

A carbon trading system, including the establishment of baselines (carbon budgets in the South African context) carries a significant administrative burden, with relatively high transaction costs. To guarantee meeting the provisions set up by Article 6 of the Paris Agreement, a robust institutional framework, mechanism to ensure transparency, and an oversight body, would be required. The feasibility of these and other significant technical and capacity hurdles that need to be addressed in the domestic context, may be too burdensome and resource-intensive for the continuously under-capacitated government administration.



Low-carbon policy inputs

The climate change mitigation debate in South Africa needs to move from improving efficiency within a projection of the existing economy, to innovation and options beyond the constraints of the current dispensation and structure of the economy. It may take step changes in the development path to achieve mitigation adequate to South Africa domestic and international commitments, and maximise economic development and social wellbeing. Business models presently unconsidered may be waiting in the wings.

The 'Low-carbon development frameworks in South Africa' project seeks to deepen understanding of, and reveal opportunities for, transitions to a low-carbon economy. It facilitates and develops contributions at the intersection of climate change mitigation, economic development and socio-economic dimensions, across immediate, medium and long-term horizons.

Working variously with government, business and labour, the project reaches from providing input to emerging government mitigation policies and measures; through investigating the business and socio-economic case for selected mitigation initiatives which hold growth potential in energy, transport, industry, waste, and land use; to analysing potential future economic trajectories and the systemic opportunities offered by these.

This policy-related paper **examines whether the inclusion of carbon trading in South Africa's Mitigation System provides flexibility to the major emitters in reducing their emissions, or serves as an escape route from accounting their emissions against the true social cost of carbon.**

The project is funded by the International Climate Initiative (IKI) of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety of Germany, and implemented by WWF-SA.

WWF South Africa's Policy and Futures Unit undertakes enquiry into the possibility of a new economy that advances a sustainable future. The unit convenes, investigates, demonstrates and articulates for policy-makers, industry and other players the importance of lateral and long term systemic thinking. The work of the unit is oriented towards solutions for the future of food, water, power and transport, against the backdrop of climate change, urbanisation and regional dynamics. The overarching aim is to promote and support a managed transition to a resilient future for South Africa's people and environment. The organisation also focuses on natural resources in the areas of marine, freshwater, land, species and agriculture.

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