

Operationalization of the Carbon Tax-Carbon Budget – Mitigation System Phase II (2023-2027)

23 February 2021

Portfolio Committee Meeting



environment, forestry
& fisheries

Department:
Environment, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



Presentation Outline

- Carbon Budgets – the climate change policy context
- Carbon Budget Implementation
- Current Carbon Tax design
- Interaction between the Carbon Budget and the Carbon Tax
- Options considered in using the Carbon Tax to enforce the Carbon Budget
- Carbon Pricing – Global Trends

Carbon Budgets – Policy context



SOUTH AFRICA'S EMISSION REDUCTION COMMITMENTS

- South Africa, as a signatory to the Paris Agreement, has submitted its **Nationally Determined Contribution (NDC)** to the UNFCCC: A breakdown of post-2020 climate actions that define how we intend to meet our mitigation obligations
- **Carbon Budgets** is one of the mitigation measures (the others being **Sectoral Emissions Targets (SET's)** and **Carbon Tax**) which form part of the South African mitigation system
- **Carbon Budget:** A greenhouse gas (GHG) emissions allowance allocated to a company over a defined time period. The term “carbon” in carbon budget is shorthand for all the GHGs accounted for in the latest South African national GHG inventory (2017).
- Both **Carbon Budgets and SET's** are proposed to assist South Africa in meeting its absolute reduction targets in terms of the Low Emissions Development Strategy (LEDS) that was approved by Cabinet in September 2020

SOUTH AFRICA'S LOW EMISSIONS DEVELOPMENT STRATEGY (LEDS)

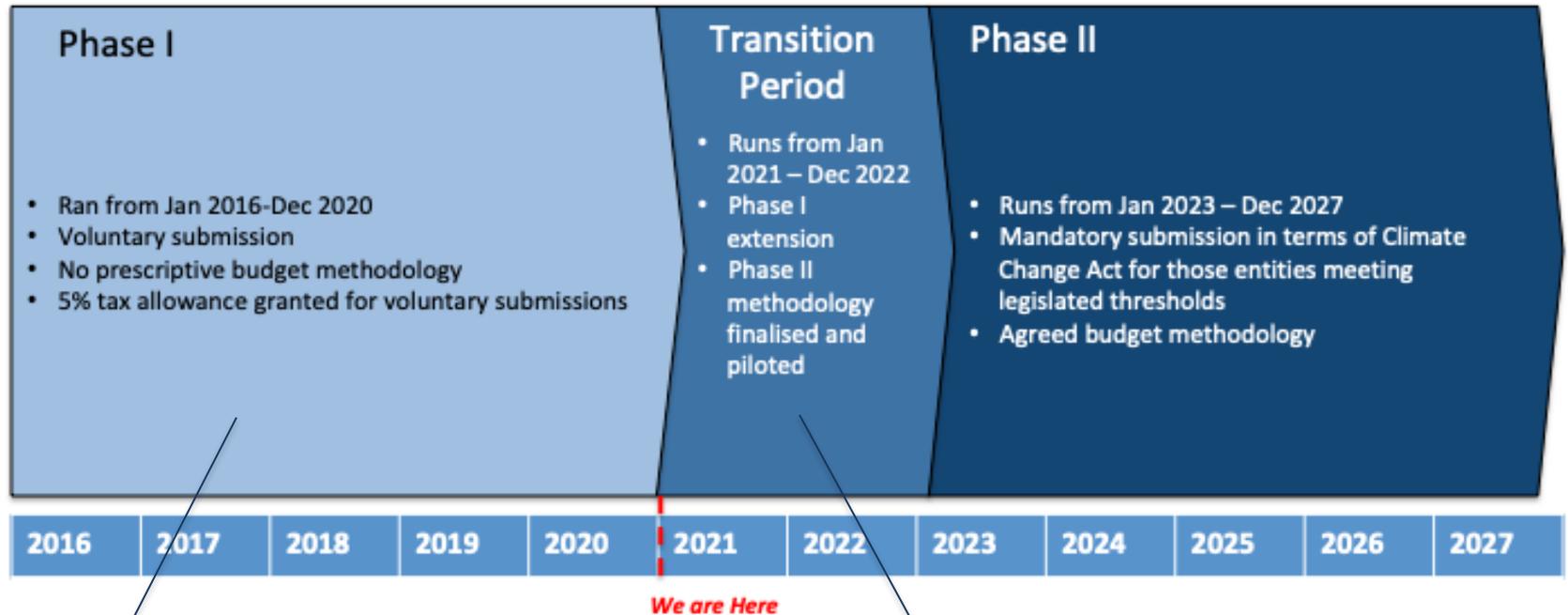
Phase	Actions
<p>Phase 1: Starting Right (start immediately and complete by end of 2020/21 financial year)</p>	<ul style="list-style-type: none"> • Start the process of developing long term plans for each sector, to avoid lock-in to emissions intensive infrastructure and establish the basis for transformation at scale • Develop approaches for allocation of Sectoral Emissions Targets (SETs) and carbon budgets to high emitting entities • Develop Sector Jobs Resilience Plans (SJRPs) to support the transition to the low carbon economy and climate resilient society in a Just manner • Identify the institutional, legislative, finance and other changes required to achieve the transformation • Develop an understanding of the relevant government decisions which need to be taken to achieve the long-term plans • Develop a monitoring plan
<p>Phase 2: Turning the corner (start immediately, as appropriate, and complete by 2025)</p>	<ul style="list-style-type: none"> • Develop and begin to implement detailed transformation plans for each sector, which is supported by the implementation of the SETs, carbon budgets, carbon tax and SJRPs • Develop investment pathways to support the transformation • Implement foundational changes to drive down the national trajectory • Implement the institutional changes to accelerate the rate of transformation and remove barriers
<p>Phase 3: Massive roll-out (to 2050)</p>	<ul style="list-style-type: none"> • Roll-out the implementation plans for each sector along with measures to support changes until they become the new reality • Refine strategies as required, to account for changes in technologies, society and markets



Carbon Budget implementation



TIMELINE



The end date for Phase I voluntary carbon budget submissions was 31 December 2020

- A Transition Period has been agreed and gazetted (22 October 2020), running from Jan 2021-Dec 2022
- There are two primary objectives for this 2 year period:
 - **Phase I extension:** Voluntary budgets will continue to be accepted during the Transition Period (5% carbon budget allowance applicable).
 - **Phase II carbon budget methodology:** A budget allocation methodology will be decided through an extensive process of engagement. This will be piloted and the outcomes will inform the mandatory phase.

3. Phase I extension

Voluntary budget submissions



A BRIEF GUIDE TO THE PHASE I EXTENSION (1)

- **Eligibility:**

- Any company with facilities registered in SAGERS may submit a Phase I extension application / threshold

- **Administration:**

- The process for submission, review and approval of budgets during the extension period will remain the same

- **Scope:**

- The carbon budget period will be 5 calendar years. Data must include 1 January 2020 to 31 December 2025 data projections and 1 January 2016 to 31 December 2020 actual data
- Direct emissions under operational control within the same entity. This is to include emissions from fuel use, process, fugitive
- Included emissions are not restricted to the activities listed in the National Greenhouse Gas Reporting Regulations. All emissions are to be included except for mobile road transport

A BRIEF GUIDE TO THE PHASE I EXTENSION (2)

- **Scope (cont.):**

- The carbon budget period will be 5 calendar years. Data must include 1 January 2020 to 31 December 2025 data projections and 1 January 2016 to 31 December 2020 actual data.
- Data is to be provided by facility level within the company.
- The data is to be aggregated up to the entity level through clear and transparent calculations using the template (to be provided)
- The projected data submitted by the company should reflect the structure of the company at the time of submission.

- **Review prior to Phase II (mandatory phase):**

- The budgets will be reviewed in 2022 for the planned commencement of the Phase II carbon budgets (2023 to 2027)

5. Phase II Scope

Defining Boundaries



PHASE II SCOPE

- **Company/facility level:**

- Budgets will be allocated at a company level.
- The principle of operational control will apply, as per the National Greenhouse Gas Emissions Reporting Regulations:
 - *“A data provider has operational control over another company if it, or one of its subsidiaries, has the full authority to introduce and implement its operating policies at the company”*
- It is imperative to bear in mind that there is no one size fit all approach to operational control

Example:

- **Company A:** Centralised control, with six manufacturing sites, each employing similar processes and producing a limited range of products, reporting as a single entity
- **Company B:** Group structure with decentralized control, consisting of a multitude of diverse businesses across numerous sectors, reporting as a single entity

The companies above need to consider how the determination of total company emissions best reflects the company’s actual power of control

Budget Allocation Methodologies

Proposed options for discussion

THREE PROPOSED APPROACHES

6.1 Fixed Reduction:

- Budgets are sector-wide fixed reductions

6.2 Mitigation Potential:

- Budget is underpinned by the mitigation potential assessed in the mitigation model

6.3 Benchmarking:

- Budget is a benchmark intensity/intensities, determined at a company level but underpinned by performance data at facility level

Fixed Reduction



SUMMARY: FIXED REDUCTION OPTION 1

- Companies are allocated a budget based on a fixed reduction percentage against baseline year
- This percentage is uniform across all sectors, for example, '5% reduction against a 2017 baseline year consumption'
- Individual company context and company reduction potentials are not considered in this approach

FIXED REDUCTION OPTION 1: PRACTICAL EXAMPLE

For the sake of example, the national GHG emissions space for industry and mining is 375 MT CO₂e.

- Following a period of engagement, South Africa sets an emissions reduction target of 1.5% for the first 5 year period based on an adjusted assessment of mitigation potential = 5.63 MT CO₂e
- 100% of country emissions are shared proportionally between 8 companies
- A uniform fixed reduction target (budget) would be calculated as follows:

Company	Proportion of National Emissions Total	Total Emissions (MT)	1.5% Target	Carbon budget (MT)
Company A	60%	225.00	3.38	221.63
Company B	20%	75.00	1.13	73.88
Company C	8%	30.00	0.45	29.55
Company D	5%	18.75	0.28	18.47
Company E	2%	7.50	0.11	7.39
Company F	2%	7.50	0.11	7.39
Company G	2%	7.50	0.11	7.39
Company H	1%	3.75	0.06	3.69
	100%	375	5.625	369.375

SUMMARY: FIXED REDUCTION OPTION 2

- Companies are allocated a budget consistent with their contribution to available industrial emissions
- Allocated reductions will be calibrated against the desired national budget
- Individual company context and company reduction potentials are not considered in this approach

FIXED REDUCTION: PRACTICAL EXAMPLE

For the sake of example, the national GHG emissions space for industry and mining is 375 MT CO₂e.

Company A: The share of emissions of this company is 65% of the industry and mining GHG emissions during the period 2023 to 2027

- The carbon budget would be **243.75 MT CO₂e** (=65%*375 MT CO₂e) for the period 2023 to 2027.

Company B: The share of emissions of this company is 20% of the industry and mining GHG emissions during the period 2023 to 2027

- The carbon budget would be **75 MT CO₂e** (=20%*375 MT CO₂e) for the period 2023 to 2027.

Company C: The share of emissions of company B is 0.15% of the industry and mining GHG emissions during the period 2023 to 2027

- The carbon budget would be **0.56 MT CO₂e** (=0.15%*375 MT CO₂e) for the period 2023 to 2027.

Mitigation Potential:

Budget underpinned by mitigation potential
assessed in the Mitigation Model

SUMMARY

- Mitigation Potential Analysis (MPA) is used as a guide to set carbon budgets.
- Last DEFF update of MPA was 2019
- The Carbon Budget assessment is based on mitigation interventions:
 - Mitigation intervention are identified and associated impacts relevant to the company are quantified
 - The Stringency process is used to assess the extent to which the mitigation interventions identified are helping with the overall carbon budget allocation objective
 - Companies will however, have to agree to a budget that aligns with the quantum mitigation measures identified and agreed upon

MITIGATION POTENTIAL: PRACTICAL EXAMPLE (3)

Company B: Baseline emissions for 2023 to 2027 are projected to be: **1 250 000** t CO₂e.

- This company can implement:
 - Waste Heat Recovery (**1%** emissions reductions)
 - Improved Process Control: (**0.15%** emissions reductions)
 - Reduction of Clinker content: (**0.3%** emissions reductions)
- They will be assigned an emissions reduction of **1.45%**, or **18 125** t CO₂e from their baseline emissions.
- Their carbon budget will be: **1 231 875** t CO₂e.

Benchmarking:

Benchmarking company emissions intensities
using company data



SUMMARY

- Benchmark used to establish emissions cap/budget
- Expressed as emissions intensity $\text{CO}_2\text{e} / \text{Amount of production}$

Production forecasted * benchmark emissions intensity =
carbon budget

NB: Product-based benchmarks are preferred but where this is not possible fallback approaches may be used (heat, fuel and historical emission-based benchmarks)

BENCHMARKING: SAMPLE APPROACHES

Increasing stringency

Option 1 – Average Intensity

The average of the emissions intensities of the existing companies per IPCC subcategory could be elected to be the benchmark that all companies should achieve.

Option 2 – Adjusted Best Performance

An adjustment of the best performing emissions intensity of existing companies per IPCC subcategory could be elected to be the benchmark that all companies should achieve. We could, for example, increase the best sector intensity by 10%

Option 3 - Best Performance

The best performing emissions intensity of existing companies per IPCC subcategory could be elected to be the benchmark that all companies should achieve.

BENCHMARKING: PRACTICAL EXAMPLE

We can derive company level emissions intensities per IPCC category (using company specific data):

- Cement Company A:
 - Fuel combustion 1A2f: (1.8 t CO₂e/t cement)
 - Process emissions 2A1: (0.51 t CO₂e/t clinker)
- Cement Company B:
 - Fuel combustion 1A2f: (2 t CO₂e/t cement)
 - Process emissions 2A1: (0.52 t CO₂e/t clinker)
- Cement Company C:
 - Fuel combustion 1A2f: (1.6 t CO₂e/t cement)
 - Process emissions 2A1: (0.51 t CO₂e/t clinker)

BENCHMARKS EXAMPLES PER SECTOR

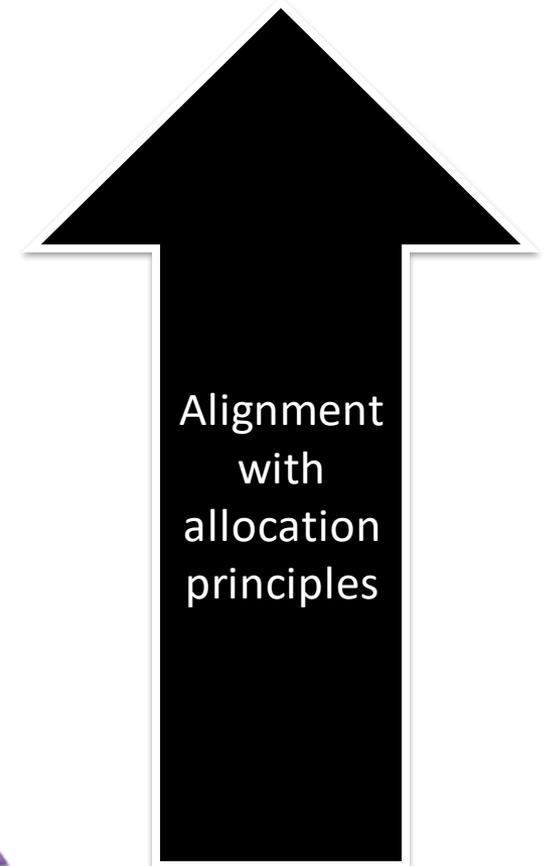
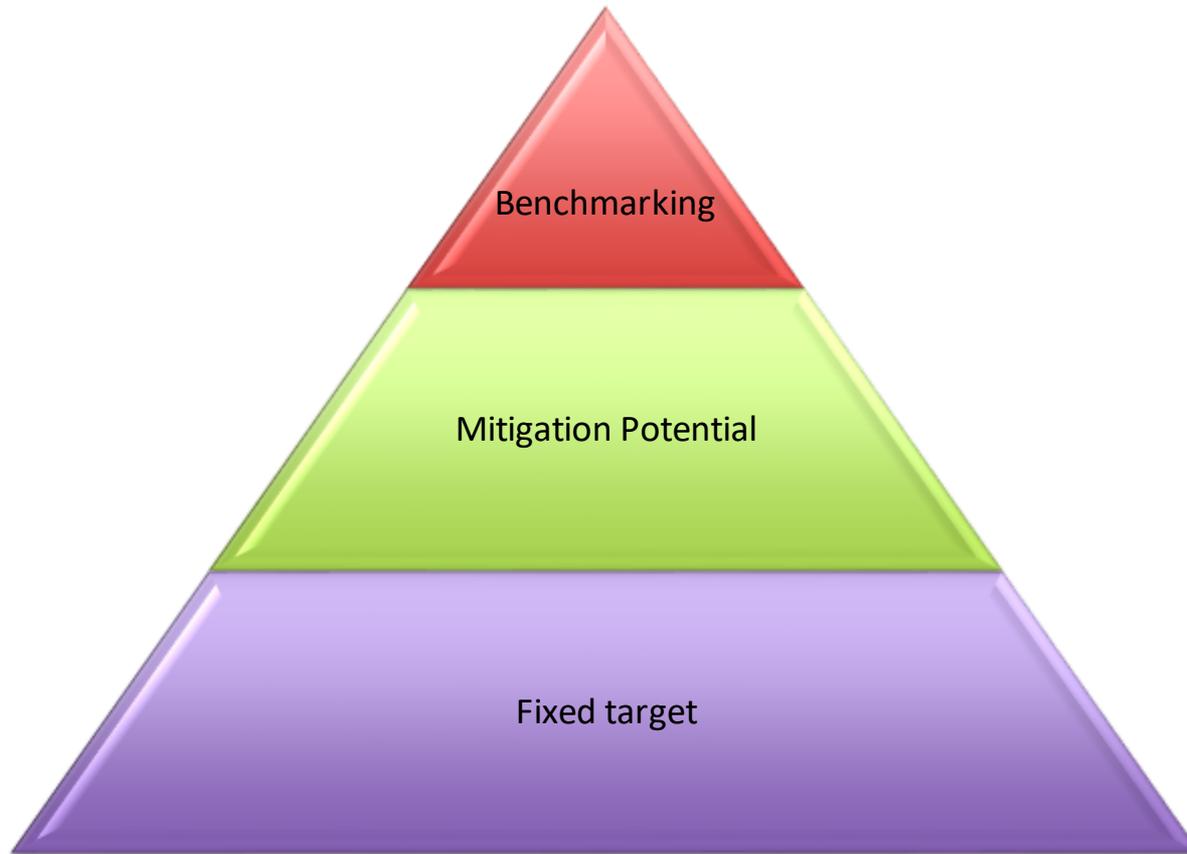
Sector	Benchmark Approach	Unit
Iron and Steel	Product benchmark	tCO ₂ -e / t Crude Steel
Ferroalloys	Product benchmarks	tCO ₂ -e / t FeCr tCO ₂ -e / t hot metal
Mining - Platinum	No indicative numbers proposed	Mining GHG emissions are highly location / situation specific, therefore there are no international benchmarks. Mining GHG emissions mostly consists of non-CO ₂ emissions (i.e. fugitive). For this reason it is suggested that fugitive emissions be classified as a 'product' for measurement purposes
Mining - Gold	No indicative numbers proposed	
Mining - Coal	No indicative numbers proposed	
Cement	Technology-based benchmark	
Petroleum Refining	Solomons methodology: South Africa Complexity Weighted Tonne (SA-CWT)	kgCO ₂ –e / SA-CWT

ALLOCATION PRINCIPLES

Government and third-party experts will work in concert with companies across sectors to select and implement a methodological approach (or approaches) that will best address key principles:

- Feasibility
- Fairness
- Equality
- Robustness
- Effectiveness
- Flexibility
- Alignment with policy objectives in this sector
- Competitiveness

PREFERRED ORDER OF PRIORITY: CARBON BUDGET METHODOLOGY



GLOBAL PRACTICE: SUMMARY CASE STUDIES

Country	Phase 1	Budget Allocation Methodology	GHG's Included	Overall GHG Emissions	Cap
Kazakhstan	2013	Grandparenting and Product-based benchmarking	CO2	353.2 MtCO2 -e	162.0 MtCO2 (~50%)
Mexico	2020 (Pilot Programme)	Grandparenting	CO2	733.8 MtCO2 -e	271.3 MtCO2 (~37%)
New Zealand	2008	Benchmarking	CO2, CH4, N2O, SF6, HFCs, PFCs	81.0 MtCO2 -e	38.1 MtCO2 –e (~51%)
S. Korea	2015	Benchmarking	CO2, CH4, N2O, SF6, HFCs, PFCs	709.1 MtCO2 - e	548 MtCO2 –e (~70%)
South Africa	2016 Phase I 2023 Phase II	Phase I: Voluntary grandfathering Phase II: In discussion	CO2, CH4, N2O, SF6, HFCs, PFCs	~514 MtCO2 -e	~ 103 MtCO2 –e (~37%)

Source: ICAP (2020). Emissions Trading Worldwide: Status Report 2020. Berlin: International Carbon Action Partnership

Integration with the Carbon Tax



CARBON TAX POLICY FRAMEWORK FOR SA

- **Tax Base**
 - Electricity generation and fuel combustion
 - Industrial processes – cement, iron and steel, glass, ceramics,
 - Fugitive emissions – e.g. methane emissions from mining
 - Direct (Scope 1) stationary emissions
 - Direct (Scope 1) non- stationary emissions – as an add on to the fuel tax regime.
- **Marginal tax rate**
 - R120/tonCO_{2e}
- **Recycling measures**
 - Reducing other taxes and providing tax incentives
 - If revenues left over, on budget support for pro poor programmes in energy, transport sectors
- **Phased approach**
 - Phase 1: 2019 to 2022
 - Phase 2: 2023-2027 (aligned with the carbon budget commitment period)
 - Starting off the tax at a relatively modest rate, coupled with generous tax-free allowances, adjusted over time to facilitate a structural transition to a low carbon, climate resilient economy in a cost-effective manner.

SOUTH AFRICA'S CARBON TAX DESIGN FEATURES: Rate, Tax-free Allowances and Recycling Measures

Revenue

Carbon tax at
R120 per ton of CO₂e

60% basic tax-free
threshold

Max of 10% tax-free
allowance for trade
exposure

10% tax-free allowance for
process and fugitive
emissions

**Up to 5% performance
allowance**

5% tax-free allowance for
complying with carbon budgets
information requirements

**5 or 10% allowance for Carbon
Offsets – to reduce the carbon
tax liability**

- Tax-free
allowances
of **60-95%** -
effective tax
rate of

**R6 - R48
t/CO₂e**

- No impact
on
electricity
prices in
the first
phase

Revenue Recycling

Energy Efficiency Savings tax
incentive

Credit against Eskom's carbon
tax liability for the renewable
energy premium built into the
electricity tariffs

Credit for the electricity levy

Support for the installation of
solar water geysers

Enhanced free basic electricity /
energy for low income
households

Improved public passenger
transport & support for shift of
freight from road to rail



CARBON TAX – ASPECTS FOR CONSIDERATION IN THE INTEGRATION

- **The Carbon Tax Bill gives effect to the polluter-pays-principle** and helps to ensure that firms and consumers take these costs into account in their FUTURE production, consumption and investment decisions
- **Alignment of the carbon tax policy with the carbon budgeting system of the DEA:**
 - Phase 1: Introduction of the **5% carbon budget allowance** for the first Carbon Budget Commitment Period (2016-2020) (to be extended to 2022)
 - Phase 2: DEA and NT working on **alignment and integration of the carbon tax and carbon budget** instruments for phase 2, and no double penalty.
- There is **agreement that alignment of the two instruments will be in terms of accounting for emissions and not policy design** where the CBs apply for a 5-year period and carbon tax applies annually. Therefore, the carbon tax enforces the carbon budgets.
- The DEFF prefers an **end of period accounting system (after 5 years)**, and the department is willing to annualise the budget if it works better with the carbon tax system. Both timing options are still open for further consultation between NT, DEFF and industry

WHAT ARE THE LEVERS FOR THE INTEGRATION OF THE TWO INSTRUMENTS?

Integration Option	Implications
<p>Option 1: Tax can be used as a penalty mechanism for exceeding CB but taxing at a higher rate above the budget</p>	<ul style="list-style-type: none"> • A Penalty is only imposed on the Carbon Tax side; • Taxation at a normal tax rate below the Carbon Budget; • Taxation at a higher tax rate (e.g., R600/ton) when carbon Budget is exceeded
<p>Option 2: Transfer a fraction or all of the current basic tax allowance (60%) to the carbon Budget allowance</p>	<ul style="list-style-type: none"> • Reduce the current basic free allowance from 60% to say 20% and transfer the 40% allowance to the carbon budget allowance; • A Penalty of not meeting a Carbon Budget reporting requirement (Administrative burden) is imposed on the DFFE side; • If the Carbon Budget is exceeded, the Carbon Budget Allowance is forfeited by the Company in question (Compliance burden)



Carbon tax at R120 per ton of CO₂e

60% basic tax-free threshold

Max of 10% tax-free allowance for trade exposure

10% tax-free allowance for process and fugitive emissions

Up to 5% performance allowance

5% tax-free allowance for complying with carbon budgets information requirements

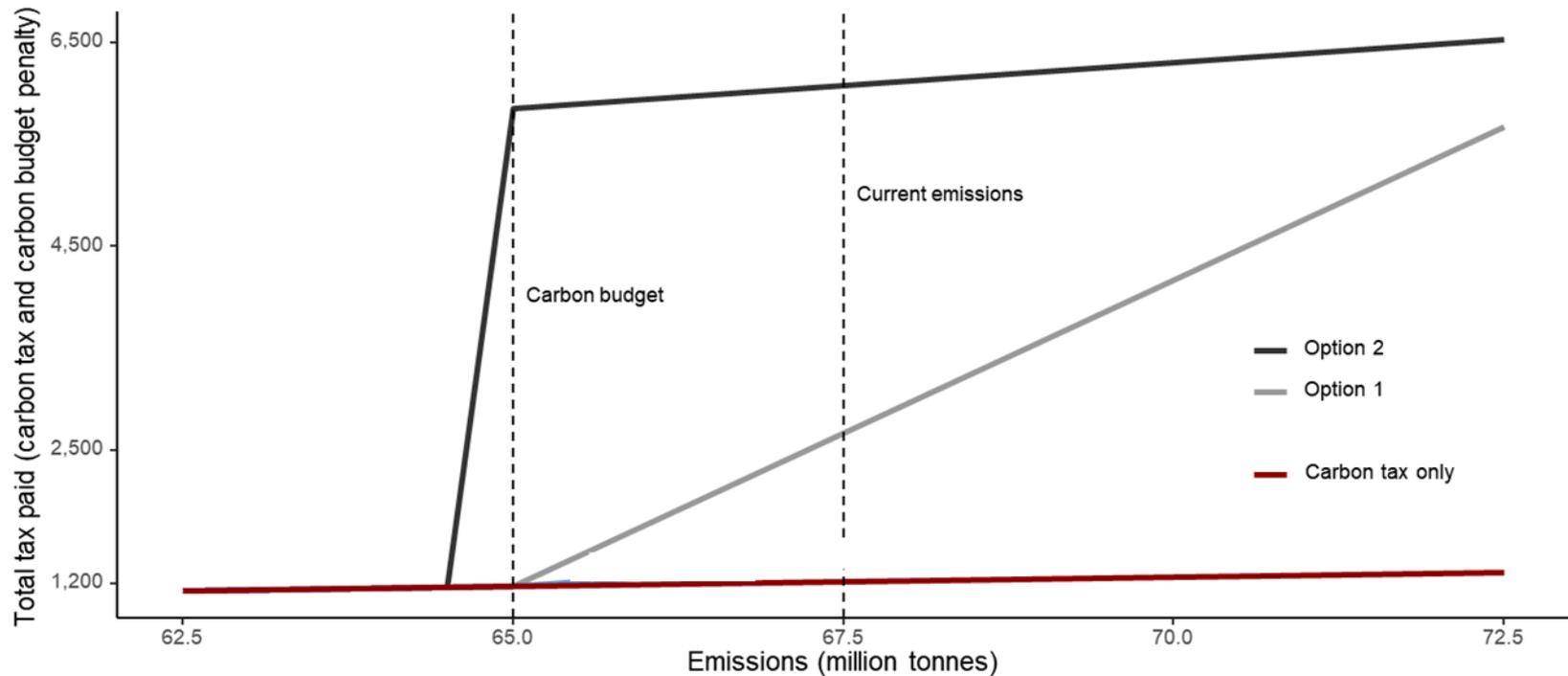
5 or 10% allowance for Carbon Offsets – to reduce the carbon tax liability

The following slide shows the cost implications of each of these integration options for a hypothetical company with a carbon budget of 65 million tons of greenhouse gas emissions over a 5-year carbon budget commitment period

ANALYSING IMPLICATIONS OF THE INTEGRATION OPTIONS

Carbon tax and carbon budget alignment options

Scenario for company with current emissions of 67.5Mt and a budget of 65Mt



Option 1: Higher tax rate of R600 per tonne of emissions above the budget.

Option 2: Removing basic allowance of 60% on ALL emissions if emissions are above the budget.

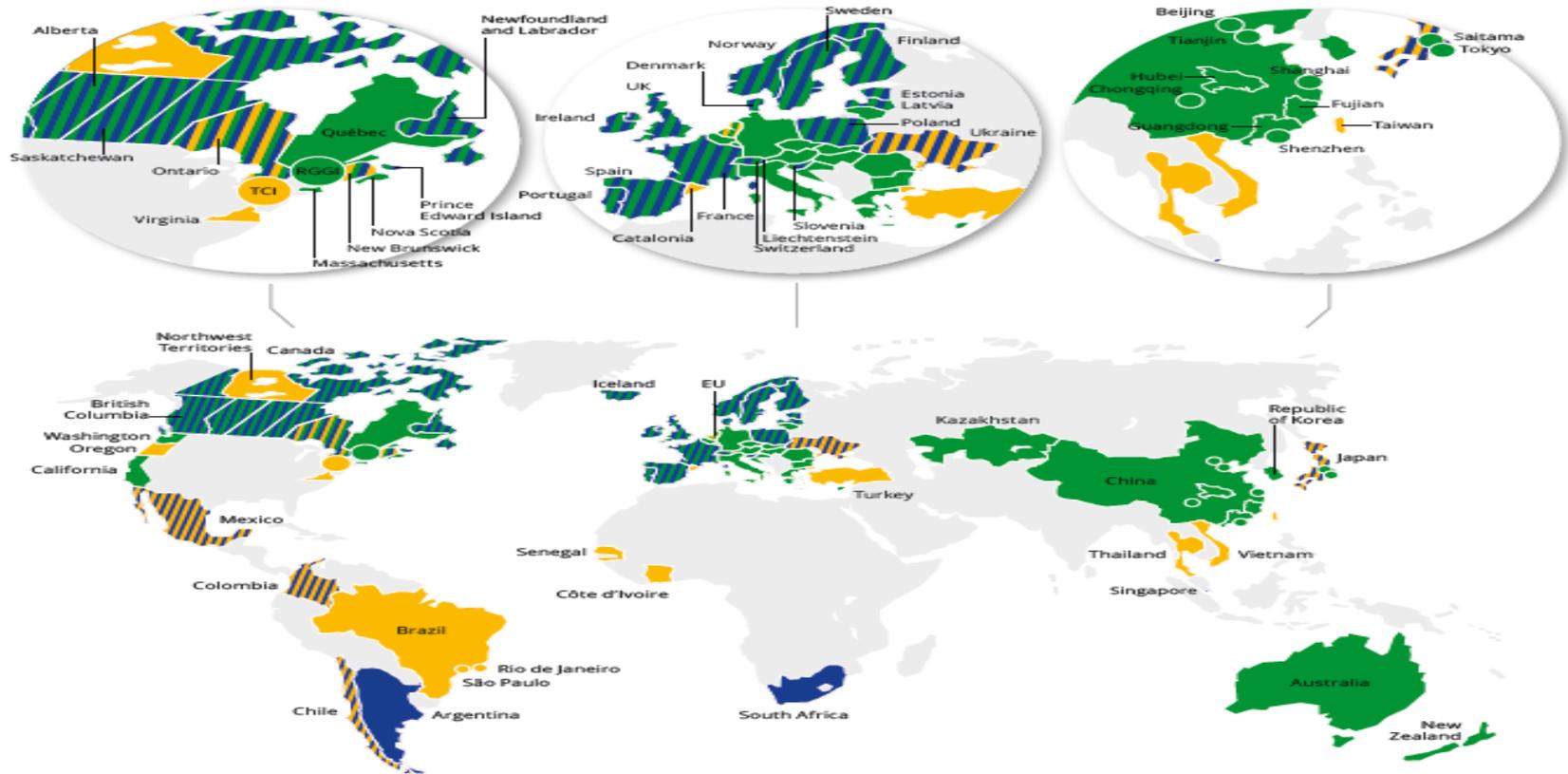
OBSERVATIONS FROM THE ANALYSIS

- Option 2 has the largest impact and increase in the company's carbon tax liability while option 2b has the lowest financial impact;
- Option 1 seems to be have a large impact on the company but a much smaller impact than option 2a;
- From the tax design perspective, NT applies the principles of fairness and equity to ensure that the impacts on a company due to a tax is lower for those with less GHG emissions and higher for those with higher emissions and that the tax payable does not differ significantly between taxpayers for each additional Rand, in the case of income taxes, or each additional tonne of CO₂ in the case of the carbon tax. This gives effect to a progressive tax design without massive increases in the tax liability on a smoother increase of the tax liability between companies is preferable;
- Both Departments agreed that the most effective integration option is Options 1. Treasury will do further work in terms of what the effective higher tax rate would be.
- A joint NT-DEFF meeting with industry took place in August 2020 and Option 1 was communicated.

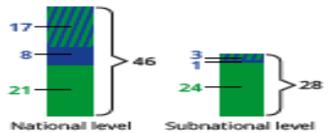
Carbon Pricing Globally



STATE & TRENDS OF CARBON PRICING



Tally of carbon pricing initiatives implemented or scheduled for implementation



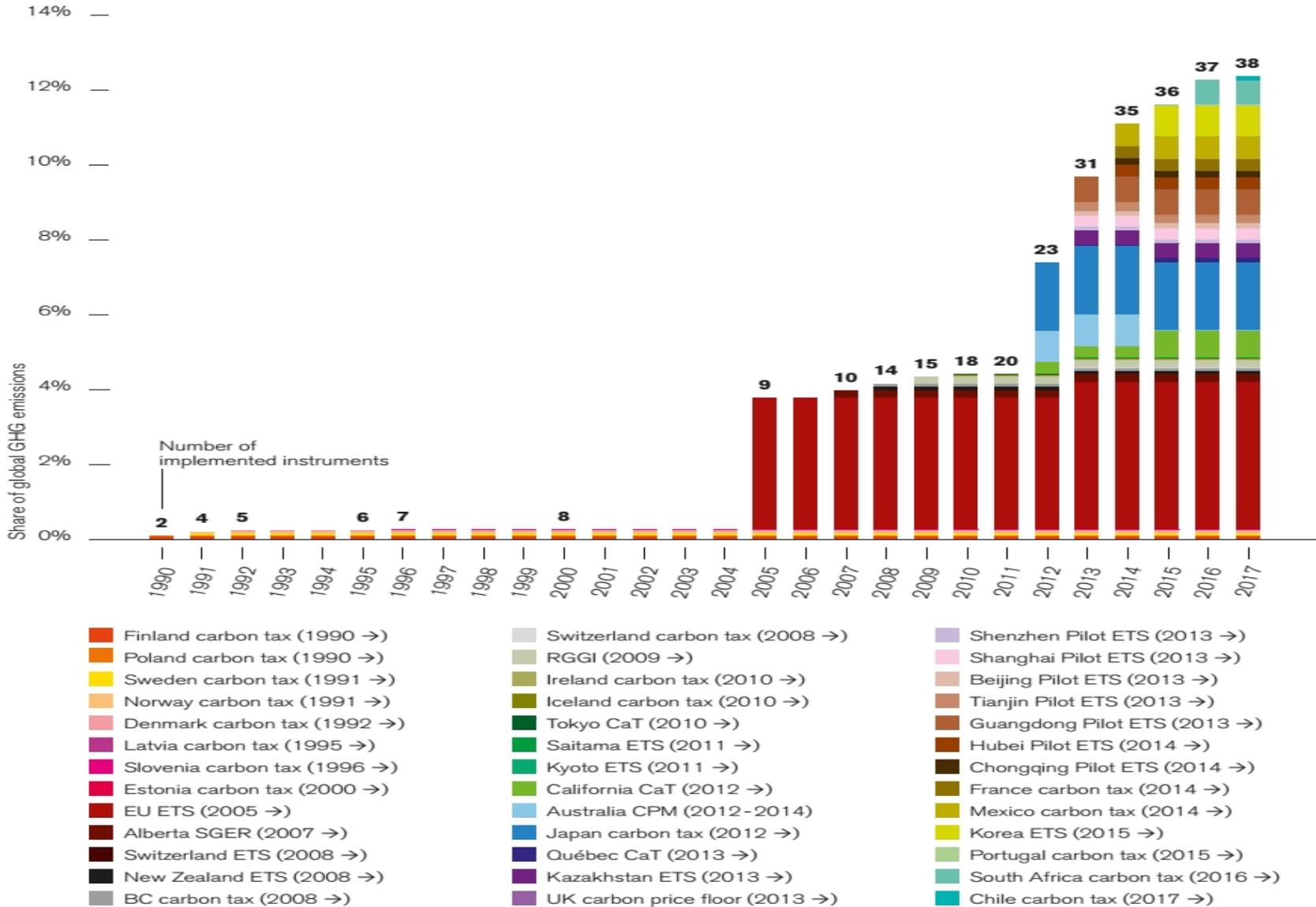
- ETS implemented or scheduled for implementation
- Carbon tax implemented or scheduled for implementation
- ETS or carbon tax under consideration
- ETS and carbon tax implemented or scheduled
- Carbon tax implemented or scheduled, ETS under consideration
- ETS implemented or scheduled, carbon tax under consideration
- ETS and carbon tax implemented or scheduled, ETS or carbon tax under consideration

The large circles represent cooperation initiatives on carbon pricing between subnational jurisdictions. The small circles represent carbon pricing initiatives in cities.

Note: Carbon pricing initiatives are considered "scheduled for implementation" once they have been formally adopted through legislation and have an official, planned start date. Carbon pricing initiatives are considered "under consideration" if the government has announced its intention to work towards the implementation of a carbon pricing initiative and this has been formally confirmed by official government sources. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS not only refers to cap-and-trade systems, but also baseline-and-credit systems as seen in British Columbia and baseline-and-offset systems as seen in Australia. The authors recognize that other classifications are possible.



STATE & TRENDS OF CARBON PRICING (CONT.)



Note: Only the introduction or removal of an ETS or carbon tax is shown. Emissions are given as a share of global GHG emissions in 2012. Annual changes in global, regional, national, and subnational GHG emissions are not shown in the graph. Data on the coverage of the city-level Kyoto ETS are not accessible; its coverage is therefore shown as zero.

INTERNATIONAL DEVELOPMENTS

- **China** has introduced seven regional carbon trading pilot schemes.
 - Each pilot covers a large city that is, Beijing, Tianjin, Shanghai, Chongqing and Shenzhen or a province namely, Guangdong, and Hubei.
 - Building on these pilots, **China implemented a national ETS in Dec 2017.**
- A carbon tax was introduced in **Mexico** in 2014 and applies to fossil fuels.
 - It also allows for the use of offsets in the payment (only CDM).
 - The tax rate applied is set at about US\$ 3.5 / tCO_{2e} and natural gas is exempted from the carbon tax.
- **India** implements a coal tax effective from 2010, currently US\$ 6/ton coal.
- Carbon tax implemented in **Chile** at the rate of US\$5 from 2017.
- In 2008, the **Canadian Province of British Columbia** launched its carbon tax at a rate of Can\$10 per tonne of CO₂. The national government proposed a national carbon tax for those provinces that have not implemented a carbon price in line with specific national criteria (i.e. A minimum carbon price).
- **Colombia** implemented a carbon tax in 2017 on transport fuels.
- **Brazil** exploring a carbon price, **Ivory Coast and Morocco** also exploring a carbon tax,
- **Singapore and Argentina** implement a carbon tax in 2019.

THANK YOU!

Thank You



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Department:
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REPUBLIC OF SOUTH AFRICA

