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DEPARTMENT OF FORESTRY, FISHERIES AND THE ENVIRONMENT

NO. 4763　　　　　　　　　　　　　　　　　　　　　　　　　　　　**26 April 2024**

DRAFT SECTORAL EMISSION TARGETS REPORT FOR PUBLIC COMMENT

I, Barbara Dallas Creecy, Minister of Forestry, Fisheries and the Environment, hereby publish the draft Sectoral Emission Targets (SETs) Report for public comment. The draft SETs Report details the proposed SETs allocation targets to be adopted by sector departments to support South Africa in meeting its domestic and international commitment to combat climate change and to support the implementation of South Africa's National Determined Contribution (NDC) under the Paris Agreement. The SETs form a key national policy instrument defined in the National Climate Change Policy (2011) that will drive South Africa's transition to lower carbon economy and climate resilience society, and which will anchor the attainment of the National Development Plan (Vision 2030). The draft SETs Report is contained in the Schedule hereto.

Members of the public are invited to submit written comments within 60 days from the date of publication of this Notice in the Government *Gazette* or newspaper, whichever date is the last date, to any of the following addresses:

By post to:	**Director-General**: Department of Forestry, Fisheries and the Environment
	Attention: Mr Jongikhaya Witi
	Department of Forestry, Fisheries and the Environment
	Private Bag X447
	Pretoria
	0001
By email to:	SETSComments@dffe.gov.za
Cc:	fsherman@dffe.gov.za
Hand delivered at:	Environment House, 473 Steve Biko Road, Arcadia, Pretoria, 0083.

Further details and any inquiries, in connection with this Notice or in connection with obtaining a copy of the Socio-Economic Impact Assessment Study (SEIAS) or the Technical SETs Report, can be directed to Mr Jongikhaya Witi to the following contact details: **Phone**: Tel: 012 399 9048 / **Email**: JWITI@dffe.gov.za,

Comments received after the closing date may not be considered.

BARBARA DALLAS CREECY
MINISTER OF FORESTRY, FISHERIES AND THE ENVIRONMENT

forestry, fisheries & the environment

Department:
Forestry, Fisheries and the Environment
REPUBLIC OF SOUTH AFRICA

Sectoral Emissions Targets 2025 to 2030

Implementation of South Africa's updated Nationally Determined Contribution

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FIGURES

Abbreviations

APP – Annual Performance Plan

CO_2eq – carbon dioxide equivalence

DALRRD – Department of Agriculture, Land Reform and Rural Development

DFFE – Department of Forestry, Fisheries and Environment

DHS – Department of Human Settlements

DMRE – Department of Mineral Resources and Energy

DPME – Department of Planning, Monitoring and Evaluation

DTIC – Department of Trade, Industry and Competition

DWS – Department of Water and Sanitation

DoT – Department of Transport

EV – Electric Vehicle

FOLU – Forestry and Other Land Use

GHG – Greenhouse Gas

GWP – Global Warming Potential

HFC - Hydrofluorocarbons

IRP – Integrated Resource Plan

IPPU – Industrial Process and Product Use

LEDS – Low Emissions Development Strategy

LULUCF – Land Use, Land-Use Change and Forestry

M+E – monitoring and evaluation

MTEF – Medium Term Expenditure Framework

MTSF – medium term strategic framework

NCCRP – National Climate Change Response Policy

NDC – Nationally Determined Contribution

NEES – National Energy Efficiency Strategy

NEMA – National Environmental Management Act

NIR – national greenhouse gas emissions inventory report

PAMs – Policies and Measures

REDD+ – Reducing emissions from deforestation and forest degradation. The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks.

SETs – Sectoral Emissions Targets

SPLUMA – Spatial Planning and Land Use Management Act

UNFCCC - United Nations Framework Conventions on Climate Change

WEM – With Existing Measures

Executive Summary

Background

The National Climate Change Response Policy (NCCRP) 2011 under Section 6 articulates the key elements in the overall approach to climate change mitigation in South Africa. (Once legislated, the Climate Bill further reinforces the climate mitigation approach in chapter 5.) The policy defines the mitigation goal or the Nationally Determined Contribution (NDC) as the performance benchmark against which the collective outcome of all mitigation actions will be measured. The key mechanism to achieve the NDC is the mitigation system, which is comprised of the Sectorial Emission Targets (SETs).

The draft Climate Change Bill further defines the NDC which will be translated into SETs. SETs are orientated to steer sectors to make transformative changes for achieving long-term climate action. SETs are anchored in sector PAMs governing the programmes and activities that currently or have the potential to make significant impact on greenhouse gas reductions when adequately implemented.

The Minister of Forestry, Fisheries and the Environment (DFFE) is required to allocate SETs to ensure the country meets the stated greenhouse gas (GHG) emission target as published in the NDC. SETs are greenhouse gas emissions reduction targets, either qualitative or quantitative, applicable to sectors or sub-sectors over a period.

Sectors Considered

Seven sectors were identified with Cabinet to focus on for the development of Sectoral Emission Targets (SETs). This includes agriculture, industry, energy, mining, human settlements, transport, and environment. The allocation of SETs is at the level of national government and the following government departments with policy jurisdiction over these sectors is mapped in Table S.0-1 below. SETs will be allocated to these specific line departments.

Table S.0-1: The scope of SETs.

Sector	Line Departments
Agriculture	Department of Rural Development, Land Reform and Agriculture
Industry	Department of Trade, Industry and Competition
Energy	Department of Mineral Resources and Energy
Mining	Department of Mineral Resources and Energy
	Department of Forestry, Fisheries and the Environment
Human Settlements	Department of Human Settlements
	Department of Water and Sanitation
Transport	Department of Transport
Environment and Forestry	Department of Forestry, Fisheries and the Environment

Key Messages

- The draft SETs will assist the country to achieve it's 2030 NDC target.
- The draft SETs will result in an emissions reduction of 27 million tonnes of Carbon Dioxide equivalent ($MtCO_2eq$) in 2030 compared to a business-as-usual scenario including an electricity emissions level equivalent to 125 $MtCO_2eq$ (resulting in 71 $MtCO_2eq$ GHG emissions avoided relative to 2022 emission levels of 196 $MtCO_2$ eq).
- To achieve the high target of the NDC it is required that the IRP 2019 is implemented in the timeframe published.
- The draft IRP 2023 indicates a transition to a lower electricity system by 2030.
- The low target of the NDC (350 Mt CO_2eq) can be achieved with increased investment to implement more ambitious targets in the electricity and transport sectors. The investment is required for increased uptake of non-GHG emitting electricity technologies, increased shift from road to rail transport of freight and passenger, and increased recycling of waste.
- For sectors to transition to a low carbon future, policies and measures either have to be newly developed and/or existing policies and measures need to be enhanced. Qualitative SETs are necessary to guide this process for future SETs updates to be more stringent.

SETs allocation

Table S.0-2 below presents the summary of quantitative targets proposed to be allocated to sectors as categorised by the line department. The qualitative SETs, which are PAMs outcomes that will contribute to creating the enabling environment for a sector to transform to be low carbon over the longer term, are presented in Table S.0-3.

Table S.0-2 Summary table of quantifiable SETs by policy sector

Policy Sector	Target type	Unit	2025	2030	Cumulative (2025-2030) - SET Allocation
DMRE - Electricity	Emission level	MtCO2eq	177.3	124.7	
DMRE - Other	Emission Reductions	MtCO2eq	3.7	11.5	47.9
DALRRD	Emission Reductions	MtCO2eq	0.7	0.6	3.4
DWS	Emission Reductions	MtCO2eq		0.1	0.1
DFFE	Emission Reductions	MtCO2eq	7.0	15.2	76.5
DoT	Emission Reductions	MtCO2eq	0.2	4.5	18.0

Table S.0-3 PAMs included in the Qualitative SETs

Sector	PAM Affected
DMRE - Energy	Energy Efficiency Demand Side Management
DMRE – Minerals	Draft Mine Closure Strategy Derelict and Ownership Mines Programme The Exploration Strategy for the Mining Sector of South Africa and Critical Minerals Strategy Sustainable Development Reporting Guidelines
DALRRD	Conservation of Agriculture Resources Act Climate Smart Strategic Framework Conservation Agriculture Strategy Climate Change Sector Plan Agriculture Sector Implementation Plan
DTIC	Green Hydrogen Commercialisation Strategy Master Plans (various) Industrial finance incentives Strategy for Green Trade Barriers Green (low carbon) Industrial Strategy National Building Standards and Regulations/ SANAS 10400 National Cleaner Production Centre
DHS	Sector Climate Response Strategy, National Housing Code
DWS	Green Drop Report Water and Sanitation Sector Policy on Climate Change
DoT	National Land Transport Strategic Framework 2023 to 2028 White Paper of National Transport Policy White Paper on National Rail Policy Roadmap for the Freight Logistics System in South Africa 2023 Draft Comprehensive Maritime Transport Policy, 2017 White Paper on National Civil Aviation Policy Draft Roads Policy
DFFE	REDD+ Strategy

1 Introduction

Per the forthcoming Climate Bill, the Minister of Forestry, Fisheries and the Environment (DFFE) is required to allocate Sectoral Emissions Targets (SETs) to ensure the country meets the stated greenhouse gas (GHG) emission target as published in the National Determined Contribution (NDC). The SETs Framework that outlines an approach that DFFE would follow when coordinating the process towards allocation and implementation of SETs with the line sector departments, was approved by Cabinet in November 2021. SETs are greenhouse gas emissions reduction targets, either qualitative or quantitative, applicable to sectors or sub-sectors over a period.

The coverage of SETs will include those listed below as defined by Cabinet. The relevant line department proposed to be included in the SETs are presented in the second column.

Table 1-1: The scope of SETs.

Sector	Line Departments
Agriculture	Department of Agriculture, Rural Development and Land Reform
Industry	Department of Trade, Industry and Competition
Energy	Department of Mineral Resources and Energy
Mining	Department of Mineral Resources and Energy
	Department of Forestry, Fisheries and the Environment
Human Settlements	Department of Human Settlements
	Department of Water and Sanitation
Transport	Department of Transport
Environment and Forestry	Department of Forestry, Fisheries and the Environment

Following consultations, the SETs will be refined and subsequently recommended to Cabinet to allocate SETs to line departments. SETs will then be revised and updated in accordance with any changes to the NDC, which is expected every 5 years, while considering our current and projected GHG emissions.

In this communication, the Department of Forestry, Fisheries and the Environment (DFFE) present the Draft Sectoral Emissions Targets (SETs) to 2030 for public consultation.

It should be noted that work is also underway to develop longer term SETs to 2050 that will guide the country towards our goal of net-zero emissions as communicated in the Low Emission Development Strategy 2050.

1.1   National Emissions Profile

The DFFE has completed the drafting of the 9th National GHG Inventory (9th Inventory) for South Africa for the period of 2000 to 2022. The inventory was compiled in accordance with the guidelines provided by the United Nations Framework Convention on Climate Change (UNFCCC) and follows the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National GHG Inventories (IPCC, 2006) and subsequent refinements[1] and supplements[2]. In the 9th inventory, the emissions for each of the major greenhouse gases (GHGs) are presented as carbon dioxide equivalents (CO_2eq), utilizing the 100-year global warming potentials (GWPs) as outlined in the 2014 IPCC Fifth Assessment Report (AR5) (IPCC, 2014b).

In 2022 the Energy sector was the largest contributor to South Africa's gross emissions (excl. LULUCF) in 2022, comprising 78% of total emissions. This was followed by the agriculture sector (11%), Industrial Processes and Product Use (IPPU) sector (6%) and the Waste sector (4 %).

South Africa's GHG emissions excluding LULUCF stood at 489,748 Gg CO_2eq in 2000, experiencing a decrease of 2.2% by 2022, where emissions totalled an estimated 478,888 Gg CO_2eq (435,700 Gg CO_2eq including LULUCF). The reduction in emissions compared to 2020 is attributed to marginal decreases across all sectors, explained below.

There was an overall decrease in Energy emissions of 2.5%, this is attributed to the decrease in the Residential sector, Aviation as well Petroleum refining, there was also decrease in the IPPU sector in 2022. Despite the overall economic recovery after the COVID-19 pandemic, the IPPU sector's estimated emissions in 2022 were 6.7% lower than those in 2000. This decline is primarily attributed to a significant reduction in metals production (specifically Iron and Steel, and Aluminium) by 39.0%, driven by a decrease in global demand. The chemicals industry also experienced a notable decline of 31.4%.

The agriculture sector accounted for 53,519 Gg CO_2eq emissions, representing 11% of South Africa's total emissions. In 2022, the primary contributor within this sector was the Enteric fermentation category, contributing 36,352 Gg CO_2eq, which constituted 68% of the total agricultural sector emissions, Overall, there has been a decreasing trend in agricultural emissions, with total emissions in 2022 being 9% lower compared to 2000 levels. This reduction can be attributed to a decrease in livestock population numbers.

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[1] 2019 Refinement to the 2006 IPCC Guidelines
[2] 2013 Supplements to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands
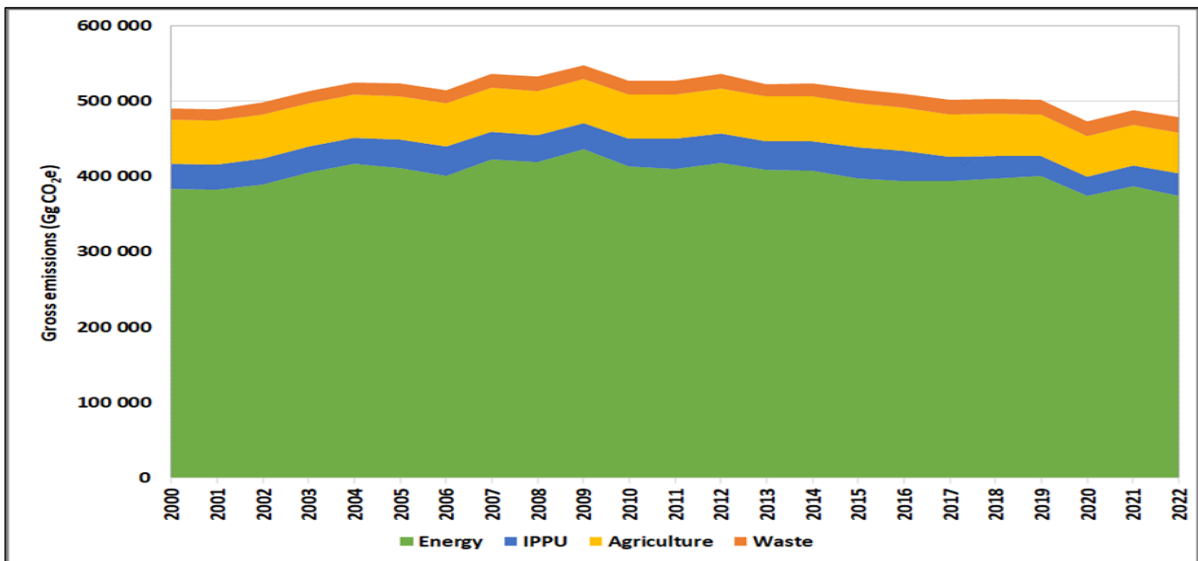
Figure 1-1: National GHG Emissions (excluding LULUCF) for South Africa, 2000 – 2022.

Notable points include a peak in emissions in 2004 at 524 903 Gg CO$_2$eq, a dip in 2010 with a 3.71% decrease, and a significant decline in 2020 by -5.79%. The emissions increased in 2021 by 3.36% due to post covid economic recovery.

The LULUCF sector was a sink in 2022 with Forest lands being the largest contributor to the sink. All other land categories were a source of emissions in 2022, with Other lands being the largest. The increasing Forest land sink between 2014 and 2022 is due to an observed increasing woodland sink because of an increase in the conversion of grassland to woodland.
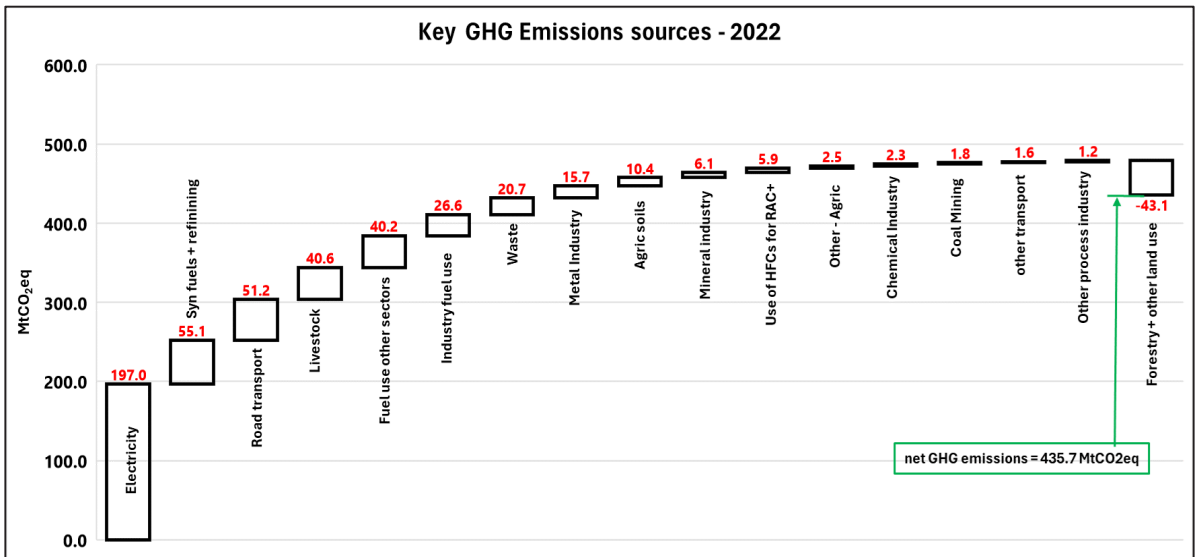
Figure 1-2: key GHG emissions sources based on the 2022 GHG emissions profile.

As per figure 1-2 above, key category analysis applied to the 2022 GHG emissions inventory shows that electricity, synfuels production, road transportation, livestock management and fuel use in the commercial, residential and industry sectors including waste management are some of the biggest contributors to GHG emissions in the country. The analysis also shows that the role forestry and other land use management plays as a sink of GHGs is significant but not sufficient to offset a large share of GHGs largely emanating from fuel combustion, synthetic fuel production and industrial processes and product use. Enhancement of the sinks through sound management of grasslands and their oils, afforestation, reforestation and forest management will help South Africa to achieve its GHG emissions goals.

A closer examination of GHG indicators (see figure 1-3) reveals the following:

– There is a decoupling of economic activity from GHG emissions. The graph above shows that there is an increase of 73% in economic output per unit of GHG emission released.
– Per capita emissions shows a decreasing trend achieving a reduction of 31% in 2022 when indexed relative to 2000 levels.
– GHG emissions per unit of energy supplied to the economy is also declining (35% relative to 2000 indexed levels).
– From the graphic, it is very clear that this decoupling trend was already taking place before the beginning of the COVID pandemic.
– This is informed by several factors such as shift to Electric furnaces for the Iron and Steel sector, decline by primary Aluminium production, decrease in livestock population and increased share of the services sector in the country's GDP.
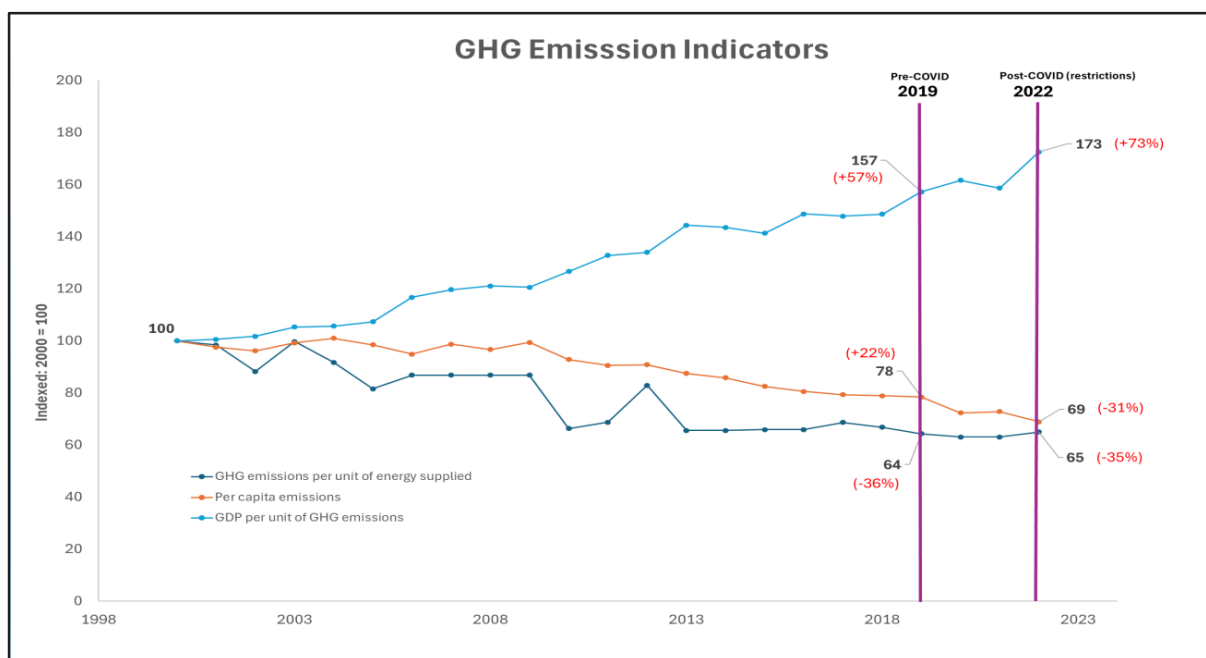

Figure 1-3: key GHG emissions sources based on the 2022 GHG emissions profile.

1.2 Expected Changes in Future Years

It is likely that GHG emissions in the different sectors across the economy will increase and/or decrease over time at different rates. The change in GHG emissions can be affected by several drivers unique to each sector that affect the activities that result in GHG emissions. Some examples of drivers include a change in market demand of a certain material or product that causes the closure of an industry, new technologies that shift the activity of a different sector, behavioural changes at a community or societal level that affects economic activity, global economic dynamics that affects local economic activity, unpredicted policy changes that affects activities of a certain sector. Of the drivers, economic growth and population can have significant impacts. Below we present the sectors that are likely to increase in GHG emissions based on economic growth and population:

Table 1-2: Expected Sector Growth.

Sector	Reason for increase/decrease in emissions
Transport	Increased population will increase the demand for transport. The economic growth will impact the type of transport being used. Uptake of hybrid vehicles to offset high fuel prices will affect GHG emissions trends for road transportation in a positive way.
Industry	Emissions associated with construction related materials produced locally such as cement and mining and quarrying could grow with increased demand in the built environment. Green ammonia production might have GHG emissions implications in Reduction in primary steel production Uncertainty in gas availability in the near future will affect industrial fuel consumption and use of natural gas/SASOL gas as feedstock for some production processes. With loadshedding, and as shown in figure 1-2 above, the is an increase in fuel consumption in the commercial and residential sectors through stand-by generators. This trend is expected to continue for the next three to four years.
Waste water	Increased population would increase the generation of wastewater in both residential and industrial wastewater. Implementation of methane recovery will result in significant emission reductions from wastewater treatment and discharge. However, as per the current implementation plans, real emission savings are to be realised between 2030-2040. Implementation of the Article Six (6) strategy could ensure accelerated implementation of methane recovery projects.
Managed waste	Increased population leading to increased consumption would increase the generation of waste needed to be landfilled. Waste diversion has also increased significantly, thus affecting the amount of biodegradable material available for methane generation.
Biomass burning	Increased population would increase the generation of waste resulting in more biomass burning.
Electricity	Increased population will increase the demand of electricity through increase of household connections and use of appliances in the household

1.3   Climate Change Bill and Low Emissions Development Strategy roadmap summary

The Climate Change Bill represents South Africa's overarching regulatory framework to be promulgated under the National Environment Management Act (NEMA) that will guide the country's transition to achieve the National Development Plan (Vision 2030) and the National Climate Change Policy (2011). The Bill intends to transition the country to a lower carbon economy and climate resilient society in the context of sustainable development. The Bill aims to make a fair contribution to the global effort to stabilise GHG concentrations in the atmosphere through various measures, including a legislated national emissions trajectory, SETs and the allocation of company carbon budgets.

1.4   South Africa's Low Emission Development Strategy 2050

The Low Emission Development Strategy (LEDS) (2050) are national, subnational or supranational strategies for achieving low-emission long-term (often focused on 2050). The Article 4 of the Paris Agreement encourages all Parties to strive to formulate and communicate long-term low greenhouse gas emission development strategies, being mindful of Article 2 and taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.

The LEDS are generally described as forward-looking national economic development plans or strategies that encompass low-emission and/or climate-resilient economic growth. A primary goal of LEDS is to double economic growth from emissions reduction - Decoupling economic growth from emissions reduction requires transformational changes in all sectors of the economy, as well as in planning processes.

South Africa's LEDS 2050 represents a blueprint that will support the transition to low carbon economic development resulting in sustained growth in employment and investment, increased financial flows, reduced GHG, and other social, economic, and environmental benefits up to 2050. South Africa's first LEDS (2050) was officially submitted to the UNFCCC Secretariat in September 2020. An updated version will include a defined national vision towards achievement of net zero by 2050, a description of the path going forward to place the country on a coupled low carbon trajectory and socio-economic development path, and a road map of the policies and measures needed to achieve these goals. The SETs will be part and parcel to this road map of policies and measures that guides the country to net zero by 2050.

1.5   Overview of South Africa's Mitigation System and the Role of SETs

The National Climate Change Response Policy (NCCRP) 2011 under Section 6 articulates the key elements in the overall approach to climate change mitigation in South Africa. (Once legislated, the Climate Bill further reinforces the climate mitigation approach in chapter 5.) The policy defines the mitigation goal or the Nationally Determined Contribution (NDC) as the performance benchmark

against which the collective outcome of all mitigation actions will be measured. The key mechanism to achieve the NDC is the mitigation system. The mitigation system is informed by the key elements; i) GHG Inventory, ii) NDC, and iii) Greenhouse Gas Emissions Projections of Policies and Measures. The key mechanisms of the mitigation system are the carbon budgets and Sectorial Emission Targets (SETs).

The draft Climate Change Bill further defines the NDC which will be translated into SETs. SETs are orientated to steer sectors to make transformative changes for achieving long-term climate action. SETs are anchored in sector PAMs governing the programmes and activities that currently or have the potential to make significant impact on greenhouse gas reductions when adequately implemented. PAMs act as signals to decision makers and the private sector. They provide the enabling environment for key GHG mitigation levers that are necessary to shift a sector to being low carbon.

DFFE initiated the implementation of SETs in 2021 by developing a framework to outline an approach that DFFE would follow when coordinating the process towards allocation and implementation of SETs. The SETs Framework was approved by Cabinet on 24th November 2021. With this approval, DFFE was permitted to implement the SETs before the Climate Change Bill was legislated.

1.6 Defining Sectoral Emission Targets (SETs)

The Draft Climate Change Bill (forthcoming) defines SETs as the greenhouse gas emission reduction goals, either qualitative or quantitative, applicable to sectors or sub-sectors over a period of time. SETs are aligned to the Nationally Determined Contribution, and they will be routinely revised every 5 years in line with future NDC updates. Each national government department will be tasked with developing and implementing Policies and Measures to ensure emissions from within respective sectors or sub-sectors remain within SET allocation. To achieve the desired outcomes, these sector departments would need to align, adjust, upscale and/or develop policies and measures to achieve allocated SETs.
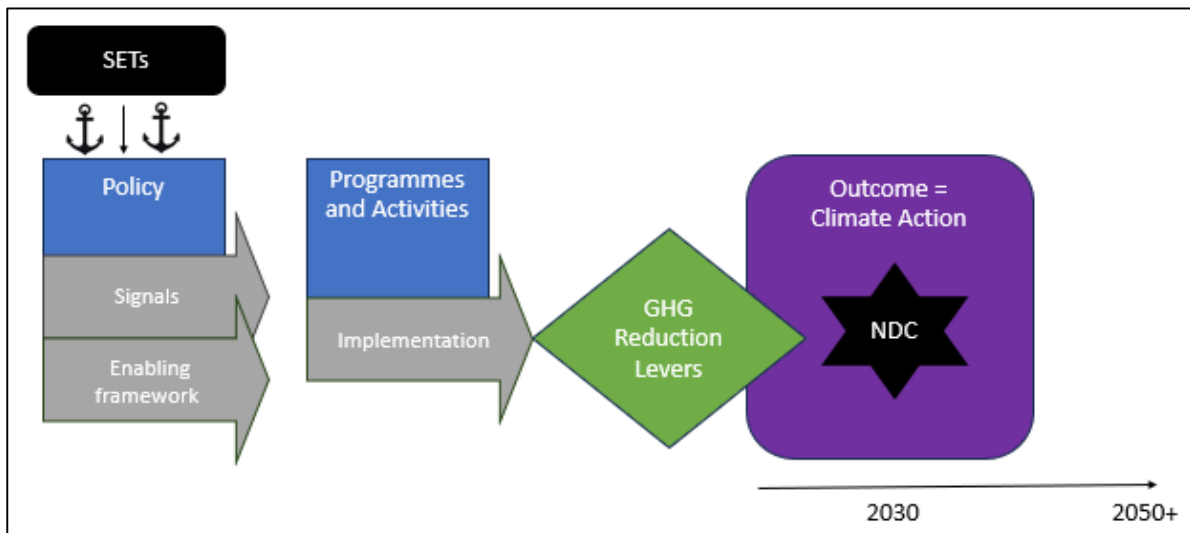
Figure 1-4: SETs are anchored in sector policies to drive long-term transformative change.

Emitting sectors or sub-sectors would need to align, adjust, upscale and/or develop Policies and Measures to achieve their allocated SETs. In addition to PAMs that are being implemented by national government, many sub-national (provincial and local) government departments are undertaking activities that contribute to the national mitigation, adaptation and resilience efforts.

The SETs were developed after consideration of a variety of PAMs that exist under the jurisdiction of line departments. The PAMs can be categorized as regulatory measures, economic measures, support measures, direct government actions and information programmes. These are defined in the accompanying Technical Document.

1.7   Role of spheres of government

The Climate Change Bill makes provision for the provincial and local government spheres to conduct climate change needs and response assessments, and based on this, develop and implement climate change response implementation plan(s) as a component of and/or in conjunction with provincial, metropolitan or district municipality's planning instruments policies and programmes. The effort provided by provincial and local governments may feed into the SETs directly depending on the roles and mandates within each sector and/or may exist outside the SETs. It will be up to the national sector department to determine how other spheres of government feed into the sectoral target. DFFE is embarking on an additional voluntary approach to support local and provincial spheres to elevate their effort on climate change mitigation. Through this initiative, done with the support of the Initiative for Climate Action Transparency (ICAT), DFFE is supporting provinces and local government to develop their respective emissions inventories and GHG emission targets.

2   Methodological Approach

2.1   SETs Allocation Process[3]

SETs will be allocated by government to sector departments. The Cabinet will assign the targets to Ministers of the respective sector line departments who will be responsible for implementing SETs. The progress for achieving SETs will be monitored annually and a final monitoring and evaluation of the SET will take place at the end of the 5-year period by the Department of Monitoring and Evaluation under the Presidency (more information can be found in section 5). DFFE provides the technical guidance and plays coordination role to provide support throughout the processes within government.

2.1.1   Determination of SETs[4]

The process to develop SETs includes a multi-step, evidence-based and collaborative approach within government led by DFFE. DFFE worked closely with sector departments to co-develop Draft SETs to be considered by Government for finalising for allocation. The work included engagements to bring awareness of SETs to line departments, a review of PAMs for each sector to assess the status (including updates and new developments) of PAMs, an in-depth analysis to evaluate the key greenhouse gas mitigation levers of PAMs and the impacts of PAMs on greenhouse gas emissions of the country. The GHG emissions analysis conducted used the DFFE Integrated Climate Change Mitigation Model to assess the GHG impacts and socio-economic impacts of PAMs to 2030 relative to the NDC. Since the development needs of the country cannot be separated from the GHG emission targets, non GHG emissions impacts to the environment, economy and society are also of key consideration in the SETs and key indicators were identified.

The approach to short-listing and the subsequent finalising of the PAMs to be part of draft SETs included analytical tools, including the DFFE Integrated Climate Change Mitigation Model and the multiple engagements made with line departments to get their inputs and recommendations on the above considerations. Figure 2-1 below highlights the process since March 2023. During this process, a policy or measure was framed into an actionable activity (a mitigation lever/progress indicator) based on planned activities of a line department as stated in a certain policy or measure, the MTSF or as verbally discussed in an engagement with a line department. These actionable activities form the basis of a quantifiable or qualitative target that makes up a SET. A SET may include a qualitative target if it was deemed most appropriate to angle the sector policy in a direction that creates an enabling environment for future greenhouse gas reductions.

The sectors of focus for SETs have policy impacts by more than one line department in many cases. The department with current or forthcoming policy that affects sector GHG emissions relevant to that sector was identified and worked with. It is noted that certain sectors have significant interlinkages in terms of greenhouse gas emitting activities such as human settlements and transport, energy and

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[3] Annexure C to this document is the SETs allocation framework that was approved by Cabinet in 2021.
[4] Annexure D to this document is a technical report titled "Sectoral Emission Targets – technical Report" that documents the method, assumptions and data used to inform the determination of the SETs.

industry, energy and transport. These are important interlinkages to manage as policies evolve and increase stringency to reduce GHG emissions.

The PAMs agreed upon with sector departments to form a draft SET were assessed for the GHG impacts on the sector and an iterative process was taken to ensure that when these PAMs are implemented the high point of the NDC would be achieved in 2025 and 2030. The full set of PAMs that form the draft SET make up the proposed SETs Scenario as described in the next section. Additional analysis was undertaken to find out what ambition would be needed above and beyond the SETs Policy Package to put the country onto a trajectory of achieving 1.5 degrees. This is the second scenario presented below, the SETs 1.5 Degree Scenario.
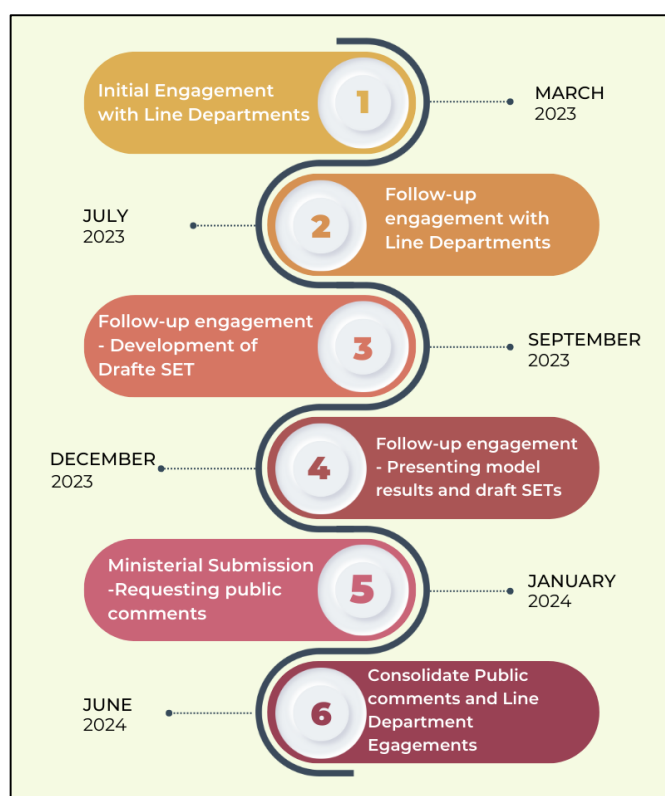
Figure 2-1: Steps undertaken and planned to finalise Draft SETs.

It should be noted that work is concurrently being undertaken to inform the long-term SETs to 2050. Currently in progress is a project to identify possible climate mitigation pathways to 2050 that equally considers socio economic development and net-zero emissions to guide future SETs. This work is necessary to be able to plan and prepare for in order to make the long-term transformative change needed to achieve the country's long term GHG aspirations.

2.2   Analysis Overview

The suite of PAMs that make up the draft Sectoral Emission Targets have been assessed using the DFFE Integrated Climate Change Mitigation Model. The model aggregates the impacts of the selected policies that forms the SETs on the national greenhouse gas emissions. Four scenarios are included:

A.) **With Existing Measures:**
No changes are made across the economy to what already exists in 2022 through to 2050. This scenario is used as the business-as-usual scenario to compare the package of policies that form the SETs. Included in the With Existing Measures (WEM) is the IRP 2019 policy as stated.

B.) **SETs Policy Package:**
The policies that form the SETs in each sector based on engagements with line departments are included in this scenario according to the stated timeline and target in each policy. Qualitative SETs are not included in the quantification of affects since there is no number value to include in the assessment. Certain policies may exist but do not have targets for the stated period (e.g. post-2015 National Energy Efficiency Strategy) and these targets are projected based on stakeholder engagement with sector experts as to what is realistically feasible.

C.) **Realistic PAMs:**
This scenario includes the same package of PAMs as the SETs Policy Package scenario where the implementation is assumed to be 75% of the planned implementation.

D.) **SETs 1.5 Degree Scenario:**
This scenario includes the same package of policies as the SETs Policy Package scenario; however, it includes increased ambition for certain uptake assuming increased investment is available. The sectors that this considers for higher ambition include:
<u>Energy</u>:
-    increased uptake of solar PV in various commercial industry sectors
-    Additional decommissioning of 1200MW coal power
<u>Transport</u>:
-    increased uptake in the modal shift from road freight to rail; and passenger road to rail
<u>Environment</u>
-    increased afforestation.
-    Increased recycling

The detailed description of the inputs and assumptions for the modelled SETs can be found in the accompanying technical report.

2.3   Model Framework and Key Assumptions

2.3.1   Modelling Framework

The DFFE Integrated Climate Change Mitigation Model is based on a bottom-up approach to estimating greenhouse gases considering the activity data and mitigation potential in key economic sectors (where possible). The model includes a PAMs analysis tool that maps policies to specific activities with defined uptake and/or penetration rates. The uptake and/or penetration rates are based on values given in existing policies and if a value is not available in a policy such as the national energy efficiency strategy, the value is then based on sector expert inputs on what is the most realistically feasible value the sector can achieve in 2030. The model analyses these policies in terms of their aggregated effect across the economy. Some policies may overlap others and care has been taken to exclude any risks of double counting.

The integrated model also includes an economic model, the South African Socio-Economic Model. This is a simulation model used to assesses the socio-economic implications of different scenarios for sectors and the whole economy based on a Social Accounting Matrix (SAM) of South Africa. It uses a set of econometric equations to predict economic behaviour based on the changes to the economy based on the implementation of the PAMs assessed in the scenarios. This model is used to provide investment requirements and employment data.

2.3.2   Data Sources and Key Assumptions

The integrated model uses the National Greenhouse Gas Inventory as the starting point including the same scope and coverage of sectors. The model includes additional disaggregation in some sectors such as energy and industry sectors and this information comes from company data. The socio-economic model includes input assumptions from STATSA. Key assumptions underpinning the model are aligned with government policies and plans, with sector-specific information obtained through stakeholder engagement and literature research where required to fill the gaps. The model has been most recently updated in 2024 with the most current available data.

Key drivers in the model are presented below. Additional information can be found in the accompanying technical report document.

Population: The population projection is aligned with the population projections used for the IRP 2023 and is assumed to follow the United Nations population projection from its Population Division (United Nations, 2022).

GDP: The Statistics South Africa Gross Domestic Product first quarterly release provided updated GDP figured to update historic GDP numbers in the model through to 2022. The GDP projections to 2030 are an output from the socio-economic model within the integrated model.

2.4 Sectoral information and impacts

2.4.1 Mining

The mining sector includes the primary extraction of a variety of minerals ranging from coal to platinum group metals, ferroalloys, manganese, iron ore, chrome, titanium to industrial minerals like clay, limestone and silica. The sources of greenhouse gas emissions are largely CO_2, CH_4 and N_2O from fuel use to conduct operations, the fugitive emissions of CH_4 from underground coal mines and the impact on land sector GHG emissions.

Emissions reductions in the mining sector would be from reducing fuel use or changing technology to use non GHG emitting energy sources, reducing fugitive emissions from coal mines, reducing the disturbance of carbon sinks during mine operations and enhancing the carbon sinks during and after mine rehabilitation. Currently the only policy driving emissions reductions is the Post-2015 NEES. There are no PAMs existing to reduce fugitive emissions from coal mines, reducing the disturbance of carbon sinks and enhancing carbon sinks during and after mine rehabilitation.

The Mining sector also has a role to play in the broader low carbon transition since. Key minerals are needed across the value chains of new technologies, of which will be important to reduce GHG emissions in the other sectors. The Critical Minerals Strategy (in development) by the DMRE will contribute to this development.

Table 2-1: Mining Sector: Information on drivers to reduce emissions.

PAM	Assumption / Progress Indicator	Unit
National Energy Efficiency Strategy	Increased efficiency of mining production	Unit energy used / Unit output
Financial Provisioning Regulations	Include carbon sequestration during rehabilitation of mines	t CO_2eq
Monitoring and Management of fugitive emissions from coal mines	Establish monitoring system of fugitive emissions	t CH_4
Critical Minerals Strategy	Role of critical minerals in the low carbon transition are identified. Potential availability of critical minerals is known over a set period	t critical mineral available over a set period

2.4.2 Agriculture

The agriculture sector includes the production crops and livestock that feeds into our food system. The sources of GHG emissions in agriculture are CO_2, CH_4 and N_2O from fuel consumption, N_2O and CH_4 from soils, N_2O and CH_4 from livestock and CO_2 from land disturbances. The agriculture land has the potential to sequester carbon. In 2022 the Livestock sector, specifically enteric fermentation accounted for most of the emissions (40,637 ktCO_2eq) and the Cropland sector contributed 3,509 ktCO_2 to national emissions.

The emissions reductions of the agriculture sector would be from reducing CH_4 and N_2O emissions from livestock, N_2O and CH_4 emissions from agriculture soils, increasing carbon sequestration in

soils, CO_2 from land disturbances and CH_4, N_2O and CO_2 from reducing fuel use or changing technology to use non GHG emitting energy sources. Conservation has the potential to sequestrate CO_2, at an estimated rate of 0.02 to 0.07 tCO_2/hectare. Currently the only policy driving emissions reductions is the Post-2015 NEES. The Draft Conservation Agriculture Policy and the Conservation Agriculture Resources Act have the potential to guide widespread adoption of conservation agriculture, there are no specific targets or mechanisms to set targets.

Table 2-2: Agriculture Sector Information: Information on drivers to reduce emissions.

PAM	Assumption / Progress indicator	Unit
National Energy Efficiency Strategy	Increased energy efficiency of agriculture production	Unit energy used / Unit output
Conservation of Agriculture Resources Act	The role of soils in climate mitigation is included in the policy	-
Conservation Agriculture Policy	Finalise policy and align implementation with the policy	-
Livestock emissions research programme	Identify emissions reduction technologies and opportunities in the livestock subsector	t CH_4 and t N_2O reduction potential per technology type

2.4.3　Human Settlements

Human settlements can refer to how we as communities interact with the built environment. It includes residential and commercial buildings, utilities like water and sanitation and overlaps with other key GHG emitting activities such as mobility, waste, energy use and land use. GHG Emissions include CO_2, N_2O and CH_4 from fuel consumption and CH_4 from wastewater. The Commercial and residential sectors accounted for approximately 3.7% of national emissions in 2022.

Emissions reductions in the human settlements would result from reducing the energy use in residential and commercial buildings, reducing the release of CH_4 from wastewater treatment facilities and designing human settlements in a way that reduces the need to travel long distances for work, leisure or other social needs, which in turn will reduce fuel use, and a reduction on the impact settlements have on land use. Key policies that impact emissions reductions in human settlements include the National Housing Code, the Greed Drop Report, Post-2015 NEES and SPLUMA.

Table 2-3: Human Settlements Sector Information: Information on drivers to reduce emissions.

PAM	Assumption/Progress Indicator	Unit
Red Book: The Neighbourhood Planning and Design Guide	Implementation of the planning and design principles to achieve sustainable human settlements	-
Climate Smart Community implementation programme	Development of climate smart communities	Number of climate smart communities developed
Green Drop Report	Inclusion of autogeneration of energy from onsite biodigesters as a criterion for assessments	-

PAM	Assumption/Progress Indicator	Unit
Methane capture at Wastewater Treatment Facilities	Implementation of methane capture technology at wastewater treatment facilities	Number of methane capture installations
Climate Smart Sector Plan for Human Settlements	Inclusion of climate mitigation in the Plan	-

2.4.4   Trade & Industry

The industry sector includes all manufacturing and production in the country. The GHG emissions from this sector include CO_2, CH_4 and N_2O from fuel consumption, CH_4 from fugitive emissions, CO_2 from process emissions, CO_2, CH_4 and N_2O from waste. The industry sector accounted for 13% of national emissions (including FOLU, not including coal-to-liquid/gas-to-liquid) in 2022. More than half of these emissions are a result of process emissions and the remaining 47% are due to energy emissions.

Emissions reductions in the industry sector come from reducing fuel consumption through, for example, improved efficiency, the switch to non-renewable fuels, alternative production processes that can substitute for production processes that result in process emissions, improved management of fugitive emissions and a reduction of waste.

Industry also has a key role to provide for the necessary inputs for other sectors to transition being low carbon. This refers to the scaling up of production of technologies and materials that are needed in other sectors to make the transition. A Green Industrial Strategy would be instrumental to coordinate the needed effort.

Table 2-4: Trade and Industry Sector Information.

PAM	Assumption/ Progress Indicator	Unit
The Green Hydrogen Commercialisation Strategy for South Africa	An implementation strategy is developed	-
Master Plans: Furniture, Sugar, R-CTFL, Poultry, Steel, Automotive, Forestry	The green economy/low carbon opportunities are integrated into the plans	-
Incentive schemes such as the Manufacturing Competitiveness Enhancement Programme, 12 L Tax Deduction of Energy Efficiency Savings, Automotive Incentive Scheme	Reformation of incentives are considered to support the transition of industry to being low carbon	ZAR incentives allocated to low carbon initiatives
Strategy for Green Trade Barriers	Strategy is developed with an implementation plan	-
National Building Regulations and Building Standards Act	The policy is updated to include uptake of energy efficiency in buildings	-
National Cleaner Production Centre and Industrial Energy Efficiency Project	Energy efficiency implementation in industry	Unit energy per production output
Green Industrial Strategy	A sector wide strategy developed to mainstream climate change	
South African Road to Production of Electric Vehicles (The Roadmap)	Increasing availability of EVs for local consumption	Number of EVs produced for local consumption

2.4.5 Transport

In 2022, the transport sector, consisting of domestic aviation, maritime and road subsectors, accounted for 12% of national GHG emissions (including FOLU), of which 11.75% can be attributed to the road transport sector. It is the second largest contributor to emissions after the electricity sector and is largely a result of the emissions of CO_2, CH_4 and N_2O from the combustion of hydrocarbons.

Emissions reductions in the transport sector include retrofitting existing aircraft for improved efficiency, early retirement of aircraft (replaced with newer efficient aircraft) and biofuels in the aviation sector, improved efficiency of internal combustion engines, shifting freight and passenger transport from road to rail and mass transit (passenger), technology swich from internal combustion engines to hybrid electric vehicles, plug-in hybrid electric vehicles, electric vehicles, fuel cell electric vehicles and compressed natural gas and substituting fossil fuel use with biofuels in the road sector, improved efficiency of train locomotives and fuel switching to hybrid diesel, CNG, biofuels and metro rail voltage upgrade in the rail sector, and a set of fuel saving measures in the maritime sector such as propeller upgrade, speed reduction, propeller polishing and wind power applications.

Table 2-5: Transport Sector Information.

PAM	Assumption / Progress Indicator	Unit
National Land Transport Strategic Framework 2023 to 2028	Behavioural change of passengers to use low carbon transport options	Number of passengers on low carbon transport options per transport type
White Paper of National Transport Policy		
White Paper on National Rail Policy	Technology shift to low carbon technology in transport systems	
National Transport Master Plan 2050	Reduction in fuel use in the fuel system	Number of low carbon vehicles on the road per technology type TJ of fuel reduced in the transport sector
Roadmap for the Freight Logistics System in South Africa 2023	Shift of freight from road to rail	Kms freight transported on rail
Draft Roads Policy	Development of an investment strategy and implementation plan to ensure GHG emission mitigation measures are implemented	Number of climate mitigation opportunities implemented
Draft Comprehensive Maritime Transport Policy, 2017	Develop an implementation strategy to deploy energy efficient technologies and other climate mitigation opportunities are implemented across the maritime sector	
White Paper on National Civil Aviation Policy	Make alternative fuels available for the aviation industry Reduce fuel use across the aviation sector Develop market-based measures for the aviation sector	

2.4.6 Energy

The energy sector is defined by the supply and demand of fuel use for energy use. Fuels may be GHG emitting (non-renewable fuels) or non-GHG emitting. The energy sector is by far the most significant contributor, accounting for 86% of national emissions in 2022 (including FOLU). The GHG emissions include CO_2, CH_4 and N_2O from fuel consumption and CO_2 and CH_4 from fugitive emissions.

Emissions reductions in the energy sector would result from a reduction of fuel consumption, a fuel switch to non-renewable fuels and improved management of fugitive emissions. Given the significant volume of GHG emissions emitted from electricity generation, which is currently fuelled by coal, the electricity subsector is a key focus to reduce national GHG emissions. Key efforts to reduce electricity sector emissions include the decommissioning of existing coal power plants and building new power generation that is fuelled by non-renewable fuels.

Table 2-6: Energy Sector Information.

PAM	Assumption/ Progress Indicator	Unit
Integrated Resource Plan	Amount of non-GHG emitting technology installed Amount of non-GHG emitting power generated Amount of GHG emitting capacity decommissioned	MW of per technology MWh per technology
Integrated Energy Plan	The plan is updated considering the future uptake of low carbon fuels	TJ low carbon fuels supplied
National Energy Efficiency Strategy	Update of the energy efficiency strategy across the economy	Unit energy used / Unit output
Solar Water Heaters	Solar water heaters installed in the residential sector to substitute for electrical or gas fired water heaters	Number of SWH installed
Demand Side management	Increased management of electricity usage across commercial, government and residential sectors	Total MWh energy demand

2.4.7 Environment & Forestry

The environment sector is classified by the greenhouse gas emitting and carbon sequestration activities that fall under policy framework of the Department of Forestry, Fisheries and the Environment (DFFE). It includes the management of carbon stocks and carbon sequestration in non-agricultural lands, company carbon budgets, solid waste management and the management of hydrofluorocarbons (HFCs).

Emissions reductions in the environment sector would come from enhancing carbon sequestration in disturbed ecosystems such as grasslands and indigenous forests, managing fires, reducing the emissions of solid waste into the atmosphere and reducing the emissions of HFCs into the atmosphere.

Table 2-7: Environment and Forestry Sector Information.

PAM	Assumption	Unit
National Waste Management Strategy	30% waste diverted from landfill sites	tonne waste type diverted
HFC Phase Down	45% decrease in consumption	Unit consumed per HFC type
Afforestation	5400 ha of temporary unplanted areas planted. 15 000 ha approved for afforestation. 200 000 trees planted outside forests footprint	T CO$_2$eq sequestered
REDD+ Strategy	Development of the strategy and implementation plan	-
Wildfires	Increased management of wildfires / lower temperature burns	Number of fires suppressed Number of managed cooler fires
Rehabilitation of wetlands	Increasing the carbon sequestration	T CO$_2$eq sequestered
Restoration of thicket		
Indigenous species cultivated		
Protection of Wetlands	Carbon stock protected	T Carbon stock protected
Land area conservation		

3 Sector Allocation

The 2030 Sectoral Emission Targets (SETs) build the foundation for a structured and coordinated approach to reduce greenhouse gas emissions by considering the key activities, or levers, and policy signals needed to achieve our climate goals as a country. The SETs have two purposes. First, they identify the key policies that are linked to key GHG mitigation levers across the economy, that if implemented as stated the country can achieve the 2025 and 2030 NDC targets as submitted to the UNFCCC in September 2021. Secondly, the SETs lay down the initial stepping stones to carry the momentum towards a low GHG emission economy. The SETs will contribute to the development of the subsequent NDC updates beyond 2030. These SETs will be updated with each 5-yearly update of the NDC which will move the economy to net-zero at a pace and speed given the socio-economic needs and context of the country.

The SETs are presented in the below tables per sector disaggregated per each PAM that contributes to the sector target. The quantitative SETs are presented in both the end of the period target for 2030 and they are annualised per year up to 2030. The targets are communicated in terms of GHG emissions reductions in carbon dioxide equivalence (CO_2eq). The qualitative SETs are presented as an objective to be completed by 2030.

Below we present two plausible options (figure 3-1) for SETs for energy, industry, transport, human settlements, agriculture, minerals and environment sectors. The first option represents the identified PAMs by government to reduce emissions by 2030 to within the NDC range of 420 Mt CO_2eq and 350 Mt CO_2eq based mostly on an existing pipeline of PAMs. The second option represents a more ambitious set of targets that can be achieved with increased investment in the energy and transport sectors to achieve our low NDC target of 350 Mt CO_2eq.

Table 3-1: Quantifiable SETs Allocations.

Agriculture, Land Reform and Rural Development								
PAM	**Unit**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**Cumulative (2025-2030)**
Agriculture PAMs (ERs[5])	MtCO$_2$eq	0,74	0,61	0,53	0,38	0,55	0,57	3,37
Water and Sanitation								
Methane capture (ERs)	MtCO$_2$eq	0,00	0,00	0,00	0,00	0,00	0,06	0,06
Mineral Resources and Energy								
Electricity Sector (ELs[6])	MtCO$_2$eq	177,35	165,85	157,72	157,95	148,95	124,73	
NEES (ERs)	MtCO$_2$eq	3,28	3,95	5,09	6,58	6,80	7,07	32,78
Electrification Strategy (ERs)	MtCO$_2$eq	0,22	1,10	1,73	1,28	1,51	2,98	8,83
SWH (ERs)	MtCO$_2$eq	0,22	0,37	1,54	1,42	1,35	1,41	6,31
Forestry, Fisheries and Environment								
CT+CB (ERs)	MtCO$_2$eq	5,54	8,03	10,37	11,95	12,09	10,45	58,41
NWMS (ERs)	MtCO$_2$eq	0,15	0,29	1,69	1,79	2,17	2,39	8,49
Forestry (ERs)	MtCO$_2$eq	1,05	0,78	0,48	0,47	0,76	0,91	4,45
Kigali Amendment (ERs)	MtCO$_2$eq	0,30	0,20	0,92	0,77	1,50	1,46	5,15
Other environment (ERs)	MtCO$_2$eq	0,00	0,00	0,02	0,00	0,00	0,00	0,02
Transport								
Transport PAMs (ERs)	MtCO$_2$eq	0.21	0.87	2.57	4.62	5.24	4.51	18.03

An assessment of emissions reductions to be achieved from the PAMs informing the determination of SETs is presented in figure 3-1 below.
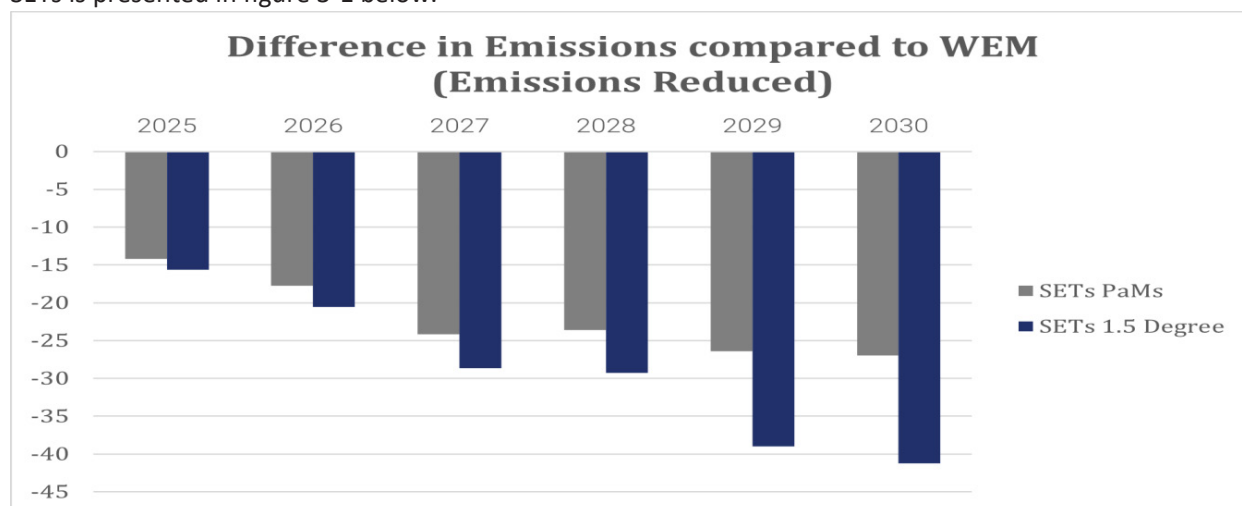
Figure 3-1: GHG Emission reductions results from PAMs to be used for SETs allocation (2025-2030).

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[5] ERs are emissions reductions achieved relative to the WEM scenario.
[6] ELs are emission levels that must be achieved in a given year within the SETs commitment period. The SETs commitment period in this case is (2025-2030).

Table 3-2: Qualitative SETs Allocations

Sector	PAM	Target	Leading Department
Agriculture	Conservation of Agriculture Resources Act, Climate Smart Strategic Framework, Climate Change Sector Plan	Update the key policies to incorporate climate mitigation and carbon sequestration, including supporting measures (including the Conservation of Agriculture Resources Act, Climate Smart Strategic Framework and Climate Change Sector Plan) Update policies with the following activities, where relevant: Nitrogen inhibitors in crops Updating fertilizer schedules Increase availability of soil sampling, standardise nitrogen testing. Feed changes in livestock subsector. Conservation agriculture Sharing best practices across Provinces for climate mitigation	**Department of Rural Development, Agriculture and Land Reform**
	Conservation Agriculture Policy	Provide training and capacity to extension officers to support smallholder farmers on zero cost climate change mitigation options	
	Livestock emissions research programme	Identify emissions reduction technologies and opportunities in the livestock subsector	
	Agriculture Sector Implementation Plan	Develop a sector implementation plan to for applying climate mitigation activities	
Human Settlements	Sector Climate Response Strategy, National Housing Code	Develop a climate response strategy for the sector that outlines in an implementation the low carbon development pathway for the sector, including other departments, local and provincial governments.	**Department of Human Settlements**
		Develop a Red Book Implementation Strategy to mainstream the Red Book into implementation programmes	
		Include an assessment of climate smart settlements in the evaluations of housing programmes and policy.	
		Provide coordination and support to Provinces/Local governments, including bylaws, to ensure climate smart settlements are developed	
	Green Drop Report	Include auto generation of energy from onsite biodigesters as a criterion in the Green Drop Report.	**Department of Water and Sanitation**
Mining	Draft Mine Closure Strategy Derelict and Ownerless Mines Programme	Include revegetation/carbon sequestration in the mine closure process	**Department of Mineral**

Sector	PAM	Target	Leading Department
	The Exploration Strategy for the Mining Sector of South Africa and Critical Minerals Strategy (Draft in Progress)	Include the future low carbon economy in The Exploration Strategy for the Mining Sector of South Africa and Critical Minerals Strategy.	**Resources and Energy**
	Sustainable Development Reporting Guidelines (note developed)	Include climate change mitigation in the Sustainable Development Reporting Guidelines	
Energy	Energy Demand Side Management	Develop an updated demand side management programme	
Transport	National Land Transport Strategic Framework 2023 to 2028	Implement the Urban Objectives of the land transport strategy. Develop an implementation plan and pilot in two cities. Develop a pilot project to implement the stated goal of 5% of rural population with access to public transport within 1km. Implement a pilot project to increase transport by non-motorised/bicycle in 3 cities. Develop a strategy to roll out charging stations	**Department of Transport**
	White Paper of National Transport Policy	Develop implementation plan for increasing fuel efficiency, cleaner fuels and the adoption of fuel-efficient modes of transport, including the promotion of low-carbon modes of transport in existing and newly designed transport systems.	
	White Paper on National Rail Policy	Develop the National Rail Implementation Plan for priority corridors. Implement an enhanced PRASA Service Recovery Plan to have all 10 existing corridors operating and include additional corridors included in the plan. Develop an M+E System for tracking the modal shift for passenger and freight from road to rail.	
	Roadmap for the Freight Logistics System in South Africa 2023	Develop a monitoring as evaluation framework to track the modal shift of freight from road to rail	
	Draft Comprehensive Maritime Transport Policy, 2017	Develop an implementation strategy to deploy energy efficient technologies and other climate mitigation opportunities to reduce fuel related GHG emissions in port facilities and in ship operations	
	White Paper on National Civil Aviation Policy	Develop an implementation strategy to:	

Sector	PAM	Target	Leading Department
		Research, develop, demonstrate, diffuse and commercialise alternative fuels for use in aviation. uptake measures to limit or reduce aviation's emissions considering the roles of airport authorities, air traffic service providers and aircraft operators. participate in market-based measures, such as carbon pricing.	
	Draft Roads Policy	Develop the National Roads Master Plan, a National Road Investment Strategy and associated implementation plan ensuring GHG emissions mitigation measures are included	
Environment	Carbon Budgets	Mandatory carbon budgets	Department of Forestry, Fisheries and Environment
	National Waste Management Strategy	30% waste diverted from landfill sites	
	MTSF (DFFE) (Kigali Amendment)	Decrease consumption by HFC by 45%	
	MTSF (DFFE)	5400 ha of temporary unplanted areas (TUPs) planted. 15 000 ha approved for afforestation. 200 000 trees planted outside forests footprint	
	REDD+ Strategy	Development of a REDD+ Strategy for the country	
	Medium-Term Strategic Framework	90% of wildfires suppressed	
		Rehabilitation of 100 wetlands (9 603 ha)	
		Thicket restoration (30 637 ha)	
		2 500 ha of land for indigenous species cultivated. Wetlands of International significance designated. 17.7% in total land area under conservation (21 652 699 of 121 991 200 ha)	

4   Implications for the 2030 NDC

4.1   NDC Overview

The latest NDC for South Africa was submitted in September 2021. It presents updated targets for 2025 and 2030 considering the country's economic circumstances and a fair contribution to the global fight against climate change. The NDC targets includes relevant policies at the time when the NDC was derived including a very ambitious power sector investment plan as set out in the 2019 Integrated Resource Plan, the Green Transport Strategy, enhanced energy efficiency programmes and the carbon tax. It is assumed that substantial multilateral support is available to implement these measures, as provided for in the Paris Agreement.

4.1.1   Scope Considerations of the NDC

The NDC was developed based on an analysis of economy-wide emissions using the National Greenhouse Gas Inventory as a baseline (NIR). The latest available NIR was 2000-2017 submitted with the Fourth Biennial Update Report using the Global Warming Potentials (GWPs) of the IPCC Second Assessment Report. All gases were covered including five greenhouse gases, CO_2, CH_4, N_2O, HFCs and PFCs. SF_6 and NF_3 were not included due to the lack of data. A few subcategories are not estimated due to either activities not occurring in South Africa or lack of data at the time. The land sector is included in the NDC excluding the emissions from natural disturbances, most notably wildfires. All carbon pools are included except dead organic matter – litter is included but dead wood is not currently included.

4.1.2   Use of GWPs

The NDC targets were finalised considering the GWPs of the Fifth Assessment Report, which is estimated to have an impact of about +10 to 20 Mt CO_2eq in the target years compared to the analysis if the Second Assessment Report were used. The GWPs of the Fifth Assessment Report will be used for national GHG accounting from 2024 in accordance with the Annex to decision 18/CMA.1 of the Paris Agreement.

4.2   Aggregated impact of SETs vs NDC target points

The combination of SETs is assessed against the NDC in figure 4-1 below. This includes the three scenarios assessed. The first is the baseline scenario "With Existing Measures" which includes all PAMs that have been implemented before and up to 2022 that are projected to 2030. The SETs scenario includes the package of PAMs that form the SETs as described in table 3-1. The third scenario, named SETs 1.5, is the more ambitious scenario that would guide the country to achieving the low point of the NDC (350 Mt CO_2eq) by 2030 through higher investments.
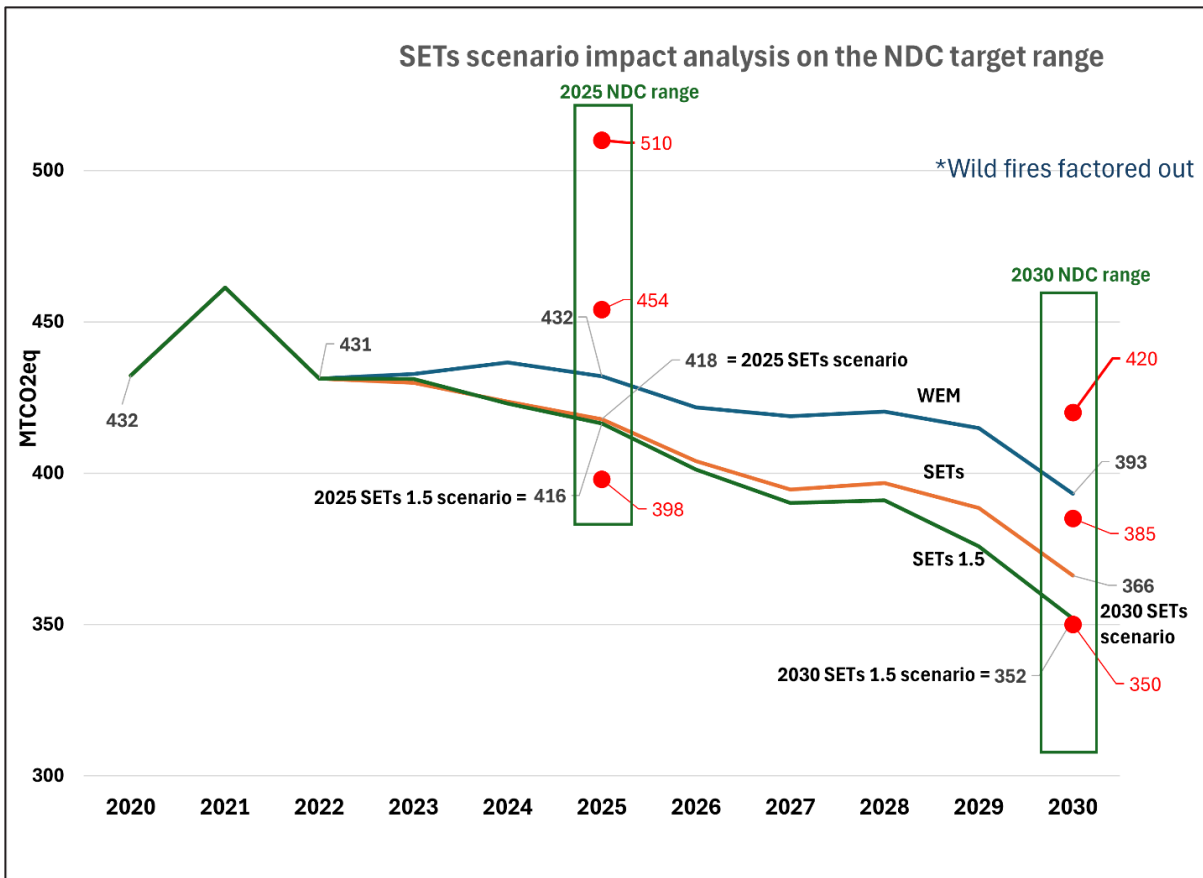
Figure 4-1: Assessing the aggregate impact of SETs allocation on the updated NDC target range.

In 2025, the country's current emissions trajectory is likely to fall within the NDC range, as represented by WEM in the above image. The SETs scenario, which includes all the PAMs targets to be allocated to sectors, will bring the emissions further down to about 19 Mt CO_2eq away from the low point of the NDC. With further ambition to set the country on a 1.5-degree scenario an additional 2 Mt CO_2eq can be shaved off the emissions to be 17 Mt CO_2eq away from the low point of the NDC.

In 2030, all scenarios including the WEM scenario is likely to meet the NDC. The WEM scenario is about 26 Mt CO_2eq below the high point of the NDC, 8 Mt CO_2eq from the mid-point of the NDC and 43 Mt CO_2e from the low point of the NDC. The SETs scenario, which achieves 366 Mt CO_2eq in 2030, is about 16 Mt CO_2eq from the low point of the NDC. The low point of the NDC can be achieved with an additional investment of 3% (an additional ~R28 trillion per year) across the energy, transport, waste, agriculture and environment sectors. The 1.5-degree scenario is estimated to be 352 Mt CO_2eq in 2030.

A key assumption of this assessment of WEM, SETs and 1.5-degree scenarios is that the policies are implemented as stated. If key policies such as the Integrated Resource Plan with its prescribed electricity build plan and decommissioning plan are not achieved the NDC may not be achieved.
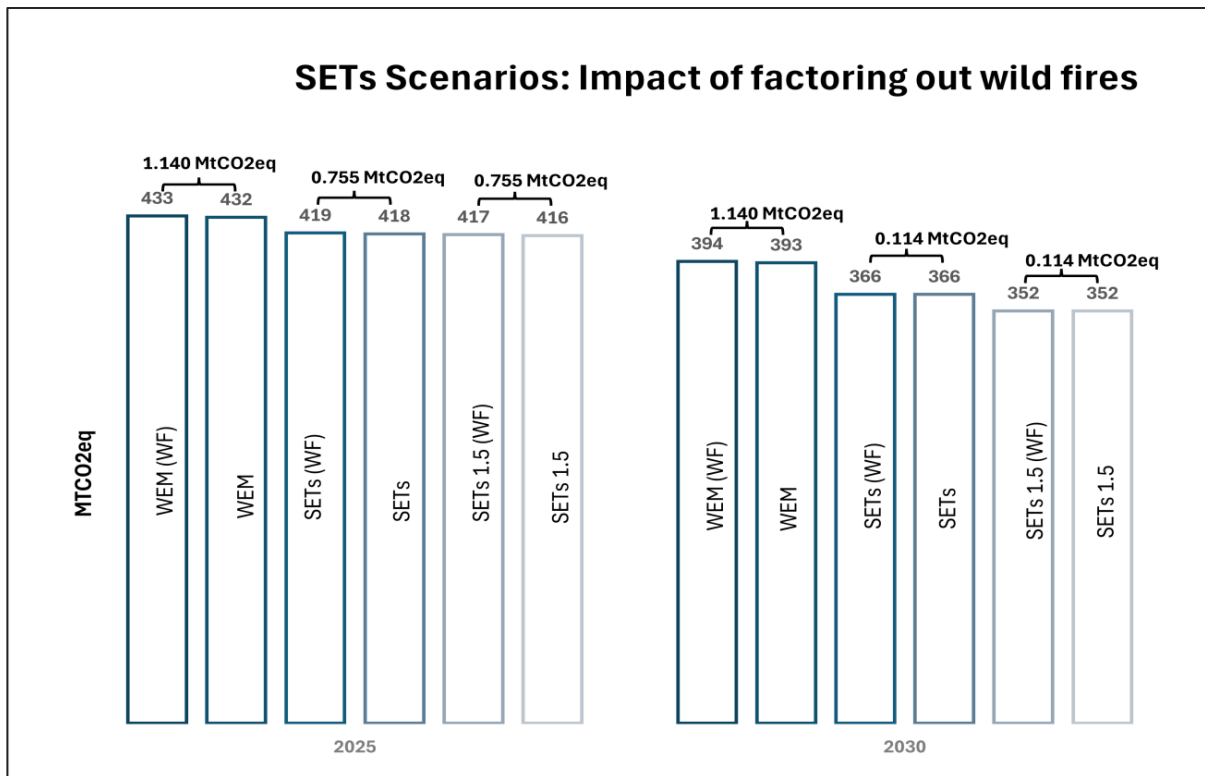
Figure 4-2: Assessing the impact of factoring wildfires on total emissions per scenario (2025, 2030).

4.3　Economic Impacts and Co-benefits of SETs

Economic Growth and Gross Value Added (GVA):

SETs will have an overall positive impact on economic growth. Growth would be similar to the historical years growth rate of 1.5%.

All scenarios assessed increase GVA of the country relative to the WEM. The annual average increase in GVA for the SETs scenario is 1.15%, for the Realistic SETs it is 1.11% and for the SETs 1.5-degree scenario it is 1.33%.

Figure 4-3: Growth per scenario
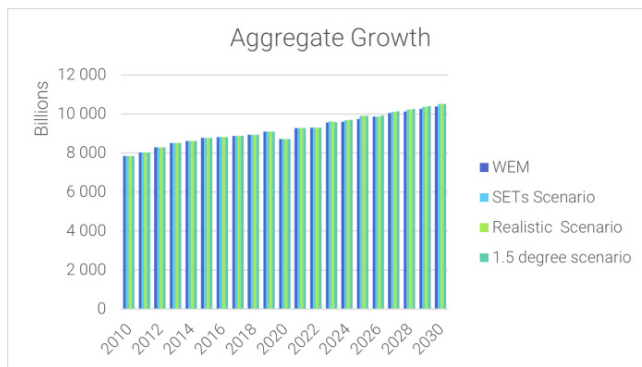
Table 4-1: Percent change of the scenarios against the WEM

Percent Increase of the SETs scenario compared to WEM					
2025	2026	2027	2028	2029	2030
0,67%	1,06%	1,76%	0,48%	1,31%	1,60%
Percent Increase of the Realistic SETs scenario compared to WEM					
0,50%	1,08%	1,75%	0,42%	1,32%	1,60%
Percent Increase of 1.5 Degree Scenario Compared to WEM					
0,54%	1,13%	1,72%	1,01%	1,70%	1,90%

Investment:

Investment into the country economy will be highest with higher emissions reductions. Investments include the amount of flow into all sectors of the economy not only the sectors that are affected by SETs. The largest share of investment would go into the services sector due to the initial share of the sector within the whole economy.

The 1.5 Degree scenario is expected to result with the most investments averaging to about R829 trillion each year between 2025 and 2030. This is compared to the WEM scenario, which would result in an average R755 trillion of investment each year. The SETs scenario is estimated to achieve an average of R811 trillion each year and the Realistic scenario would achieve about R808 trillion each year. The investment deeds to achieve the 1.5 degree scenario compared to the SETs scenario is 3%, or R28 trillion annually.

Figure 4-4: Investment per scenario

Employment:

The SETs scenario has a net increase of employment of 2.7% compared to the WEM scenario, **or about 419 000 jobs added each year between 2025 to 2030. The SETs 1.5-degree scenario** increases implement by an additional 0.6% compared to the SETs scenario, or 517 000 jobs annually between 2025 to 2030. The SETs 1.5-degree scenario increases overall employment by 3.3%, or 517 000 jobs compared to the WEM annually. The highest growth sectors are electricity, manufacturing and construction.

Figure 4-5: Employment impacts per scenario
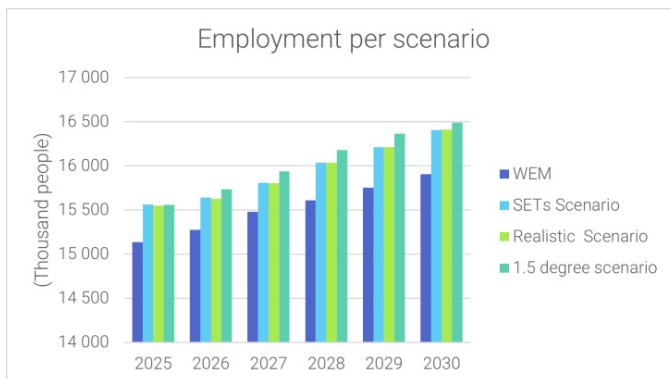
Key Co-benefits

SETs will have additional impacts specific to each sector in many ways. The below table lists the key co-benefits for the sector that will be tracked. These have been identified with sector line departments that are relevant to the specific PAMs of focus.

Table 4-2: Key Co-benefits of SETs per sector

Sector	Key Co-benefits
Energy	Water Air Quality Access to Affordable Electricity Economic Growth
Trade and Industry	Air quality

Sector	Key Co-benefits
	Employment Economic Growth
Transport	Air Quality Cost Savings For Users Cost Savings For Government Road Safety Reduced Traffic
Mining	Safety (reduced methane) Soil quality Biodiversity
Human Settlements	Air Quality Cost Savings Building Efficiency Reduced Traffic
Agriculture	Cost Savings Yield Climate Change Resilience
Environment	Biodiversity Climate Resilience Cleaner Environment

5   M+E Framework for SETs

5.1   M+E Approach

The SETs are to be aligned with the overall national planning system as implemented by DPME. The overall monitoring and evaluation (M+E) of the SETs will be part of the Medium-Term Development Plan (MTDP) monitoring and assessment process as it already exists. In this way, the Presidency will have the role of providing oversight of the performance of implementing the SETs. Sector departments are expected to report on progress of the assigned SET. Information to be provided includes evidence of achieving a qualitative SET (e.g. completed implementation strategy) and data collected to track a quantitative SET (e.g. energy efficiency achieved per end-use sector). DFFE will support where needed, including with translating sector activity data to greenhouse gas emissions equivalence and the overall analysis of the SETs performance against the NDC. Sector departments are not expected to report against SETs in terms of GHG emissions equivalent. A template for M+E of a SET will be developed with the sector department at the start of the SETs allocation period so that the information that is needed to be collected is clear from the beginning.

The overall performance of the SETs is conducted at the end of the 5-year MTDP period. The review of SETs will include the business-as-usual performance analysis by the DPME in terms of strategic reporting assessment. An additional step will include an overall assessment of performance of the SETs in relation to the NDC. This work will be supported by DFFE, who is equipped with the capacity and tools to track greenhouse gas emissions performance including the national greenhouse gas inventory system. It is noted that SETs will be assessed every 5 years, however since the SETs will be part of the APP, there will be an annual tracking component based on the existing APP review

structures. Annual tracking will provide the necessary information for government to direct resources to ensure SETs are achieved that may be behind schedule.

The general process of the M+E is:

1. SETs are allocated by Government to line departments.
2. SETs are integrated into the MTSF and included in the Government budgetary planning process, the medium-term development plan (MTDP).
3. SETs are considered in the strategic outcomes that form part of the Performance Agreement with Ministers and subsequently integrated into the Delivery Agreements.
4. SETs are subsequently incorporated into the respective line department Annual Performance Plans
   a. Where necessary, Line Departments can ensure provincial and line department MTDP, strategic plans and annual performance plans incorporate aspects of the SETs that may be relevant.
5. Monitoring of performance of SETs is part of the monitoring tools and reports at the DPME.
   a. Electronic Quarterly Performance Report System: This provides the necessary information for Government to track performance against Annual Performance Plans.
   b. Annual Reports: This provides information on the institution's performance relative to the targets set in the Annual Performance Plan and the budget. It is submitted during the preceding financial year.
   c. End-term performance reviews:
   d. Auditor General of South Africa:
6. Evaluation of performance is conducted by the DPME quarterly and annually according to APP and annual report processes based on key indicators only.
7. Performance to achieve SETs is comprehensively reviewed at the end of the 5-year MTSF term. This includes an overall analysis of the performance of SETs in relation to the NDC and sector activities.

Table 5-1: Roles and Responsibilities

Institution/Minister	Roles and Responsibilities
Ministers	Integrate SETs within the relevant outcomes as part of the Delivery Agreement
Department of Monitoring and Evaluation under the Presidency	Oversight of the M+E system.
Department of Forestry, Fisheries and Environment	Conducting greenhouse gas emissions performance analysis at the sector and national level. Provide the assessment of GHG emissions relative to the NDC.
Line Department	Reporting into the national planning system, e.g. quarterly, annual reports. Providing additional detail of activity data (non-greenhouse gas emissions data) where requested
National Treasury	Provide budgetary analysis and performance tracking.

The purpose of the Strategic Plans is to set out an institution's policy priorities, programmes and project plans for a 5-year period. It focuses on the strategic outcome orientated goals for an institution as a whole and objectives for each of its main service delivery areas.

The Annual Performance Plan sets out the objectives and activities that institutions intend to do in the upcoming financial year that contributes to the achievement of the longer term MTSF. They are linked to the Strategic Plan and the budget.
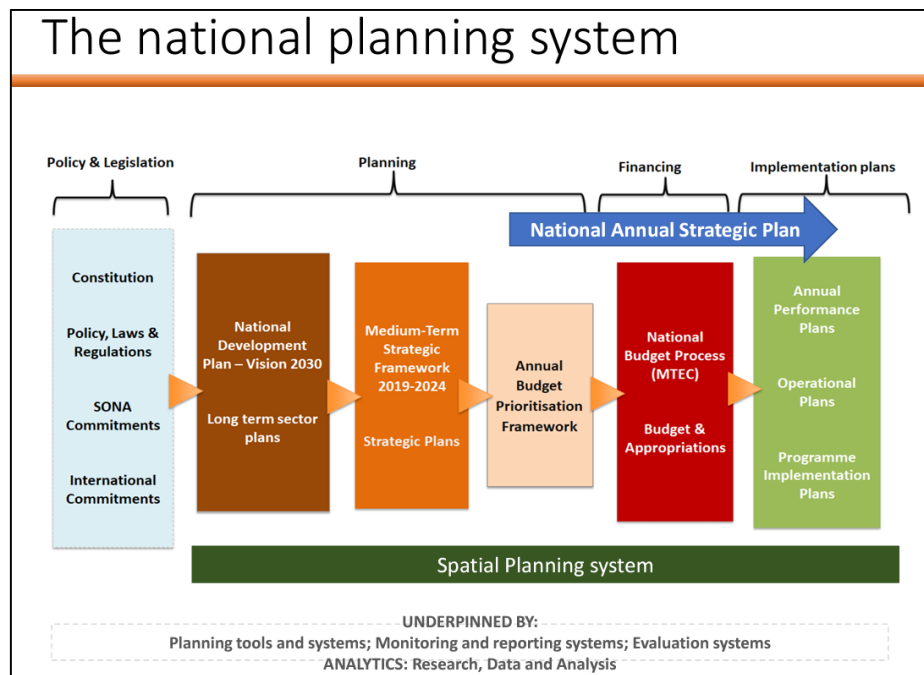

Figure 5-1: National Planning System

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