



**senedi**

South African National Energy  
Development Institute



# Annual Performance Plan

2024 - 2025

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## About SANEDI

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The South African National Energy Development Institute (SANEDI) was established in 2011 under the National Energy Act, 2008 (Act No. 34 of 2008) (NEA).

The Act provides for SANEDI to direct, monitor and conduct energy research and development, promote energy research and technology innovation as well as undertake measures to promote Energy Efficiency (EE) throughout the economy.

SANEDI's energy development agenda is a key part of our country's energy journey, and its portfolio of initiatives is closely attuned to technology advancements, declining technology costs and continued innovation in the energy sector.

These can enable South Africa to take full advantage of our energy resources and the associated infrastructure development as a vehicle for economic growth, industrialisation, employment creation, and sustainable development.

SANEDI is committed to fulfilling the objectives of South Africa regarding energy security and universal access. The entity is fully behind the Integrated Resource Plan (IRP) 2019 which updates the energy forecast from the current period to the year 2030.

The IRP 2019 considers energy security as well as energy demand-supply balance. We are equally concerned that most of the communities that lack access to energy are in the rural areas where "energy poverty" is more prevalent. Whereas the provision of universal access to energy requires scaling up capital investment, the

country is likely to experience budget constraints because of COVID-19.

In the context of the post-COVID-19 recovery, SANEDI will strengthen its obligation to energy transformation pathways in line with its mandate.

SANEDI considers itself as an integral part of the National System for Innovation (NSI), as defined by the Draft White Paper on Science, Technology, and Innovation, published under the custodianship of the Department of Science and Technology (DST now DSI) on 10 September 2018.

This White Paper builds on the previous version adopted in 2006 and sets out the medium to long term policy direction for Government to ensure a growing role for Science, Technology, and Innovation in a prosperous, and inclusive society in which the potential of all South Africans is realised.

SANEDI will continue its commitment to the policy statements in this White Paper, and the decadal plans that will follow detailing implementation of the policy.

Additionally, as an innovation body, SANEDI will continue its long-standing collaboration with the Department of Science & Innovation (DSI), Department of Mineral Resources & Energy (DMRE), and other role players within the innovation value chain, to see that there is a realisation of our National objectives.

## Accounting Authority Statement

The energy sector faces several challenges with interrupted energy supply being top of the agenda. The capacity constraints that Eskom continues to experience are having a negative impact on the economic recovery plans and will continue to do so until we find sustainable solutions to the challenge at hand. In our Strategic Plan (SP) 2020-2025, we adopted the following themes that would underpin the work that SANEDI will focus on.

These themes are:-

- **Energy Security:** the universal access to affordable energy and balancing energy demand and supply,
- **Climate change response:** the need to decarbonise the economy through embracing the fundamentals of the Just Energy Transition (JET) and enabling the achievement of the Nationally Determined Contributions (NDC 2030),
- **Convergence:** the integration of information systems, energy & engineering technologies to improve service delivery,
- **People Management and Energy Skills:** attract, develop & retain exceptional talent, and
- **Policies Processes and Systems:** develop processes, policies, systems, best practices & standards for operational excellence.

As SANEDI, we are concerned about Energy Security and our revised strategy is a response thereto, as well as addressing the emerging energy dynamics. We have made some changes in our SP 2020/25 as we revised our strategic outcomes, the mission and vision statements. We are fully committed to address Clean Coal and loadshedding in the country. We are also strengthening our strategic partnership with DMRE and DSI. The Energy Secretariat that was assigned to SANEDI by DSI is now allocated as a fourth programme in our proposed programme structure.

At the beginning of the Medium-Term Strategic Framework (MTSF) period and as described in our Strategic Plan (SP) 2020/2025, SANEDI was dealing with a global context shaped by several megatrends including climate change, urbanisation, demographic shifts, the Fourth Industrial Revolution (4IR) and growing inequalities. Programmes of action were shaped taking these trends, local context, and National Priorities into account. SANEDI, as mentioned in our SP 2020/25, has previously adopted three themes that would



strengthen and drive our mandate. SANEDI believes that the repositioning of its focus around these new themes which play to our existing strengths and expertise in the areas of sustainable energy, Renewable Energy Technologies (RET) and Smart Grids(SGs) continues to be the appropriate focus. This is enabling us to evolve and harness the changing global and local environment.

SANEDI understands that it is uniquely positioned and is required to carefully balance the short-term needs of the country as far as energy solutions are concerned, while considering where the country wants to be in decades to come, and therefore develop energy solutions and technologies ahead of time. Our SP 2020/25 and this APP aim to maintain this careful balance of focus. SANEDI is building even closer collaboration and alignment with the DMRE to ensure that the key priorities of the Department, in line with National Priorities, are delivered effectively. SANEDI is a key part of the country's innovation system and can contribute to the elevation of innovation in the country by increasing its alignment with the White Paper on Innovation.

**MR SICELO XULU**

Accounting Authority SANEDI



## Chief Executive Officer's Statement

The South African energy sector is complex and is changing dynamically over multiple periods of time. The sector is faced with a short-term crisis of energy security wherein the generation supply more often cannot meet the demand for electricity. In the midst of this short-term crisis, there are significant expectations of a transition in the energy sector to invest in sources of generation that would meet climate change goals.

These dynamic changes in the energy landscape have been driven by seismic technology shifts as well as technological disruptors. By the same token, the triple challenges of unemployment, poverty, and inequality must be addressed. There is an opportunity for the country, the community, and its citizens to take advantage of the opportunities presented by technological changes, including skills development and employment of SMMEs, youth and women.

This Annual Performance Plan (APP) is derived from the recently revised SANEDI 5 Year Strategic Plan which will continue to contribute to areas in:

Applied Energy Research (Renewables, Clean Coal, Clean Mobility, Smart Grids, Data & Knowledge Management & Modelling); Energy Efficiency (Energy Performance Certification, 12L Tax Incentive, Energy Services Market Development, Cool Surfaces & Insulation, Standards & Labelling, Demand Side Management); and

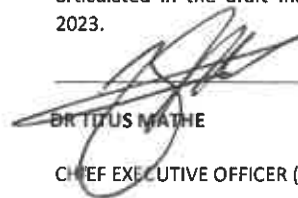
DSI Energy Secretariat (Coal CO2-X, Energy Storage, Hydrogen South Africa (HySA), and Renewable Sustainable Energy (RSE) Hub and Spokes).

SANEDI as an agency of the DMRE is mandated to direct, monitor and conduct energy research and development, promote applied energy research and technology innovation, as well as undertake measures to promote the uptake of energy efficiency throughout the economy. Its mission is to expediently conduct policy relevant research and implement innovative energy research, development and energy efficiency solutions to catalyse South Africa's socio-economic growth and climate resilience.



In conclusion, the 2024/25 APP is a continuation of a bold new step in addressing the short to medium term energy challenges faced by South Africa. It builds up to the delivery of the revised 5-year Strategic Plan in 2025. However, the budget cuts have necessitated the review of some of the projects and KPI's to be achieved in the 2024/25 financial year. Although it is the last year of our 5 year Strategic Plan, SANEDI is still committed to achieve high performance culture and a well capacitated organization in preparation of its next 5 year strategic phase.

Lastly, it is exciting to be part of SANEDI at a time when South Africa is going through an energy transition. This requires us to find innovative and sustainable solutions that support South Africa's energy transition as articulated in the draft Integrated Resource Plan (IRP) 2023.

  
DR TITUS MATHE  
CHIEF EXECUTIVE OFFICER (CEO) SANEDI



## Official Sign-off

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It is hereby certified that this Annual Performance Plan:

- Was developed by the Management of the SANEDI under the guidance of the Board,
- Takes into account all the relevant policies, Legislation and other Mandates for which the SANEDI is responsible, and
- Accurately reflects the Impact, Outcomes and Outputs which the SANEDI will endeavour to achieve over the period 2024/25.



**Mr. Mthetheleli Bapwa**

*Corporate Planning, Monitoring and Evaluation Manager*

Date: 31/01/2024



**Ms. Lethabo Manamela CA (SA)**

*Chief Financial Officer (CFO)*

Date: 31/01/2024



**Dr. Titus Mafhe**

*Chief Executive Officer (CEO)*

Date: 31/01/2024



**Mr. Sicelo Xulu**

*SANEDI Accounting Authority*

Date: 31/01/2024



## List of Acronyms

ACRONYM	DESCRIPTION
4IR	4th Industrial Revolution
ADA	Austrian Development Agency
AG	Auditor-General
AGSA	Auditor-General of South Africa
AMI	Advanced Metering Infrastructure
AOP	Annual Operating Plans
APP	Annual Performance Plan
ADA	Austrian Development Agency
AV	Autonomous Vehicles
BARC	Board Audit and Risk Committee
CO <sub>2</sub>	Carbon Dioxide
CCTs	Clean Coal Technologies
CCS	Carbon Capture & Storage
CCUS	Carbon Capture Utilisation and Storage
CEO	Chief Executive Officer
CFF	Cleaner Fossil Fuel
CFO	Chief Financial Officer
CGS	Council for Geoscience
CM	Cleaner Mobility
COGTA	Department of Cooperative Governance and Traditional Affairs
CSIR	Council for Scientific and Industrial Research
DBSA	Development Bank of Southern Africa
DDM	District Development Model
DKM	Data & Knowledge Management
DMRE	Department of Mineral Resources and Energy
DoE	Department of Energy
DoD	Department of Defence
DoT	Department of Transport
DSI	Department of Science and Innovation
DSM	Demand Side Management
TU	Technical University of Denmark
EA	Executive Authority
EC	European Commission
EE	Energy Efficiency
EEDSM	Energy Efficiency and Demand Side Management
EPBIP	Energy Efficiency in Public Buildings and Infrastructure Programme
EPC	Energy Performance Certificate
EMS	Energy Management Systems
ERD	Energy Research and Development
ESCo	Energy Services Company
Eskom	Electricity Supply Commission
ETPSG	European Technology Platform Smart Grid
EU	European Union
EV	Electric Vehicles
ExCo	Executive Committee
FFC	Funding and Finance Committee
FGD	Flue Gas Desulphurisation
GDA	German Development Agency
GDP	Gross Domestic Product
GEF	Global Environment Facility



## List of Acronyms (continued)

ACRONYM	DESCRIPTION
GHG	Greenhouse Gas
GGE	Greenhouse Gas Emissions
HFCT	Hydrogen and Fuel Cell Technologies
HR	Human Resources
HSRM	South African Hydrogen Society Roadmap
IAF	Impact Assessment Framework
ICT	Information Communications and Technology
IEA	International Energy Agency
IPPPP	Independent Power Producers Procurement Programme
IRP	Integrated Resource Plan
IT	Information Technology
JET	Just Energy Transition
IPAP	Industrial Policy Action Plan
IPPs	Independent Power Producers
IRP	Integrated Resource Plan
KPA	Key Performance Area
KPI	Key Performance Indicator
kWh	Kilowatt hour
LCOE	Levelised Cost of Electricity
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation, Learning
MEPS	Minimum Energy Performance Standards
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MTEF	Medium Term Expenditure Framework
MTSF	Medium Term Strategic Framework
MW	Mega-Watts
NBEPR	National Building Energy Performance Register
NCPC	National Cleaner Production Centre
NDC	Nationally Determined Contributions
NDP	National Development Plan
NEA	National Energy Act
NECSA	South African Nuclear Energy Corporation
NEES	South Africa National Energy Efficiency Strategy
NEPBR	National Energy Performance Building Register
NERSA	National Energy Regulator of South Africa
NOx	Nitrous Oxide
NPF	National Planning Framework
NRCS	National Regulator for Compulsory Specifications
NRF	National Research Foundation
NSDP	National Spatial Development Plan
NSI	National System of Innovation
NT	National Treasury
PBWTP	Public Buildings & Wastewater Treatment Plants
PC	Projects Committee
PCSP	Pilot Carbon Dioxide Storage Pilot Project
PGM	Platinum Group Metal
PMO	Project Management Office
PtH	Power to Heat



## List of Acronyms (continued)

ACRONYM	DESCRIPTION
PV	Photovoltaic
PwD's	People Living with Disabilities
R&D	Research and Development
R&I	Research and Innovation
RC	Remuneration Committee
RDI	Research and Development Initiatives
RE	Renewable Energy
RET	Renewable Energy Technologies
RSE	Renewable Sustainable Energy
S&L	Standards & Labelling
SACCS	South African Centre for Carbon Capture and Storage
SADC	Southern African Development Community
SALGA	South African Local Government Association
SANAS	South African National Accreditation System
SANEDI	South African National Energy Development Institute
SARETEC	South African Renewable Energy Technology Centre
SARS	South African Revenue Service
SASGI	South African Smart Grids Initiative
SAWS	South African Weather Service
SCM	Supply Chain Management
SDA	Swiss Development Agency
SDBIP	Service Delivery and Budget Implementation Plan
SEP	Stakeholder Engagement Plan
SETA's	Sector Education and Training Authority
SG	Smart Grids
SJEC	Social Justice & Ethics Committee
SLA	Service Level Agreement
SMMEs	Small, Medium Micro Enterprises
SoE	State-owned Entity
SOLTRAIN	Solar Thermal Training and Demonstration Initiative
SSEG	Small-scale Embedded Generation
SP	Strategic Plan
SWH	Solar Water Heating
SWOT	Strengths Weaknesses Opportunities and Threats
TES	Thermal Energy Storage
the dtic	Department Trade, Industry and Competition
TFEC	Total Final Energy Consumption
ToC	Theory of Change
TUT	Tshwane University of Technology
TVET	Technical Vocational Education and Training
UCG	Underground Coal Gasification
UNIDO	United Nations Industrial Development Organisation
UoT	University of Technology
VVISDP	Viability and Validation Innovation Service Delivery Programme
WASA	Wind Atlas for South Africa
WHR	Waste Heat Recovery
WSP	Workplace Skills Plan
WWTPs	Waste Water Treatment Plants



# 1. Executive Summary

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Under the guidance of the Executive Authority (EA), the SANEDI 2024/25 APP was developed to operationalise strategic priorities identified in the revised (2020/25) SP and the attainment of the set performance targets related to each programme.

A review of SANEDI's operating environment was conducted to adapt the APP to the global socio-economic and climatic conditions, as well as the South African political, economic, socio-cultural, technological, environmental, and legal contexts at the time of reporting.

The consolidated fiscal deficit is projected at 4.2 per cent of GDP for 2022/23 and will reach 3.2 per cent in 2025/26. This is primarily due to Eskom's debt relief.

The Government debt will stabilise at a higher level of 73.6 per cent of GDP and in 2025/26. This is three years later than anticipated in the 2022 Medium- Term Budget Policy Statement.

Furthermore, the impact of Russia's invasion of Ukraine on the South African economy has been felt in terms of rising fuel, oil wheat, and maize prices.

In addition, the plan was informed and aligned to key Government Policy Frameworks that guide the work of SANEDI such as the National Development Plan (NDP), Medium Term Strategic Framework (MTSF) and DMRE priorities.

SANEDI's strategy draws from the contextual environment within which it sees itself, including primarily a global shift, driven by:

- (1) Decarbonisation through technological advancements towards convergence and sector coupling,
- (2) Energy Security,
- (3) Changing demographic patterns and increased urbanisation, and
- (4) Increased environmental sensitivity and awareness driving socio- political and economic discourse.

Within this global context, the South African environment is characterised by an unsustainable economic trajectory, with stagnating economic growth, rising unemployment and income inequality. It is in this environment, both with significant opportunities and threats, that SANEDI must discharge its Mandate of delivering Energy Efficiency (EE) and Energy Research and Development (ERD).

In the analysis of SANEDI's Mandate for energy research and EE as well as the broader environment directly impacting SANEDI, six strategic themes emerged, underpinning the strategy that SANEDI has adopted.

Strategic themes are the main, high-level business strategies that form the basis for SANEDI's business model.



## 2. Strategic Themes

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The following themes were used to underpin the strategy:

SANEDI's priority sub-programmes and projects may be summarised as:

<b>1. Energy security</b>	The universal access to affordable energy and balancing energy demand and supply (e.g. loadshedding & liquid fuel shortage).
<b>2. Climate change response</b>	The need to decarbonise the economy through embracing the fundamentals of the Just Energy Transition (JET) and enabling the achievement of the Nationally Determined Contributions (NDC 2030).
<b>3. Convergence</b>	Integration of information systems, energy & engineering technologies to improve service delivery.
<b>4. People Management and Energy Skills</b>	Attract, develop & retain exceptional talent whilst fostering employee wellbeing and respect.
<b>5. Policies, Processes and Systems</b>	Develop processes, policies, systems, best practices & standards for operational excellence.

- Energy Efficiency,
- Smart Grid Technology,
- Energy Secretariat,
- Cleaner Mobility,
- Renewable Energy,
- Data and Knowledge Management,
- Balance Energy Supply and Demand to address loadshedding, grid stability, liquid fuels shortage and gas,
- Cleaner Fuels and Related Technologies, and
- Collaboration with Local, Regional, and International energy partners.



# PART A: OUR MANDATE





### 3. Our Mandate

To drive optimal resource allocation through the various layers of State, consistency in strategic and budgetary planning is required. The relationship between the mandate, policy priorities and entities of the State is highlighted in the image below and was considered a critical feature in the development of the strategy.

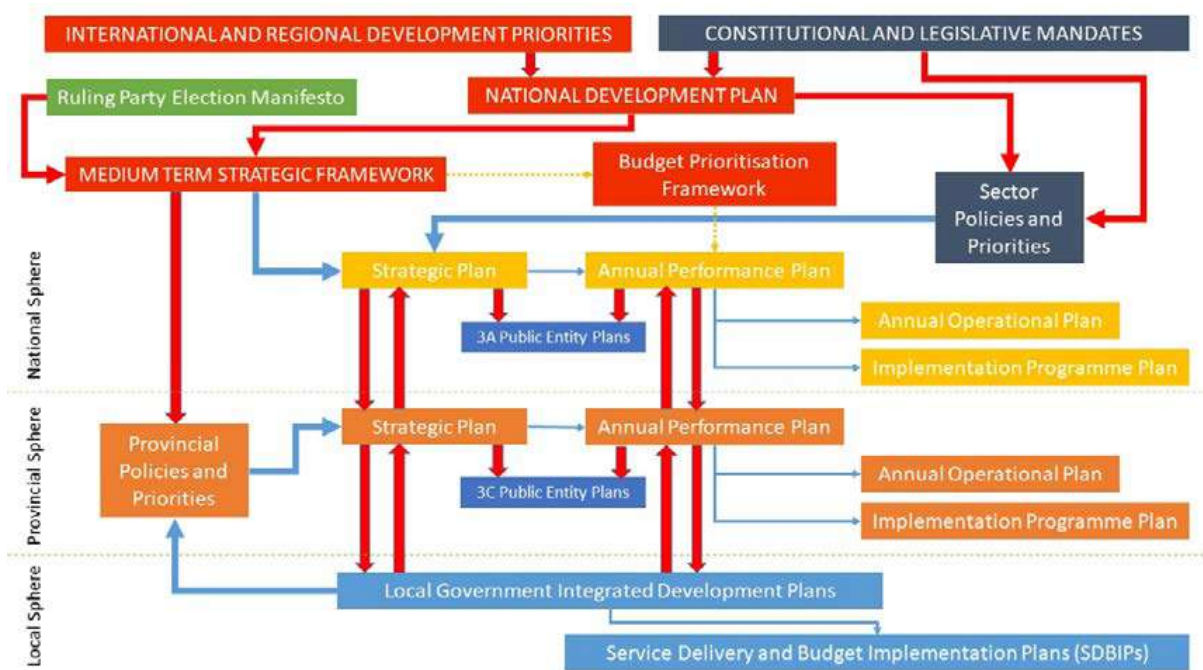


Figure 1: Context for Strategic Alignment



### 3.1 CONSTITUTIONAL MANDATE

SANEDI, as an entity of the State, derives its mandate from the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) and relevant Legislative and Policy Frameworks. SANEDI has a functional responsibility towards technological development and Energy Efficiency (EE) in the field of energy (other than nuclear energy) – thereby improving the overall energy landscape within the country.

The strategy developed by SANEDI seeks to ensure alignment with two critical components of the Constitution, namely:

1. Chapter 2, The Bill of Rights, where: Everyone has the right:

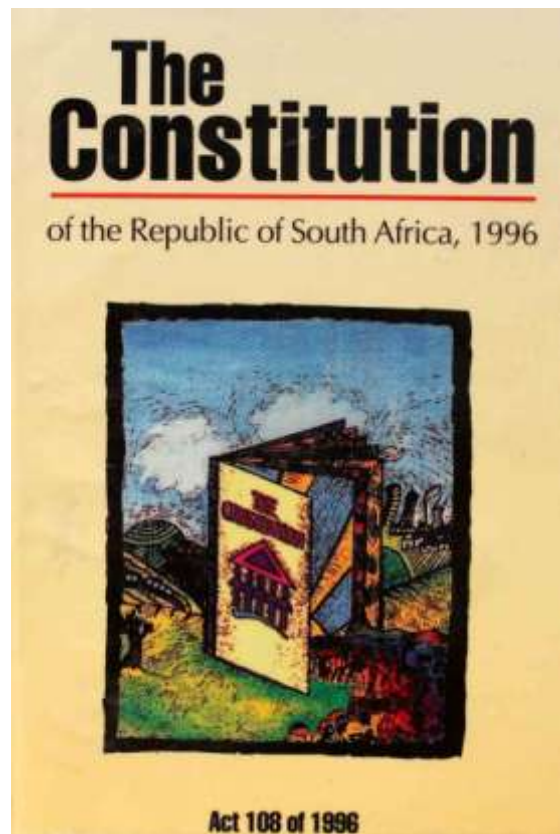
(a) To prevent pollution and ecological degradation,

2. Schedule 4, The Functional Areas of Concurrent National and Provincial Legislative, specifically with respect to Municipalities and the issue of Local Government matters related to: Electricity (and gas reticulation).

(b) To promote conservation, and

(c) To secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

SANEDI has a clear role to play, contributing towards an environment that is sustainably utilised for the socio-economic development of the country, as well as municipal development for the distribution of electricity (and potentially other energy sources) to the residents of the country.



## 3.2 LEGISLATIVE AND POLICY MANDATES

As a Schedule 3A State-owned Entity (SoE), SANEDI's authority is derived from Section 7 (2) of the National Energy Act, 2008 (Act No. 34 of 2008) (NEA). Section 7 (2) of the NEA gives effect to SANEDI's powers and functions and provides for its responsibilities as stated below:

Energy Research and Development	
<p>Direct, monitor, conduct and implement energy research and technology development in all fields of energy, other than nuclear energy, and</p> <p>Promote energy research and technology innovation.</p> <p>Provide for:</p> <ul style="list-style-type: none"> <li>• Training and development in the field of energy research and technology development,</li> <li>• Establishment and expansion of industries in the field of energy,</li> <li>• The commercialisation of energy technologies resulting from ERD programmes,</li> <li>• Register patents and intellectual property in its name resulting from its activities,</li> <li>• Issue licences to other persons for the use of its patents and intellectual property,</li> <li>• Publish information concerning its objects and functions, Establish facilities for the collection and dissemination of information in connection with Research &amp; Development Initiatives (RDI),</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake any other energy technology development-related activity as directed by the Minister, with the concurrence of the Minister of Science and Technology,</li> <li>• Promote relevant energy research through cooperation with any entity, institution or person equipped with the appropriate skills and expertise within and outside the Republic,</li> <li>• Make grants to educational and scientific institutions in aid of research by their staff or for the establishment of facilities for such research,</li> <li>• Promote the training of research workers by granting bursaries or grants-in-aid for research,</li> <li>• Undertake the investigations or research that the Minister, after consultation with the Minister of Science and Technology, may assign to it, and</li> <li>• Advise the Minister and the Minister of Science and Technology on research in the field of energy.</li> </ul>
Energy Efficiency	
<p>Undertake EE measures as directed by the Minister and</p> <p>Increase EE throughout the economy.</p>	<p>Increase the Gross Domestic Product (GDP) per unit of energy consumed, and</p> <p>Optimise the utilisation of finite energy resources.</p>

Figure 2: Primary Legislative Mandate



SANEDI's operational mandate is also influenced by the following Legislation and Policies:

Legislative Framework	Policy Framework
<ul style="list-style-type: none"> <li>• Electricity Regulation Act, 2006 (Act No. 4 of 2006), as amended.</li> <li>• White Paper on Energy Policy, 1998.</li> <li>• Petroleum Products Act, 1977 (Act No. 120 of 1977), as amended.</li> <li>• Central Energy Fund Act, 1977 (Act No. 38 of 1977), as amended.</li> <li>• Petroleum Pipelines Act, 2003 (Act No. 60 of 2003).</li> <li>• Petroleum Pipelines Levies Act, 2004 (Act No. 28 of 2004).</li> <li>• Gas Act, 2001 (Act No. 48 of 2001).</li> <li>• Gas Regulator Levies Act, 2002 (Act No. 75 of 2002).</li> <li>• National Energy Regulator Act, 2004 (Act No. 40 of 2004).</li> <li>• Abolition of the National Energy Council Act, 1991 (Act 95 of 1991).</li> <li>• The National Environmental Management Act, 1999 (Act No. 107 of 1999).</li> <li>• The Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).</li> <li>• South African Revenue Service Act, 1997 (Act 34 of 1997).</li> </ul>	<ul style="list-style-type: none"> <li>• SANEDI Business Case.</li> <li>• National Development Plan Vision 2030.</li> <li>• Medium-Term Strategic Framework.</li> <li>• National Energy Efficiency Strategy of the RSA, 2008.</li> <li>• Energy Security Master Plan for Liquid Fuels, 2007.</li> <li>• Energy Security Master Plan, 2007.</li> <li>• Integrated Resource Plan for Energy, 2010.</li> <li>• Department of Science and Technology 10-year Innovation Plan.</li> <li>• Measurement and Verification Guideline for Energy Efficiency Certificates (EEC) (DRAFT).</li> <li>• Industrial Policy Action Plan (IPAP) 2010/11 – 2012/13, published Feb 2010.</li> <li>• Carbon Capture and Storage Road Map.</li> <li>• Climate Change Response White Paper.</li> <li>• Draft White Paper on Science, Technology and Innovation, and Intellectual Property Law.</li> <li>• The Science, Technology and Innovation Decadal Plan.</li> </ul>

**Figure 3: SANEDI Legislative and Policy Mandate**



### 3.3 INSTITUTIONAL POLICIES AND STRATEGIES OVER THE FIVE-YEAR PLANNING PERIOD

As highlighted, the National Planning Framework (NPF) must align with the National Development Plan (NDP) policy priorities, as well as the Executive focus of the National Government, including the seven key priorities of Government.

In driving towards strategic alignment, the five-year NDP implementation plan was considered, with a focus on the three pillars that describe the strategic priorities of the National Government for the following five years, namely:

- i. Pillar 1: Inclusive Economic Growth,
- ii. Pillar 2: Capabilities of South Africans, and
- iii. Pillar 3: A capable State.

With the following themes cutting across all three pillars:

- i. Youth empowerment,
- ii. Gender equity,
- iii. 4th Industrial Revolution (4IR),
- iv. Environmental sustainability (climate change), and

- (v). National Spatial Development Plan (NSDP).

Furthermore, the seven key priorities for Government were considered and are as follows:

- i. Economic transformation and job creation,
- ii. Education, skills and health,
- iii. Consolidating the social wage through reliable and quality basic services,
- iv. Spatial integration, Human Settlements and Local Government,
- v. Social cohesion and safe communities,
- vi. A capable, ethical and developmental State, and
- vii. A better Africa and World.

As energy is central to socio-economic development and the growth of a country, SANEDI has a defined and clear role in assisting in the achievement of the National Priorities.

#### RELEVANT COURT RULINGS

There were no court rulings that impacted SANEDI's strategic context.



## PART B: OUR STRATEGIC FOCUS



### 3.1 Vision

To be a leading research & innovation organisation for sustainable and inclusive energy development that influences energy policy goals in South Africa and beyond.



### 3.2 Mission

Expediently conduct policy relevant research and implement innovative energy research, development and Energy Efficiency (EE) solutions to catalyse South Africa's socio-economic growth and climate resilience.



### 3.3 Values

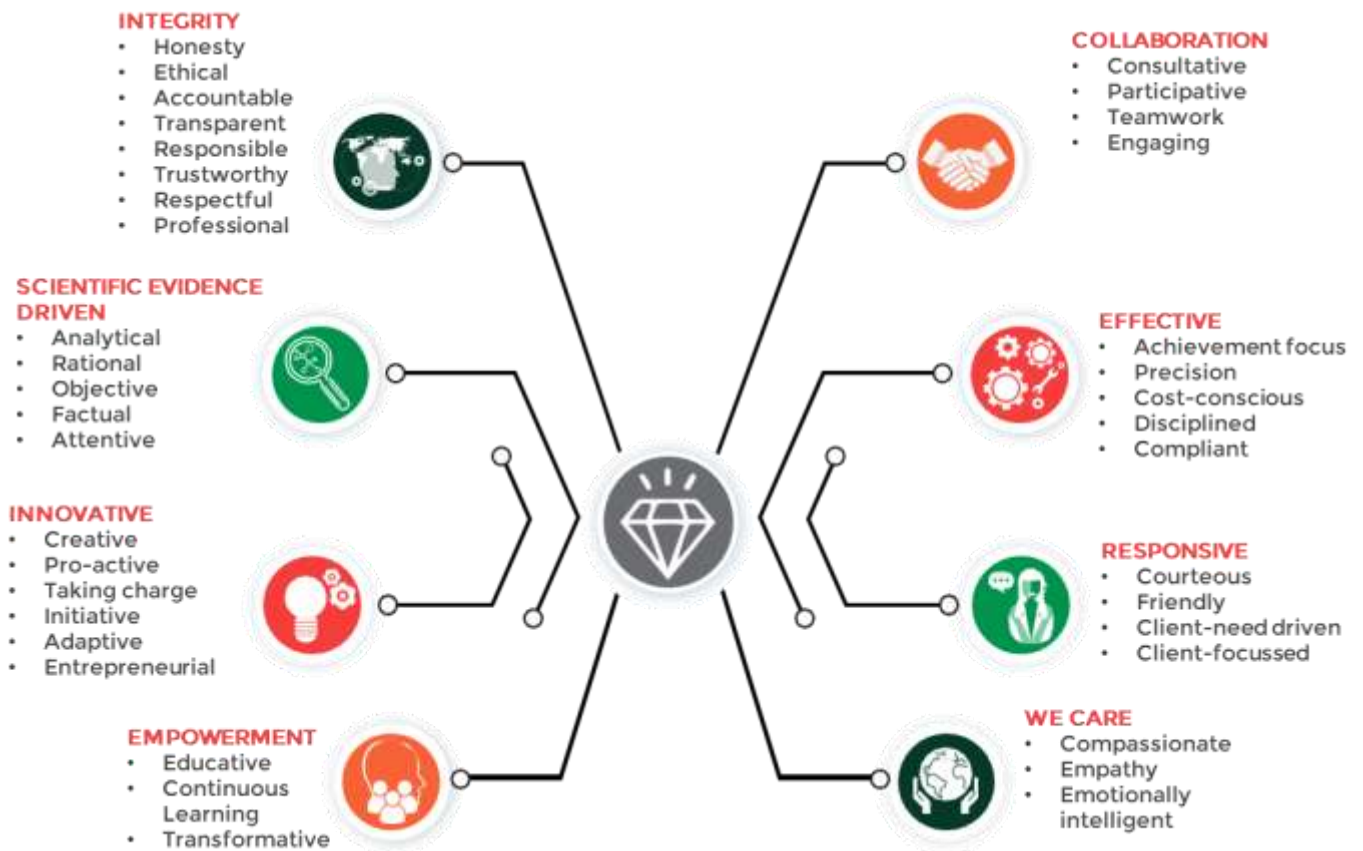


Figure 4: Organisational Values





### 3.4 STRATEGIC THEMES

The following themes underpin SANEDI’s 2020/25 strategy:

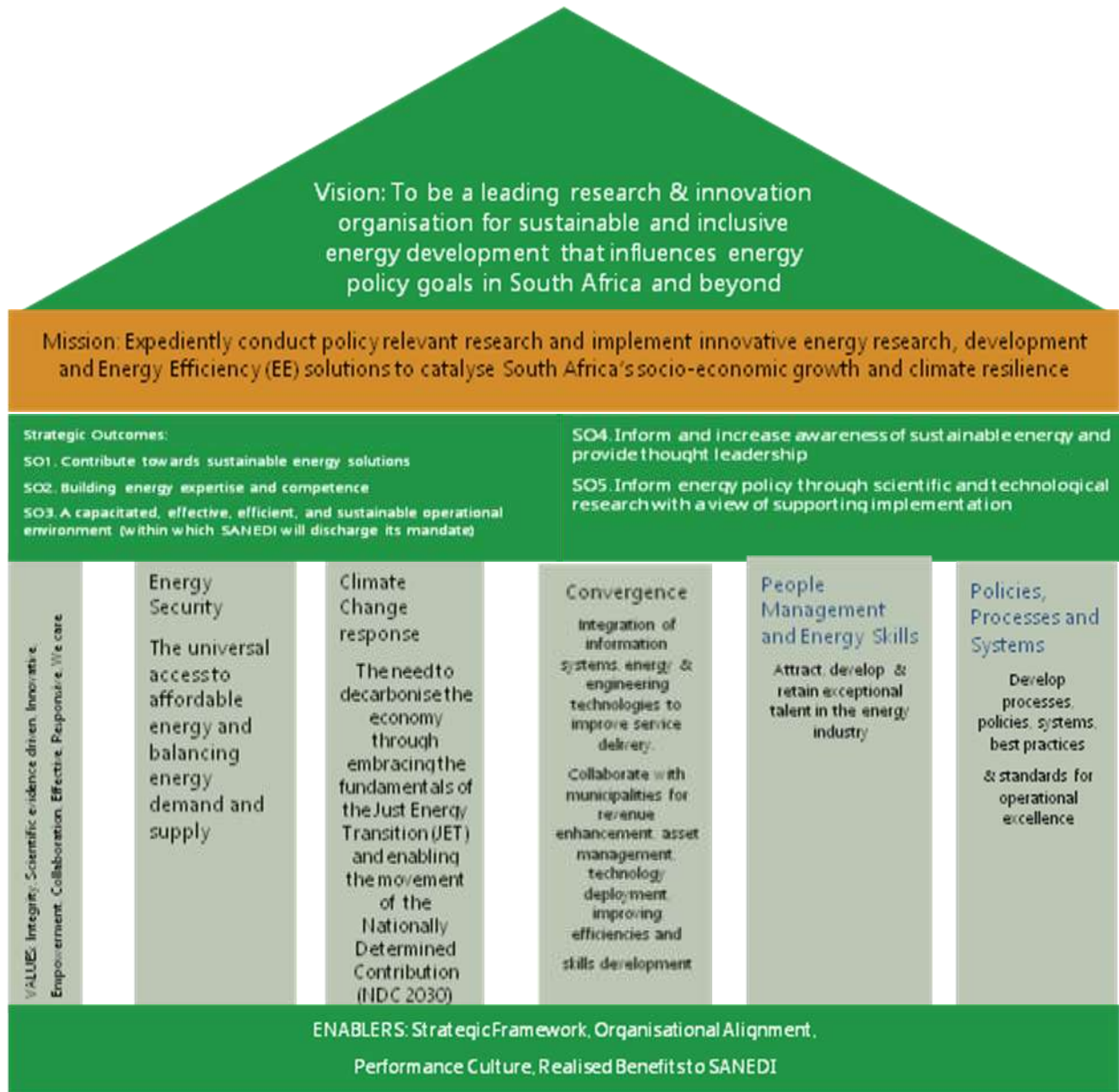


Figure 5: SANEDI Strategic Themes



### 3.5 OUR SERVICES

SANEDI provides the following services as guided by the functions stipulated in the National Energy Act.

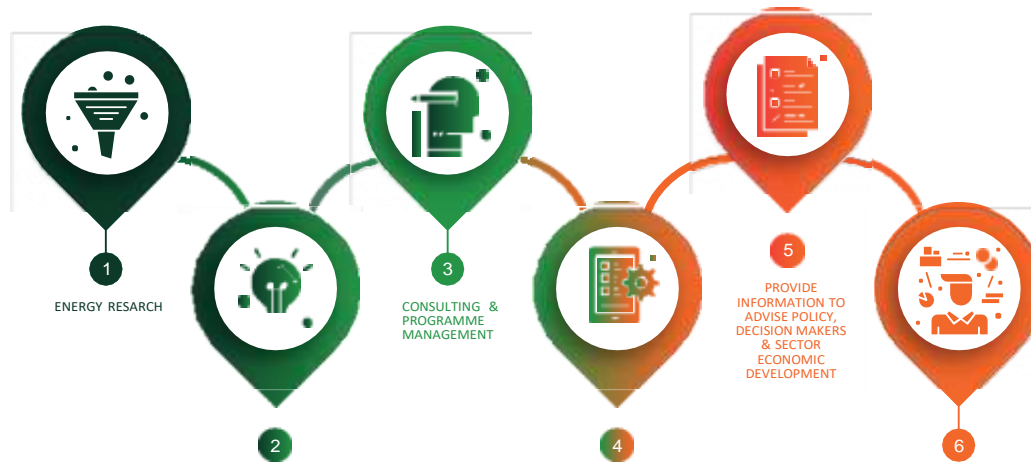


Figure 6: SANEDI Services

#### 1. Energy Research

SANEDI is a centre for information for innovation, research, development, and demonstration in the areas of energy, the optimal use of energy resources, analysis and optimisation of energy systems, climate change and sustainable energy systems.

#### 2. Energy Efficiency Services

SANEDI is a strategic research organisation focusing on EE technologies that are accelerating the shift to a low- carbon economy.

#### 3. Consulting, Programme and Project Management

SANEDI provides advisory and programme management services and employs established methodologies and cutting-edge concepts and techniques.

#### 4. Design and implement pilot projects

We assist in the planning and execution of pilot projects aimed at encouraging the adoption of cutting-edge energy supply and EE technologies.

#### 5. Policy Advice, decision-makers and sector economic development

Our in-depth analysis evaluates policy pathways for the power, transport, industry, and building sectors to adapt to the energy transition.

#### 6. Energy skills and capacity development

We contribute to South Africa's energy skills and capacity development and equip policy professionals with the requisite skills needed to navigate change and generate opportunities.



### 3.5.1 SMART GRIDS

A Smart Grid (SG) is an electricity network that can intelligently integrate the actions of all users connected to it – generators, consumers, and those that do both, to efficiently deliver sustainable, economic, and secure electricity supplies.

The Smart Grids programme responds to the current industry challenges such as energy reliability, EE, systems operations efficiency, customer satisfactory, economic, and environmental challenges.



The programme conducts research that proposes solutions to support just energy transition to sustainable and cleaner technologies that ensure South Africa's energy transition aspirations. The Smart Grids programme focuses on expanding the deployment of Smart Grids technologies to increase automation and improve performance as well as efficiency within the South African Electricity Distribution grid.

#### Objectives

- Provide a common vision for Smart Grids for South Africa,
- Facilitate a Smart Grid knowledge-sharing forum, for both the Electricity Supply and Distribution

Industry and relevant government departments, and

- Implement applied research pilots within municipalities to introduce various Smart Grids concepts.

#### Smart Grids 2030 Vision

The Smart Grid 2030 Vision was developed in 2017 and revised in 2023 by the South African Smart Grid Initiative (SASGI) under the guidance of the Department of Mineral Resources and Energy (DMRE) and the South African National Energy Development Institute (SANEDI). The document provides a common vision of Smart Grid which can be realised over time, aligning efforts across

all sectors of the industry. The vision document has been updated to ensure it is still relevant to South Africa and the challenges the industry faces, as a lot has changed within the electricity supply industry in South Africa. The 2nd revision of the document was launched on the 28th of March 2023.

#### Smart Grid Laboratory

The SANEDI Smart Grids Programme in collaboration with the University of Pretoria has developed a Smart Grids Laboratory which is based at the University of Pretoria Hatfield Campus. The South African electricity grid is evolving into “smarter grids” in response to technological advancements and there is a need to address the challenges faced by the industry. The aim of the Smart Grids lab is to stimulate research in the Smart Grids areas and drive solutions in the African continent. A cloud platform for data analysis and smart metering

are the fundamental components. For full functionality, the lab requires hardware and software. The lab enhances the education of students and provides them with experience of working on engineering projects, that are often industry-sponsored. Students also benefit in their achievement of academic goals - such as final year projects, independent studies, and Masters and PhD theses. The goal of the Smart Grids laboratories is to make Smart Grids technologies more easily implementable.



## Just Energy Transition Research Programme in Collaboration with South African Universities and Universities of Technology

SANEDI has collaborated with 6 Universities to conduct research that will put forward solutions to eradicate the ongoing energy crises in South Africa with 5 themes, namely:

- Energy Planning & Policy Input Development,
- Energy Efficiency & Demand Side Management,
- Grid Planning & Sustainability,
- Systems Operations Management, and
- Power Grid Digitalisation.

### 3.5.2 CLEAN ENERGY (RENEWABLE ENERGY)

Renewable Energy (RE), often referred to as clean energy, comes from natural sources or processes that are constantly replenished. South Africa has abundant natural and RE resources that can be harnessed for energy production:

- One of the best solar regimes in the world, measured at 4.5 to 6.6 kWh/m<sup>2</sup>, at one of the most abundant RE resources in the country.
- A reasonable wind energy resource (an average of 8 m/s measured at 80 m) is available in geographically dispersed locations, allowing for security of supply.
- Biomass for energy use is restricted due to water availability in South Africa, but energy from waste, utilising the estimated 60 – 70 million m<sup>3</sup> of waste generated annually, is more readily available and exploitable.
- Despite limited water availability, 1400 MW of pump storage is currently utilised by Eskom from two sites in South Africa, while micro-hydro

The purpose of this programme is to propose solutions to support the transition to sustainable, and cleaner technologies that ensure South Africa's energy transition aspirations as contained in the Department of Mineral Resources and Energy's (DMRE), Just Energy Transitions (JET) framework.

applications at specific sites offer further opportunities.

- A world-class wave energy (10 – 50 kW/m crest length) and ocean current (70 – 85 Sv peaking at 2 m/s) resource, is potentially exploitable upon the availability of commercially viable technologies.

Through Renewable Energy, we will continue to undertake Biogas, Solar and Wind projects to demonstrate GHG emissions mitigation potential in support of National commitments. The market and the industry will be promoted, and technology that is fit for purpose will be tested.

Our RE programme entails facilitating RE technology pilot and demonstration, as well as research and co-ordination, collaboration and dissemination of National and International RE knowledge, contributing towards a sustainable low carbon energy future. Initiatives that are being carried out by the Renewables programme include:

#### Pilot and demonstration of Renewable Energy Technologies that are fit for purpose in SA

The Renewables programme co-ordinates multiple projects designed to prove that RE can offer a reliable, sustainable, secure, energy solution designed to fit the needs of the consumer/user who is employing this

#### Sector and policy support studies

Sector and policy support studies are produced to promote technology development and uptake, industry expansion and boost the National economy, using knowledge gained from pilot and demonstration projects, skills development and training, awareness and

intervention. These technologies include the harnessing of solar energy in the form of heat and light, biogas, energy storage, and energy innovation towards sustainable energy supply and security.

understanding as well as scientific data proving energy savings, Greenhouse Gas (GHG) emissions savings, and technology performance towards creating business cases around viable investment in RE.



### The SOLTRAIN Project

A Southern African Development Community (SADC) regional programme, that has been in existence since 2009, focusses on capacity building and demonstration of solar thermal energy systems in the SADC region and is funded by the Austrian Development Agency (ADA). Through the programme, Solar Thermal Roadmaps have been developed for all partner countries, and capacity-building and training programmes have been implemented. The Solar Thermal Training and Demonstration Initiative (SOLTRAIN) project aims to

tackle thermal needs at domestic and commercial sector levels and create opportunities by catalysing the growth of the Solar Water Heating (SWH) sector.

The next phase of the project, SOLTRAIN+ was concluded in 2022 building on the success in success high-density housing, commercial and hospital space. The project has been extended by 4 years to 2026. The objective of this phase is a broader focus on solar technology, in particular Photovoltaic Thermal (PVT).

### The WASA Project

The main objective of the Wind Atlas for South Africa (WASA) project is to develop, verify and employ numerical Wind Atlas methods, and to develop capacity to enable large-scale exploitation of wind energy in South Africa. This includes dedicated wind resource assessment and siting tools for planning purposes that can be used for feasibility studies in support of projects.

Phase 4 of the WASA project has commenced in 2023. The focus of the previous phases was on ground measurements in the Western Cape, Eastern Cape, Kwa-Zulu Natal. Phase 4 will focus on Mpumalanga and the Free State provinces. This will increase ground measurement coverage in support of the Just Energy Transition. The ground measurements provide higher-resolution data for improved modelling and forecasting.

### PlasWen Pyrolysis Concept

With plasma gasification, an electric arc heats a gas stream (air or nitrogen), at extremely high temperatures typically 5000C, and supplies energy to the process. Due to the temperature, ash, metals and glass in the waste stream are melted, organic components volatilised, and

complex molecules dissociated. Organic materials, containing mostly chemically bound carbon, hydrogen, and oxygen, are decomposed into syngas which can produce electricity, biofuels or Hydrogen.

### 3.5.3 CLEANER FUELS AND RELATED TECHNOLOGIES

Cleaner Fuels and Related Technologies emphasises the use of Fossil Fuels as an energy source but with reduced GHG emissions. Due to its high dependency on fossil fuels for its energy supply, SA wishes to leverage this concept in its journey to meeting its Nationally Determined Contributions (NDC) targets.

SANEDI retains the CFF and renamed it the Cleaner Fuels & Related Technologies sub-programme we are also exploring other applied energy research including clean coal pilots a. Through demonstrated clean energy initiatives, SANEDI will support the Council for Geoscience, Sector Education and Training Authorities (SETAs) and Incubators in the clean energy sector.

In 2012, the South African Carbon Capture Storage (CCS) Roadmap was endorsed by Cabinet. Recently, delays and the incorporation of capture, utilisation and mineralisation saw the phylogeny of a refreshed Roadmap. The Pilot Carbon Dioxide (CO<sub>2</sub>) Storage Project

- Since the launch of the original Atlas, the CGS has undertaken further geological analyses indicating further possible geological storage sites. Consequently, the PCSP has been moved from the

and the Pilot CO<sub>2</sub> Capture Project conflate in the integrated CCS Demonstration Project circa 2026. The consummation of the overall Carbon Capture, Utilisation and Storage (CCUS) programme is anticipated during 2030.

There are changes in Cleaner Fossil Fuel (CFF), and from 1 September 2020, certain sub-programmes under CFF were transferred to the Council for Geoscience (CGS) as per the Minister's approval. To this end, the Pilot Carbon Dioxide Storage Pilot Project (PCSP), the CCUS project, and the team have been transferred to the Council for Geosciences (CGS) for further implementation and custodianship. The transfer of CCUS to CGS is a logical step as SANEDI had been working with the CGS throughout the CCS programme. The move has resulted in extra staff being available to work on the programme. Moreover, it has resulted in two major revisions to the CCUS Programme:

- KZN Province to the Mpumalanga Province, closer to the source of point CO<sub>2</sub> emissions.
- Technologies, enhanced coal-bed methane, underground coal gasification and enhanced



geothermal energy extraction, have been added to the scope of utilisation under investigation.

SANEDI believes that the exploration of solutions in CFF is important. Additionally, there is scope outside of CCUS that should be explored. Cleaner Fuels & Related Technologies portfolio will focus on the entire coal value chain including pre-combustion, combustion, and post-

#### 3.5.4 CLEANER MOBILITY

Cleaner Mobility (CM) creates a favourable environment for the broader use of cleaner alternative fuels and technology for public and private transport modes.

SANEDI's CM programme, with support from the United Nations Industrial Development Organisation (UNIDO), has been actively engaging with the Department of Transport (DoT) as well as various cities to explore and introduce cleaner mobility options. SANEDI has been instrumental in doing applied research and demonstration regarding the use of Electric Vehicles (EVs) and charging batteries using solar Photovoltaics (PV) with success. Going forward, the CM sub-programme will continue solving key challenges including energy security, EE in transportation, urban air pollution, traffic congestion, local industry development and climate change.

There are expected fiscal challenges in the next three to five years, which will have an impact on SANEDI including its operations and programme activities.

#### 3.5.5 CENTRE FOR ENERGY SYSTEMS ANALYSIS AND RESEARCH (DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING)

The Data and Knowledge Management programme will provide a mechanism for energy modelling and planning in support of the alignment of National and local Government energy data objectives. The Data and Knowledge Management programme completed projects that supported residential energy assumption, pulp & paper and automotive sectors.

The Data and Knowledge Management programme provides a mechanism for energy modelling and planning, to support the alignment of National and local Government energy objectives. The aim is to develop an energy data repository and technical capacity to support National and local energy planning and policy.

combustion with clean coal technologies such as sulphur emissions reduction technologies like Flue Gas Desulphurisation (FGD), particulates emissions reduction technologies like high-frequency transformers combined with chemical injection, Nitrous Oxide (NOx) reduction technologies and coal combustion product utilisation and beneficiation.

To ensure the sustainability of the programme, the CM has identified several funding opportunities to supplement and compensate for the expected shortfall in funding. In the next 12 months, the programme expects to secure an additional USD 6 million from external sources for research and demonstration projects for the development of Electric Vehicles batteries.

Research projects to be undertaken through CM would:

- Serve as a tool for guiding the decision-making process for Municipalities and public decision-makers,
- Identify, contrast, and recommend appropriate policies and support instruments for the South African EV market, and
- Contribute to knowledge dissemination and awareness on technology developments.

SANEDI plans to be a data repository for energy data in South Africa and is in the process of establishing a data centre that will house reliable, accurate and up-to-date energy datasets that will be made available to Stakeholders.

In 2024, SANEDI will establish a Digitalisation Laboratory that will be used to visualise energy datasets, the laboratory will be established to provide data analysis, modelling and forecasting capabilities for energy data in the country.

At present, SANEDI is responsible for maintaining the following datasets that are annually maintained and available at no cost to Stakeholders: WASA database, 12L Tax Incentives database, Big EE database, Transport database and Residential database.





For the Medium-Term Strategic Framework (MTSF) period, SANEDI will continue to maintain the above datasets, and create and maintain the following datasets:

- Solar Map for South Africa,
- Coal Map for South Africa,
- EV Charging Map for South Africa,
- CO<sub>2</sub> to X Projects,
- Mini Grid Visualisation,
- DSI \ Energy Secretariat Hydrogen Data,
- Energy Efficiency Data, and
- Demand Side Management Data

### 3.5.6 ENERGY EFFICIENCY (EE)

Demand Side Management Data Through Energy Efficiency (EE) we will continue to undertake Cool Roof Surface and projects to demonstrate GHG emissions mitigation potential in support of National commitments. The market and industry will be promoted and technology that is fit for purpose will be tested.

Energy Efficiency refers to the use of less energy to achieve the same goal. Energy-efficient systems and buildings use less energy to heat, cool, and operate appliances and electronics. One of the simplest and most affordable ways to slow climate change, lower consumer energy costs, and boost the competitiveness of South African businesses is through EE. EE is also a vital component in achieving Net Zero emissions of Carbon Dioxide (CO<sub>2</sub>) through decarbonisation.

SANEDI's co-ordination and implementation of the EE tax incentives (Section 12L and 12I), has produced phenomenal results, both in terms of energy savings and reduction in Greenhouse Gas Emissions (GGE). Through the 12L and 12I programmes, SANEDI will continue to support the industry in reducing energy and carbon intensity through the verifiable deployment of RE and EE initiatives. Over 19 TWh have been saved, and the emission of 18 730 Mega-tonnes of CO<sub>2</sub> has been avoided. Based on the success of this activity over the last five years, the National Treasury (NT) has decided to extend the Section 12L incentive from January 2020 to December 2025. This also saw the development of various (secure) online tools and databases for the processing of these applications, which over the last few years, has resulted in the establishment of a significant repository of EE data, for use in modelling the impacts of these interventions.

Furthermore, the Cool Surfaces programme, which initially started as a small activity within the

international Clean Energy Ministerial series of activities, has gained traction in South Africa with impressive results achieved in a Northern Cape pilot programme managed by SANEDI. This resulted in SANEDI representing one of 10 countries globally to win an award of USD 100 000 in 2019, for accelerated implementation of the initiative in South Africa.

SANEDI will continue to roll out Cool Surfaces on roof surface area in households and selected buildings in selected Municipalities. This has proven to be an inexpensive way of improving ambient air quality in buildings, especially low-income housing. This has developed the Cool Surfaces industry — thereby creating jobs in the clean energy space.

Every company and building owner has a role to play in South Africa's drive to curb carbon emissions. Climate change is a threat, and EE measures must be adopted. Absa Bank has been a pioneer in this regard, being the first bank to achieve compliance with the country's new building energy performance regulations. Over the 2024/25 financial year, we will continue to partner with more Stakeholders to confront the climate change battle. Our new strategic vision towards a more sustainable and efficient energy sector is primed to equip and support South Africa's economic transformation, growth, and social development. The EE-initiated projects aim to: -

- Support businesses with tax incentives to promote and instil, a culture of cleaner production and EE in all sectors of the economy through participating applicants from which the projects are derived,
- Contribute towards achieving the National carbon emissions reduction targets, and
- Maintain a repository of EE data, readily available to the key Stakeholder (DMRE) for policy formulation and evidence-based decision-making.





### 3.5.7 THE ENERGY SECRETARIAT

The Energy Secretariat is responsible for ensuring effective monitoring of energy security specific to the energy landscape and DSI flagship programmes.

The four flagship programmes comprise the Coal CO<sub>2</sub>-X, Energy Storage, Hydrogen South Africa (HySA), and Renewable Sustainable Energy (RSE) Hub and Spokes. Flagship programmes are housed and implemented with local Universities and Science Councils where centres of excellence have been established.

The strategic role of the Energy Secretariat objective is to ensure effective implementation, monitoring, and evaluation of innovation policies relevant to the energy landscape and the four Department of Science & Technology (DSI) flagship programmes.

SANEDI is proud to have been awarded the privilege by the DSI to host on its behalf, the DSI Energy Secretariat.

The Secretariat is an administrative office which carries out the substantive and administrative work as directed by the Chief Director of Hydrogen Energy.

The objective of establishing the Energy Secretariat is to support the successful commercialisation, and scaling up of knowledge outputs from the broader energy Research and Development Initiatives (RDI) portfolio and ensuring systemic impact in the National System of Innovation (NSI).

The SANEDI-DSI collaboration is Initially a 3-year programme with an estimated budget of R180 million per annum. SANEDI prepared towards the end of the last financial year, and this year will see the Secretariat tackling substantive work towards its objectives.

### 3.5.8 COLLABORATION WITH LOCAL, REGIONAL & INTERNATIONAL ENERGY PARTNERS



SANEDI is viewed as a strategic partner because our mission aligns with the goals of many partners, including advancing EE and RE initiatives to combat climate change and providing South Africa access to a skills pipeline in the RE industry.

In South Africa and the SADC region, we hope to be a driving force behind opportunities in the large-scale demand-side EE market. Scaling up EE interventions in

South Africa and the SADC region is considered one of the most promising solutions to ensure energy security in the country and region. This will help in achieving rapid, ambitious, and cost-effective emission reductions.

SANEDI represents South Africa in energy research and EE through its collaboration with local, Regional, and International energy partners. Below is a list of priority partners as identified in the Stakeholder map:



**STAKEHOLDER MAP**

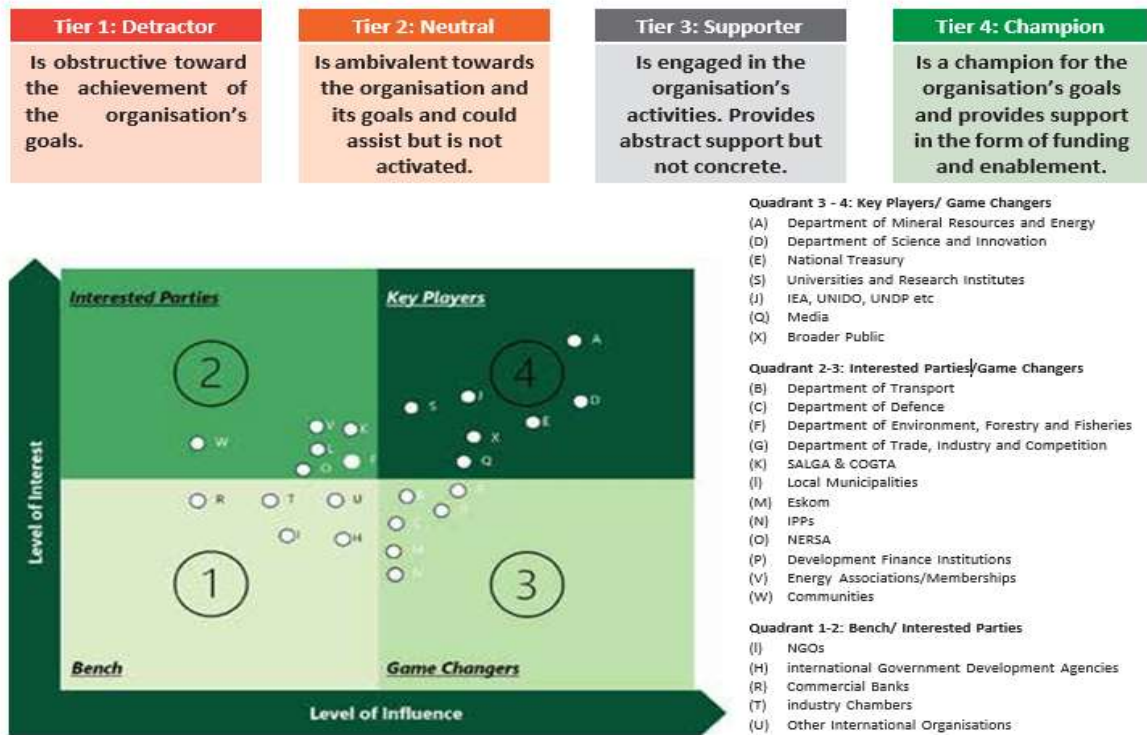


Figure 7: Stakeholder map

**3.5.9 BALANCING ENERGY DEMAND AND SUPPLY**

With the threat of loadshedding an ever-constant reality for South Africans, unpacking the stability of the National grid is an important exercise. It has become fundamentally critical to conduct research geared towards reducing or eliminating rotational power cuts. Loadshedding is poised to rise to extreme levels unless unprecedented interventions are taken urgently to introduce about 10 GW by 2024.

Loadshedding and grid stability have thus become key focus areas for SANEDI in the coming years. This focus is key given the opportunities presented by renewable and

embedded energy generation in the country. The incorporation of energy storage, EE, renewable and embedded power sources with the electric utilities has been a promising solution towards ensuring uninterrupted power supply and lessening the negative economic effects of loadshedding on the economy.

Below are the coordinated programmes SANEDI is implementing which contribute to a reduction in loadshedding and grid stability in South Africa.

Programmes / Projects	Activities	Potential Savings Per Annum	CO <sub>2</sub> Off-set
EU GBS Wastewater Treatment Plants (WWTPs)	14 WWTP assessed	10,224 MWh	11,042 tonnes
Solar PV System within WWTP	14 – 250 kW – 800kW Grid-tie PV Systems	15,366 MWh	16,595 tonnes
EU GBS Buildings	18 Public Buildings assessed	81,936 MWh	88,491 tonnes
Pulp & Paper	11 Paper Mills assessed	579,616 MWh	625,985 tonnes
Automotive Industry	7 Light Duty Vehicles	87,763 MWh	94,784 tonnes
Totals per annum saving potential and CO <sub>2</sub> off-set			2 957 200 t

Table 1

### 3.5.10 SMART GRIDS PROGRAMME

The SGs programme has indirectly contributed to addressing a reduction of increased levels of loadshedding in the past few years, with the pilot project deployment of over 12,000 smart meters across 10 Municipalities between 2014 to 2018. These smart

For the utility (Municipalities), smart meters have improved their ability to do bi-directional metering, where they can accommodate feed-in tariffs should a customer have a grid-tie PV roof-top system. Such metering and RE systems allow for the reduction of grid demand, thereby, promoting grid stability.

In 2021, the SGs programme undertook a research study on “Advanced Distribution Management Systems for Municipalities with Distributed Generation Penetration” This study was shared with Municipalities to enable

meters provide customers direct visibility of their electricity usage, thereby, keeping customers cautious of electricity usage and indirectly reducing their usage of electricity.

them to understand the implications of grid automation and increased RE penetration. Traditionally, distribution network design does not need to consider issues of stability, as the network is passive and remains stable under most circumstances provided the transmission network is itself stable. However, this is likely to change as the penetration of RE increases and their contribution to network security becomes greater. This study contributes in the long-term to the areas that need to be considered, like transient first swing stability as well as long-term dynamic stability and voltage collapse.

### 3.5.11 DATA & KNOWLEDGE MANAGEMENT AND ENERGY MODELLING

The Data and Knowledge Management (DKM) programme addresses loadshedding and grid stability by adhering to the targets stipulated in the post-2015 National Energy Efficiency Strategy. This strategy, amongst other things, states that end-use energy consumption within the public building sector is expected to increase to 125.13PJ in 2030, from 62.4PJ in 2012 levels. These increases can be curtailed by 19.7PJ, which is a decrease of roughly 16%, by conducting refurbishments and interventions in space heating, lighting and improved building practices based on the current version of the SANS10400-XA. Future tightening of the standards and enforcement would achieve greater savings, provided they are enforced. Despite being the most cost-effective method, new stock of office buildings and renovations to existing stock offer the greatest potential for savings.

Within municipal services, based on interventions, energy savings of 47% for bulk-water supply and water treatment, 32% for the municipal vehicle fleet, 25% for street lighting and 16% for buildings and facilities could be achieved. Referring to the post-2015 South Africa National Energy Efficiency Strategy’s (NEES) implementation plan and in collaboration with the DMRE, the DKM programmes address grid stability by implementing Demand-Side Management measures like EE interventions.

The figures stated below are potential savings that can be realised if the EE interventions are carried out within plants and buildings assessed. The first phase of the project was focused on assessing the potential for energy savings. The next phase if granted an extension of the GBS programme, will focus on implementing EE retrofits through a shared savings performance contracting model.

### 3.5.12 CLEANER MOBILITY

The CM programme has the potential to contribute towards grid stability. The programme will contribute towards research aimed at using EVs as an energy storage and energy generator using a municipal distribution network. EVs have the potential to store energy during the off-peak period and feedback energy into the distribution network during the peak period, thus contributing towards the stabilisation of the grid at a municipal level.

The programme did not specifically assess the contribution towards grid stability, The programme will now assess the potential of EVs on grid stabilisation using the work done internationally in this area.

Historically, the CM programme focused on research aimed at policy development (e.g., green transport), economic impact analysis and demonstration (e.g., deployment of 4 EV charging stations).



As of April 2023, CM has concluded a project funding agreement with the Development Bank of Southern Africa (DBSA) for the implementation of the Electric Bus Pilot and demonstration project in South Africa. The Global Environmental Facility (GEF), through the DBSA, has approved USD 4,7 million in funding for the project, which will be used primarily for the procurement and deployment of 49 electric buses and charging

infrastructure in the city of eThekweni and the City of Tshwane in the next five years. A project of this magnitude, complexity, and reach is expected to create

opportunities for Research & Development, local manufacturing, job creation and policy development in the transport sector during and post-implementation.

Programmes / Projects	Activities	Potential Savings Per Annum	CO <sub>2</sub> Off-set
Converting 30% of fleet to cleaner mobility of Municipality buses e.g. Metro Bus, Golden Arrow, and PUTCO.	The CM programme in collaboration with the DBSA, the City of Johannesburg, City of Tshwane and eThekweni Municipality is planning to procure 40 Electric buses to be deployed in the three Metropolitan areas. The objective of the project is to demonstrate the benefits of converting the municipal fleet from ICE to an Electric Drive train. Application for funding has been submitted to the GEF and Municipalities are following their respective internal processes for budget allocation for the project.	Potential cost savings to be determined during demonstration stage of the project.	1 366 000 t
Converting 30% of the fleet to CM taxis.	The concept of converting taxis to CM has been considered by Municipalities and taxi associations. There has been engagement with several Municipalities and taxi associations. Further research and scoping for the large-scale project will be undertaken in the current financial year.	Detailed cost savings for converting of taxis from ICE to CM to be investigated in the scoping phase of the project.	1 591 200 t
Totals per annum saving potential and CO <sub>2</sub> off-set			2 957 200 t

Table 2

### 3.5.13 CLEANER FUELS AND RELATED TECHNOLOGIES

Cleaner fuels are fuels that produce much lower GHG emissions than traditional fuels on a life-cycle basis. Growing South Africa's cleaner fuels market will help reduce our carbon footprint cutting emissions from hard-to-abate sectors, creating jobs and stimulating private sector investments.

South Africa is committed to reducing its carbon emissions in line with its international commitments to mitigate climate change. To meet its carbon emission goals, the economy will need to be powered by clean power and cleaner fuels. Cleaner fuels provide a near-term pathway for emissions reductions and are expected

to play a critical role in 'hard-to-decarbonise sectors such as industry and medium- and heavy-duty freight.

Also recognising the essential role of hydrogen in the country's energy mix, South Africa's broad economic policies on gas includes the Gas Master Plan 2022 which aims to increase the proportion of natural gas in the country's total energy mix, and the recently launched South African Hydrogen Society Roadmap (HSRM).

SANEDI is well-positioned to expand its scope to conduct applied research and promote the production and usage of cleaner fuels production in the country.

### 3.5.14 CLEANER COAL

The Minister of Mineral Resources and Energy on the occasion of the Coal Colloquium on 01 February 2022 expressed that:

- Coal will remain the mainstay of South Africa's energy basket for the next 10 to 20 years, and a strategic sector as well as a job provider,

- The new Eskom build, and the coal Independent Power Producers (IPPs) will sustain the coal industry,
- South Africa is highly dependent on coal for its base load and energy security, and
- Coal mining and energy generation industries do not only bring significant revenue, and employ thousands of employees.



Given our strong reliance on coal and the necessity to maintain compliance with the Just Energy Transition (JET) requirements, it is widely acknowledged that SANEDI needs to expand its research on Cleaner Coal

Technologies (CCTs). CCTs are one option South Africa has that will help ensure that the country maintains its reliance on coal-based power generation while maintaining compliance with its obligations to mitigate climate change.

To increase the effectiveness and acceptability of coal extraction, preparation, and use from an environmental standpoint, a new generation of advanced coal

utilisation methods known as CCTs have been developed over the years. The use of CCTs, carbon capture and storage, and flue gas separation, has expanded in several nations, including South Africa.

Going forward, SANEDI's Cleaner Fuels & Related Technologies portfolio will focus on CCTs such as sulphur emissions reduction technologies like Flue Gas Desulphurisation (FGD), particulate emissions reduction technologies like high-frequency transformers combined with chemical injection, Nitrous Oxide (NOx) reduction technologies and ash utilisation and beneficiation.





## 4. SITUATIONAL ANALYSIS

An important information source for SANEDI is environmental analysis, both internal and external. At the institutional level, SANEDI's mission can be viewed as that of a subject matter expert (SME) in applied energy research as well as the promotion and adoption of EE throughout the country. This requires a highly qualified

and competent staff complement, which not only comes at a high cost to the organisation but is also difficult to secure in the job market. A crucial pre-requisite for economic productivity and social well-being on a Regional and global scale is sustainable hybrid energy.

### 4.1 INTERNAL ENVIRONMENTAL ANALYSIS

SANEDI is influenced by the conditions and forces that exist within the organisation. An extensive review of SANEDI's vision, mission and values, programmes (operations) and processes, as well as internal capacity

and capabilities (width and depth of resources), was conducted, and this uncovered an array of aspects that were interpreted as strengths or weaknesses.

#### 4.1.1 SANEDI: AN ENTITY OF MINERAL RESOURCES AND ENERGY (DMRE)

SANEDI is an implementation agency of the Government, specifically the Department of Mineral Resources and Energy (DMRE), previously the Department of Energy (DoE), established under the National Energy Act, 2008 (Act No. 34 of 2008) (NEA), with a focus on EE, Energy Research, Development, and

Innovation. SANEDI has commitments to Skills Development through our programmes on RE, CM and SGs. These include training and development on EE technologies and related datasets, as well as Clean Mobility Technology systems to enable energy transition expertise and competence building.

#### 4.1.2 OPERATING MODEL (PEOPLE, PROCESS, TECHNOLOGY)

SANEDI's operating model comprises three converging components that speak to People, Process, and Technology, which determine the organisation's capacity to action its business processes, thereby achieving its strategy. Aligned to SANEDI's Strategic Themes 4, 5 and 6, robust and well-defined business processes create a well-functioning organisation.

Significant effort has been placed on process standardisation, driving towards well-defined business principles. Clear lines of accountability must be established to reinforce current systems and procedures. Change Management becomes a key component in terms of embedding the change the organisation is undertaking.

In the past financial year, a few key milestones were achieved, to ensure that the organisation is well-resourced and is continuously undertaking organisational review as in when it's necessary during strategic planning. The milestones include:

-Implementation of the organisational review and section 189 without any litigation,

-Implemented a new operational structure for the organisation with a remuneration system that is aligned with the market,

-Significantly improved visibility and influence of the organisation through the development, adoption, and implementation of the Stakeholder Engagement Plan (SEP); and

-Secured project funding exceeding the MTSF allocation on a multi-year ensuring sustainability.

Appointment of key staff and interns

Improvement of diversity and inclusion

SANEDI continues to engage with key Stakeholders to ensure that operational activities are aligned with those of key Stakeholders, and in turn, will have the desired impact.



## 4.2 EXTERNAL ENVIRONMENT ANALYSIS

### 4.2.1 INCREASED FOCUS ON SPEED OF GLOBAL DECARBONISATION TO 2030

There has been increasing attention over the past few years on achieving a significant fall in global emissions by 2030 to conserve the world’s remaining carbon budget. The analysis contained in the 2018 IPCC Special Report (SR15) suggested that, under some scenarios, to be consistent with a 1.5°C climate goal, global net anthropogenic CO<sub>2</sub> emissions would need to decline by about 45% by 2030 (relative to 2010 levels).

This fall in CO<sub>2</sub> emissions in the SR15 analysis includes reduced emissions from both the energy and industry sectors and the AFOLU (Agriculture, Forestry and Other Land Use) sector. The fall in CO<sub>2</sub> emissions from ‘Fossil

Fuels and industry’ was around 37% (relative to 2010). The corresponding fall in CO<sub>2</sub> emissions in Net Zero is around 20%. The smaller fall in CO<sub>2</sub> emissions assumed in Net Zero partly reflects the higher level of CO<sub>2</sub> emissions in 2019 than assumed in the SR15 analysis, together with the assumption that emissions rise over the next year or so, as the global economy continues to recover from the pandemic. It also reflects an assessment of the likely lead times associated with financing, and implementing the required changes to the global energy system that are necessary to support a rapid decarbonisation.

The pace of decarbonisation in Net Zero in the second half of this decade is broadly like that assumed in the SR15 analysis, albeit from a higher level. Bloomberg New Energy Finance (2022) estimates that in order to achieve Net Zero emissions by the year 2050, global energy-related emissions must decrease by 75% by 2040, and 30% below 2019 levels by 2030, respectively. This 1.75-degree budget calls for a 3.2% annual reduction until 2030, and a quick reversal of current trends, emissions increased by 0.9% annually from 2015 to 2020. The

power sector needs to make the most reductions over the following ten years, reducing emissions by 57% from 2019 levels by 2030 and then 89% by 2040. Emissions from the transportation sector must decrease by 11% by 2030, and by 80% by 2040 compared to 2019 levels. For industry and buildings, it’s 16% and 12% down by 2030 and 58% and 55% by 2040. Transitions in fuels and energy-intensive sectors such as construction materials, chemicals and long-distance transport are therefore particularly important.

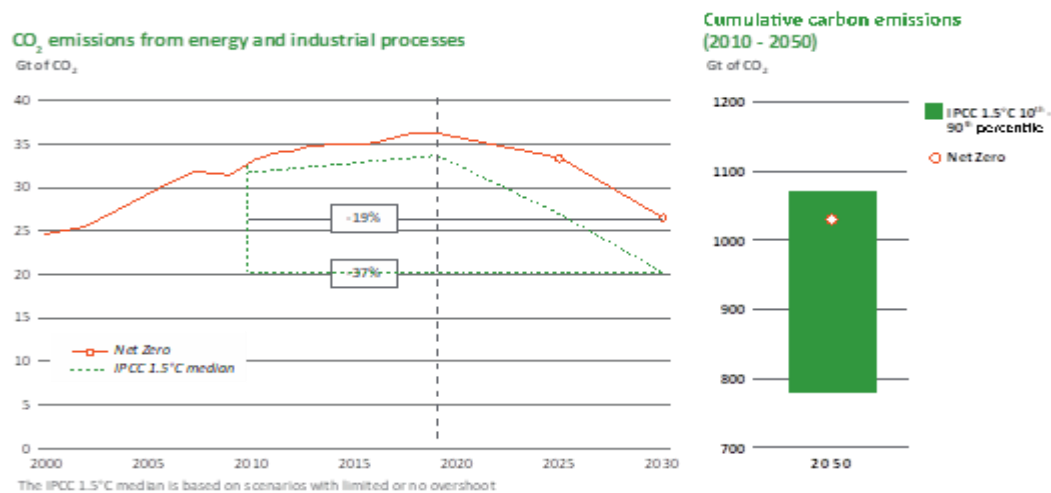


Figure 8: Global CO<sub>2</sub> Emissions

### 4.2.2 PEOPLE CENTERED TRANSITIONS

Enhancing lives and means of livelihood is the goal of the energy sector’s transformation. This entails giving citizens the tools they need to take advantage of the opportunities and navigate the disruptions brought on by the switch to clean energy technologies, in addition to the advantages of avoiding the worst effects of climate change. It entails eliminating energy poverty

because no system can be maintained if significant portions of the world’s population are still denied access to modern energy sources. Additionally, it entails placing employment, equity, inclusion, affordability, access, and sustainable economic development at the forefront of the process.





According to the International Energy Agency (IEA), energy sector transformation also comes with dislocation, as new jobs are not necessarily created in the same places where jobs are lost. Skill sets are not automatically transferable, and new skills are needed.

Changes in the energy sector must support social and economic development and improve quality of life. A starting point is to bring modern energy to those who lack access. The IEA estimates that providing universal access to electricity and clean cooking by 2030 would

#### 4.2.3 GENDER MAINSTREAMING

The energy sector is one of the worst-performing sectors of the global economy when it comes to gender balance, despite overwhelming evidence of the social, and economic benefits of diversity and equal opportunities in the workforce. Few women hold senior positions, and only a small percentage of the labour force is female. Only one in five jobs worldwide in the oil and gas industry, and one in three jobs worldwide in the RE industry, are held by women. Aside from that, data from nearly 2 500 publicly traded energy companies show that women make up just under 14% of Senior Managers (representation is strongest in utilities), compared to 16% in 30 000 non-energy companies.

Energy transitions offer a chance to integrate policies and actions, that address gender equality issues in the energy and related sectors.

#### 4.2.4 ENERGY SECURITY

Energy transitions can be chaotic and tumultuous affairs, marked by conflicting interests and stop-go strategies. There is a constant risk of energy supply and demand mismatches, as the world moves toward Net Zero emissions because of a dearth of appropriate investment signals, a lack of sufficient technological advancement, inadequately designed policies, or bottlenecks resulting from a lack of infrastructure. Physical risks to the world's energy infrastructure are growing because of climate change.

#### 4.2.5 SHORTAGES IN LIQUID FUEL

A shortage of oil refineries across sub-Saharan Africa, coupled with soaring crude prices because of the war in Ukraine, has left countries dangerously short of fuel supplies and disrupting airlines. The impact of liquid fuel

This is true both within specific countries and internationally. Governments need to manage the impacts in a coordinated way, seek transition pathways that maximise opportunities for decent, high-quality work and for workers to make use of existing skills, and mobilise long-term support for workers and communities where jobs are lost.

require investments of USD43 billion per year, closing an important gap in the global energy system at a fraction of the overall cost of transitions. The affordability and security of energy supply are also vital considerations when it comes to quality of life.

This will necessitate tailored policy support, with solutions created to consider the unique dynamics of the various sectors and sub-sectors, as well as the ways that gender equality can be improved as energy transitions advance.

SANEDI is acutely aware of the challenges faced by women and is committed to the inclusion and support of women in the energy sector. A Gender Mainstreaming strategy will be finalised during 2024/25 FY to ensure that Gender Mainstreaming is integrated into the current programmes and strategies. SANEDI intends to set targets to ensure that we achieve transformation and gender equality objectives in the energy sector.

According to the IEA estimates, over 10% of dispatchable generation fleets, coastal refineries, and freshwater-cooled thermal power plants are vulnerable to severe coastal flooding, and about a quarter of the world's electricity networks are at high risk of destructive cyclone winds. Additionally, a third of these facilities are situated in high-water stress regions. These risks are predicted to rise over time, highlighting the urgent need to improve the climate change resilience of energy systems

shortage is expected to be longer lasting in South Africa, as the Government and private sector companies are less able to come up with the funding needed to get refineries running at full capacity.



**4.2.6 ENERGY DEMAND**

Global energy demand measured at the final point of energy use decarbonises in all three scenarios, as the world electrifies and makes increasing use of hydrogen. The share of Fossil Fuels in Total Final Energy Consumption (TFEC) declines from around 65% in 2019 to 30-50% by 2050 in the three scenarios. Within hydrocarbons, the largest falls occur in the share of coal as the world increasingly shifts towards lower carbon fuels in industry and buildings, and in the share of oil, driven primarily by falling use of oil in road transport. The role of electricity increases substantially, with electricity consumption increasing by 75- 85% over the outlook in all three scenarios. The share of electricity at

the final point of use increases from 20% in 2019, to around 30% in New Momentum, and 45-50% in Accelerated and Net Zero. The growth in electrification in all three scenarios is met mostly by the rapid growth in wind and solar power.

**Total final energy consumption decarbonises as Fossil Fuels are replaced by electricity and hydrogen**

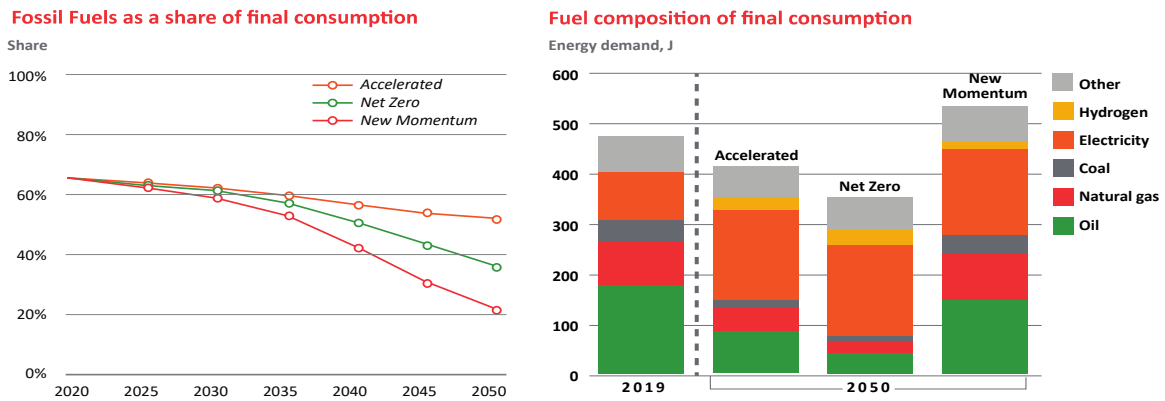


Figure 9: Fossil Fuels as a share of final consumption vs fuel composition of final consumption

**4.2.6.1 ENERGY EFFICIENCY**

In clean energy transitions, EE is referred to as the “first fuel” because it offers some of the quickest, and most affordable CO<sub>2</sub> mitigation options while lowering energy costs and enhancing energy security. The most effective way to reduce energy demand is through EE, which is also closely related to electrification, behavioural modification, digitalisation, and material efficiency. Together, these metrics influence global energy intensity, which is a crucial indicator of the economy’s EE. Global energy intensity is the amount of energy needed to produce one unit of GDP. The rate of improvement in global energy intensity must be two to three times greater than historical rates and rise to just over 4% per year between 2020 and 2030 in order to stay on track with the 2050 Net Zero targets.

Energy-efficient technologies help to reduce emissions and fossil fuel use across the board, by slowing the

growth of energy demand. For instance, more fuel-efficient steel, cement, and chemical production reduces the use of Fossil Fuels in industry, better insulation and more efficient appliances reduce the electricity and direct use of Fossil Fuels in buildings, and more energy-efficient cars, trucks, and aircraft reduce the demand for oil in the transportation sector.

To get back on track, a massive and unprecedented shift toward more EE buildings, transportation, and industry is required, adopting the full range of EE-related measures to prevent increased energy demand. The importance of EE in addressing issues like energy security, affordability, and climate change is greater than ever, as the world

grapples with one of the biggest and most serious energy crises of modern times.



#### 4.2.7 POLICY DISCOURSE

Major energy security developments in the country are a response to the growing sense of urgency in ensuring access to affordable, clean, and modern sources of energy by the Government. However, the results of a review of the policies indicate that the current suite of Government policies and programmes aimed at fighting energy access, and energy poverty have produced sub-optimal solutions.

It appears that many policies and programmes appear to be failing to address the many problems at hand, as the country still grapples with loadshedding and high levels of energy poverty. Thus, if the country is to achieve

reduction in energy poverty and reach its goal of universal access to energy, then policy and regulatory frameworks and resources to support energy service delivery need to be urgently and constructively reviewed. Anchored on the District Development Model (DDM), this can be and can be achieved by close collaboration between the DMRE, the DSI, civil society and the many energy Stakeholders in the country.

The role of coal in South Africa’s energy mix is far from over. Eskom is still planning to bring more coal-fired generating capacity online, while the DMRE plans to keep it as part of its energy mix.

#### 4.2.8 PESTEL ANALYSIS

<b>Political</b>	<ul style="list-style-type: none"> <li>• The large-scale impact of loadshedding on the economy and businesses.</li> <li>• Structural change in energy.</li> <li>• The impact of the JET on the economy.</li> <li>• Prioritising EE in emerging economies.</li> <li>• Independent Power Producers Procurement Programme (IPPPP).</li> <li>• Government policies and regulations.</li> <li>• Political stability and potential changes in leadership (the impending national elections in 2024) can impact energy policies and investments.</li> <li>• Government initiatives for renewable energy and commitment to addressing climate change.</li> </ul>
<b>Economical</b>	<ul style="list-style-type: none"> <li>• Energy Security.</li> <li>• Population trends would continue to impact Energy Security.</li> <li>• The impact of Just Energy Transition to society.</li> <li>• Gender mainstreaming.</li> <li>• Economic conditions influence energy demand, especially in industries and households.</li> <li>• Currency fluctuations may affect the cost of importing energy resources.</li> <li>• Economic growth and development impact energy consumption patterns and infrastructure investments.</li> </ul>
<b>Social</b>	<ul style="list-style-type: none"> <li>• Public awareness and acceptance of renewable energy sources.</li> <li>• Demographic trends influencing population growth and energy consumption.</li> <li>• Social attitudes toward energy conservation and sustainable practices.</li> </ul>
<b>Technological</b>	<ul style="list-style-type: none"> <li>• Advancements in energy technologies, including solar, wind, and storage solutions.</li> <li>• Technological barriers and opportunities in the development of a smart grid.</li> <li>• Digitalisation and automation in the energy sector for improved efficiency.</li> </ul>
<b>Environmental</b>	<ul style="list-style-type: none"> <li>• Climate change concerns and the need for sustainable energy solutions.</li> <li>• Environmental regulations affecting the exploration and extraction of energy resources.</li> <li>• Impact of renewable energy adoption on reducing carbon emissions.</li> </ul>
<b>Legal</b>	<ul style="list-style-type: none"> <li>• Compliance with energy regulations and licensing requirements.</li> <li>• Legal frameworks related to environmental protection and land use for energy projects.</li> <li>• Energy market competition and antitrust laws</li> <li>• Energy Performance Certificate (EPC) regulations.</li> <li>• The National Regulator for Compulsory Specifications (NRCS) informs new performance and safety lighting regulations for General Service Lamps.</li> </ul>

Figure 10: PESTEL Analysis



### 4.3 SWOT ANALYSIS

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>• Collaboration stock - We have established and maintained relationships and partnerships with both internal and external Stakeholders.</li> <li>• Organisational capability - Great organisational capability to deliver and implement programmes and projects.</li> <li>• Recognised brand – Built and maintained a strong brand locally and internationally.</li> <li>• High quality work output – We have consistently produced high quality work output over the years.</li> <li>• Management team - Management has extensive experience in energy, research, and development.</li> <li>• Resilient and committed workforce.</li> </ul>	<ul style="list-style-type: none"> <li>• Human Capital constraints – High labour turnover, as SANEDI is losing experienced and skilled employees being replaced by young graduate engineers leaving many positions vacant. Skill set built around certain projects might not work in the future.</li> <li>• Financial constraints / funding model – The organisation does not collect any form of revenue and is heavily reliant on the Shareholder and largely the donor community for funding.</li> <li>• Prioritisation of programmes - SANEDI manipulates donors to support its priorities.</li> <li>• Stakeholder engagement – SANEDI needs to improve on Stakeholder programmes.</li> </ul>
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> <li>• New collaborations and partnerships – There is a growing community of partners and organisations working on various energy development initiatives including the DecadalPlan .</li> <li>• Research - There is a growing demand for theoretical and empirical investigations on energy security and development.</li> <li>• Financial self-sufficiency - There are avenues (consulting fees, royalties, data sales) available for SANEDI to generate revenue and ensure financial self-sufficiency.</li> <li>• Government policy and programmes - Promotion of programmes and policies designed to solve the nations and the world’s energy issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Evolving mandate - Technology changes and new energy problems are driving policy shifts.</li> <li>• Local and geopolitical instability - Escalating International and internal political tensions affecting the economy, energy policies and SANEDI Mandate.</li> <li>• Funding risks - The ability of SANEDI to carry out its Mandate is put at risk by a limited budget, and less funding commitments from the Shareholder.</li> <li>• Skills shortage - South Africa has a big shortage of critical engineering skills. The shortage of engineering professionals means that we don’t have enough practitioners available for ongoing programmes and projects.</li> </ul>

Figure 11: SANEDI SWOT Analysis



#### 4.4 STRATEGIC OUTCOMES

In making its desired impact of enabling decarbonisation and a just transition from a fossil fuel-based economy to a cleaner energy economy for sustainable development, SANEDI strives to achieve the following outcomes within the 2020/25 planning period:

<b>TABLE OF STRATEGIC OUTCOMES (SOs) AND KEY PERFORMANCE AREAS (KPA)s</b>	
<b>SO1. Contribute towards sustainable energy solutions</b>	
KPA 1	Digitalised energy systems
KPA 2	Green House Gas (GHG) reduction through sustainable energy interventions
KPA 3	Catalyse balanced Just Energy Transition
KPA 4	Energy Research, Development, and Innovation
KPA 5	Balancing Energy Supply and Demand
KPA 6	ICT
KPA 7	Intellectual Property
KPA 8	Energy Secretariat
KPA 9	Collaboration with industry, tertiary education bodies and SETAs
<b>SO2. Building energy expertise and competence</b>	
KPA 10	Implement skills development interventions
KPA 11	SMMEs and enterprise development
KPA 12	HR – Recruitment
<b>SO3. A capacitated, effective, efficient, and sustainable operational environment (within which SANEDI will discharge its mandate)</b>	
KPA 13	Supply Chain Management
KPA 14	Governance, Risk and Compliance
KPA 15	Local, Regional and International Partnerships
KPA 16	Financial Management
KPA 17	Funding Management
<b>SO4. Inform and increase awareness of sustainable energy and provide thought leadership</b>	
KPA 18	Developing and implementing communications strategy
KPA 19	Public Relations Management
KPA 20	Internal and External Communications
KPA 21	Events Management
KPA 22	Publications
KPA 23	Technical and Research Publications
<b>SO5. Inform policy through scientific and technological research with a view of supporting implementation</b>	
KPA 24	Energy Policy Influence and Advocacy



#### 4.5 LINKING OF OUTCOMES AND PROGRAMMES

PROGRAMME 1.1: ADMINISTRATION	
SUB-PROGRAMME	STRATEGIC OUTCOME
Human Resources	SO3. A capacitated, effective and efficient operational environment (within which SANEDI will discharge its mandate).
Information Communications Technologies	
Risk Management	
Financial Management	
Supply Chain Management	
COSEC, Governance, Legal, Risks & Compliance Project Management Office	
Corporate Planning, Monitoring and Evaluation	
Communications and Stakeholder Management	SO4. Inform and increase awareness of sustainable energy and provide thought leadership.
PROGRAMME 1.2: STRATEGIC INITIATIVES	
SUB-PROGRAMME	STRATEGIC OUTCOME
Intellectual Property & Commercialisation	SO1. Contribute to sustainable energy solutions. SO2. Building energy expertise and competence. SO3. A capacitated, effective, and efficient operational environment (within which SANEDI will discharge its mandate). SO4. Inform and increase awareness of sustainable energy and provide thought leadership. SO5. Provide thought leadership.
Local, Regional & International Energy Partners	
SMMEs & Enterprise Development	
Technical Skills Development	
Energy Technical Support for SA participation in BRICS, G20, G7, AU, etc.,	
PROGRAMME 2: APPLIED ENERGY RESEARCH, DEVELOPMENT & INNOVATION	
SUB-PROGRAMME	OUTCOME
Cleaner Fuels & Related Technologies	SO1. Contribute to sustainable energy solutions.
Renewable Energy	SO1. Contribute to sustainable energy solutions.
	SO4. Inform and increase awareness of sustainable energy
	SO2. Building energy expertise and competence.
	SO4. Inform and increase awareness of sustainable energy
Smart Grids	SO1. Contribute towards sustainable energy solutions.
Data Knowledge Management	SO5. Provide thought leadership.
	SO4. Inform and increase awareness of sustainable energy.
	SO2. Building energy expertise and competence.
Cleaner Mobility	SO1. Contribute towards sustainable energy solutions.
Balancing Energy Supply & Demand	SO1. Contribute towards sustainable energy solutions.
PROGRAMME 3: ENERGY EFFICIENCY	
SUB-PROGRAMME	OUTCOME
Cool Surfaces	SO1. Contribute towards sustainable energy solutions.
Section 12L Tax Incentives	SO1. Contribute towards sustainable energy solutions.
Measures and Verification	SO2. Building energy expertise and competence.
Lighting	SO5. Inform energy policy through scientific and technological research with a view of supporting implementation
Standards and Labelling	
Energy Performance Certificates	
PROGRAMME 4: THE ENERGY SECRETARIAT	
SUB-PROGRAMME	OUTCOME
Coal CO <sub>2</sub> -X RD	SO1. Contribute towards sustainable energy solutions.
Energy Storage RDI	
Hydrogen SA (HySA)	
Renewable Energy Hub and Spokes	
Coordination and Management	



## 5. FUNDING AND RESOURCE ALLOCATION

SANEDI derives its revenue through transfers from the Department, Interest income earned on money market investments and well as donor funding. On average Allocation has grown by an inflationary increase year on year although this remains below what SANEDI needs to implement its mandate.

For the upcoming year 2024/25, SANEDI's allocation will decline by 9% from (R85 038 to R77 240) which is a baseline downward adjustment that will be allocated to SANEDI's baseline on an annual basis over the next three years from 2024/25 financial year up until 2026/27. There are possibilities of further adjustments as government is experiencing some expenditure pressures.

To cushion the impact of the budget adjustments, SANEDI will need to maximise on its investment activities, cash flow management and cost containment in order to ensure that the current allocation is sufficient to cover the operational requirements of the organisation. We are estimating that in the upcoming year SANEDI can generate an additional R13 million of revenues from interest income and other income to be generated through services rendered.

We have also amended our strategy in terms of the allocation of funds between goods and services and compensation of employees to increase the allocation towards compensation of employees to do most of the work in house as opposed to outsourcing. This will result in an allocation of 38% of the budget towards goods and services and 62% to compensation of employees.

	2024/2025	2025/2026	2026/27
Current payments	90 824	96 822	100 892
Compensation of employees	56 067	58 848	61 543
Goods and services	34 257	37 450	38 802

The total budget will be allocated as follows in between the three programmes:

- Administration R45 466
- Applied Energy Research and Innovation R14 223
- Energy Efficiency R31 135
- Energy Secretariat R – (No allocation from Fiscus but 129 million estimated for 2024/25 from DSI)

The Energy Secretariat is funded through an annual round of funding from the DSI. Over the past three years SANEDI has been allocated a R180 million for the secretariat but this amount is reviewed on an annual basis. At present we can only speculate that the allocation for the year will be R129 million because of baseline adjustments across government which will also impact the budget allocation for the Energy Secretariat.

This process will be concluded during the 2024/25 financial year and as such has not been included in the budget estimates.

The allocation to programmes also will see an allocation in favour of compensation of employees. The expectation is that in line with the approved funding strategy, funding to cover the core work of the various programmes will be funded from external funds. We have also introduced some budget shifts in between the programmes and sub-programmes in responding to baseline adjustments to spread the impact and minimise shortfalls at sub-programme levels. Impact on critical programmes such as the energy efficiency programme were minimised as well as ensuring that funding is made available for Clean Coal Technology research which is a crucial part of the energy plans of the country as per the draft IRP. CESAR funding is also critical to address the requirements around energy planning requirements which are also critical for the mandate of the DMRE.

Programmes and Sub-programmes	% of total	% of total	Variance
Administration	56%	50%	6%
Applied Energy and Innovation	0%	0%	0%
Cleaner fossil fuels	0%	4%	-4%
Energy efficiency programme	17%	16%	1%
Smart grids	9%	8%	1%
Working for energy	0%	0%	0%
Clean energy solutions	12%	12%	1%
Centre for energy systems analysis and research (CESAR)	4%	7%	-3%
Cleaner Mobility	3%	3%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>0%</b>

Management will continue to implement the approved funding strategy of the Board and explore additional funding from external sources. The plan to ensure that over and above the allocation from the Vote we secure an additional R 500 million to fund new projects over the next three years.

Although plans have been put in place to cushion the impact of the budget adjustments, the lack of adequate funding remains a risk that faces the organisation and can materially impact the organisation's ability to fully implement its Mandate. A sustainable funding solution is needed to ensure that SANEDI is adequately funded and resourced.

Partnerships remain a significant part of our strategy for us to deliver on our mandate. We continue to value the partnerships that have supported SANEDI in the past and that will continue in the future to support the delivery of sustainable energy and energy security in our country.





## 5.1 EXPENDITURE SUMMARY

	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
Rand thousand	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
<b>Economic classification</b>														
<b>Current payments</b>	<b>74 052</b>	<b>85 412</b>	<b>125 181</b>	<b>102 293</b>	<b>90 815</b>	<b>90 815</b>	<b>(0)</b>	<b>91 815</b>	<b>90 824</b>	<b>(991)</b>	<b>96 032</b>	<b>96 822</b>	<b>790</b>	<b>100 892</b>
<i>Compensation of employees</i>	36 792	32 962	45 001	36 850	46 881	46 881	-	49 000	56 067	7 067	51 940	58 848	6 908	61 543
Salaries and wages	36 792	32 962	45 001	36 850	46 881	46 881	-	49 000	56 067	7 067	51 940	58 848	6 908	61 543
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Goods and services</i>	34 912	52 040	76 153	61 642	39 728	39 727	(0)	38 423	34 257	(4 166)	39 436	37 450	(1 986)	38 802
Of which														
Administrative fees	465	518	426	620	443	443	-	461	461	-	489	483	(6)	505
Advertising	463	669	589	726	589	589	-	589	589	-	624	617	(8)	645
Audit costs: External	898	1 997	1 400	1 717	1 400	1 400	-	1 400	1 400	-	1 484	1 466	(18)	1 533
Catering: Internal activities	18	28	46	155	46	46	-	46	46	-	49	48	(1)	50
Communication (G&S)	-	-	909	38	950	950	(0)	1 000	1 000	-	1 060	1 047	(13)	1 095
Computer services	3 119	2 954	3 987	4 307	4 147	4 147	-	4 314	4 314	-	4 573	6 611	2 038	6 915
Consultants: Business and advisory services	5 778	12 174	6 439	15 262	6 211	6 211	-	6 485	3 020	(3 465)	6 875	3 836	(3 038)	3 642
Legal services (G&S)	1 085	-	1 100	825	1 200	1 200	-	1 300	1 300	-	1 742	1 361	(381)	1 424
Science and technological services	18 152	21 272	47 671	25 575	12 271	12 271	-	9 784	10 384	600	9 043	10 162	1 119	10 890
Contractors	451	-	150	214	156	156	-	162	162	(0)	172	190	18	178
Maintenance and repairs of other fixed structures	170	-	150	214	156	156	-	162	162	(0)	172	170	(2)	178
Other	281	-	-	-	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced services	-	-	3 997	4 116	3 204	3 204	-	3 681	1 981	(1 700)	3 574	2 092	(1 482)	2 188
Consumables: Stationery, printing and office supplies	376	112	390	175	400	400	-	400	400	-	424	419	(5)	438
Operating leases	1 185	1 259	2 188	1 643	2 287	2 287	0	2 287	2 287	-	2 424	2 394	(30)	2 505
Travel and subsistence	367	455	2 361	1 798	2 091	2 091	-	2 153	2 553	400	2 282	2 660	378	2 761
Training and development	832	654	751	664	785	785	(0)	796	1 796	1 000	844	1 446	602	1 234
Operating payments	1 662	9 948	3 421	2 274	3 256	3 256	-	3 259	2 259	(1 000)	3 455	2 296	(1 159)	2 461
Venues and facilities	61	-	327	1 117	292	292	-	305	305	-	323	323	-	338
Depreciation	2 348	410	4 026	3 801	4 207	4 207	0	4 392	500	(3 892)	4 656	524	(4 132)	548
<b>Transfers and subsidies</b>	<b>90 974</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Other Government units	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
National Government	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>165 026</b>	<b>85 412</b>	<b>125 181</b>	<b>102 293</b>	<b>90 815</b>	<b>90 815</b>	<b>(0)</b>	<b>91 815</b>	<b>90 824</b>	<b>(991)</b>	<b>96 032</b>	<b>96 822</b>	<b>790</b>	<b>100 892</b>

Table 3



## 5.2 PROGRAMME 4: BUDGET – ENERGY SECRETARIAT

SANEDI has been hosting the Energy Secretariat since its appointment by the DSI in 2020. The allocation for 2022/2023 from the DSI is R184 920 000.00 for which 5.5% (R10 170 600.00) is the SANEDI administration fee. The budget also includes 7.7% (R13 869 000.00) for the Energy Secretariat running expenses including the

salaries and R10 362 798.16 reserved for the Call for proposals – clean energy technologies in partnership with municipalities. The balance of the funds is for transfers to Centres of competence and entities that are conducting research work on behalf of the DSI. The entire allocation is as follows:

ITEMS	AMOUNT
Energy Secretariat (Administration Fee at 5.5 %)	R10 170 600
Energy Secretariat – operationalisation/set up (7.5%)	R13 869 000
Call for proposals – clean energy technologies in partnership with municipalities	R10 362 798
Coal CO <sub>2</sub> to X (University of Cape Town – UCT)	R10 666 856
Coal CO <sub>2</sub> to X (EPCM)	R1 400 000
Energy Storage (ANL/NECSA)	R1 047 418
Energy Storage (University of Western Cape – UWC, UL, CSIR, NECSA)	R15 420 000
Renewable Energy Hub and Spokes (Stellenbosch University: SU)	R22 148 284
HySA Systems (UWC)	R18 008 005
HySA Infrastructure (North-West University – NWU) – (In accordance with Annexure P)	R28 000 000
HySA Infrastructure (Council for Scientific and Industrial Research – CSIR)	R 6 500 000
HySA Catalysis (UCT)	R24 536 501
HySA Catalysis (Mintek)	R6 660 538
Coal CO <sub>2</sub> to X Project demonstration at Kelvin power station	R16 130 000
<b>Total</b>	<b>R184 920 000</b>

Table 4

The above budget is an indicative budget of what SANEDI is expecting to receive from the energy secretariat in future years as it continues to support the DSI will the implementation of the its strategy.



## 6. PLANNING TOOLS

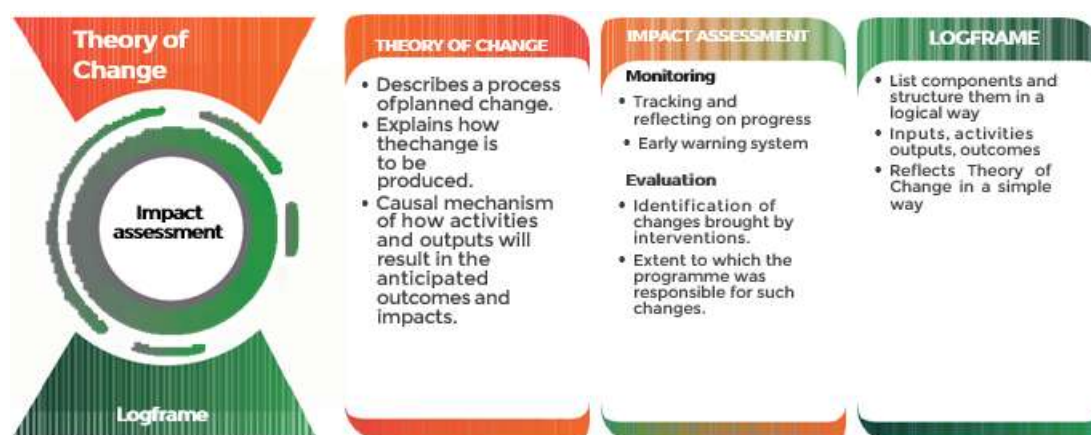


Figure 12: Theory of Change as a Planning Tool

### 6.1 THEORY OF CHANGE

SANEDI's Theory of Change (ToC) allows for mapping the change that SANEDI is pursuing, and illustrates how the activities of the organisation are envisaged to contribute to the change. By institutionalising ToC, SANEDI will be able to monitor and track its contributions to the energy sector and the country, considering the pursued outcomes and impacts. By conducting regular implementation evaluations and making use of the recreated ToC, it will also be able to identify the areas of success and challenges, which will assist the organisation in informing and refining future planning and efforts, so SANEDI's contribution can be increasingly targeted and effective.

SANEDI's ToC is in line with SANEDI's Strategic Plan (SP) for the period between 2020/25. It reflects the vision, mission, and objectives for the 2020/25 period, to ensure that the assessment of the organisation's performance is fair and is done considering the activities that are pursued during the analysis period. The Mandate of the organisation is expected to remain the same in the foreseeable future and demand the organisation to deliver EE, and Energy Research and Development (ERD).

However, the ever-changing technology landscape, the macro-economic challenges, and the resource constraints have forced the organisation to prioritise the needs for the 2020/25 period. As outlined in the SP 2020/25, the organisation re-positioned itself to focus on three areas of delivery:

- Service delivery through the Smart Cities programmes, particularly as it relates to transport, energy, revenue, and asset management,
- Decarbonisation through technological programmes, compliance monitoring and awareness campaigns, and
- Information and Knowledge Management to increase the National dataset on energy-related information, thereby facilitating improvements in public sector policy-making and private sector investment decisions.

#### LOGFRAME

The Logframe, or Logical Framework tool was used for improving the planning, implementation, management, monitoring, and evaluation of SANEDI's programmes. As a results chain, it described impact, outcomes, outputs, activities, and inputs, and showed the logical linkages between them.

Indicators, baselines, and targets at each level of the results chain are developed to measure progress towards achieving the desired results. Assumptions and risks form the basis of the Logframe. Indicators and targets developed through the Logframe are reflected in SANEDI's SP, Annual Performance Plans (APP) and Annual Operating Plans (AOP).

## 6.2 SWOT

In revising the APP, SANEDI's internal characteristics, strengths and weaknesses were assessed with a SWOT (strengths, weaknesses, opportunities, and threats) assessment to build on its strengths and overcome or work around its weaknesses in the action plan.

The SWOT assessment assessed the external environmental conditions, or opportunities and threats, that favour or threaten SANEDI's strategy. The progress made in responding to SWOT analysis was emphasised in the planning process.

## 6.3 IMPACT ASSESSMENT FRAMEWORK (IAF)

IAF is envisaged to enable SANEDI to track and assess the impact of its work going forward. The IAF framework aims to assist SANEDI in:

- Conducting comparative assessments of SANEDI's contributions to similar developmental organisations,
- Monitoring and tracking SANEDI's contributions to the energy sector and the country,
- Showcasing SANEDI's contribution and building the organisation's reputation,
- Inspiring innovation and interest in the energy sector among South Africa's youth, and

- Informing and refining future planning and efforts so SANEDI's contribution can be increasingly targeted and effective..

The above scope for the IAF is wide-ranging and cannot be responded to by a single tool. Therefore, SANEDI comprises three elements that would allow it to measure the aspects outlined above, namely:

- A benchmarking tool for comparing the organisation's performance against other similar institutions in other countries, or organisations in South Africa that are also meant to contribute to the desired impacts pursued by SANEDI, and
- A reputational framework to measure and showcase SANEDI's reputation.



## 6.4 BALANCED SCORE CARD

The Balanced Score Card was used by SANEDI as a strategic planning and management tool that aligned the entity's functions with its vision and strategy. It is envisioned that SANEDI's Balanced Score Card would be used to improve the entity's internal and external communications, as well as to act as a tool for the Board

to measure Management's performance against pre-determined results.

Using the SANEDI's Balanced Score Card approach suggests that the organisation could be viewed from six perspectives i.e.:

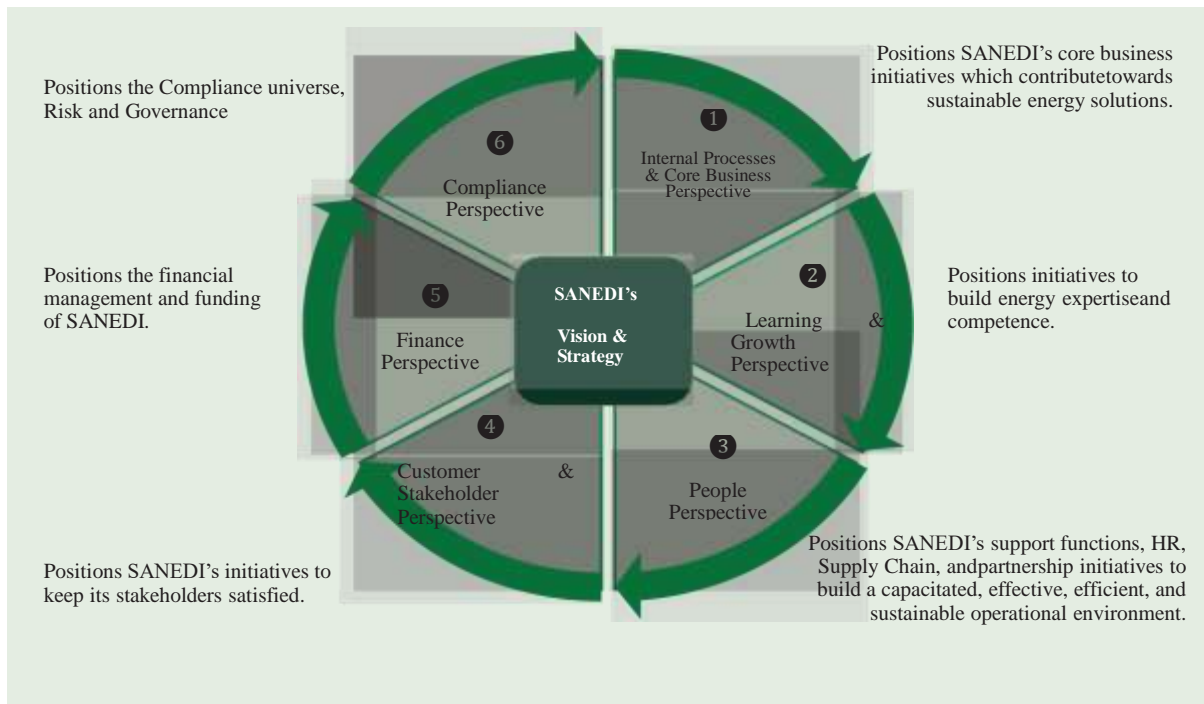


Figure 13: SANEDI's Balanced Score Card

## 7. ORGANISATIONAL STRUCTURE

The organogram includes the SANEDI Board directly overseeing the Board Committees: Board Audit and Risk Committee (BARC), Remuneration Committee (RC), Projects Committee (PC), Funding and Finance Committee (FFC), and Social Justice and Ethics Committee (SJEC). The SANEDI CEO reports to the Board

and oversees three programmes: Administration IP Management and Commercialisation, Applied Energy Research, Development and Innovation, and Energy Efficiency. Within those programmes are several sub-programmes as shown in the figure below:

### 7.1 BOARD STRUCTURE

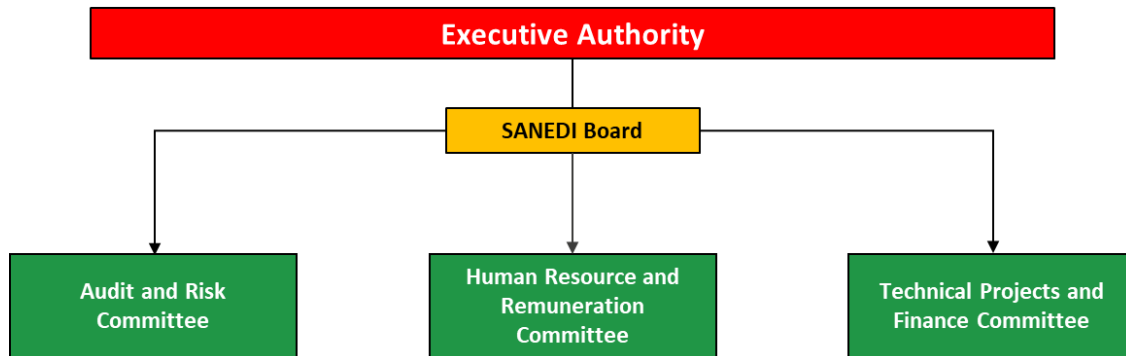


Figure 14: Board Structure

### 7.2 MANAGEMENT ORGANOGRAM

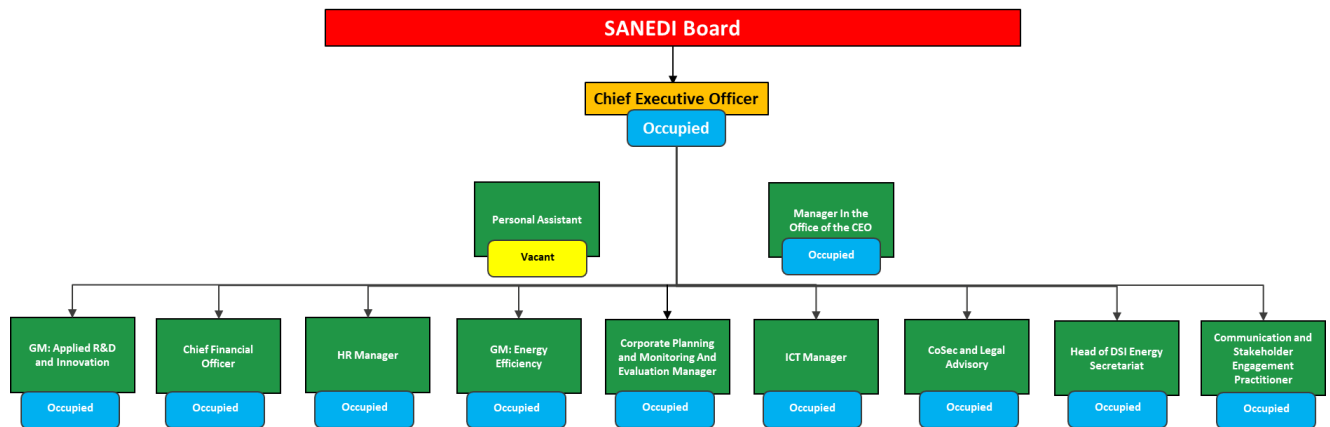


Figure 15: Management Organogram



### 7.3 PROGRAMMES

SANEDI has undergone an organizational restructuring and benchmarking exercise to ensure the efficient utilization of resources in delivering the mandate. Implementation of the new organizational structure will likely occur during the strategic cycle presented. Due to

the broad mandate, and limited funds available, resource effectiveness and efficiency by focusing on real value creation is key to the long-term sustainability of SANEDI. The programmes and sub-programmes are shown in Figure 16 below:

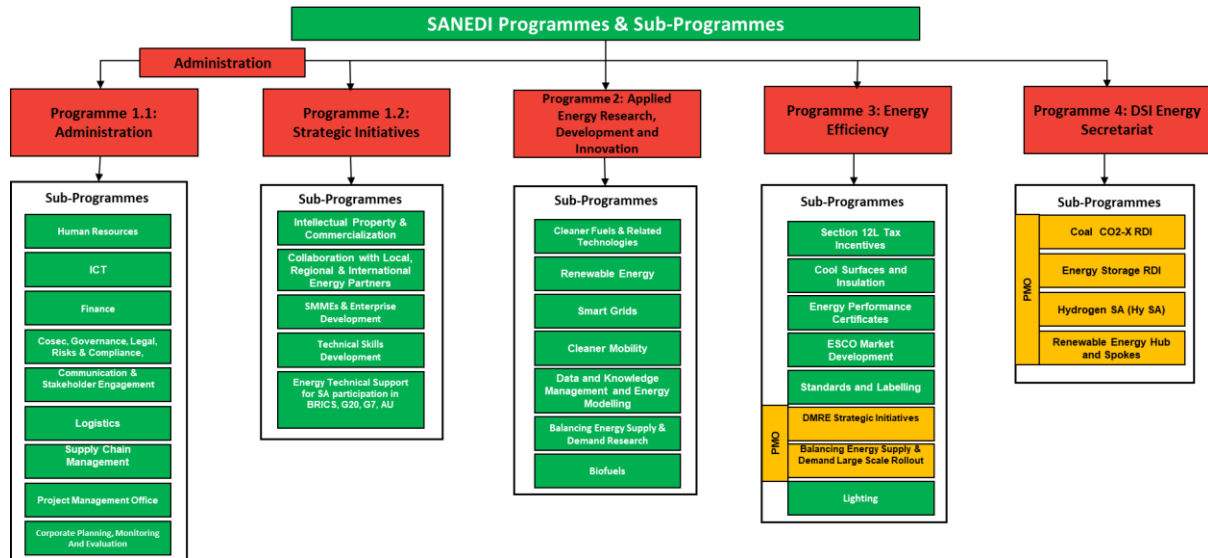


Figure 16: Programmes and Sub-Programmes

In Figure 17 are projects as linked to the sub-programmes and programmes:

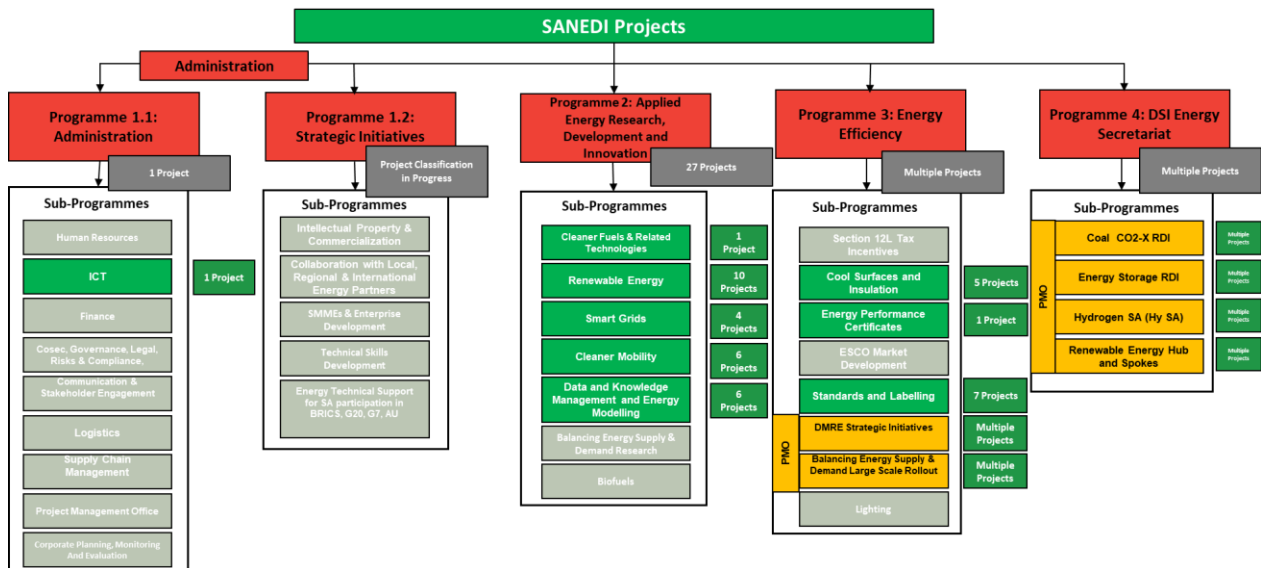


Figure 17: Programmes, Sub-Programmes and Projects





# PART C: MEASURING OUR PERFORMANCE



## 8. PROGRAMME 1.1: ADMINISTRATION

The purpose of Programme 1.1 is to create an effectual delivery environment for SANEDI that is fully compliant with all statutory requirements.

The Administration Programme serves as the bedrock upon which SANEDI propels itself towards its overarching strategic outcomes. By harmonising the efforts of various sub-programmes, the Administration Programme stands as a lynchpin, ensuring the institution's efficiency, effectiveness, and sustainability.

The Administration Programme plays a pivotal role in fostering an environment that nurtures sustainable energy solutions. Through strategic Human Resources initiatives, it cultivates a skilled workforce, instilling a culture of innovation and dedication. Information Communications Technologies are leveraged to provide the technological backbone necessary for groundbreaking energy research and development.

Aligned with the goal of building energy expertise, the Administration Programme strategically invests in Human Resources and Supply Chain Management. Robust HR practices ensure a knowledgeable and motivated workforce, while effective supply chain processes guarantee the timely availability of resources crucial for building competence within the institution.

The heart of the Administration Programme beats to the rhythm of an operational environment characterised by capacity, efficiency, and sustainability. This is achieved

through meticulous Risk Management practices, Financial Management transparency, and the diligent oversight provided by COSEC, Governance, Legal, Risks & Compliance sub-programmes.

The Financial Management and Communications and Stakeholder Management sub-programmes synergise to enhance the institution's visibility. Transparent financial practices contribute to building trust, while strategic communication initiatives ensure the dissemination of information, fostering awareness and thought leadership in sustainable energy.

The Administration Programme serves as the backbone for informing energy policy by providing the necessary administrative support for scientific and technological research. The Project Management Office ensures the effective execution of research initiatives, translating findings into actionable insights that inform policy and support its implementation.

In essence, the Administration Programme intertwines the diverse threads of Human Resources, Information Communications Technologies, Risk Management, Financial Management, Supply Chain Management, COSEC, Governance, Legal, Risks & Compliance, Project Management Office, Corporate Planning, Monitoring and Evaluation, and Communications and Stakeholder Management. This supports day-to-day operations but also propels the institute towards becoming a beacon of excellence in the realm of sustainable energy.



### 8.1.1 SUB-PROGRAMME 1: HUMAN RESOURCES

To make this possible, the previously approved Human Resources (HR) strategy that was formulated a few years ago and does not align with the current organisational strategy, will have to be changed to align with the recent changes within the organisation. The focus in 2024/25 is to review the strategy and prioritise the Balance Score Card and Talent Management. Performance Management and start introducing an integrated people management system.

To improve reporting and monitoring, SANEDI needs to have a SMART (specific, measurable, attainable, realistic, and timeous) Performance Management system that can be improved by a Balanced Score Card whereby the Key

Performance Areas (KPA) across the organisation are the same and only differ in internal processes.

All Executives and Management will be measured on the same dimension in their respective areas of work. The Score Card will also assist in aligning the KPA to the Annual Performance Plan (APP) and organisational strategy.

In addition, HR will conduct a culture survey to gauge the impact of the country's lockdown on SANEDI's working culture. On completion of the survey, and depending on the outcomes, interventions to resolve the challenges will be sought and implemented or promote SANEDI's culture to a more desirable state.

### 8.1.2 SUB-PROGRAMME 2: INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

SANEDI has made significant investment in Information Systems infrastructure which enabled the organisation to continue to operate during the period of hard lockdowns. Information Technology (IT) is a crucial part of the business and a key enabler in our ability to effectively deliver on our Mandate and maintain an effective and efficient control environment.

Several strategic IT projects are planned which should further improve efficiencies:

Installation of a Project server solution for the organisation – SANEDI has implemented a Project Management Office (PMO) to assist with the implementation of projects across all Departments. Currently, these projects operate using different kinds of software which includes Microsoft Excel and Microsoft Word. We had procured some hardware; however, additional software and hardware must be procured to

house these databases and ensure that the data is backed up and safely stored. Furthermore, an internet connection is required to facilitate the hosting and the safety of the data.

The current systems stated below are required to be hosted by SANEDI on behalf of the (DMRE) as we pursue the vision of establishing a data centre at SANEDI:

- 12L database,
- GIS system,
- SEEL system,
- Additional WASA databases,
- MDMS system, and
- Standards and Labelling system.

### 8.1.3 SUB-PROGRAMME 3: FINANCE

SANEDI has consistently managed to obtain an unqualified audit opinion from the Auditor-General of South Africa (AGSA) indicative of a sound control environment that exists within the organisation. For the year under review, increased focus will be made on improving reporting for decision-making, and maintenance of a sound control environment, to ensure that the entity retains an unqualified audit from the Auditor-General (AG).

The Internal Control environment will undergo continuous reviews with the audit action plans developed and implemented by the Internal Audit Department within a reasonable period, to avoid material weaknesses in the control environment.

The AGSAs audit findings will continue to be addressed within the financial year that they are raised, focusing on addressing root causes to avoid repeat findings and material findings that may have an impact on the audit outcomes of the organisation.

The Finance Department, working with the programmes, will continue to drive the implementation of funding plans that will ensure that the organisation's Mandate is adequately funded through the leveraging of Climate funds as available. This is a continuous process which will ensure that SANEDI takes advantage of available opportunities. Cost containment measures will continue to be implemented for operational costs to be kept within inflationary increase.



Any increases in employee-related costs will continue to be made based on market-related surveys and will endeavour to be as competitive as possible to attract and retain the right calibre of employees into the organisation. This is being implemented in partnership with HR.

SANEDI will continue to monitor the costs associated with the use of consultants to ensure that they stay within a reasonable range, with the use of consultants only, when necessary, e.g., where capacity constraints exist, where skills are not readily available within the organisation, and where funding arrangements for the use of consultants require it.

#### **8.1.4 SUB-PROGRAMME 4: COSEC, GOVERNANCE, LEGAL, RISKS & COMPLIANCE**

We continue through our Risk Management system to monitor the risks associated with the implementation of the SP and APP. Historical performance indicates that current systems are appropriate and have not resulted in the materialisation of any of the identified risks.

For the current financial year, we will focus on maintaining the status quo in relation to Risk Management, although we will conduct reviews of our current Risk Management systems to identify areas for

improvement. The function is also significantly under-resourced, and measures to ensure that there is adequate capacity with Risk Management will be pursued. The focus of Risk Management is to ensure that Business and Operational Risks are mitigated by various risk owners. The impact of Risk Management is to monitor and reduce the impact of risks that are threatening the organisation and improve on the action plans to mitigate risks.

#### **8.1.5 SUB-PROGRAMME 5: COMMUNICATIONS & STAKEHOLDER ENGAGEMENT**

Stakeholder engagement is the process utilised by SANEDI to understand and involve Stakeholders in its activities and decisions. For identifying, understanding, and responding to sustainability issues and concerns, as well as for reporting and performance, the institute uses the process to engage relevant Stakeholders.

Stakeholder engagement helps SANEDI to meet its strategic needs ranging from gathering information and trends that may impact our activities, improving transparency, building the trust of the Stakeholders

whose support is critical for our long-term success, to sparking the innovation and organisational change needed to meet new challenges and opportunities.

By getting to understand our Stakeholders, SANEDI can better understand what they want, when they want it, how engaged they are, and how the entity's plans and actions will affect their expectations and goals.

#### **8.1.6 SUB-PROGRAMME 6: LOGISTICS**

Logistics within SANEDI is a strategic sub-programme that focuses on optimising the flow of goods and services, ensuring efficient stakeholder engagements, and managing logistics expenses within the agreed budget.

This vital component of our operations encompasses a range of activities designed to enhance the organisation's efficiency and satisfaction among internal participants.

#### **8.1.7 SUB-PROGRAMME 7: SUPPLY CHAIN MANAGEMENT**

Supply Chain Management (SCM) within SANEDI plays a pivotal role in ensuring a streamlined procurement process, effective vendor relationships, and adherence to budget constraints. This sub-programme encompasses

various activities aimed at optimising the flow of goods and services while upholding the highest standards of integrity and financial prudence.



### 8.1.8 SUB-PROGRAMME 8: PROJECT MANAGEMENT OFFICE

The Project Management Office (PMO) at SANEDI serves as a central hub for project planning, execution, and oversight. It plays a crucial role in ensuring that projects and initiatives are completed on time, within budget, and with the highest level of quality. The PMO

implements standardised project management practices and methodologies, ensuring seamless coordination and effective utilisation of resources for successful project outcomes.

### 8.1.9 SUB-PROGRAMME 9: CORPORATE PLANNING, MONITORING AND EVALUATION

The Corporate Planning, Monitoring, and Evaluation sub-programme at SANEDI is a strategic unit that oversees the organisation's direction, progress, and impact. It is responsible for formulating strategic plans, monitoring the implementation of activities, and evaluating outcomes to ensure alignment with organisational goals and objectives. This sub-programme employs rigorous methodologies to enhance efficiency, effectiveness, and overall performance.





**8.1.10 PROGRAMME 1.1: ADMINISTRATION BUDGET**

Expenses	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
<b>Rand thousand</b>														
<b>Objective/Activity</b>														
Administration	52 494	36 072	50 012	58 015	50 522	50 521	(1)	52 748	45 466	(7 282)	56 277	50 909	(5 368)	52 987
<b>Economic classification</b>														
Current payments	52 494	36 072	50 012	58 015	50 521	50 521	(0)	52 748	45 466	(7 282)	56 277	50 909	(5 368)	52 987
<b>Compensation of employees</b>	36 792	12 139	24 409	34 939	25 507	25 507	-	26 666	26 666	-	28 266	27 919	(347)	29 204
Salaries and wages	36 792	12 139	24 409	34 939	25 507	25 507	-	26 666	26 666	-	28 266	27 919	(347)	29 204
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Goods and services</b>	13 354	23 523	21 577	19 384	20 807	20 807	(0)	21 690	18 300	(3 390)	23 355	22 466	(889)	23 236
<b>Of which<sup>1</sup></b>														
Administrative fees	264	518	426	620	443	443	-	461	461	-	489	483	(6)	505
Advertising	454	669	589	605	589	589	-	589	589	-	624	617	(8)	645
Minor assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Audit costs: External	898	1 997	1 400	1 673	1 400	1 400	-	1 400	1 400	-	1 484	1 466	(18)	1 533
Bursaries: Employees	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	14	28	46	38	46	46	-	46	46	-	49	48	(1)	50
Communication (G&S)	-	-	909	-	950	950	(0)	1 000	1 000	-	1 060	1 047	(13)	1 095
Computer services	3 119	2 954	3 987	4 211	4 147	4 147	-	4 314	4 314	-	4 573	6 611	2 038	6 915
Consultants: Business and advisory services	3 492	5 589	4 739	5 693	4 511	4 511	-	4 709	1 020	(3 689)	4 992	2 836	(2 156)	2 967
Legal services (G&S)	1 085	-	1 100	825	1 200	1 200	-	1 300	1 300	-	1 742	1 361	(381)	1 424
Contractors	451	-	150	211	156	156	-	162	162	(0)	172	170	(2)	178
Maintenance and repairs of other fixed structures	170	-	150	211	156	156	-	162	162	(0)	172	170	(2)	178
Other	281	-	-	-	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced services	-	-	852	320	277	277	-	621	621	-	658	650	(8)	680
Consumables: Stationery, printing and office supplies	374	112	390	146	400	400	-	400	400	-	424	419	(5)	438
Operating leases	1 185	1 259	2 188	1 643	2 287	2 287	0	2 287	2 287	-	2 424	2 394	(30)	2 505
Travel and subsistence	174	228	1 000	764	700	700	-	700	1 000	300	742	1 000	258	1 000
Training and development	377	245	664	498	693	693	(0)	700	1 700	1 000	742	1 344	602	1 128
Operating payments	1 450	9 924	3 137	2 137	3 008	3 008	-	3 000	2 000	(1 000)	3 180	2 021	(1 159)	2 174
Venues and facilities	17	-	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	2 348	410	4 026	3 692	4 207	4 207	0	4 392	500	(3 892)	4 656	524	(4 132)	548
<b>Total Expenditure</b>	<b>52 494</b>	<b>36 072</b>	<b>50 012</b>	<b>58 015</b>	<b>50 521</b>	<b>50 521</b>	<b>(0)</b>	<b>52 748</b>	<b>45 466</b>	<b>(7 282)</b>	<b>56 277</b>	<b>50 909</b>	<b>(5 368)</b>	<b>52 987</b>

**Table 5**



8.1.11 PROGRAMME 1.1: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 3; 4	Human Resources	Talent Management	Percentage of training undertaken as per EXCO approved Annual Training Plan	80%	100%	104 %	80%	80%	100%	100%
		Recruitment	Vacancy rate of funded positions	5%	<5%	2.08%	<5%	<5%	<5%	<5%
		Employment Equity	Percentage of training deviation from employment equity targets	>5%	<5%	4.26%	≥ 91%	≥ 91%	≥ 1%	≥ 1%
	Information Communications Technologies	Implementation of Corporate ICT Plan in relation to the IT strategy	ICT vulnerability assessment and penetration test	New Output Indicator	New Output Indicator	New Output Indicator	2	2	2	2
			ICT governance maturity assessment	New Output Indicator	New Output Indicator	New Output Indicator	70%	70%	100%	100%
	Finance	Financial Management	External audit outcome	Unqualified audit	Unqualified audit	Unqualified audit	Unqualified audit	Unqualified audit	Unqualified audit	Unqualified audit
			% spent of the Vote allocation	New Output Indicator	New Output Indicator	New Output Indicator	≥ 90%	95%	≥ 90%	≥ 90%
	COSEC, Governance, Legal, Risks & Compliance	Critical business risk factors identified, managed as per the Risk Management Plan	Quarterly review of strategic and operational risks.	>90%	100%		4	4	4	4
			Governance, Risk and Compliance	Compliance universe report.	New Output Indicator	New Output Indicator	New Output Indicator	4	4	4
	Communications and Stakeholder Management	Developing and Implementing Communications Strategy	Communications and stakeholder engagement strategy and plan reviewed and approved.	New Output Indicator	New Output Indicator	New Output Indicator	1	1	1	1
			External and/or Internal (within SANEDI) Newsletters.	New Output Indicator	New Output Indicator	New Output Indicator	4	New Output Indicator	4	4
			Number of media engagements (media releases)	New Output Indicator	New Output Indicator	New Output Indicator	12	12	12	12
			Report detailing number of Key Stakeholder Engagements (linked to Strategy).	New Output Indicator	New Output Indicator	New Output Indicator	4	4	4	4
	Supply Chain Management	Procurement of Goods and Services	Procurement as per the Procurement Plan.	New Output Indicator	New Output Indicator	New Output Indicator	≥60%	60%	≥100%	≥100%
			% Bids awarded to BBBEE status service providers.	New Output Indicator	New Output Indicator	New Output Indicator	≥ 90%	New Output Indicator	≥ 90%	≥ 90%
% Procurement from Youth and Women .			New Output Indicator	New Output Indicator	New Output Indicator	≥ 5%	New Output Indicator	≥ 5%	≥ 5%	
Project Management Office	Managing Management Oversight	Report detailing progress and budget spent on the projects	New Output Indicator	New Output Indicator	New Output Indicator	4	New Output Indicator	4	4	
Corporate Planning, Monitoring and Evaluation	Strategic planning, and monitoring of Annual Operational Plan	Quarterly reports approved by the board and submitted to the Shareholder	New Output Indicator	New Output Indicator	New Output Indicator	4	New Output Indicator	4	4	

Table 6





### 8.1.11.1 PROGRAMME 1.1 Output Indicators: Annual and Quarterly Targets

Sub-Programme	Output Indicators	Annual Target	Q1	Q2	Q3	Q4
Human Resources	Percentage of training undertaken as per EXCO approved Annual Training Plan	100%	25%	50%	75%	100%
	Vacancy rate of funded positions	<5%	<5%	<5%	<5%	<5%
	Percentage of employment deviation from employment equity targets	≥ 1%	≥ 1%	≥ 1%	≥ 1%	≥ 1%
ICT	ICT vulnerability assessment and penetration test	2	1	n/a	n/a	2
	ICT governance maturity assessment	100%	80%	90%	95%	100%
Finance	External audit outcome	Unqualified audit	n/a	Unqualified audit	n/a	n/a
	% spent of the Vote allocation	≥ 90%	≥15%	≥45%	≥70%	≥90%
COSEC, Governance, Legal, Risks & Compliance	Quarterly review of strategic and operational risks.	4	1	2	3	4
	Compliance universe report.	4	1	2	3	4
Communications and Stakeholder Management	Communications and stakeholder engagement strategy and plan reviewed and approved.	1	1	n/a	n/a	n/a
	External and/or Internal (within SANEDI) Newsletters.	4	1	2	3	4
	Number of media engagements (media releases)	12	3	6	9	12
	Report detailing number of Key Stakeholder Engagements (linked to Strategy).	4	1	2	3	4
Supply Chain Management	Procurement as per the Procurement Plan.	≥100%	≥10%	≥30%	≥45%	≥100%
	% Bids awarded to BBBEE status service providers.	≥ 90%	≥ 90%	≥ 90%	≥ 90%	≥ 90%
	% Procurement from Youth and Women .	≥ 5%	≥ 5%	≥ 5%	≥ 5%	≥ 5%
Project Management Office	Report detailing progress and budget spent on the projects	4	1	2	3	4
Corporate Planning, Monitoring and Evaluation	Quarterly reports approved by the board and submitted to the Shareholder	4	1	2	3	4

Table 7



## 9. PROGRAMME 1.2: STRATEGIC INITIATIVES

At SANEDI, our commitment to excellence extends across the entire business landscape through a set of transformative strategic initiatives. Designed to cut across programmes and sub-programmes, these initiatives serve as pillars, propelling our organization towards innovation, collaboration, and impactful change.

The Strategic Initiatives Programme is the driving force within SANEDI, strategically crafting initiatives that directly contribute to the realisation of the institution's overarching strategic outcomes.

This programme serves as a proactive engine, propelling the institute towards sustainable energy solutions, building expertise, fostering collaboration, and enhancing global influence.

The core objective of the Strategic Initiatives Programme is to spearhead initiatives that directly contribute to the development and implementation of sustainable energy solutions.

By strategically leveraging intellectual property, fostering commercialisation efforts, and supporting local enterprises, the programme actively aligns itself with SANEDI's commitment to addressing energy challenges.

Through targeted initiatives in technical skills development and intellectual property utilisation, the programme aims to build a reservoir of expertise within SANEDI.

This not only enhances the workforce's competence but also ensures that SANEDI remains at the forefront of

innovation and knowledge creation in the energy sector. The Strategic Initiatives Programme recognises the importance of robust initiatives in enterprise development and international partnerships in fostering a capacitated, effective, and sustainable operational environment.

By supporting Small, Medium, and Micro Enterprises (SMMEs) and actively participating in global forums, the programme contributes to the institute's overall operational excellence.

In its pursuit of global partnerships and participation in international forums, the programme plays a crucial role in elevating SANEDI's thought leadership. By engaging on the global stage, SANEDI not only shares its insights but also gains valuable perspectives that contribute to informing and increasing awareness of sustainable energy practices.

Through its initiatives in intellectual property and participation in international energy forums, the Strategic Initiatives Programme actively supports SANEDI's role in informing energy policy.

By translating research into tangible solutions and contributing to global energy discussions, the programme aids in shaping policies that align with scientific and technological advancements.

In essence, the Strategic Initiatives Programme is a strategic powerhouse, aligning its initiatives with SANEDI's broader goals and ensuring that each undertaking contributes significantly to SANEDI's impact and influence in the realm of sustainable energy.



## 9.1 PROGRAMME 1.1 AT A GLANCE

SUB-PROGRAMME	DESCRIPTION OF SUB-PROGRAMME	APP BUDGET	SOURCE OF FUNDING	RISKS
HUMAN RESOURCES	Managing employee related processes and affairs, as well as administration of employee benefits in an efficient manner to ensure that SANEDI has an adequately capacitated, motivated staff complement.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
ICT	Support efficient operations and ensuring data processing, integrity, and availability.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
FINANCE	Delivery of business and support activities relating to the effectual financial management, financial reporting, and the auditing practices	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
COSEC, GOVERNANCE, LEGAL, RISKS & COMPLIANCE	Facilitate transparency and compliance from a Legislative and Governance perspective. Incorporating all lines of business and support activities relating to the Board and Board Committees.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
COMMUNICATIONS & STAKEHOLDER ENGAGEMENT	To ensure effective communications with all Stakeholders through robust Stakeholder engagement, client satisfaction surveys, public awareness campaigns in collaboration with the Department of Mineral Resources & Energy (DMRE) and media intelligence support services.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
LOGISTICS	Logistics within SANEDI is a strategic sub-programme that focuses on optimising the flow of goods and services, ensuring efficient stakeholder engagements, and managing logistics expenses within the agreed budget.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
SUPPLY CHAIN MANAGEMENT	The goal is to ensure a seamless procurement-to-delivery process, minimize costs, and enhance efficiency and customer satisfaction through data-driven decision-making and strategic planning	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
PROJECT MANAGEMENT OFFICE	Managing employee related processes and affairs, as well as administration of employee benefits in an efficient manner to ensure that SANEDI has an adequately capacitated, motivated staff complement.	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
CORPORATE PLANNING, MONITORING AND EVALUATION	To ensure strategic planning, continuous monitoring of activities, and evaluating outcomes to ensure that the organization operates efficiently, effectively, and in alignment with its goals and objectives	Total Administration Programme 1.1 Budget: R45 466 000	Fiscus funding only, no external funds	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>

Table 8



### 9.1.1 SUB-PROGRAMME 1: INTELLECTUAL PROPERTY AND COMMERCIALISATION

The Intellectual Property and Commercialisation initiative focuses on cultivating innovation within SANEDI. By nurturing inventive ideas, protecting intellectual property, and fostering collaborations with

commercial partners, we aim to translate groundbreaking concepts into tangible products and services. Through this initiative, we harness creativity as a driving force for SANEDI's growth and sustainability.

SUB-PROGRAMME	DESCRIPTION OF SUB-PROGRAMME	MATURITY OF THE SUB-PROGRAMME	RISKS
INTELLECTUAL PROPERTY AND COMMERCIALISATION	This sub-programme supports the patenting and protection intellectual property. It also implements monetisation practises of intellectual property by application within industry	This is a newly categorised as a sub-programme	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
LOCAL, REGIONAL, INTERNATIONAL ENERGY PARTNERS	This sub-programme supports the creation of domestic and international stakeholder relationships	This is a newly categorised as a sub-programme	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
SMMES AND ENTERPRISE DEVELOPMENT	This sub-programme supports the development of SMMES in the domestic environment	This is a newly categorised as a sub-programme	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
TECHNICAL SKILLS DEVELOPMENT	This sub-programme supports the practical development of local students who are / or wish to operate in the South African energy industry	This is a newly categorised as a sub-programme	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>
ENERGY TECHNICAL SUPPORT FOR SA PARTICIPATION IN BRICS, G20, G7, AU	This sub-programme supports the featuring of SANEDI resources and outputs at intergovernmental conferences and engagements	This is a newly categorised as a sub-programme	<ul style="list-style-type: none"> <li>Resourcing</li> <li>Funding</li> </ul>

Table 9



### 9.1.2 SUB-PROGRAMME 2: LOCAL, REGIONAL, INTERNATIONAL ENERGY PARTNERS

Our Local, Regional, and International Energy Partners initiative emphasises the power of partnerships. By engaging with local communities, forging alliances at the regional level, and collaborating on the international stage, we enhance our collective ability to address

energy challenges. This initiative embodies our commitment to fostering relationships, sharing expertise, and creating a global impact in the energy sector.

### 9.1.3 SUB-PROGRAMME 3: SMMEs AND ENTERPRISE DEVELOPMENT

Supporting small and medium-sized enterprises (SMMEs) is at the heart of SANEDI's growth strategy. Through the SMMEs and Enterprise Development initiative, we provide mentorship, resources, and

opportunities to budding entrepreneurs. By empowering local businesses, we contribute to economic growth, job creation, and sustainable development in the communities we serve.

### 9.1.4 SUB-PROGRAMME 4: TECHNICAL SKILLS DEVELOPMENT

In the rapidly evolving energy landscape, technical expertise is paramount. The Technical Skills Development initiative focuses on nurturing a skilled workforce. Through training, education, and mentorship programmes, we equip individuals with the technical

know-how essential for success in the energy industry. By investing in skills development, we ensure our workforce is prepared for the challenges and opportunities of the future.

### 9.1.5 SUB-PROGRAMME 5: ENERGY TECHNICAL SUPPORT FOR SA PARTICIPATION IN BRICS

SANEDI's influence goes beyond borders. Through the Energy Technical Support initiative, we actively participate in prominent international forums such as BRICS, G20, G7, and AU. By providing technical expertise and shaping energy policies at the global level, we

reinforce our commitment to sustainable energy practices. Our involvement in these forums amplifies our voice and enhances our contribution to shaping the future of energy on a global scale.



## 9.1.6 SUB-PROGRAMME 5: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 3; 4; 5	Intellectual Property & Commercialization	We aim to translate groundbreaking concepts into tangible products and services.	No. of Intellectual property right (IPR's) filed within the energy sector*	New Output Indicator	New Output Indicator	New Output Indicator	2	New Output Indicator	2	2
			No. of business cases linked to intellectual property application in the energy sector*	New Output Indicator	New Output Indicator	New Output Indicator	2	New Output Indicator	2	2
	Local, Regional & International Energy Partners	This initiative embodies our commitment to fostering relationships, sharing expertise, and creating a global impact in the energy sector.	No. of new energy partners	New Output Indicator	New Output Indicator	New Output Indicator	4	New Output Indicator	4	4
	SMMEs & Enterprise Development	By empowering local businesses, we contribute to economic growth, job creation, and sustainable development in the communities we serve	No. of SMMEs supported and/or assisted with business development and commercialisation in the energy sector*	New Output Indicator	New Output Indicator	New Output Indicator	2	New Output Indicator	2	2
	Technical Skills Development	Through training, education, and mentorship programs, we equip individuals with the technical know-how essential for success in the energy industry.	No. of unemployed TVET and University Technology Students trained in the energy sector*	New Output Indicator	New Output Indicator	New Output Indicator	3	New Output Indicator	3	3
			No. of operating/employed technicians/artisans supported*	New Output Indicator	New Output Indicator	New Output Indicator	3	New Output Indicator	3	3
			No. of unemployed technicians/artisans supported*	New Output Indicator	New Output Indicator	New Output Indicator	3	New Output Indicator	3	3
	Energy Technical Support for SA participation in BRICS, G20, G7, AU, etc.,	By providing technical expertise and shaping energy policies at the global level, we reinforce our commitment to sustainable energy practices	No. of intergovernmental forums where SANEDI provides support (i.e., documentation, presentations, attendance, etc.)	New Output Indicator	New Output Indicator	New Output Indicator	4	New Output Indicator	4	4

Table 10

### 9.1.6.1 SUB-PROGRAMME 5: Output Indicators: Annual and Quarterly Targets

Sub Programme	Output Indicator	Annual Target	Q1	Q2	Q3	Q4
Intellectual Property & Commercialization	No. of Intellectual property right (IPR's) filed within the energy sector*	2	0	1	0	2
	No. of business cases linked to intellectual property application in the energy sector*	2	0	0	0	2
Local, Regional & International Energy Partners	No. of new energy partners	4	1	2	3	4
SMMEs & Enterprise Development	No. of SMMEs supported and/or assisted with business development and commercialisation in the energy sector*	2	0	1	0	2
Technical Skills Development	No. of unemployed TVET and University Technology Students trained in the energy sector*	3	0	0	0	3
	No. of operating/employed technicians/artisans supported*	3	0	0	0	3
	No. of unemployed technicians/artisans supported*	3	0	0	0	3
Energy Technical Support for SA participation in BRICS, G20, G7, AU, etc.,	No. of intergovernmental forums where SANEDI provides support (i.e., documentation, presentations, attendance, etc.)	4	1	2	3	4

Table 11



## 9.2 PROGRAMME 2: APPLIED ENERGY RESEARCH, DEVELOPMENT & INNOVATION

The purpose of Programme 2 is to facilitate knowledge creation that can support energy-related planning and decision-making and accelerate the transformation of the energy sector and landscape in the country. Additionally, this programme plays a vital role in demonstrating and piloting technologies to provide knowledge and decision-making data to inform primarily policy as well as various stakeholders in both private and public sectors.

South Africa is an active member of the Conference of the Parties (COP) and is a signatory to the COP 26 agreement in Paris which commits the country to decarbonise. This is in recognition of the devastating potential of climate change globally. In particular, the potential impacts on destructive weather impacts, food security and the health of citizens.

The Integrated Resource Plan (IRP) 2 recognises the challenges that South Africa faces as a country within the National and Global energy landscape and proposes power sector technology solutions to address them. In the plan, opportunities are also highlighted that could significantly improve infrastructure planning and development, ensuring progress towards achieving the just energy transition and the target of Net Zero by 2050.

The IRP recognises the socioeconomic challenges of increasing electricity tariffs, shortages of generation capacity emanating from the challenges that Eskom is faced with, as well as the over-reliance on coal as the primary dominant source of energy. These have a significant negative impact on the economic growth of the country.

The IRP also recognises opportunities that are brought about, by emerging technological advancements and the concomitant decreasing costs of production. These developments, make global access to energy through cleaner technologies such as solar PV, bioenergy, and wind through applications which are grid-connected and off-grid solutions such as microgrids and battery storage increasingly possible for both urban and rural applications.

Reliance on coal for electricity or liquid fuels for energy is starting to become less viable, as the b financing institutions move away from financing coal-based energy generation.

This constraint is making it imperative for the country to start aggressively investing in cleaner coal technologies and ensuring that the country begins to adhere to minimum global emission standards.

Gas (GHG) emissions as set out in the 2016 Nationally Determined Contributions (NDC). As disruptive technologies are developed and applied across the world, it becomes crucial that these technologies are assessed for their potential adoption and deployment within the South African energy landscape, to ensure their appropriateness for the country in support of the advancement of the country's development goals. Where it becomes evident that transition is required from one technology to the next, attention should also be given to issues of the impact of such a transition. In this regard, a just transition is required to minimise the adverse impacts on affected fossil energy sectors and communities who depend on them for socio-economic development. The development of concomitant policies also needs to be supported by accurate, reliable, and timely data and research information.

SANEDI's contribution then becomes crucial in supporting policy formulation, as well as piloting and demonstrating new technologies to inform policy and support the adoption of new technologies.

For the (2020/25) Medium Term Strategic Framework (MTSF) period, SANEDI will be mainly focusing on the provision of technological information, developing, and maintaining datasets, and implementing pilot and demonstration projects that will enable, strengthen, and support the ability of Government and all sectors of the economy, to collectively ensure that there is the security of energy supply through several targeted initiatives.





### 9.3 PROGRAMME 2: APPLIED ENERGY RESEARCH, DEVELOPMENT & INNOVATION BUDGET

Expenses	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
<i>Rand thousand</i>	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
<i>Objective/Activity</i>														
Applied Energy Research and Innovation	101 368	27 604	48 606	26 510	25 272	25 272	-	26 364	31 135	4 771	27 118	31 061	3 943	32 450
<i>Economic classification</i>														
Current payments	10 394	27 604	48 606	26 510	25 273	25 273	-	26 364	31 135	4 771	27 118	31 061	3 943	32 450
Compensation of employees	-	13 088	15 163	1 247	15 701	15 701	-	16 406	17 077	671	17 390	18 051	660	18 881
Salaries and wages	-	13 088	15 163	1 247	15 701	15 701	-	16 406	17 077	671	17 390	18 051	660	18 881
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	10 394	14 516	33 442	25 154	9 573	9 573	-	9 958	14 058	4 100	9 728	13 011	3 283	13 569
Of which 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Administrative fees	197	-	-	-	-	-	-	-	-	-	-	-	-	-
Advertising	-	-	-	121	-	-	-	-	-	-	-	-	-	-
Minor assets	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Audit costs: External	-	-	-	44	-	-	-	-	-	-	-	-	-	-
Bursaries: Employees	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	-	-	-	43	-	-	-	-	-	-	-	-	-	-
Communication (G&S)	-	-	-	38	-	-	-	-	-	-	-	-	-	-
Computer services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Consultants: Business and advisory services	736	669	-	82	-	-	-	-	2 000	2 000	-	1 000	1 000	675
Infrastructure and planning services	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Science and technological services	8 823	13 626	30 952	19 557	7 110	7 110	-	7 384	9 384	2 000	6 999	9 162	2 163	9 890
Contractors	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Maintenance and repairs of other fixed structures	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced services	-	-	1 348	3 796	1 301	1 301	-	1 360	1 360	-	1 442	1 442	-	1 508
Consumables: Stationery, printing and office supplies	2	-	-	-	-	-	-	-	-	-	-	-	-	-
Rental and hiring	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	111	82	1 142	992	1 162	1 162	-	1 214	1 314	100	1 287	1 407	120	1 496
Training and development	415	115	-	4	-	-	-	-	-	-	-	-	-	-
Operating payments	80	24	-	71	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	109	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
Other government units	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
National government	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>101 368</b>	<b>27 604</b>	<b>48 606</b>	<b>26 510</b>	<b>25 273</b>	<b>25 273</b>	<b>-</b>	<b>26 364</b>	<b>31 135</b>	<b>4 771</b>	<b>27 118</b>	<b>31 061</b>	<b>3 943</b>	<b>32 450</b>

Table 12



### 9.3.1 SUB-PROGRAMME 1: CLEANER FUELS AND RELATED TECHNOLOGIES

In 2012, the South African Carbon Capture and Storage (CCS) Roadmap was endorsed by Cabinet. Recently, delays and the incorporation of capture, utilisation and mineralisation saw the phylogeny of a refreshed Roadmap. The Pilot CO<sub>2</sub>Storage Project and the Pilot CO<sub>2</sub> Capture Project conflate in the integrated CCS Demonstration Project circa 2026. The consummation of the overall Carbon Capture, Utilisation and Storage (CCUS) programme is anticipated during 2030.

Through demonstrated clean energy initiatives, SANEDI will support among others, the Council for Geoscience (CGS), the Sector Education and Training Authorities (SETAs) and Incubators, towards enabling the development of technology, skills, and energy economy within only the industrial and commercial sectors. We are now changing Cleaner Fossil Fuels to Cleaner Fuels and Related Technologies.

### 9.3.2 PROGRAMME BUDGET – CLEANER FUELS & RELATED TECHNOLOGIES

Expenses	2020/21	2021/22	2022/23	2023/24			2024/25			2025/26		2026/27		
	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
<b>Rand thousand</b>														
<b>Objective/Activity</b>														
<b>Cleaner Fossil Fuels</b>	91 640	-	-	-	-	-	-	-	4 000	4 000	-	3 094	3 094	2 865
<b>Economic classification</b>														
<b>Current payments</b>	666	-	-	-	-	-	-	-	4 000	4 000	-	3 094	3 094	2 865
<b>Compensation of employees</b>	-	-	-	-	-	-	-	-	2 000	2 000	-	2 094	2 094	2 190
Salaries and wages	-	-	-	-	-	-	-	-	2 000	2 000	-	2 094	2 094	2 190
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	666	-	-	-	-	-	-	-	2 000	2 000	-	1 000	1 000	675
Of which <sup>1</sup>														
Administrative fees	181	-	-	-	-	-	-	-	-	-	-	-	-	-
Consultants: Business and advisory services	-	-	-	-	-	-	-	-	2 000	2 000	-	1 000	1 000	675
Science and technological services	483	-	-	-	-	-	-	-	-	-	-	-	-	-
Consumables: Stationery, printing and office supplies	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	1	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Transfers and subsidies</b>	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
Other government units	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
National government	90 974	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	91 640	-	-	-	-	-	-	-	4 000	4 000	-	3 094	3 094	2 865

Table 13



**9.3.3 SUB-PROGRAMME 1: CLEANER FUELS & RELATED TECHNOLOGIES – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS**

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Cleaner Fuels and Related Technologies	Cleaner fuels and Related Technologies assessed/ Evaluated	Number of energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or technology roadmaps and demonstration projects/facilities	0	1	1	1	1	1	1
		Energy solutions assessed evidenced by reports	Number of approved Annual Energy Industry status reports	New Output Indicator	New Output Indicator	New Output Indicator	1	1	1	1

**Table 14**

**9.3.4 SUB-PROGRAMME 2: CLEAN ENERGY (RENEWABLE ENERGY)**

The Clean Energy (Renewable Energy) sub-programme will focus on developing pilot and demonstrate Sustainable Energy Technologies in different applications with the aim of providing research, showcasing

potential, creating data, and developing policy recommendations and insights for decision-makers and industry to inform potential uptake of such technologies in the commercial and industrial sectors.

**JUST TRANSITION**

As the country transitions its power generation infrastructure from fossil-based to a cleaner, environmentally sustainable energy infrastructure, there is a need to ensure that the transition happens in a manner that is equitably and socially just, focusing on local communities and people. The decommissioning of power stations that are coming to their end of life, as well as the transition of Fossil Fuels, presents a challenge of ensuring that communities and people stand to be negatively affected.

prepared for future jobs that will be brought about by this transition. The transition to new technologies will create opportunities for dialogue and engagement with Stakeholders to bring about an understanding of the transition and the need thereof, and the need to understand the new technologies as we move away from the traditional methods of energy supply.

SANEDI has been involved through several partnerships in up skilling, and training artisans and professionals in an effort to ensure that people are capacitated and

SANEDI will focus on the engagements with Stakeholders with the objective of ensuring that there is understanding, buy-in, and adoption of new technologies by communities in general, opportunities for new industries, jobs are harnessed, and there is the commercialisation of these technologies.

**WIND RESOURCE MAP**

The Wind Atlas for South Africa (WASA) project is a renewable resource measurement project, for wind potential in South Africa, that has seen 18 wind measurement masts built across five Provinces. Providing reliable high-resolution data on the wind energy resource for South Africa has the ultimate benefit of being able to level the playing field for wind energy developers, and provide a much-needed boost in Renewable Energy (RE) site development. Data generated from these masts will continue to be a useful tool to inform policy decision-makers, investors,

researchers, and other Stakeholders in providing reliable and accurate wind data including two new Provinces (Mpumalanga and Free State) to enable the continuous assessment of wind potential in South Africa. The project is currently in its fourth phase and is being undertaken in partnership with the Department of Mineral Resources & Energy (DMRE), Danish Energy Agency, South African Weather Services (SAWS), Council for Scientific and Industrial Research (CSIR), and the Technical University of Denmark (DTU).



From the IRP, wind has been identified as one of the least costly options for electricity generation in the country and is expected to contribute 1600MW of electricity by 2030. SANEDI will continue its partnership with the South African Renewable Energy Technology Centre (SARETEC) with regards to the training of wind technicians as we support the industry, by ensuring that there will be appropriate skills available in the country.

### **PV AND ENERGY STORAGE PILOTS**

In partnership with various Stakeholders and collaborators, SANEDI will explore opportunities for Photovoltaics (PV) and battery storage as options for ensuring energy security in South Africa.

SANEDI will furthermore explore, map (with thorough modelling of scenarios), and identify opportunities for consolidating environmental rehabilitation initiatives with power generation opportunities. It will also explore the potential for repurposing sites from retired power

### **SOLTRAIN**

The Solar Thermal Training and Demonstration Initiative (SOLTRAIN), funded by the Austrian Development Agency (ADA) has been active in South Africa since 2009. SANEDI has collaborated with this initiative since its inception, and since 2016 is the official implementation partner of this project in the country. To date, it has achieved over 800 demonstration systems, over 5000 persons trained, over 200 training courses for awareness

### **PLASWEN**

SANEDI commissioned the South African Nuclear Energy Corporation (NECSA) to design, build and demonstrate a proof-of-concept waste pyrolysis machine. The unit can treat between 0,2 and 0,5 tonnes of municipal green waste per day, while able to produce between 10 and 25

### **SANEDI CSIR THERMAL LAB**

South African industry has historically developed into an environment of low coal and electricity prices. This has resulted in a wide range of industrial processes that are inefficient and carbon-intensive. Rapidly increasing energy costs, coupled with the need to reduce GHG emissions, require industrial consumers to optimise, and in some cases redesign their thermal generation and distribution systems. Waste Heat Recovery (WHR), Power-to-Heat (PtH) and Thermal Energy Storage (TES) technologies have the potential for concurrent cost savings and decarbonisation, but the development of

We will also pursue pilot studies, that will show the potential of locally developed wind technologies for commercialisation and mass rollout. The new policy of Government allowing their own generation by businesses and Municipalities creates an opportunity to create sustainable businesses and jobs in the wind energy space.

plants as sites for RE power plants. Feasibility studies supporting this concept will, as far as funding allows, be conducted with the aim of developing viable business cases should they be a pursuable option.

Through its partnership with the Department of Defence (DoD), SANEDI is exploring the possibility of piloting fit-for-purpose micro, small and medium scale PV with battery storage for energy security to meet National priority demand within the Defence Force Mandate.

generation, industry capacitation and boost, as well as developing business cases and roadmaps for solar thermal implementation across six South African Development Community (SADC) country partners. Through this project, South Africa has been able to place the largest district heating system in Saharan Africa, marking the country in the top 14 in 2022 with the 7th highest growth rate in the solar thermal market globally.

kW. The unit can further treat COVID-19 material waste, mixed solid waste, and tyres. It is scalable and can treat larger waste volumes and produce more electricity over time.

these technologies requires innovative Research and Development (R&D) solutions for the South African market.

Initial objectives of this lab are to conduct modelling and technology development into WHR, PtH and TES systems to support industrial competitiveness. Simulation and analysis will guide the optimisation of thermal energy systems, and in cases where off-the-shelf solutions are not readily available in the market, targeted R&D will be conducted in partnership with industry to develop novel solutions.



## **SANEDI DoD PARTNERSHIP**

SANEDI and the DoD are currently engaged in an energy collaboration that allows them to essentially pilot and demonstrate technologies that are fit for purpose on DoD facilities. These technologies stretch across the EE and RE space and are designed to be able to prove that RE technologies can be adapted to deliver according to requirements across various sectors. Currently, SANEDI has 17 active projects at different scales with the National Defence Force, demonstrating technologies

such as Cool Surfaces, Photovoltaics, biogas, storage, energy-efficient lighting, energy efficiency, energy security, and water treatment using EE and RE. Included in all of these are skills development, technology proof and transfer, ultimately leading to an economic boost through industry support during the project duration and subsequent business case and return on investment development based on in situ technology performance.

## **DSI SOLAR RDI PROGRAMME**

This programme is designed to accelerate solar technologies in the market, create industry and skills in the sector in South Africa, and advance new and innovative technologies to pilot and potential commercial stage. The mainstream component of this project has yielded three primary outputs, an innovative

inverter technology, waste-to-energy technology and a portable solar energy device that can be scaled up to container size for small and micro business use. This programme is currently winding down, though further offshoots will be showcased under the Energy Secretary within SANEDI.

## **INTERNATIONAL RELATIONS**

SANEDI represents South Africa and the DMRE in several International fora. At least three of these are within specific technologies of the International Energy Agency (IEA) task projects, which focus on solar heating and cooling technologies, bioenergy and the Photovoltaic

Power Systems Programme (PVPS). The renewables programme also collaborates closely with the German Development Agency (GIZ), and the Austrian Development Agency (ADA), towards clean energy technologies and a sustainable future.

## **VIABILITY AND VALIDATION INNOVATION SERVICE DELIVERY PROGRAMME (VVISDP)**

The Department of Science and Innovation (DSI) submitted a proposal and successfully secured European Funding. The programme management comprises a consortium from the Department of Cooperative Governance and Traditional Affairs (CoGTA), DSI, Technology Innovation Agency (TIA) and the South African Local Government Association (SALGA).

TIA appointed SANEDI to manage the Energy Management component of the VVISDP. The programme

is divided into four work streams and six projects. Viable Energy Management technologies will be demonstrated at selected Municipalities whose submitted proposals were approved.

These Municipalities include the City of Cape Town, Drakenstein, the City of Mbombela, Rustenburg and uMhlathuze. SANEDI will be responsible for the overall Energy Management sub-programme budget of an estimated R18 million.



### 9.3.5 SUB-PROGRAMME BUDGET – CLEAN ENERGY (RENEWABLE ENERGY)

Expenses	2020/ 21	2021/ 22	2022/23		2023/24			2024/25			2025/26			2026/ 27
	Audit ed outco me	Audit ed outco me	Budg et	Audit ed outco me	Budg et estim ate	Appro ved budget	Chang es from budg et estim ate	Budg et estim ate	Revis ed budg et estim ate	Chang es from budg et estim ate	Budg et estim ate	Revis ed budg et estim ate	Chang es from budg et estim ate	Planni ng budg et estim ate
Rand thousand	000	000	000	000	000	000	000	000	000	000	000	000	000	000
Objective/Activity														
Clean energy solutions	4 410	15 910	33 032	18 576	11 109	11 109	-	11 594	10 634	-960	12 290	11 692	-598	12 615
Economic classification														
Current payments	4 410	15 910	33 032	18 576	11 109	11 109	-	11 594	10 634	-960	12 290	11 692	-598	12 615
Compensation of employees	-	6 433	6 374	-	6 661	6 661	-	6 960	4 000	2 960	7 378	4 280	-3 098	4 477
Salaries and wages	-	6 433	6 374	-	6 661	6 661	-	6 960	4 000	2 960	7 378	4 280	-3 098	4 477
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	4 410	9 477	26 658	18 576	4 449	4 449	-	4 634	6 634	2 000	4 912	7 412	2 500	8 138
Of which <sup>†</sup>														
Administrative fees	16	-	-	-	-	-	-	-	-	-	-	-	-	-
Advertising	-	-	-	109	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	-	-	-	31	-	-	-	-	-	-	-	-	-	-
Science and technological services	4 188	9 359	25 432	14 148	3 237	3 237	-	3 367	5 367	-2 000	3 569	6 069	-2 500	6 733
Agency and support/outourced services	-	-	853	3 542	853	853	-	893	893	-	947	947	-	990
Consumables: Stationery, printing and office supplies	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Rental and hiring	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	96	81	372	429	358	358	-	374	374	-	396	396	-	415
Training and development	-	37	-	4	-	-	-	-	-	-	-	-	-	-
Operating payments	80	-	-	71	-	-	-	-	-	-	-	-	-	-
Venues and facilities	29	-	-	240	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>4 410</b>	<b>15 910</b>	<b>33 032</b>	<b>18 576</b>	<b>11 109</b>	<b>11 109</b>	<b>-</b>	<b>11 594</b>	<b>10 634</b>	<b>-960</b>	<b>12 290</b>	<b>11 692</b>	<b>-598</b>	<b>12 615</b>

Table 15



### 9.3.6 SUB-PROGRAMME 2: CLEAN ENERGY (RENEWABLE ENERGY) – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Renewable Energy	Smart public facilities: Pilots and studies (Renewable Energy SANEDI driven initiative contributing towards GHG reduction)	Number of energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or technology roadmaps and demonstration projects/facilities	4	4	4	2	4	2	2
		Accessible and high-quality data: maintain energy-related datasets	Minimum number of energy-related datasets maintained per annum	3	2	2	2	2	2	2
		SANEDI development of instruments for industry players	Number of policy support instruments either industry roadmaps or sector development plans or industry support tools	1	1	1	0	1	0	0
		Reports from energy-related knowledge sharing events / platforms	Number of energy-related knowledge sharing events / platforms engaged in either hosted by SANEDI or attended by SANEDI staff or knowledge presented by SANEDI staff	6	15	1	2	4	2	2

Table 16

- Targets in the above tables are outlined according to known funding available and committed to these outputs, however this does not negate

overachieving these targets once more projects are confirmed.

There are some expected outputs that could be delivered from projects waiting for the new financial year to confirm funding, and thus be able to add into expected/ projected outputs. These projects are linked into collaborative agreements where mutual resources

are pooled to achieve outcomes/demonstrations, several such collaborative Memoranda of Agreements (MoA) overarching collaborations with project partners and separate project agreements are pending in the new financial year.

\*\* Output indicators are defined concisely in the table above for ease and conciseness in target measuring, however please refer to the Annual Report (AR) for complete breakdowns of the intricate and detailed deliverables leading to answering SANEDI's Mandate towards job and skills creation, business

support/development, technology demonstration, business case development, return on investment understanding, economic and industrial advancement, National and International collaboration, policy information, as well as knowledge and networking exchange.



### 9.3.7 SUB-PROGRAMME 3: SMART GRIDS

Electricity service delivery within the municipal environment has been a challenge over the years. Municipal electric distribution departments struggle to maintain their networks and to provide their customers with the level of service they need. This has resulted in additional revenue losses and the difficulty of introducing new technologies and customers are migrating to alternative energy sources, “small-scale renewables technologies”.

Through the deployment of smart distribution networks, also referred to as Advanced Metering Infrastructure (AMI), revenue and asset management initiatives can be driven as a sustainable business model that guarantees visibility and control of local networks.

SANEDI’s Smart Grids (SG) sub-programme focuses on the introduction of smart distribution networks to support the deployment of distributed generation, revenue enhancement, asset management, and modernisation of the Distribution Grid.

Pilots and Demonstrations are required to guide municipal electricity distribution asset management interventions, industry insights and case studies that emanate from piloting SG technologies using system thinking.

Previous AMI projects supported by the DMRE’s Electricity Directorate for policy-making decisions have successfully piloted these concepts, carefully considering the risk of the age and state of distribution assets.

Now after lessons learnt from doing and not just conceptualising, a better understanding of how to deploy AMI to address sustainability is now

championed by the National Treasury (NT) in collaboration with other National entities through projects that aim to generate blueprints for success.

These projects will further support case studies and research publications that allow other municipal electricity distribution departments, and industry stakeholders to replicate successes and avoid similar pitfalls during their implementation of AMI projects.

The aim of improving the knowledge base, consisting of public officials and technical experts is crucial to driving better service delivery, thereby, guaranteeing sustainable Municipal Electricity Distribution departments.

In the last financial year, SANEDI, in collaboration with Municipalities, developed the Smart Grid Roadmap. The Roadmap serves as a guideline to Municipalities in their SGs journey, and allows SANEDI to use SGs technologies as an enabler to solve pressing municipal-related problems:

- Asset Management.
- Revenue Management,
- iGrid Modernisation

In 2024/25 the SG sub-programme will be assisting Municipalities to implement the best practices for Asset Management and sharing lessons learnt with the broader municipality community through forums such as the South African Smart Grid Initiative (SASGI) and the Association of Municipal Electricity Utilities (AMEU). We will continue to build on the JET Research Programme with Universities and the University of Technology on various utility research required for the Just Energy Transition.





### 9.3.7.1 SUB-PROGRAMME BUDGET – SMART GRIDS

	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26		2026/27	
Expenses	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
Rand thousand	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Objective/Activity														
Smart grids	4 565	5 926	9 455	5 904	8 184	8 184	-	8 522	7 522	- 1 000	8 205	6 868	- 1 337	7 152
<b>Economic classification</b>														
Current payments	4 565	5 926	9 455	5 904	8 184	8 184	-	8 522	7 522	- 1 000	8 205	6 868	- 1 337	7 152
<i>Compensation of employees</i>	-	2 139	4 673	-	4 883	4 883	-	5 102	5 102	-	5 408	5 408	-	5 657
Salaries and wages	-	2 139	4 673	-	4 883	4 883	-	5 102	5 102	-	5 408	5 408	-	5 657
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Goods and services</i>	4 565	3 787	4 782	5 851	3 302	3 302	-	3 420	2 420	- 1 000	2 797	1 460	- 1 337	1 495
Of which <sup>1</sup>														
Advertising	-	-	-	12	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	-	-	-	10	-	-	-	-	-	-	-	-	-	-
Science and technological services	4 150	3 787	4 384	5 300	2 886	2 886	-	2 986	1 986	- 1 000	2 337	1 000	- 1 337	1 014
Agency and support/outsourced services	-	-	-	254	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	-	-	398	275	416	416	-	434	434	-	460	460	-	481
Training and development	415	-	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	53	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>4 565</b>	<b>5 926</b>	<b>9 455</b>	<b>5 904</b>	<b>8 184</b>	<b>8 184</b>	<b>-</b>	<b>8 522</b>	<b>7 522</b>	<b>- 1 000</b>	<b>8 205</b>	<b>6 868</b>	<b>- 1 337</b>	<b>7 152</b>

Table 17

### 9.3.7.2 SUB-PROGRAMME 3: SMART GRIDS – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets							
				Audited Performance			Estimated Performance	MTEF Period			
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target	
1; 2; 4; 5	Smart Grids	Pilot and Demonstration of rollout of an Asset Management Framework in a Municipal environment	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities	3	4	2	2	2	2	2	2
		Research publications reflecting smart grid insights	Number of approved Annual Energy Industry status reports	1	1	1	1	1	1	1	1
		Number of industry roadmaps or sector development plans and industry support	Number of industry roadmaps or sector development plans and industry support	N/A	1	1	0	1	0	0	0

Table 18

\*A key target will be to Pilot and Demonstrate of rollout of an Asset Management Framework in a Municipal environment and share the South African Best Practice with the industry.



### 9.3.8 SUB-PROGRAMME 4: CENTRE FOR ENERGY SYSTEMS ANALYSIS AND RESEARCH (DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING)

The vision of the DKM programme is to be a relevant knowledge asset for the energy industry and support and inform high-confidence energy planning, decision-making and policy development throughout the energy sector.

#### Key Areas

- Develop technical know-how, knowledge and human capacity in energy modelling and planning.
- Collect and maintain an open central database of energy research and related data.
- Research and develop suitable models for the South African energy system.
- Provide research support and advice on government initiatives regarding energy data collection, modelling and planning.
- Collaborate with local and international bodies regarding research and policy development.

#### Energy PhDs and Master's Thematic Tracers

The objective of this proposed trace investigation is to identify the thematic energy research activities in South Africa at Masters and PhD levels and to develop baseline statistics. Such information is critical for funding selective support for the energy field and carrying out priority implementation.

Knowledge of the thematic priorities of PhD and master's research is of critical importance for matching skills and new jobs. This study is undertaken in collaboration with the University of Pretoria.

Roadmap hot water appliances within South Africa, in collaboration with the University of Cape Town.

South Africa is currently facing a national energy crisis. In an effort to contribute to mitigating the crisis, SANEDI in

collaboration with the University of Cape Town is developing a Residential Load Management roadmap for geysers in middle and high-income households within South Africa. The project objectives are strategically aligned with the contribution towards sustainable energy solutions, energy security and climate change adaptation, mitigation, and resilience.

The project will focus on the following:

- Number of geysers installed within middle and high-income households
- Types of geysers installed
- Maintaining the geysers using load control devices
- The distribution of geyser control devices in income groups (Mega Watt and Mega Watt per hour)

#### Student Bursaries: Barry Bredenkamp Bursary Programme

The DKM sub-programme through the SANEDI Just Energy Transition (JET) Programme has awarded bursaries to postgraduate students at the University of Johannesburg. The bursary programme is named after the late Barry Bredenkamp who was SANEDI's general manager for the Energy Efficiency Programme. Barry

Bredenkamp was a "struggle veteran" in the energy efficiency revolution and an advocate for skills development in the energy sector.

The Bursary Programme assists students who need financial support in the Science, Technology, Engineering and Mathematics (STEM) fields.



**9.3.8.1 SUB-PROGRAMME BUDGET – CENTRE FOR ENERGY SYSTEMS ANALYSIS AND RESEARCH (DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING)**

	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
Expenses	Audit ed outco me	Audit ed outco me	Budg et	Audit ed outco me	Budg et estim ate	Approv ed budget	Chang es from budget estim ate	Budg et estim ate	Revis ed budget estim ate	Chang es from budget estim ate	Budg et estim ate	Revis ed budget estim ate	Chang es from budget estim ate	Planni ng budget estim ate
Rand thousand	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000	R'000
Objective/Activity														
Centre for energy systems analysis and research	740	3 220	3 224	1 720	3 224	3 224	-	3 369	6 100	2 731	3 571	6 355	2 784	6 626
Economic classification														
Current payments	740	3 220	3 224	1 720	3 224	3 224	-	3 369	6 100	2 731	3 571	6 355	2 784	6 626
Compensation of employees	-	2 047	3 224	1 247	3 224	3 224	-	3 369	5 000	1 631	3 571	5 235	1 664	5 476
Salaries and wages	-	2 047	3 224	1 247	3 224	3 224	-	3 369	5 000	1 631	3 571	5 235	1 664	5 476
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	740	1 173	-	417	-	-	-	-	1 100	1 100	-	1 120	1 120	1 150
Of which <sup>1</sup>														
Audit costs: External	-	-	-	44	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Communication (G&S)	-	-	-	38	-	-	-	-	-	-	-	-	-	-
Consultants: Business and advisory services	736	669	-	82	-	-	-	-	-	-	-	-	-	-
Science and technological services	-	480	-	-	-	-	-	-	1 000	1 000	-	1 000	1 000	1 000
Contractors	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Maintenance and repairs of other fixed structures	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	3	-	-	249	-	-	-	-	100	100	-	120	120	150
Operating payments	-	24	-	-	-	-	-	-	-	-	-	-	-	-
Venues and facilities	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	56	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>740</b>	<b>3 220</b>	<b>3 224</b>	<b>1 720</b>	<b>3 224</b>	<b>3 224</b>	<b>-</b>	<b>3 369</b>	<b>6 100</b>	<b>2 731</b>	<b>3 571</b>	<b>6 355</b>	<b>2 784</b>	<b>6 626</b>

**Table 19**

- Funding will be allocated from the Centre For Energy Systems Analysis And Research (Data And Knowledge Management And Energy Modelling) sub-programme to the new sub-programme of Balancing Energy Supply and Demand.



**9.3.8.2 SUB-PROGRAMME 4: CENTRE FOR ENERGY SYSTEMS ANALYSIS AND RESEARCH (DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING) – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS**

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Data Knowledge Management and Energy Modelling	New energy solutions	Number of new energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities	New Output Indicator	New Output Indicator	New Output Indicator	1	2	1	1
		Research publications reflecting clean energy insights	Number of approved Annual Energy Industry status reports	1	1	1	1	1	1	1
		Energy Data Research support and development	Number of energy-related research students / contracted researchers supported either bursaries or non-bursaries which align with SANEDI's transformation objectives	New Output Indicator	New Output Indicator	New Output Indicator	0	5	0	0

**Table 20**

**9.3.9 SUB-PROGRAMME 5: CLEANER MOBILITY**

By 2050, about 70% of the world’s population will live, commute and work in urban areas. Between now and then, cities and suburbs will undergo significant transformations to create sustainable living conditions for their residents. Mobility and energy are the twin pillars of these transformations, and both will require radical adaptation to meet demographic and economic growth without increasing congestion and pollution. Cities will require mobility and energy solutions that are sustainable, affordable, secure, inclusive, and integrated with customer-centric infrastructure and services. Thus, the convergence of energy and mobility is critical.

These are exciting times in which new technologies allow people to rethink the way they live more sustainably and efficiently. Smart Mobility, Smart Water, Smart Grid, and Smart Integration. These are the foundations of tomorrow’s cities, which are being realised today.

Mobility is going to change rapidly in the coming years as Electric Vehicles (EV’s) proliferate, ride-sharing continues to grow, and (eventually) Autonomous Vehicles (AV) enter urban fleets. This is especially true in cities where new forms of mobility are concentrated, and where investment in supporting infrastructure needs to accommodate this growth. These changes coincide with the evolution towards a cleaner, more decentralised, and digitalised energy systems and services, and increasing electrification.

The Cleaner Mobility (CM) programme within SANEDI in collaboration with the Development Bank of Southern Africa (DBSA) and key Stakeholders, will conduct a study to assess the feasibility of rolling out electric buses for public transport in the next three years. The project objective is to advance and accelerate large-scale rollout of EVs for public transport systems in major metropolitan areas, and will initially comprise two phases, namely feasibility study and demonstration. The feasibility study is funded through the Global Environment Facility (GEF) whilst the demonstration phase with an estimated budget of R 1,7 billion will be primarily funded (83%) by Metropolitan Municipalities, with GEF expected to provide 17% of the project funding.

The programme has relied on collaboration with key partners in financial, technical and Government sectors to undertake large-scale, and high-impact projects in the CM sector. Such collaborations will still be critical for the programme’s success in the short to medium term. The programme will intensify efforts to secure more partnerships, particularly in key areas such as financial and technical assistance. The partnerships with entities such as the DBSA, Department of Transport (DoT), Municipalities and GEF, to name a few, will be strengthened as part of the objective to unlock additional resources towards infrastructure development projects, for both public transport and private use electric vehicles.



There is an opportunity to design a different future, and reap both environmental and economic benefits with a call to action around the following three principles to be acted upon: -

- Take a multi-stakeholder and market-specific approach: First and foremost, a market-specific approach that considers all relevant Stakeholders should be applied to new mobility patterns with smarter and cleaner energy systems. Energy, mobility, and infrastructure enterprises, along with policymakers, regulators, and urban planners, can collectively define a new paradigm for cities. The paradigm would go beyond today's industry
- Prioritise high-use vehicles. The focus should be on electrifying fleets, taxis, mobility-as-a-service vehicles, and public transport, which will have a greater impact, as these represent a higher volume of kilometres
- Deploy critical charging and refuelling infrastructure today while anticipating the transformation of mobility. To keep pace with growing demand and to address range-anxiety issues, charging infrastructure is needed, especially along highways, at destination points, and close to public transport hubs. To minimise the risk of stranded investments, future mobility and vehicle ownership patterns should be considered, as some current charging locations (i.e., in apartment buildings, at parking meters along city

divisions in search of complementary municipal, Regional and National policies. The investment and infrastructure to support electric mobility will vary significantly from one place to another, thus, any approach needs to be market-specific. Local Stakeholders should plan for electrification while considering local characteristics, especially urban infrastructure and design, the energy system and the culture and patterns of mobility.

travelled. Although personal-use vehicles will likely remain a significant portion of the vehicle stock for many years, they are on the road less than 5% of the time, representing a low volume of overall kilometres driven.

streets) may not be needed in the future. The infrastructure should be deployed in combination with grid edge technologies, such as decentralised generation, storage, microgrids and Smart buildings and integrated into SGs, to fully exploit the flexibility of EVs while enabling the stability of the energy system. Digitalisation would help simplify and enhance the customer experience, support efficient infrastructure deployment and management as well as enable new services associated with electric, shared, and autonomous mobility. Charging stations can become hubs for Smart City services.



### 9.3.9.1 SUB PROGRAMME BUDGET CLEANER MOBILITY

	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
Expenses	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
Rand thousand														
Objective/Activity														
Cleaner Mobility	13	2 548	2 895	310	2 755	2 755	-	2 879	2 879	-	3 052	3 052	-	3 192
Economic classification														
Current payments	13	2 548	2 895	310	2 755	2 755	-	2 879	2 879	-	3 052	3 052	-	3 192
Compensation of employees	-	2 469	893	-	933	933	-	975	975	-	1 034	1 034	-	1 081
Salaries and wages	-	2 469	893	-	933	933	-	975	975	-	1 034	1 034	-	1 081
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	13	79	2 002	310	1 823	1 823	-	1 904	1 904	-	2 018	2 018	-	2 111
Of which <sup>1</sup>														
Science and technological services	2	-	1 136	109	987	987	-	1 031	1 031	-	1 093	1 093	-	1 143
Agency and support/outsourced services	-	-	495	-	447	447	-	467	467	-	495	495	-	518
Travel and subsistence	11	1	372	39	389	389	-	406	406	-	430	430	-	450
Training and development	-	78	-	-	-	-	-	-	-	-	-	-	-	-
Venues and facilities	-	-	-	162	-	-	-	-	-	-	-	-	-	-
<b>Total Expenditure</b>	<b>13</b>	<b>2 548</b>	<b>2 895</b>	<b>310</b>	<b>2 755</b>	<b>2 755</b>	<b>-</b>	<b>2 879</b>	<b>2 879</b>	<b>-</b>	<b>3 052</b>	<b>3 052</b>	<b>-</b>	<b>3 192</b>

Table 21

- Funding will be allocated from the Cleaner Mobility sub-programme to the new sub-programme, Biofuels.

### 9.3.9.2 SUB-PROGRAMME 5 CLEANER MOBILITY – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets							
				Audited Performance			Estimated Performance	MTEF Period			
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target	
1; 2; 4; 5	Cleaner Mobility	Cleaner mobility: Greening municipal fleet and cleaner transport massification plans	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities	1	1	1	1	1	1	1	
			Annual energy industry insight (trends) publications reflecting insights from extensive international and national collaboration, interfacing and forums	1	1	1	1	1	1	1	
			Number of industry roadmaps or sector development plans and industry support tools developed to promote energy related market / industry development	N/A	1	1	0	1	0	0	
			Number of energy-related knowledge sharing events / platforms engaged in either hosted by SANEDI or attended by SANEDI staff or knowledge presented by SANEDI staff	N/A	N/A	1	1	1	1	1	

Table 22



### 9.3.9.3 SUB-PROGRAMME 6: BALANCING ENERGY SUPPLY AND DEMAND - OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

This sub-programme is highly dependent on funding and finding resources to capacitate, although the agreed-upon approach is to start on a smaller scale. There is a timeously high priority objective to focus on demand-side management, for example, a South African aggregator model. This sub-programme will focus on the proposal for an aggregator model focused on geyser loads for balancing energy supply and demand, which can be applied across industry. It is important to note that this work is reported to NECOM (National Energy Crisis Committee).

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Balancing Energy Supply and Demand	A Proposal for an aggregator model focused on geyser loads for balancing energy supply and demand	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities:	0	0	New Output Indicator	1	1	1	1

Table 23

- Funding for this new sub-programme will be allocated from the CENTRE FOR ENERGY SYSTEMS ANALYSIS AND RESEARCH (DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING) sub-programme

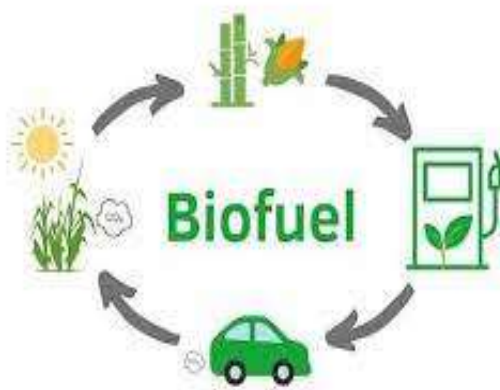
### 9.3.10 SUB-PROGRAMME 7: BIOFUELS - OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

This sub-programme is exploring the legislation of the use of biomass for fuelling supply. The output of the sub-programme is a desktop study looking at international best practices and lessons learned thereof.

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Biofuels	Desktop study looking at international best practices and lessons learned thereof.	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities:	0	0	0	1	1	1	1

Table 24

- Funding for this new sub-programme will be allocated from the Cleaner Mobility sub-programme



### 9.3.10.1 PROGRAMME 2: Output Indicators: Annual and Quarterly Targets

Sub-Programme	Output Indicator	Annual Target	Q1	Q2	Q3	Q4
Cleaner Fuels and Related Technologies	Number of energy solutions assessed either advisory notes or feasibility reports/study reports/case studies or technology roadmaps & demonstration projects/facilities	1	0	0	0	1
		1	0	0	0	1
Renewable Energy	Number of energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or technology roadmaps and demonstration projects/facilities.	2	0	0	1	2
	Minimum number of energy-related datasets maintained per annum.	2	0	0	0	2
	Number of policy support instruments either industry roadmaps or sector development plans or industry support tools.	0	0	0	0	0
	Number of energy-related knowledge sharing events / platforms engaged in either hosted by SANEDI or attended by SANEDI staff or knowledge presented by SANEDI staff.	2	0	0	1	2
Smart Grids	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities.	2	0	0	0	2
	Number of approved Annual Energy Industry status reports.	1	0	0	0	1
Data Knowledge Management and Energy Modelling	Number of new energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities.	1	0	0	0	1
	Number of approved Annual Energy Industry status reports.	1	0	0	0	1
Cleaner Mobility	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities.	1	0	0	0	1
	Annual energy industry insight (trends) publications reflecting insights from extensive international and national collaboration, interfacing and forums.	1	0	0	0	1
	Number of energy-related knowledge sharing events / platforms engaged in either hosted by SANEDI or attended by SANEDI staff or knowledge presented by SANEDI staff	1	0	0	0	1
Balancing Energy Supply and Demand	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities.	1	0	0	0	1
Biofuels	Number of energy solutions assessed by either advisory notes or feasibility reports or study reports or case studies, or technology roadmaps and demonstration projects / facilities.	1	0	0	0	1

Table 25





#### 9.4. PROGRAMME 3: ENERGY EFFICIENCY

Since 2008, South Africa has been experiencing intermittent bouts of loadshedding across the country, largely brought about by the demand for energy exceeding the available supply from Eskom at various points in time. Notwithstanding, this serious challenge to the country's economic development, South Africa remains within the top 15 countries with the highest GHG per capita, because of the country's dependence on coal for power generation. To address these two serious

National challenges, the EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, and the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.

The key activities planned for the 2024/25 financial year which are included in this APP, are highlighted as follows: -

- The administration of the Section 12L Energy Efficiency tax incentives on behalf of the DMRE, NT and the South African Revenue Services (SARS), where registered companies can claim a rebate for every unit of energy saved. Although still very significant in the size of rebates claimed (and associated GHG savings), we are expecting a slight decline in the number of applications received, because of companies shifting their focus from EE interventions more towards the installation of SSEG technologies, due to the recent increase in licensing threshold to 100MW by the DMRE and The National Energy Regulator of South Africa (NERSA).
- Within the activities around SMART public facilities, SANEDI will be hosting and maintaining the National Building Energy Performance Register (NBEPR), as mandated by the EPC Regulations promulgated by the DMRE Minister on 8 December 2019, as well as facilitating the market through several sub- initiatives, such as the re-skilling of 20 unemployed electricians to be able to enter this market and conduct EPC-assessments in commercial buildings. SANEDI is also co-funding the collection of data.
- Analysis of results and the issuing of 20 EPCs in public facilities across all three tiers of Government. SANEDI has also been earmarked to provide a fully funded Monitoring and Evaluation (M&E) facility for an international (V-NAMA) funded 'Energy Efficiency in Public Buildings and Infrastructure Programme (EEPBIPI)', also covering facilities in all three tiers of Government, as well as State-owned Entities (SoEs).
- Furthermore, through the Energy Efficiency Standards and Labelling programme that SANEDI is administering on behalf of the DMRE, it is anticipated that at least one additional technology will be added to the current basket of 12 domestic appliances for which mandatory Minimum Energy Performance Standards (MEPS) already exist. SANEDI is working very closely with multiple public and private sector Stakeholders in this activity, which includes the dtic, DMRE, South African Bureau of Standards (SABS), National Regulator for Compulsory Specifications (NRCS), manufacturers, retailers, end-users of these technologies, as well as international partners and donor funders.
- However, all successful EE programmes worldwide, are reliant on the existence of a robust Energy Service Company (ESCO) market, i.e., companies that focus on and specialise in EE audits and the implementation and financing of EE interventions. In this area, we will be finalising two extensive World Bank-funded studies in the coming financial year, one titled: 'Sustainable Energy Efficiency Sectoral Financing Mechanisms' and an 'ESCO Market Development Strategy for South Africa'. Both these SANEDI-initiated reports are expected to provide a clear strategy to accelerate the uptake of EE in South Africa, whilst potentially creating a platform for significant job creation opportunities for women, youth, and PwDs. This will also increase the number of requisite skills to assist in activities relating to the envisaged Just Energy Transition (JET) in South Africa in the coming years.



- Digitalisation has been identified by the International Energy Agency (IEA) as one of the key enablers towards a low carbon and EE world and SANEDI has embraced this by securing funding for the Tshwane University of Technology (TUT) to conduct the first-ever Digitalisation Impact
- SANEDI will furthermore continue to support the establishment of a Cool Roof industry in South Africa, through a transition from pilot and projects (to increase the number of square meters coated), towards an increase in local economic development
- Balancing Energy Supply & Demand Large Scale Rollout refers to a strategic initiative aimed at managing the equilibrium between energy production and consumption on a significant scale. This sub-programme focuses on deploying advanced technologies, grid infrastructure, and demand-side management strategies to ensure a stable and reliable energy supply for large
- Lighting initiatives focus on improving the efficiency, sustainability, and quality of lighting systems. This sub-programme involves implementing energy-efficient lighting technologies such as LED (Light Emitting Diode) bulbs, smart lighting controls, and motion sensors. By promoting the adoption of these advanced lighting solutions,
- Lastly, the Section 12L Energy Efficiency tax incentives, the EPCs for buildings, and phase 2 of the Carbon Tax, all require the Inspection Bodies involved in these activities to be accredited by the South African National Accreditation System (SANAS). In leading by example and because of our key role in the successful implementation of the first two legislated activities, SANEDI has initiated a formal process to become SANAS-accredited in these two disciplines within the 2024/25 financial

To address climate change, we will partner with more stakeholders in the 2024/25 financial year. Our new strategic vision towards a more sustainable and efficient

- Support businesses with tax incentives to promote, and instil a culture of cleaner production and EE in
- Achieving the National carbon emissions reduction targets; and
- Maintaining a repository of EE data, readily available to the key Stakeholder (DMRE) for policy formulation and evidence-based decision making.

Assessment for EE in South Africa, due for completion in the 2024/25 financial year, and in support of this on a practical level, SANEDI is administering and maintaining datasets that can underpin a transition towards a Digital Energy Efficiency industry in South Africa.

by supporting local manufacturing of the coatings, job creation through skills development, and capacity building and product quality control through the development of local product standards and testing facilities.

communities or regions. By optimising energy distribution, integrating renewable sources, and implementing demand response measures, this initiative contributes to the overall resilience of the energy system, reduces environmental impact, and supports sustainable economic growth and development.

the sub-programme aims to reduce energy consumption, lower electricity bills, and minimize environmental impact. Additionally, it enhances overall visibility and safety in public spaces, fostering energy-conscious communities and supporting the global shift towards eco-friendly practices.

year. The initial aim is to assist the DMRE with the assessment of internal projects such as the Energy Efficiency and Demand Side Management (EEDSM) projects within municipalities and some Government building EPC projects, but this accreditation could assist in potential revenue generation activities by participating in these markets at a future stage.

energy sector is primed to equip, and support South Africa's economic transformation, growth, and social development. The EE-initiated projects aim to:

all sectors of the economy, through participating applicants from which the projects are derived;



9.4.1 PROGRAMME BUDGET – ENERGY EFFICIENCY

Expenses	2020/21	2021/22	2022/23		2023/24			2024/25			2025/26			2026/27
	Audited outcome	Audited outcome	Budget	Audited outcome	Budget estimate	Approved budget	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Budget estimate	Revised budget estimate	Changes from budget estimate	Planning budget estimate
<b>Energy efficiency programme</b>	1 958	21 736	26 563	17 768	15 021	15 021	-	12 703	14 223	1 520	12 637	14 832	2 195	15 455
<b>Economic classification</b>														
<b>Current payments</b>	1 958	21 736	26 563	17 768	15 021	15 021	-	12 703	14 223	1 520	12 637	14 832	2 194	15 455
Compensation of employees	-	7 735	5 429	664	5 673	5 673	-	5 928	12 324	6 396	6 284	12 879	6 595	13 458
Salaries and wages	-	7 735	5 429	664	5 673	5 673	-	5 928	12 324	6 396	6 284	12 879	6 595	13 458
Social contributions	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goods and services	1 958	14 001	21 134	17 104	9 347	9 347	-	6 775	1 899	(4 876)	6 354	1 953	(4 401)	1 997
Of which <sup>1</sup>														
Administrative fees	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Advertising	9	-	-	-	-	-	-	-	-	-	-	-	-	-
Catering: Internal activities	4	-	-	74	-	-	-	-	-	-	-	-	-	-
Computer services	-	-	-	96	-	-	-	-	-	-	-	-	-	-
Consultants: Business and advisory services	1 550	5 916	1 700	9 487	1 700	1 700	-	1 776	-	(1 776)	1 883	-	(1 883)	-
Science and technological services	187	7 646	16 719	6 018	5 161	5 161	-	2 400	1 000	(1 400)	2 044	1 000	(1 044)	1 000
Maintenance and repairs of other fixed structures	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Agency and support/outsourced services	-	-	1 797	-	1 627	1 627	-	1 700	-	(1 700)	1 474	-	(1 474)	-
Consumables: Stationery, printing and office supplies	-	-	-	29	-	-	-	-	-	-	-	-	-	-
Rental and hiring	-	-	-	414	-	-	-	-	-	-	-	-	-	-
Travel and subsistence	18	145	219	42	229	229	-	239	239	-	253	253	-	265
Training and development	40	294	88	162	92	92	-	96	96	-	102	102	-	106
Operating payments	132	-	285	66	248	248	-	259	259	-	275	275	-	287
Venues and facilities	14	-	327	715	292	292	-	305	305	-	323	323	-	338
<b>Total Expenditure</b>	1 958	21 736	26 563	17 768	15 021	15 021	-	12 703	14 223	1 520	12 637	14 832	2 194	15 455

Table 26



9.4.2 PROGRAMME 3: ENERGY EFFICIENCY – OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	Section 12L Tax Incentives	Processed 12L applications	12L EE tax certificates issuers	2	39	11	20	25	20	20
			GHG emissions reduced (Mega tonnes CO2)	N/A	N/A	1 ton	0,5 Mega tonnes	0,5 Mega tonnes	0,5 Mega tonnes	0,5 Mega tonnes
		EE datasets and information used for policy decision making	Number of EE energy-related datasets (12L) maintained per annum	1	2	3	1	1	1	1
	Cool Surfaces & Insulation	Smart public facilities (and any other SANEDI driven initiative contributing towards GHG reduction)	A report detailing number of new EE solutions (Cool Surface) assessed	0	0	0	0	1	0	0
	Energy Performance Certificates (EPCs)	Smart public facilities (and any other SANEDI driven initiative contributing towards GHG reduction)	A report detailing a number of new EE solutions (EPCs) assessed	0	0	0	2	2	2	2
		EE datasets and information used for policy decision making	A report detailing number of EE energy-related datasets (EPCs) maintained per annum	0	0	0	2	1	2	2
	ESCo Market Development	EE datasets and information used for policy decision making	A report detailing number of EE energy-related datasets (ESCo) maintained per annum.	0	0	0	2	1	2	2
		EE capacity created through training	Number of recipients of energy-related training facilitated (excl. SANEDI staff)	0	0	0	20	20	20	20
Standards & Labelling	Minimum energy performance standards, regulations and related impact assessments developed	A report detailing number of new EE solutions (standards and labelling) implemented	0	0	0	4	4	4	4	
DMRE Strategic Initiatives (PMO's)*	Standards and Labelling, skills programme, energy efficiency and public buildings infrastructure programme	Approved report detailing number of DMRE Strategic Initiative Implementation	New Output Indicator	New Output Indicator	New Output Indicator	1	n/a	1	1	
Balancing Energy Supply & Demand Large Scale Rollout (PMO)	Rollout with municipality systems for controlling load management.	Approved report detailing number of Large-Scale Rollout of Balancing Energy Supply & Demand	New Output Indicator	New Output Indicator	New Output Indicator	1	n/a	1	1	
Lighting	High efficiency lighting rollout in public metros and municipalities	Report detailing implementation of highly efficient lighting rollout within metros and/or municipalities	New Output Indicator	New Output Indicator	New Output Indicator	1	n/a	1	1	

Table 27

### 9.4.2.1 PROGRAMME 3: ENERGY EFFICIENCY – Output Indicators: Annual and Quarterly Target

	Output Indicator	Annual	Q1	Q2	Q3	Q4
Section 12L Tax Incentives	12L EE tax certificates issuers	20	5	10	15	20
	GHG emissions reduced (Mega tonnes CO <sub>2</sub> )	0,5 Mega tonnes	0,2 mega tonnes	0,3 mega tonnes	0,4 mega tonnes	0,5 mega tonnes
	Number of EE energy-related datasets (12L) maintained per annum	1	0	0	0	1
Energy Performance Certificates (EPCs)	A report detailing a number of new EE solutions (EPCs) assessed	2	0	0	1	2
	A report detailing number of EE energy-related datasets (EPCs) maintained per annum	2	0	1	0	2
ESCo Market Development	A report detailing number of EE energy-related datasets (ESCo) maintained per annum.	2	0	1	0	2
	Number of recipients of energy-related training facilitated (excl. SANEDI staff)	20	5	10	15	20
Standards & Labelling	A report detailing number of new EE solutions (standards and labelling) implemented	4	1	2	3	4
DMRE Strategic Initiatives (PMO's)*	Approved report detailing number of DMRE Strategic Initiative Implementation	1	0	0	0	1
Balancing Energy Supply & Demand Large Scale Rollout (PMO)	Approved report detailing number of Large-Scale Rollout of Balancing Energy Supply & Demand	1	0	0	0	1
Lighting	Report detailing Implementation of highly efficient lighting rollout within metros and/or municipalities	1	0	0	0	1

Table 28

- The Cool Surfaces and Insulation sub-programme will be replaced with “Cool Surfaces Commercialisation” and the budget will come from the “Commercialisation Budget”.



## 9.4.2 Programme 3 Alignment Considerations

SUB-PROGRAMME	ALIGNMENT TO THE DMRE	ALIGNMENT TO THE DSI
SECTION 12L TAX INCENTIVES	<ul style="list-style-type: none"> <li>The 12L Tax Incentive encourages businesses to invest in energy efficient technology and this has the potential to: <ul style="list-style-type: none"> <li>Improve the energy intensity of the economy.</li> <li>Reduce carbon emissions.</li> <li>Reduce production costs for businesses through energy savings and increase profits.</li> <li>Increase business competitiveness, and</li> <li>Assist the country in achieving its Nationally Determined Contribution (NDC) towards climate change and reduce carbon emissions.</li> </ul> </li> <li>There is high alignment to the DMRE for this sub-programme.</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
COOL SURFACES & INSULATION	<ul style="list-style-type: none"> <li>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</li> <li>There is low alignment to the DMRE for this sub-programme</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
ENERGY PERFORMANCE CERTIFICATES	<ul style="list-style-type: none"> <li>EPCs are mandatory for private sector, non-residential buildings and publicly owned, operated, and occupied buildings which meet a specific criterion in terms of floor size.</li> <li>SANEDI hosts and maintains a National Energy Performance Register</li> <li>There is high alignment to the DMRE for this sub-programme.</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
ESCO MARKET DEVELOPMENT	<ul style="list-style-type: none"> <li>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</li> <li>There is high alignment to the DMRE for this sub-programme.</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
STANDARDS & LABELLING	<ul style="list-style-type: none"> <li>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</li> <li>There is average alignment to the DMRE for this sub-programme.</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
DMRE STRATEGIC INITIATIVES (PMO'S)	<ul style="list-style-type: none"> <li>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</li> <li>The initial aim is to assist the DMRE with the assessment of internal projects such as the Energy Efficiency and Demand Side Management (EEDSM)</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
BALANCING ENERGY SUPPLY & DEMAND LARGE SCALE ROLLOUT (PMO – MINISTRY OF ELECTRICITY)	<ul style="list-style-type: none"> <li>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</li> <li>The initial aim is to assist the DMRE with the assessment of internal projects such as the Energy Efficiency and Demand Side Management (EEDSM)</li> <li>There is low alignment to the DMRE for this sub-programme</li> </ul>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>
LIGHTING	<p>The EE division at SANEDI plans on undertaking a range of solutions-based activities, which are guided by various Legislative commitments, guidance from the Shareholder, the DMRE and defined in a formal Memorandum of Understanding (MoU) between SANEDI and the Department, as well as activities identified through SANEDI's own research and strategic planning.</p>	<ul style="list-style-type: none"> <li>There is a low alignment to the DSI for this programme.</li> </ul>

Table 29



### 9.4.3 Programme 3 At A Glance

SUB-PROGRAMME	DESCRIPTION OF SUB-PROGRAMME	APP BUDGET	SOURCE OF FUNDING	MATURITY OF THE SUB-PROGRAMME	RISKS
SECTION 12L TAX INCENTIVES	The administration of the Section 12L Energy Efficiency tax incentives on behalf of the DMRE, NT and the South African Revenue Services (SARS), where registered companies can claim a rebate for every unit of energy saved.	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	This sub-programme will continue in 2024/25 as the current sunset clause is 31 December 2025. Pronouncements of the continuation of the programme will be announced with the upcoming budget speech from NT.	Low risk in terms of: <ul style="list-style-type: none"> <li>Technology.</li> </ul>
COOL SURFACES & INSULATION	This sub-programme supports the Cool Roof initiative, but also notes the inclusion of insulation for thermal efficiency.	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	The sub-programme continues to evolve. The focus will be on commercialisation.	High risk in terms of: <ul style="list-style-type: none"> <li>Budget</li> <li>People</li> <li>Process.</li> </ul>
ENERGY PERFORMANCE CERTIFICATES	As part of a broader programme aimed at promoting sustainable practices, EPCs play a crucial role by encouraging energy-efficient design, helping property owners make informed decisions, and contributing to overall energy conservation efforts.	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	Regulation is in place for this sub-programme. 2150 EPC's issued as of end of January 2024.	High risk in terms of: <ul style="list-style-type: none"> <li>Budget</li> <li>People</li> <li>Process</li> <li>Technology</li> <li>Timing</li> </ul>
ESCO MARKET DEVELOPMENT	All successful EE programmes worldwide, are reliant on the existence of a robust Energy Service Company (ESCO) market, i.e., companies that focus on and specialise in EE audits and the implementation and financing of EE interventions	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	The sub-programme will progress with a focus to ramp-up the development of ESCo.	High risk in terms of: <ul style="list-style-type: none"> <li>Budget</li> <li>Technology</li> </ul>
STANDARDS & LABELLING	This sub-programme focuses on developing industry regulations and certification protocols, enabling consumers to make informed choices based on standardised labels indicating the product's performance, energy efficiency, or environmental impact	EE programme budget R14 223 000	Mix of Fiscus and external funding.	The programme will continue. As technology advances, existing regulations will need to be revised and updated over time.	High risk in terms of: <ul style="list-style-type: none"> <li>Process</li> <li>Technology</li> <li>Timing</li> </ul>
DMRE STRATEGIC INITIATIVES (PMO'S)*	There are several DMRE strategic initiatives for which SANEDI operates as the project management office.	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	This initiative will continue with the projects that are in-progress and further implements additional projects in collaboration with other stakeholders.	Medium risk in terms of: <ul style="list-style-type: none"> <li>Delays</li> </ul>
BALANCING ENERGY SUPPLY & DEMAND LARGE SCALE ROLLOUT (PMO – MINISTRY OF ELECTRICITY) *	This sub-programme focuses on the project management outputs of deploying advanced technologies, grid infrastructure, and demand-side management strategies to ensure a stable and reliable energy supply for large communities or regions. <ul style="list-style-type: none"> <li>Reporting into NECOM</li> </ul>	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	The sub-programme will be implementing pilot and mass roll-out projects.	High risk in terms of: <ul style="list-style-type: none"> <li>Budget</li> <li>Process</li> <li>People</li> <li>Timing</li> </ul>
LIGHTING	This sub-programme involves implementing energy-efficient lighting technologies such as LED (Light Emitting Diode) bulbs, smart lighting controls, and motion sensors. By promoting the adoption of these advanced lighting solutions, the sub-programme aims to reduce energy consumption, lower electricity bills, and minimize environmental impact.	EE programme budget R14 223 000	Mix of Fiscus funding and external funding	This sub-programme will commence in the 2024/25 FY.	Low risk in terms of: <ul style="list-style-type: none"> <li>Budget</li> <li>Process</li> <li>People</li> <li>Timing</li> </ul>

Table 30



## 9.5 PROGRAMME 4: THE ENERGY SECRETARIAT

The DSI commissioned the National Research Foundation (NRF) to conduct a review of the Renewable Sustainable Energy (RSE) Hub and Spokes programme. Recommendations proposed the establishment of an Energy Secretariat. The DSI contracted SANEDI to establish an Energy Secretariat in the 2019-20FY.

The Secretariat would promote the 10-Year Innovation Plan and leverage the Energy Grand Challenge. The Grand Challenge stimulates and advances a knowledge-based economy and advances increased knowledge generation and exploitation, human capital development, knowledge infrastructure, and enablers to addressing the “innovation chasm.” These efforts will seamlessly address the energy trilemma which encompasses energy access, environmental sustainability, and energy security.

### **The Science and Innovation flagship programmes are summarised here:**

The Coal CO<sub>2</sub>-X Programme demonstrates CO<sub>2</sub> captured from the flue gas emitted from coal-fired power stations, along with green hydrogen produced from RE sources by way of the electrolysis of water, to green, clean burning 0% sulphur diesel. This is a RE carrier for local demand and developing global renewables trade. The programme seeks to reduce CO<sub>2</sub> emissions while honouring our National obligations under the Paris Agreement.

Energy Storage Programme advances energy storage technology research. Lithium-ion battery development supports stationary and mobile applications. Lithium, nickel, and cobalt minerals can be supplied by neighbouring countries. Research focal areas include value-added precursor materials like lithium manganese oxide and lithium nickel manganese cobalt. Universities and science councils undertake computational modelling, precursor material development, cell manufacturing, and battery testing research. The research programme consortium comprises Universities and Science Councils alike.

The Hydrogen South Africa (HySA) Programme originated from the National Hydrogen and Fuel Cell Technologies (HFCT) RDI strategy approved by Cabinet in May 2007. The programme consortium comprises local Universities and Science Councils researching the beneficiation of Platinum Group Metal (PGM) resources. The research contributes actively towards energy security and RE. It further supports Government’s ambition to supply green hydrogen to Africa. It also exploits component manufacture throughout the HFCT value chain.

The role of the Secretariat is to commercialise and upscale knowledge outputs from the RDI portfolio. The outputs will systematically ensure an impact on the National System of Innovation (NSI). The Secretariat will monitor and evaluate the implementation of the Energy Science, Technology, and Innovation Plan. Monitor implementation of innovative, alternative, and emerging technology policies influencing the energy landscape. Coordinate and monitor the training of Technical Vocational Education and Training (TVET) and University of Technology (88UT) graduates. Deploy scalable technologies with the public and private sectors, as well as academia. Align deployments with the Presidential District Development Model.

The Hub and Spokes Programme advances research and technology innovation in the RE landscape, postgraduate skills development, and increases the knowledge base. It stimulates new science, technology, and innovation industries supporting Government policies and plans. The hub and spokes model involves administrative support at the hub, while computational modelling, photovoltaic, solar thermal, and wind technology research and demonstrations are undertaken by the hubs SANEDI onboarded a new DSI programme, the VVISDP. DSI applied for and secured European Union (EU) funding.

Strategic programme management is undertaken by a consortium comprising CoGTA, DSI, TIA and SALGA. TIA recently appointed SANEDI to implement the energy management component of the programme. The City of Cape Town, Drakenstein, City of Mbombela, and Rustenburg submitted successful proposals that were approved.

The Energy Secretariat has not compiled Key Performance Indicators (KPIs) and targets in the 2024/25 APP. Work currently underway by the UK Partnering for Accelerated Climate Transitions (UK-PACT) is investigating a model for improved operational efficiency and Governance. A Theory of Change – Monitoring, Evaluation, Learning (MEL) framework also forms part of the project outputs. The UK PACT project outputs will enable SANEDI to formulate appropriate and relevant KPIs and targets in support of the 2024/25 APP.





## LEAP-RE

The Europe-Africa Partnership for Renewable Energy (LEAP-RE) is a 5-year programme co-funded by the European Commission (EC) under Horizon 2020. It aims to develop long-term partnerships between Europe and Africa on Research and Innovation (R&I) in RE. The consortia comprise 83 partners from European and African countries. The overall budget is €32m, including €15m from the EC. There are three pillars, Pillar 1 is a

joint call for RE research proposals, Pillar 2 focuses on the management of R&I and capacity building projects, and Pillar 3 fosters long-term RE partnerships between African and European countries. SANEDI has secured R5 million from the DSI and expects an additional R15 million, to implement projects approved by Leap-Re International.



# LEAP-RE



**9.5.1 PROGRAMME 4: THE ENERGY SECRETARIAT:  
Budget**

We have made budget estimates for the 2024/25 Financial Year considering the recommendations submitted by SANEDI to the DSI for the projects (transfers), and a possible 30% budget cut (worst case scenario), and the projections are as follows:

	2023/2024	2024/2025
Energy Secretariat Administration Fee at 5.5 %	R10 209 650	-
Energy Secretariat – Operationalisation/set up 7.5%	R13 922 250	-
Transfers to projects implementing agencies (Centres of Excellence)	R161 498 100	-
Total projected for 2024/25 FY (Worst case scenario with 30% budget cut)	R185 630 000	R129 941 000

**Table 31**

**9.5.2 THE ENERGY SECRETARIAT: OUTCOMES, OUTPUTS, OUTPUT INDICATORS AND TARGETS**

Strategic Outcomes	Sub-Programme	Output	Output Indicator	Annual Targets						
				Audited Performance			Estimated Performance	MTEF Period		
				2020/21	2021/22	2022/23	2024/25 Annual Target	2023/24 Annual Target	2024/25 Annual Target	2025/26 Annual Target
1; 2; 4; 5	<u>PMO for DSI</u> 1. Coal CO <sub>2</sub> -X RDI 2. Energy Storage RDI 3. Hydrogen SA (HySA) 4. Renewable Energy Hub and Spokes	Approved Q1 Report to the DSI	Approved report detailing number of University of Technology / TVET graduates offered experiential learning opportunities in the energy sector	N/A	N/A	N/A	1	4	1	1
		Approved Q2 Report to the DSI	Approved report detailing number of intellectual property rights (IPRs) filed based on energy RDI	N/A	N/A	N/A	1	1	1	1
		Approved Q3 Report to the DSI	Approved report detailing number of stationary fuel cells / clean energy technologies deployed in partnership with Municipalities / District Municipalities	N/A	N/A	N/A	1	4	1	1
		Approved Q4 Report to the DSI	Approved report detailing number of SMMEs assisted / supported with business development and commercialisation	N/A	N/A	N/A	1	2	1	1

**Table 32**

**9.5.2.1 THE ENERGY SECRETARIAT: Output Indicators, Annual and Quarterly Targets**

Sub-Programme	Output Indicator	Annual	Q1	Q2	Q3	Q4
<u>PMO for DSI</u> 5. Coal CO <sub>2</sub> -X RDI 6. Energy Storage RDI 7. Hydrogen SA (HySA) 8. Renewable Energy Hub and Spokes	Approved report detailing number of University of Technology / TVET graduates offered experiential learning opportunities in the energy sector	1	0	0	0	1
	Approved report detailing number of intellectual property rights (IPRs) filed based on energy RDI	1	0	0	0	1
	Approved report detailing number of stationary fuel cells / clean energy technologies deployed in partnership with Municipalities / District Municipalities	1	0	0	0	1
	Approved report detailing number of SMMEs assisted / supported with business development and commercialisation	1	0	0	0	1

**Table 33**



### 9.5.3 PROGRAMME 4 AT A GLANCE

SUB-PROGRAMME	DESCRIPTION OF SUB-PROGRAMME	APP BUDGET	EXTERNAL FUNDING (AMOUNTS AND SOURCES)	MATURITY OF THE SUB-PROGRAMME	RISKS
COAL CO <sub>2</sub> -X RDI	This programme demonstrates technologies that  Capture CO <sub>2</sub> from flue gas of coal-fired boilers/power plants & convert the flue gas components together with (green hydrogen) to value-added products such as green ammonia, fertilizer salt and sulphuric acid.	Not applicable, programme fully funded by the DSI	3 <sup>rd</sup> Party: R28 196 856	This is a DSI KPI and not SANEDI, to avoid duplication in reporting.	The only risk at this stage is that there is no long-term contract with the DSI.
ENERGY STORAGE RDI	Storage Solutions: Battery Grade Aluminium foil development Battery powered Cool transport Battery pack development Energy Storage Internship	Not applicable, programme fully funded by the DSI	3 <sup>rd</sup> Party: R16 467 417,84	This is a DSI KPI and not SANEDI, to avoid duplication in reporting.	The only risk at this stage is that there is no long-term contract with the DSI.
HYDROGEN SA (HY SA)	HySA Systems aimed at (i) develop Hydrogen Fuel Cells systems and prototypes, (ii) perform technology validation and system integration in two key HySA-Programmes:	Not applicable, programme fully funded by the DSI	3 <sup>rd</sup> Party: R83 705 044	This is a DSI KPI and not SANEDI, to avoid duplication in reporting.	The only risk at this stage is that there is no long-term contract with the DSI.
RENEWABLE ENERGY HUB AND SPOKES	The focus is on Advances in Renewable Energy (RE) technology innovation along with skills development at a postgraduate level to increase the knowledge base.	Not applicable, programme fully funded by the DSI	3 <sup>rd</sup> Party: R 22 148 284	This is a DSI KPI and not SANEDI, to avoid duplication in reporting.	The only risk at this stage is that there is no long-term contract with the DSI.

Table 34



#### 9.5.4 PROGRAMME 4 ALIGNMENT CONSIDERATIONS

SUB-PROGRAMME	ALIGNMENT TO THE DMRE	ALIGNMENT TO THE DSI
COAL CO <sub>2</sub> -X RDI	The programme is aligned to the DMRE Integrated Resource plan in terms of decarbonization of the electricity sector.	Programme included in the DSI decadal plan, and it's aligned to the DSI 2019 science, technology, and Innovation plan.
ENERGY STORAGE RDI	The programme is aligned to the DMRE energy storage programme under the ministerial determination through the IRP. It also supports small scale embedded generation.	Programme included in the DSI decadal plan, and it's aligned to the DSI 2019 science, technology, and Innovation plan.
HYDROGEN SA (HY SA)	The DMRE is busy developing a hydrogen strategy, which aligns with this programme.	Programme included in the DSI decadal plan, and it's aligned to the DSI 2019 science, technology, and Innovation plan.
RENEWABLE ENERGY HUB AND SPOKES	This is aligned to the Integrated resource plan (IRP) in terms of decarbonization of the electricity sector.	Programme included in the DSI decadal plan, and it's aligned to the DSI 2019 science, technology, and Innovation plan.

Table 35



## 10. EXPLANATION OF PLANNED PERFORMANCE OVER THE MEDIUM-TERM PERIOD

In developing its strategy, SANEDI must align with key National Priorities and DMRE focus areas. Its strategy thus seeks to add value and contribute towards specific areas of these priorities. The table below details the alignment of the strategic outcomes to the NDP, MTSF and DMRE priorities.

OUTCOME	LINK TO NDP	LINK TO MTSF	LINK TO DMRE PRIORITIES
SO1. Contribute towards sustainable energy solutions.	<p><b>Chapter 4: Economic Infrastructure.</b> At least 20 000 MW of this additional generated capacity should come from renewable sources.</p> <p>The proportion of people who use public transport for regular commutes will expand significantly. By 2030, public transport will be user friendly, less environmentally damaging, cheaper and integrated or seamless.</p> <p>The concept of Smart Cities is based on cleaner and more efficient energy technologies, offering cleaner and more efficient buildings and transportation.</p>	<p><b>Priority 5: Spatial integration, Human Settlements and Local Government.</b></p> <p>Smart Cities are equipped with SGs systems using the Smart Cities framework to enhance municipal revenue management, energy asset management and improved demand-response.</p>	<p><b>Policy, Planning and Clean Energy.</b></p> <p>Smart Cities aim to utilise a cleaner and more efficient energy system with less detriment to the environment.</p>
		<p><b>Priority 2: Economic transformation and job creation.</b></p> <p>The move towards Smart Cities will have an impact on the economic outlook of the country through increased access and uptake of Information and Communications Technology (ICT), creating new opportunities and improved competitiveness for the country.</p> <p>Transport massification in the municipal environment will result in a greener municipal fleet. The massification will also result in the introduction of new technologies, creating opportunities for new jobs and business opportunities and innovation in the sector.</p> <p><b>Policy, Planning and Clean Energy.</b></p> <p>Smart Cities aim to utilise a cleaner and more efficient energy system with less detriment to the environment.</p>	<p><b>Policy, Planning and Clean Energy.</b></p> <p>Smart Cities aim to utilise a cleaner and more efficient energy system with less detriment to the environment.</p> <p><b>Policy, Planning and Clean Energy.</b></p> <p>Petroleum and Petroleum Products Regulation: The focus will be on strengthening the role of the regional offices in the licensing process, by improving the capabilities in the regional offices and delegating certain functions to these offices.</p> <p>The DMRE also aims to diversify the country's energy sources and reducing GHG emissions.</p>
	<p><b>Chapter 5: Environmental sustainability and resilience - Zero-emission building standards by 2030.</b></p> <p>The drive towards zero emissions starts with identifying, and reducing current sources of GHG emissions in our energy systems.</p> <p><b>Priority 7: A better Africa and World.</b></p> <p>In reducing GHG emissions, South Africa would be aligning itself with goals towards the mitigation of climate change, hence contributing to a better world. This will entail developing strategic policy and regulatory frameworks and programmes to promote a low carbon economy.</p>		



OUTCOME	LINK TO NDP	LINK TO MTSF	LINK TO DMRE PRIORITIES
SO1. Contribute towards sustainable energy solutions. (continued)	<p><b>Chapter 4: Economic infrastructure – The foundation of social and economic development.</b> Aims to promote: (i) Economic growth and development through adequate investment in energy infrastructure and the provision of quality energy services that are competitively priced, reliable and efficient, and (ii) Environmentally sustainable through efforts to reduce pollution and mitigate the effects of climate change.</p>	<p><b>Priority 2: Economic transformation and job creation.</b> Promote a just transition to an environmentally sustainable economy. High impact environmental sustainability research, evidence gathering, and systematic review commissioned. <b>Priority 7: A better Africa and World.</b> Transition towards an environmentally sustainable economy.</p>	<p><b>Policy, Planning and Clean Energy.</b> The DMRE aims to foresee the implementation of policy interventions, mapping out future power generation technologies. Top of their priorities are diversifying energy sources and reducing GHG emissions.</p>
	<p><b>Chapter 13: Building a capable and developmental State.</b> Clear Governance structures and stable leadership enable SOEs to achieve their developmental potential.</p>	<p><b>Priority 2: Economic transformation and job creation.</b> Awareness creation to enable investments for inclusive growth, industrialisation, localisation, exports and as well as innovation.</p>	
SO2. Building energy expertise and competence.	<p><b>Chapter 9: Improving education, training and innovation.</b> Expand science, technology and innovation outputs by increasing R&amp;D spending by the Government, and through encouraging industry to do so.</p>	<p><b>Priority 2: Economic transformation and job creation.</b> Awareness creation to enable investments for inclusive growth, industrialisation, localisation, exports, and as well as innovation. <b>Priority 3: Education, skills and Health.</b> Address the challenge of poverty across society through providing skills and creating economic opportunities, especially for vulnerable groups. An awareness of clean technologies opens up an opportunity for South Africans to acquire new skills.</p>	
SO3. A capacitated, effective, efficient and sustainable operational environment (within which SANEDI will discharge its Mandate).	<p><b>Chapter 13: Building a capable and developmental State.</b> A public service immersed in the development agenda but insulated from undue political interference. Clear Governance structures and stable leadership enable SOEs to achieve their developmental potential.</p>	<p><b>Priority 1: A capable, ethical, and developmental State.</b> Clean administration, accurate and reliable reporting. Strengthening Internal capacity and collaboration with other organs of State.</p>	<p><b>The Implementation of Best Management Practices.</b> In support of Government's cost-cutting measures, outlined by the Minister of Finance in his medium-term budget policy statement in 2013, the DMRE has begun and will continue to review and implement internal policies aimed at containing operational costs.</p>
SO4. Inform and increase awareness of sustainable energy and provide thought leadership.	<p><b>Chapter 13: Building a capable and developmental State</b> Clear Governance structures and stable leadership enable SOEs to achieve their developmental potential.</p>	<p><b>Priority 2: Economic transformation and job creation.</b> Awareness creation to enable investments for inclusive growth, industrialisation, localisation, exports and as well as innovation.</p>	



OUTCOME	LINK TO NDP	LINK TO MTSF	LINK TO DMRE PRIORITIES
<p><b>SO4. Inform and increase awareness of sustainable energy and provide thought leadership (continued)</b></p> <p><b>SO5. Inform energy security through scientific and technological research with a view of supporting implementation.</b></p>	<p><b>Chapter 3: Economy and Employment.</b> Public employment programmes should reach 1- million people by 2015 and 2-million people by 2030.</p> <p><b>Chapter 13: Building a capable and developmental State.</b> Staff at all levels have the authority, experience, competence and support they need to do their jobs.</p>	<p><b>Priority 3: Education, skills and health.</b> Expanding the high-tech industry by ensuring that the legal and regulatory framework promotes innovation, scaling up skills development for young people in new technologies, and reducing data costs.</p> <p><b>Priority 1: A capable, ethical and developmental State.</b> Scaling up skills development for young people, women and Government officials in new technologies.</p>	<p><b>Electrification and Energy Programme and Project Management.</b> Through economic development initiatives, such as Education Project &amp; Partnerships (EP&amp;Ps), the programme will:</p> <ul style="list-style-type: none"> <li>• Create job possibilities through EP&amp;Ps,</li> <li>• Create opportunities for skills development within the energy sector,</li> <li>• Re-establish electrical engineering training programmes that support the Municipalities' capacity building and poverty alleviation, and</li> <li>• Develop small businesses in rural areas that support the mission of rural development.</li> </ul>





## 11. PROGRAMME RESOURCE CONSIDERATIONS

### 11.1 STATEMENTS OF HISTORICAL FINANCIAL PERFORMANCE AND POSITION

Statement of financial performance	Audited Outcome	Audited Outcome	Audited Outcome	Approved Budget	Average Growth Rate	Expenditure/total: Average	Medium Term Estimate			Average Growth Rate	Expenditure/total average
	2020/21	2021/22	2022/23	2023/24	2020/21-2023/24		2024/25	2025/26	2026/27	2023/24 - 2026/27	
Revenue											
Tax revenue											
Non-tax revenue	8 571	6 380	10 228	6 582	-8,4%	7,9%	13 584	16 183	16 513	35,9%	13,8%
Other non-tax revenue	8 571	6 380	10 228	6 582	-8,4%	7,9%	13 584	16 183	16 513	35,9%	13,8%
Transfers received	80 471	94 597	110 271	84 233	1,5%	92,1%	77 240	80 638	84 379	0,1%	86,2%
<b>Total revenue</b>	<b>89 042</b>	<b>100 977</b>	<b>120 499</b>	<b>90 815</b>	<b>0,7%</b>	<b>100,0%</b>	<b>90 824</b>	<b>96 821</b>	<b>100 892</b>	<b>3,6%</b>	<b>100,0%</b>
Expenses											
Current expenses	74 052	85 412	102 293	90 815	7,0%	100,0%	90 824	96 822	100 892	3,6%	100,0%
Compensation of employees	36 792	32 962	36 850	46 881	8,4%	37,1%	56 067	58 848	61 543	9,5%	58,8%
Goods and services	34 912	52 040	61 642	39 727	4,4%	46,5%	34 257	37 450	38 802	-0,8%	39,7%
Depreciation	2 348	410	3 801	4 207	21,5%	2,6%	500	524	548	-49,3%	1,6%
Interest, dividends and rent on land	-	-	-	-	-	-	-	-	-	-	-
Transfers and subsidies	90 974	-	-	-	-100,0%	13,8%	-	-	-	-	-
<b>Total expenses</b>	<b>165 026</b>	<b>85 412</b>	<b>102 293</b>	<b>90 815</b>	<b>-18,1%</b>	<b>100,0%</b>	<b>90 824</b>	<b>96 822</b>	<b>100 892</b>	<b>3,6%</b>	<b>100,0%</b>
<b>Surplus/(Deficit)</b>	<b>(75 984)</b>	<b>15 565</b>	<b>18 207</b>	<b>-</b>	<b>-100,0%</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	

Table 36

Financial Position	Audited Outcome	Audited Outcome	Audited Outcome	Approved Budget	Average Growth Rate	Expenditure/total: Average	Medium Term Estimate			Average Growth Rate	Expenditure/total average
	2020/21	2021/22	2022/23	2023/24	2020/21-2023/24		2024/25	2025/26	2026/27	2023/24 - 2026/27	
Carrying value of assets	6 764	6 116	13 477	10 966	17,5%	4,4%	10 966	11 624	12 158	3,5%	9,8%
of which:					-	-				-	-
Acquisition of assets	(1 209)	(2 436)	(6 871)	(10 796)	107,5%	-3,2%	(11 187)	(12 526)	(12 500)	5,0%	-10,1%
Receivables and prepayments	4 744	18 044	6 477	1 946	-25,7%	2,7%	1 946	2 063	2 158	3,5%	1,7%
Cash and cash equivalents	260 613	303 784	362 642	99 145	-27,5%	92,9%	99 145	105 094	109 928	3,5%	88,5%
<b>Total assets</b>	<b>272 121</b>	<b>327 944</b>	<b>382 596</b>	<b>112 056</b>	<b>-25,6%</b>	<b>100,0%</b>	<b>112 057</b>	<b>118 780</b>	<b>124 244</b>	<b>3,5%</b>	<b>100,0%</b>
Accumulated surplus/(deficit)	155 890	171 455	189 663	10 965	-58,7%	42,2%	10 966	11 624	12 159	3,5%	9,8%
Unspent conditional grants and receipts	103 411	145 631	175 372	84 068	-6,7%	50,8%	84 068	89 113	93 212	3,5%	75,0%
Trade and other payables	7 227	4 393	10 858	6 485	-3,5%	3,2%	6 485	6 874	7 190	3,5%	5,8%
Provisions	5 593	6 465	6 703	10 537	23,5%	3,8%	10 537	11 169	11 683	3,5%	9,4%
<b>Total equity and liabilities</b>	<b>272 121</b>	<b>327 944</b>	<b>382 596</b>	<b>112 056</b>	<b>-25,6%</b>	<b>100,0%</b>	<b>112 056</b>	<b>118 780</b>	<b>124 244</b>	<b>3,5%</b>	<b>100,0%</b>
Contingent liabilities	-	-	-	-			-	-	-		

Table 37



Expenditure for the organisation is linked to the total amount of income the entity can secure for the implementation of various projects. As a result, significant fluctuations occur year-on-year. Over the previous medium-term period, SANEDI's actual revenue declined versus the budget, mainly due to a reduction in donor funding secured for new projects. Most projects are funded over two to three years, and new funds can only be secured for the next phase once the current phase is completed.

Future projections indicate, and based on our strategy, that in the medium-term there will be average increases in expenditure and revenues because of new projects that will be undertaken, as the entity moves into new phases on some of the existing projects. Specifically, the following projects will have a significant impact on the expenditure estimates:

- The Smart Grids projects,
- Data Knowledge Management,
- Energy Efficiency 12 L project,
- Energy Efficient Wastewater treatment,

- Energy Efficiency in Government buildings, and
- Energy Secretariat.

Cost containment measures will continue to be implemented to contain expenditure.

Administrative expenditure related to Programme 1: Governance and Administration will be expected to increase with inflationary adjustments over the remainder of the medium term as we focus on

improving control efficiencies, and automation of data management processes. Administration will account for under 20% of the total expenditure, not considering the compensation of employees. The expectation in the future years will be that compensation of employees will account for over 50% of the total budget at most, around 50% will be for goods and services, apart from the 2024/25 year as we anticipate increased expenditure from the Energy Secretariat, and this stabilising subsequently to around 50%. We will also be continuing to implement the organisational review recommendations. Core mandate expenditure relating to Programmes 2 and 3, that is Applied Energy Research and Energy Efficiency, will increase especially under the Energy Secretariat programme.

## 11.2 PERSONNEL INFORMATION

Salary level	Post status estimated for 31 March 2024		Number and cost of personnel posts filled/planned for on funded establishment															Number	
	Number of posts on approved establishment	Number of funded posts	Actual			Revised estimates			Medium-term expenditure estimate									Average growth rate of personnel posts (%)	Average salary level Total (%)
			2022/23			2023/24			2024/25			2025/26			2026/27				
			Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost	Number	Cost	Unit cost		
Salary level	65	65	60	36 850	614	64	46 881	733	66	56 067	849	66	58 849	892	66	61 542	932	9,5%	100,0%
1 – 6	24	24	16	4 082	255	24	4 195	175	24	5 831	243	24	6 121	255	24	7 748	323	22,7%	36,6%
7 – 10	26	26	29	14 104	486	25	14 728	589	27	18 397	681	27	19 312	715	27	20 104	745	10,9%	40,4%
11 – 12	4	4	5	4 630	926	4	4 366	1 091	4	4 997	1 249	4	5 246	1 311	4	5 285	1 321	6,6%	6,1%
13 – 16	10	10	9	12 465	1 385	10	19 463	1 946	10	22 129	2 213	10	23 223	2 322	10	23 423	2 342	6,4%	15,3%
17 – 22	1	1	1	1 570	1 570	1	4 129	4 129	1	4 712	4 712	1	4 948	4 948	1	4 982	4 982	6,5%	1,5%

Table 38



### 11.3 COMPENSATION OF EMPLOYEES

Employee compensation costs have historically increased by 6-7%. The inflationary increases of around 5-7% are expected in future for cost-of-living adjustments however significant increases are expected for parity adjustments.

Actual costs amounted to R36 million for the 2022/23 period, as vacancies were filled in both the administrative and technical functions of the entity to cater for new projects.

The expectation in future years will be that they will increase to R56 million in 2024/25, mainly because of proposed amendments to SANEDI's operating model and parity adjustments that will be implemented in line with the revised strategy of the organisation.

In terms of cost pressures, salaries will account for over 60% of the baseline, as SANEDI aims to attract top talent

and a highly skilled workforce. The current allocation is underfunded as these resources cannot be recruited given the current base line salary parity adjustments that were motivated by low salaries in relation to the market and secondly a high turnover of above 10% was experienced annually.

Principles of addressing the salary disparities were set and implemented, this is however a three-year period exercise to fulfil the philosophy of paying employees on the 50th percentile of their grades.

The salary bill for the current year (2023/24) has increased by 21%, with a prediction that the salaries for 2024/25 will increase by the same percentage due to the increase in recruiting for scarce and critical skills and remunerating current scarce and critical skills in relation to the market.

### 11.4 DETAILED BREAKDOWN FOR EMPLOYEE COSTS

Salary level	Actual	Actual	Actual	Budget Estimate	Revised Estimates		
	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27
	Cost	Cost	Cost	Cost	Cost	Cost	Cost
Basic	31 041	31 578	29 798	34 412	42 050	44 750	46 157
Performance bonus	3 844	6 661	5 009	7 168	8 410	8 490	9 217
Medical Aid cc	761	1 400	732	1 514	2 242	2 242	2 461
Provident & Pension	1 146	3 500	1 099	3 786	3 364	3 364	3 707
Total	36 792	32 962	36 638	46 881	56 066	58 846	61 542

Table 39



## 12. KEY RISKS

Risk Management provides an enabling environment in support of the identification, management, and oversight of risks across strategic risks. This role includes ensuring that countering fraud and/or corruption is made an integral part of the organisation's strategy.

RISK #	STRATEGIC OUTCOME	KEY RISK	RISK DEFINITION	RISK MITIGATION
1.	A capacitated, effective, and efficient sustainable operational environment.	Major business interruption.	Inability to adapt to new operating environment, resulting in a weak internal control environment and inefficiencies in operations. Inability to operate from the office/project sites.	<ul style="list-style-type: none"> <li>• Business Continuity Plan</li> <li>• Remote working capabilities (HS Committee and working from home protocols).</li> <li>• Project funding strategies to supplement fiscal funds.</li> <li>• Project planning and monitoring.</li> <li>• Health and Safety Protocols.</li> <li>• Performance managementsystem.</li> <li>• Insurance over assets.</li> <li>• Site visits for external stakeholders and stakeholderengagement.</li> </ul>
2.	A capacitated, effective, and efficient operational environment (within which SANEDI will discharge its Mandate).	Loss of specialised skills within SANEDI.	Lack of expertise to meet the needs of the changing environment (JET). Inability to attract and retain scarce and specialised skills.	Retention and succession plan linked to training and development. Collaborations with other research institutions (CSIR, GIZ, Universities etc.).
3.	A capacitated, effective, and efficient operational environment (withinwhich SANEDI will discharge itsMandate).	Disruption to operational Information Technology systems.	Inability to react timeously to disruptions.	<ul style="list-style-type: none"> <li>• ICT Continuity Plan.</li> <li>• Off-site Disaster Recovery Plan.</li> <li>• Service Level Agreements (SLAs) in place with InformationTechnology (IT) service providers (MTN, hardware providers &amp; Software providers).</li> <li>• Insurance over hardware assets.</li> <li>• End point security for cyberattacks</li> <li>• System documentation and operational architectural designs.</li> </ul>
4.	A capacitated, effective, and efficient operational environment (within which SANEDI will discharge its Mandate) – internal compliance.	Non-adherence to good Corporate Governance.	Key Governance structures are not in place.	Charters reviewed annually. Governance Policy. Exco recommends all relevant aspects to the Board and Board Committees.



## KEY RISKS (Continued)

RISK #	STRATEGIC OUTCOME	KEY RISK	RISK DEFINITION	RISK MITIGATION
5.	A capacitated, effective, and efficient operational environment (within which SANEDI will discharge its Mandate). Internal operational effectiveness and efficiency.	Fraud and corruption.	Illegal or improper acts by employees.	<ul style="list-style-type: none"> <li>Loss of assets and resources.</li> <li>Reputational damage.</li> <li>Possible litigation.</li> <li>Non- achievement of SANEDI Mandate.</li> <li>Disruption of day-to-day business.</li> <li>Low staff morale.</li> <li>Irregular, fruitless and wasteful expenditure.</li> <li>Adverse impact on the external audit opinion.</li> </ul>
6.	All outcomes.	Insufficient funding from the fiscus.	The current trends demonstrate insufficient funding from the fiscus to accommodate growth of SANEDI in terms of building capacity and requisite expertise Multi Stakeholder interdependencies. Unavoidable reliance on external parties for the implementation of strategy.	<ul style="list-style-type: none"> <li>Leveraging external funds (donor funds).</li> <li>Budgetary controls (planning based on available funds, cost containment etc.).</li> <li>Oversight monitoring over budget utilisation. Board Audit and Risk Committee (BARC) and Board.</li> <li>Stakeholder Engagement Plan.</li> <li>Contracts, Memorandum of Agreements (MoAs) and SLAs with all Third Parties.</li> <li>Legal function reviews all contracts.</li> <li>Monitoring of contracts at project level.</li> </ul>
7.	All outcomes.	Inadequate implementation of Stakeholder management.	Inadequate financial resources to effectively implement Stakeholder Management. Evolving Stakeholders groupings in the energy sector.	Stakeholder Engagement Plan.

### 13. PUBLIC-PRIVATE PARTNERSHIPS

SANEDI is not currently part of any formal public-private partnerships as defined by South African law. SANEDI does, however, intend to pursue the establishment of such partnerships, particularly with Metropolitan councils and Municipality involvement. In such a case, a public-private partnership model will be explored to allow the Local Government institution to provide a

concession to SANEDI to develop key projects in their jurisdiction. In the case where a private management company is required to operate a facility allocated to SANEDI on a concessional basis, it intends to establish a public-private partnership to manage such a relationship.



PART D: TECHNICAL INDICATOR DESCRIPTIONS (TIDs)



## 14. TECHNICAL INDICATOR DESCRIPTIONS (TIDs)

### PROGRAMME PERFORMANCE INDICATORS – HUMAN RESOURCES

INDICATOR TITLE	Percentage of training undertaken as per EXCO approved Annual Training Plan
Definition	This indicator tracks development of skills and competencies against approved annual training plan
Source Of Data	HR records of staff training such attendance registers and certificates.
Method Of Calculation / Assessment	The number of training interventions executed ÷ by the number of planned interventions X 100.
Means Of Verification	Training records, attendance records for physical and virtual training.
Assumptions	The training is sponsored by SANEDI and including externally funded. The internally facilitated training is also considered. The approved EXCO training plan will be used as the baseline and any additional training will be included during reporting.
Disaggregation Of Beneficiaries (Where Applicable)	Not Applicable.
Spatial Transformation (Where Applicable)	Not Applicable.
Calculation Type	Cumulative (year-to-date)
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	Responsibility for reporting resides with the HR Manager.

INDICATOR TITLE	PERCENTAGE DEVIATION FROM EMPLOYMENT EQUITY TARGETS
Definition	To track/monitor achievement against SANEDI improved Employment Equity Plan.
Source Of Data	Employment Equity reports.
Method Of Calculation / Assessment	Total white males on staff establishment-planned recruitments of white males)/planned recruitments x 100
Means Of Verification	Employment Equity reports.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Non-cumulative
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in the APP.
Indicator Responsibility	HR Manager.

INDICATOR TITLE	VACANCY RATE OF FUNDED POSITIONS
Definition	To monitor vacancy rate of funded positions prioritised by EXCO in a stipulated period
Source Of Data	Organisation structure, HR records on vacant positions.
Method Of Calculation / Assessment	Number of funded vacancies prioritised by EXCO in a stipulated period ÷ number of funded positions in the organisation x 100.
Means Of Verification	Proof of funded positions, vacant positions prioritised by EXCO per reporting period.
Assumptions	The assessment will consider vacancies that are older than three months.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Non-cumulative
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in APP.
Indicator Responsibility	HR Manager.

## PROGRAMME PERFORMANCE INDICATORS – FINANCE

INDICATOR TITLE	EXTERNAL AUDIT OUTCOME
Definition	Strengthening of Governance to ensure the organisation achieves an unqualified audit.
Source Of Data	Auditor General (AG) report.
Method Of Calculation / Assessment	Simple count of “Unqualified audit opinion obtained.
Means Of Verification	Audit opinion from external auditors.
Assumptions	None.
Disaggregation Of Beneficiaries (Where Applicable)	Not Applicable.
Spatial Transformation (Where Applicable)	Not Applicable.
Calculation Type	Non-cumulative
Reporting Cycle	Annually.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	CFO.

INDICATOR TITLE	% SPENT OF THE VOTE ALLOCATION
Definition	This indicator measures the percentage of the allocated budget (Vote allocation) that has been expended within a specific timeframe. It assesses the financial utilization efficiency of the allocated resources for a particular project, programme, or organisational activity.
Source Of Data	Data for this indicator is sourced from financial records, accounting systems, and budget reports maintained by the organization.
Method Of Calculation / Assessment	The calculation involves dividing the total amount spent (expenditures) by the allocated budget (Vote allocation) and then multiplying the result by 100 to obtain the percentage spent.
Means Of Verification	Verification is done through financial audits, reconciliations, and reviews of financial statements. Detailed expenditure records are compared against the budget allocation to ensure accuracy.
Assumptions	None.
Disaggregation Of Beneficiaries (Where Applicable)	Not Applicable.
Spatial Transformation (Where Applicable)	Not Applicable.
Calculation Type	Cumulative (year-to- date).
Reporting Cycle	Annually.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	CFO.



**PROGRAMME PERFORMANCE INDICATOR – SUPPLY CHAIN MANAGEMENT**

INDICATOR TITLE	PROCUREMENT AS PER THE PROCUREMENT PLAN
Definition	It measures the extent to which the procurement plan is executed to ensure the achievement of all other strategic objectives in a financial year.
Source Of Data	Procurement documents/records.
Method Of Calculation / Assessment	Number of awards completed within procurement cycle ÷ total number of approved transactions per the approved procurement plan submitted to treasury at the beginning of the financial year x 100.
Means Of Verification	Register of issued tenders, procurement plan , e-tender portal
Assumptions	The assumptions are that SANEDI will measure the Bids that went to market irrespective of whether the award was successfully concluded or not at the point of measurement to exclude market externalities it cannot control. Additional transactions that originate during the year, not part of the original plan, will be included in the numerator for the purposes of determining whether or not the organisation has achieved its target.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	Chief Financial Officer (CFO).

INDICATOR TITLE	% BIDS AWARDED TO B-BBEE STATUS SERVICE PROVIDERS
Definition	This indicator tracks bids that are awarded to B-BBEE status service providers
Source Of Data	Bids database/records
Method Of Calculation / Assessment	Number of bids awarded to B-BBEE status service providers ÷ total number of bids awarded x 100.
Means Of Verification	Bids database/records
Assumptions	None.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to- date).
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	CFO.

INDICATOR TITLE	% PROCUREMENT FROM YOUTH & WOMEN
Definition	This indicator tracks procured services from youth and woman
Source Of Data	Bids database/records
Method Of Calculation / Assessment	Procured services to youth and women ÷ total number of procured services x 100.
Means Of Verification	Bids database/records
Assumptions	None.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to- date).
Reporting Cycle	Annual.
Desired Performance	Achieving targets as set in APP for the relevant period.
Indicator Responsibility	CFO.

**PROGRAMME PERFORMANCE INDICATORS – COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT**

<b>INDICATOR TITLE</b>	<b>COMMUNICATIONS AND STAKEHOLDER ENGAGEMENT STRATEGY AND PLAN REVIEWED AND APPROVED</b>
Definition	This indicator tracks the availability of an approved Communications and Stakeholder Engagement Strategy.
Source Of Data	Communications and Stakeholder Engagement Strategy.
Method Of Calculation / Assessment	Simple count of the number of approved strategies.
Means Of Verification	Proof of submissions of reviewed Communications and Stakeholder Engagement Strategy and plan.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Annual.
Desired Performance	Target to be achieved as set in the APP.
Indicator Responsibility	Communications and Stakeholder Engagement Manager.

<b>INDICATOR TITLE</b>	<b>EXTERNAL AND/OR INTERNAL (within SANEDI) NEWSLETTERS</b>
Definition	The regular dissemination of external and/or internal updates and newsletters to relevant stakeholders, the public and employees to provide information about the organization's activities, achievements, or developments.
Source Of Data	Records of newsletters, communication logs, and distribution lists.
Method Of Calculation / Assessment	Count of Newsletters produced.
Means Of Verification	Records of external/internal updates and newsletters.
Assumptions	Assumes that the organization has established a communication plan and follows it to disseminate updates and newsletters.
Disaggregation Of Beneficiaries (Where Applicable)	Specify the relevant stakeholders or target audience for each update or newsletter if necessary.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly
Desired Performance	Effective and timely communication with stakeholders or the public through external updates and newsletters, meeting the organization's communication objectives.
Indicator Responsibility	Communication team or responsible individuals managing external communication activities.

INDICATOR TITLE	NUMBER OF MEDIA ENGAGEMENTS (media releases)
Definition	Media engagements activities such as releases and briefings are designed to disseminate information to the general public, where SANEDI is a thought leader in energy research and Energy Efficiency (EE).
Source Of Data	Media releases and briefings statements.
Method Of Calculation / Assessment	Simple count of the number of media releases and briefings.
Means Of Verification	Proof of media count of media releases and briefings i.e Briefings video or audio output and releases statement.
Assumptions	The indicator is used to measure the rate at which SANEDI is disseminating information to the general public.
Disaggregation Of Beneficiaries (Where Applicable)	Not Applicable.
Spatial Transformation (Where Applicable)	Not Applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets set in the APP for the relevant period.
Indicator Responsibility	Communication and Stakeholder Engagement Manager

INDICATOR TITLE	REPORT DETAILING NUMBER OF KEY STAKEHOLDER ENGAGEMENTS (linked to Strategy)
Definition	The count of meaningful engagements with key stakeholders that are directly related to the organization's strategic goals and initiatives.
Source Of Data	Records of stakeholder meetings, correspondence, and engagement reports.
Method Of Calculation / Assessment	Count the number of engagements with key stakeholders that are clearly linked to the organization's strategic objectives.
Means Of Verification	Review records of stakeholder engagements and correspondence to confirm their alignment with strategic goals.
Assumptions	Assumes that the organization has identified key stakeholders and documented their strategic relevance in engagement activities.
Disaggregation Of Beneficiaries (Where Applicable)	Specify the categories or types of key stakeholders engaged with, if necessary.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Typically, quarterly or annually, but the frequency can vary based on the organization's strategic planning cycle.
Desired Performance	The number of engagements should align with the organization's strategic objectives. The specific target may vary based on the strategic plan and goals.
Indicator Responsibility	Stakeholder Engagement team, Strategy Department, or individuals responsible for managing strategic stakeholder interactions.

## PROGRAMME PERFORMANCE INDICATORS – PROJECT MANAGEMENT OFFICE

INDICATOR TITLE	REPORT DETAILING PROGRESS AND BUDGET SPENT ON THE PROJECTS
Definition	The indicator details the progress on SANEDI's projects.
Source Of Data	Project management records, timelines, and completion reports.
Method Of Calculation / Assessment	Count of reports.
Means Of Verification	Report detailing the progress on the projects.
Assumptions	Assumes that project timelines are accurately defined and that project management processes are in place.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date)
Reporting Cycle	Typically assessed periodically, such as quarterly or annually, to monitor trends in project on-time delivery.
Desired Performance	The organization aims for a high percentage of projects delivered on time, indicating effective project management and execution. Specific targets may vary based on project complexity and organizational goals.
Indicator Responsibility	Project Managers, Project Management Office (PMO), or individuals responsible for tracking and reporting project timelines.

## PROGRAMME PERFORMANCE INDICATORS – CORPORATE PLANNING, MONITORING AND EVALUATION

INDICATOR TITLE	QUARTERLY REPORTS APPROVED BY THE BAORD AND SUBMITTED TO THE SHAREHOLDER
Definition	Confirmation and approval of the organization's Quarterly Performance Reports by authorised parties, signifying their endorsement of the plan's objectives and targets.
Source Of Data	Official records of the signed-off Quarterly Report document and approval documentation.
Method Of Calculation / Assessment	Simple count of a report.
Means Of Verification	records of the signed-off Report, including signatures and approval documentation.
Assumptions	Assumes that the organization has a formal process for developing and approving the Report, including obtaining signatures from authorized parties.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quartely
Desired Performance	100% sign-off and approval of the Report by the relevant authorities, indicating full endorsement of the plan's objectives and targets.
Indicator Responsibility	The department or individuals responsible for developing and obtaining approvals for the Report, typically within the organization's planning or strategy department

## PROGRAMME PERFORMANCE INDICATORS – ICT

INDICATOR TITLE	ICT VULNERABILITY ASSESSMENT AND PENETRATION TEST
Definition	Conduct an ICT Vulnerability and Penetration test with the SANEDI ICT head office environment
Source Of Data	Network Penetration Report
Method Of Calculation / Assessment	1 Internal report and 1 External report/plan
Means Of Verification	1 Internal report and 1 External report/plan
Assumptions	None
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date)
Reporting Cycle	Quarterly
Desired Performance	Achieving targets as set in the APP
Indicator Responsibility	ICT Manager

INDICATOR TITLE	ICT GOVERNANCE MATURITY ASSESSMENT
Definition	Conduct an ICT Governance Maturity assessment with SANEDI.
Source Of Data	Maturity assessment report.
Method Of Calculation / Assessment	Level 3: Full Conformance ÷ Total Practices x 100.
Means Of Verification	Maturity assessment report.
Assumptions	Quarterly.
Disaggregation Of Beneficiaries (Where Applicable)	Resources are available.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Calculation Type	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Reporting Cycle	Cumulative (year-to-date).
Desired Performance	Quarterly
Indicator Responsibility	Achieving targets as set in the APP.
	IT Manager.

### PROGRAMME PERFORMANCE INDICATORS – COSEC, GOVERNANCE, LEGAL, RISKS & COMPLIANCE

INDICATOR TITLE	QUARTERLY REVIEW OF STRATEGIC AND OPERATIONAL RISKS
Definition	This indicator monitors risk environment and tracks mitigated risks.
Source Of Data	Quarterly review of strategic risks and operational risks.
Method Of Calculation / Assessment	Simple count of reports.
Means Of Verification	Quarterly review of strategic risks and operational risks.
Assumptions	Not applicable.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date).
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in the APP.
Indicator Responsibility	Company Secretary

INDICATOR TITLE	COMPLIANCE UNIVERSRE REPORT
Definition	This indicator monitors compliance with applicable laws and legislation
Source Of Data	Compliance universe report
Method Of Calculation / Assessment	Simple count of report
Means Of Verification	Compliance universe report
Assumptions	Not applicable.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date).
Reporting Cycle	Quarterly.
Desired Performance	Achieving targets as set in the APP.
Indicator Responsibility	Company Secretary

## 14.1 PROGRAMME 1: STRATEGIC INITIATIVES

### PROGRAMME PERFORMANCE INDICATORS – INTELLECTUAL PROPERTY AND COMMERCIALISATION

INDICATOR TITLE	NUMBER OF INTELLECTUAL PROPERTY RIGHTS (IPR's) FILED WITHIN THE ENERGY SECTOR*
Definition	The count of intellectual property rights (IPRs) filed within the energy sector by SANEDI. IPRs include patents, trademarks, copyrights, or any other legally recognized intellectual property protection.
Source Of Data	Records of filed IPR applications, legal documents, or intellectual property databases.
Method Of Calculation / Assessment	Count the report detailing number of IPR applications filed by SANEDI within the energy sector during a specified reporting period.
Means Of Verification	Review IPR filing records, legal documentation, or intellectual property databases to confirm the number of filings within the energy sector.
Assumptions	Assumes that SANEDI maintains accurate records of IPR filings and their relevance to the energy sector.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Typically assessed periodically, such as annually, to monitor trends in IPR filings.
Desired Performance	SANEDI may set specific targets based on its innovation and intellectual property strategies. The indicator helps assess SANEDI's efforts in protecting its intellectual property within the energy sector.
Indicator Responsibility	Office of the CEO

INDICATOR TITLE	NUMBER OF BUSINESS CASES LINKED TO INTELLECTUAL PROPERTY APPLICATIONS IN THE ENERGY SECTOR*
Definition	This indicator measures the number of business cases within the energy sector that are directly associated with intellectual property applications. Intellectual property applications include patents, trademarks, copyrights, and trade secrets related to innovations in the energy sector.
Source Of Data	Data for this indicator is sourced from government patent offices, intellectual property databases, and energy sector organizations.
Method Of Calculation / Assessment	Simple count report detailing business cases
Means Of Verification	Verification is done through cross-referencing information from patent databases, intellectual property offices, and energy sector organizations. Confirmation of intellectual property applications is obtained through official records and documentation.
Assumptions	Assumes accurate and up-to-date record-keeping by patent offices and energy sector entities.
Disaggregation Of Beneficiaries (Where Applicable)	Business cases can be disaggregated by energy sub-sector, type of intellectual property (patents, trademarks, etc.), and geographic location.
Spatial Transformation (Where Applicable)	Not applicable for this indicator.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Annually.
Desired Performance	An increase in the number of business cases linked to intellectual property applications in the energy sector, indicating a growing culture of innovation and protection of intellectual property rights.
Indicator Responsibility	Office of the CEO

## PROGRAMME PERFORMANCE INDICATORS – LOCAL, REGIONAL, AND INTERNATIONAL ENERGY PARTNERS

INDICATOR TITLE	NUMBER OF NEW ENERGY PARTNERS
Definition	The count of new energy partners or collaborators that SANEDI has established relationships with within a specified reporting period. Energy partners can include other organizations, companies, or entities involved in energy-related initiatives, projects, or collaborations.
Source of Data	Records of new energy partnerships, collaboration agreements, or partnership databases.
Method of Calculation/Assessment	Count report detailing the number of new energy partnerships or collaborations initiated by SANEDI during the reporting period.
Means of Verification	Review partnership agreements, collaboration records, or relevant documentation to confirm the establishment of new energy partnerships.
Assumptions	Assumes that SANEDI maintains accurate records of new energy partnerships and collaborations.
Disaggregation of Beneficiaries	Not applicable.
Spatial Transformation (If applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Typically assessed periodically, such as quarterly or annually, to monitor trends in new energy partnerships.
Desired Performance	SANEDI may set specific targets based on its strategic goals and objectives for expanding energy-related collaborations. The indicator helps assess SANEDI's ability to establish productive partnerships within the energy sector.
Indicator Responsibility	Office of the CEO

## PROGRAMME PERFORMANCE INDICATORS – SMME'S AND ENTERPRISE DEVELOPMENT

INDICATOR TITLE	NUMBER OF SMMEs SUPPORTED AND/OR ASSISTED WITH BUSINESS DEVELOPMENT AND COMMERCIALISATION IN THE ENERGY SECTOR
Definition	SANEDI's initiatives and activities aimed at supporting Small, Medium, and Micro-sized Enterprises (SMMEs) and promoting their development and growth. This can include various forms of support, such as training, mentorship, financial assistance, or partnerships.
Source Of Data	Records of SMME development programmes, financial reports, partnership agreements, and documentation related to enterprise development initiatives.
Method Of Calculation / Assessment	Count report detailing SMMEs supported and/or assisted with business development and commercialisation in the energy sector
Means Of Verification	Review programme records, financial reports, success stories, and feedback from SMMEs to evaluate the impact of enterprise development efforts.
Assumptions	Assumes that SANEDI implements and maintains effective SMME and enterprise development programmes and accurately records their outcomes.
Disaggregation Of Beneficiaries (Where Applicable)	Specify the categories or types of SMMEs and enterprises that benefit from the development initiatives if necessary.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Periodically assessed, with reporting frequency depending on the specific initiatives and programmes in place.
Desired Performance	SANEDI aims to foster the growth and sustainability of SMMEs, potentially measured through factors such as job creation, revenue growth, and positive feedback from beneficiaries. Specific targets may vary based on organizational goals.
Indicator Responsibility	Office of the CEO

## PROGRAMME PERFORMANCE INDICATORS – TECHNICAL SKILLS DEVELOPMENT

INDICATOR TITLE	NUMBER OF UNEMPLOYED TVET AND UNIVERSITY TECHNOLOGY STUDENTS TRAINED IN THE ENERGY SECTOR*
Definition	The count of unemployed Technical and Vocational Education and Training (TVET) and university technology students who have undergone training programmes within the energy sector. This training aims to enhance their skills and employability in energy-related fields.
Source Of Data	Records of training programmes, enrolment data, completion records, and participant information.
Method Of Calculation / Assessment	Count report detailing the number of unemployed TVET and university technology students who successfully completed training programmes within the energy sector during the reporting period.
Means Of Verification	Review training programme records, enrolment lists, completion certificates, and participant information to confirm the number of trained students.
Assumptions	Assumes that SANEDI conducts training programmes for unemployed students and accurately records their participation and completion.
Disaggregation Of Beneficiaries (Where Applicable)	Specify the categories or types of training programmes or specialisations within the energy sector if necessary.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Typically assessed periodically, such as annually, to monitor the impact of training initiatives on unemployment.
Desired Performance	SANEDI may set specific targets for the number of students trained, aiming to reduce unemployment rates among TVET and university technology graduates. The indicator helps assess SANEDI's contribution to enhancing employability in the energy sector.
Indicator Responsibility	Training and Development team, HR department, or individuals responsible for planning and conducting training programmes for unemployed students in the energy sector.

INDICATOR TITLE	NUMBER OF OPERATING/EMPLOYED TECHNICIANS/ARTISANS SUPPORTED*
Definition	This indicator measures the number of technicians and artisans within a specific sector or industry who receive support in the form of training, resources, or employment opportunities, leading to their active employment or operation in relevant roles.
Source Of Data	Data for this indicator is collected from vocational training institutions, employment records of relevant industries, government agencies, and industry associations.
Method Of Calculation / Assessment	Count a report detailing No. of operating/employed technicians/artisans supported
Means Of Verification	Verification is done through employment records, training completion certificates, and reports from vocational training institutions. Employers' records and industry association reports are also used to verify employment and operational status.
Assumptions	Assumes that the support provided directly contributes to the employment or active operation of technicians and artisans. Also assumes accurate reporting and record-keeping by vocational training institutions and employers.
Disaggregation Of Beneficiaries (Where Applicable)	Beneficiaries can be disaggregated by type of support received (training, resources, employment), specific technical or artisanal skills, gender, age group, and geographical location.
Spatial Transformation (Where Applicable)	Not applicable for this indicator.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly or semi-annually, depending on the availability of data and the nature of support programmes.
Desired Performance	An increase in the number of operating/employed technicians/artisans supported, indicating successful skill development programmes and enhanced employment opportunities within the specific sector or industry.
Indicator Responsibility	Office of the CEO



## PROGRAMME PERFORMANCE INDICATORS – TECHNICAL SKILLS DEVELOPMENT CONTINUED

INDICATOR TITLE	NUMBER OF UNEMPLOYED TECHNICIANS/ARTISANS SUPPORTED*
Definition	This indicator measures the number of unemployed technicians and artisans within a specific sector or industry who receive support in the form of training, resources, or programmes designed to enhance their skills and employability, leading to potential future employment opportunities.
Source Of Data	Data for this indicator is collected from government employment agencies, vocational training institutions, skill development programmes, and NGOs providing support to unemployed technicians and artisans.
Method Of Calculation / Assessment	Count Report detailing No. of unemployed technicians/artisans supported
Means Of Verification	Verification is done through participation records, training completion certificates, and reports from vocational training institutions and support programme organizers.
Assumptions	Assumes that the support provided contributes to the enhancement of skills and employability of unemployed technicians and artisans. Also assumes accurate reporting and record-keeping by vocational training institutions and support programme organisers.
Disaggregation Of Beneficiaries (Where Applicable)	Beneficiaries can be disaggregated by type of support received (training, resources, counselling), specific technical or artisanal skills, gender, age group, and geographical location.
Spatial Transformation (Where Applicable)	Not applicable for this indicator.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly or semi-annually, depending on the duration and nature of the support programmes.
Desired Performance	An increase in the number of unemployed technicians/artisans supported, indicating successful implementation of skill development programmes and increased opportunities for unemployed individuals to enter the workforce.
Indicator Responsibility	Office of the CEO

## PROGRAMME PERFORMANCE INDICATORS – ENERGY TECHNICAL SUPPORT FOR SA PARTICIPATION IN BRICS, G20, G7, AU ETC.,'

INDICATOR TITLE	NUMBER OF INTER-GOVERNMENTAL FORUMS WHERE SANEDI PROVIDES SUPPORT (i.e., documentation, presentations, attendance, etc.)
Definition	The count of intergovernmental forums or meetings for which SANEDI has provided support. Support may include providing documentation, making presentations, attending meetings, or any other assistance to facilitate the functioning of such forums.
Source Of Data	Records of supported intergovernmental forums, meeting minutes, presentation materials, attendance logs, and related documentation.
Method Of Calculation / Assessment	Report number of intergovernmental forums or meetings for which SANEDI has provided support during the reporting period.
Means Of Verification	Review records of supported forums, meeting minutes, presentation materials, and attendance logs to confirm the number of instances where support was provided.
Assumptions	Assumes that SANEDI actively engages with intergovernmental forums and accurately records the support provided.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Typically assessed periodically, such as quarterly or annually, to monitor SANEDI's engagement with intergovernmental forums.
Desired Performance	SANEDI may set specific targets for the number of intergovernmental forums supported, aiming to contribute to

	collaborative efforts and policy development. The indicator helps assess SANEDI's commitment to intergovernmental cooperation.
Indicator Responsibility	Office of the CEO

## 14.2 PROGRAMME 2: APPLIED ENERGY RESEARCH, DEVELOPMENT & INNOVATION - PERFORMANCE INDICATORS

### PROGRAMME PERFORMANCE INDICATORS – CLEANER FUELS & RELATED TECHNOLOGIES

INDICATOR TITLE	NUMBER OF ENERGY SOLUTIONS ASSESSED EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES
Definition	Assess and/or demonstrate energy solutions for relevance in South Africa.
Source Of Data	As confirmed by (i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Method Of Calculation / Assessment	Count of energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or technology roadmaps and demonstration projects/facilities
Means Of Verification	energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or technology roadmaps and demonstration projects/facilities
Assumptions	Sufficient funding provided.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP or more.
Indicator Responsibility	General Manager (GM).

INDICATOR TITLE	NUMBER OF APPROVED ANNUAL ENERGY INDUSTRY STATUS REPORT
Definition	A report on annual energy industry status report .
Source Of Data	Report.
Method Of Calculation / Assessment	Count of a report.
Means Of Verification	Report on annual energy industry status report .
Assumptions	Sufficient data and information are available, accessible and provided.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Annual.
Desired Performance	Achieve at least the stated target in the APP or more.
Indicator Responsibility	GM.

### PROGRAMME PERFORMANCE INDICATORS – CLEAN ENERGY (RENEWABLE ENERGY)

INDICATOR TITLE	NUMBER OF ENERGY SOLUTIONS ASSESSED EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES OR TECHNOLOGY ROPADMAPS AND DEMONSTRATION PROJECTS/FACILITIES
Definition	Assess and/or demonstrate energy solutions for relevance in South Africa.
Source Of Data	As confirmed by (i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Method Of Calculation / Assessment	Count of energy solutions assessed either advisory notes or feasibility reports or study reports or case studies or

	technology roadmaps and demonstration projects/facilities
Means Of Verification	i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Assumptions	Sufficient funding provided.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP or more.
Indicator Responsibility	GM.

<b>INDICATOR TITLE</b>	<b>NUMBER OF ENERGY-RELATED KNOWLEDGE SHARING EVENTS/PLATFORMS ENGAGED IN EITHER HOSTED BY SANEDI OR ATTENDED BY SANEDI STAFF OR KNOWLEDGE PRESENTED BY SANEDI STAFF</b>
Definition	This indicator tracks the hosting of industry knowledge sharing events and platforms to promote energy-related market/industry development.
Source Of Data	Knowledge sharing events records (registers, recordings, pictures, etc.).
Method Of Calculation / Assessment	Count of knowledge sharing events hosted.
Means Of Verification	Knowledge sharing events records (registers, recordings, pictures, etc.).
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP or better.
Indicator Responsibility	GM.

#### **PROGRAMME PERFORMANCE INDICATORS – CLEAN ENERGY (RENEWABLE ENERGY)**

<b>INDICATOR TITLE</b>	<b>MINIMUM NUMBER OF ENERGY-RELATED DATASETS MAINTAINED PER ANNUM</b>
Definition	This indicator tracks maintenance (update and expand) of energy-related datasets.
Source Of Data	Datasets.
Method Of Calculation / Assessment	Count of data sets.
Means Of Verification	Energy-related data sets.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Annual.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM.

## PROGRAMME PERFORMANCE INDICATORS – SMART GRIDS

INDICATOR TITLE	NUMBER OF ENERGY SOLUTIONS ASSESSED BY EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES, OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES
Definition	To track the number of energy solutions assessed for relevance to local applications.
Source Of Data	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, and (vi) Operational demonstration facilities/projects or pilots that document an assessed EE solution.
Method Of Calculation / Assessment	Count of energy solutions assessed.
Means Of Verification	Proof of (i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, and (vi) Operational demonstration facilities/projects or pilots that document an assessed EE solution.
Assumptions	Outputs not published or released to the public or intended recipients because of Government moratorium, preference, or sensitivity of content.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM.

INDICATOR TITLE	NUMBER OF APPROVED ANNUAL ENERGY INDUSTRY STATUS REPORTS
Definition	This indicator tracks annual energy industry insight (trends) publication reflecting insights from extensive International and National collaboration, interfacing and forums produced annually.
Source Of Data	Published industry insights
Method Of Calculation / Assessment	Simple count of reports.
Means Of Verification	Published industry insights.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Annually.
Desired Performance	Achieve the stated target in APP.
Indicator Responsibility	Respective GM.

## PROGRAMME PERFORMANCE INDICATORS – DATA AND KNOWLEDGE MANAGEMENT AND ENERGY MODELLING

INDICATOR TITLE	NUMBER OF ENERGY SOLUTIONS ASSESSED BY EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES, OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES
Definition	This indicator tracks the production of detailed analytical reports containing data and insights for priority energy-related sectors and/or sub-sectors.
Source Of Data	Industrial EE project records, Relevant Economic Classification study articles.
Method Of Calculation / Assessment	Simple counting of energy solutions assessed
Means Of Verification	Sector reports.

Assumptions	None.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM

<b>INDICATOR TITLE</b>	<b>NUMBER OF APPROVED ANNUAL ENERGY INDUSTRY STATUS REPORTS</b>
Definition	This indicator tracks annual energy industry insight (trends) publication reflecting insights from extensive International and National collaboration, interfacing and forums produced annually.
Source Of Data	Published industry insights
Method Of Calculation / Assessment	Simple count of approved annual Energy Industry Status Reports..
Means Of Verification	Published industry insights.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Cumulative (year to date)
Desired Performance	Achieve the stated target in APP.
Indicator Responsibility	Respective GM

## PROGRAMME PERFORMANCE INDICATORS – CLEANER MOBILITY

<b>INDICATOR TITLE</b>	<b>NUMBER OF ENERGY SOLUTIONS ASSESSED BY EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES, OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES</b>
Definition	Assess and/or demonstrate energy solutions for relevance in South Africa.
Source Of Data	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Method Of Calculation / Assessment	Count of energy solutions assessed
Means Of Verification	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Assumptions	Outputs not published or released to the public or intended recipients because of Government moratorium, preference, or sensitivity of content.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM

<b>INDICATOR TITLE</b>	<b>ANNUAL ENERGY INDUSTRY INSIGHT (Trends) PUBLICATIONS REFLECTING INSIGHTS FROM EXTENSIVE INTERNATIONAL AND NATIONAL COLLABORATION, INTERFACING AND FORUMS</b>
Definition	Annual energy industry insight (trends) publication reflecting insights from extensive international and national collaboration, interfacing and forums produced annually.
Source Of Data	Published industry insights.
Method Of Calculation / Assessment	Count of energy industry insight (Trends) publications reflecting insights from extensive International and National collaboration, interfacing, and forums.
Means Of Verification	Published industry insights.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GMs, responsibility for final publication resides with the CEO of SANEDI.

#### PROGRAMME PERFORMANCE INDICATORS – CLEANER MOBILITY (Continued)

<b>INDICATOR TITLE</b>	<b>NUMBER OF ENERGY-RELATED KNOWLEDGE SHARING EVENTS/PLATFORMS ENGAGED IN EITHER HOSTED BY SANEDI OR ATTANDED BY SANEDI STAFF OR KNOWLEDGE PRESENTED BY SANEDI STAFF</b>
Definition	This indicator tracks the hosting of industry knowledge sharing events and platforms to promote energy-related market/industry development.
Source Of Data	Knowledge sharing events records. (Registers, recordings, pictures, etc.).
Method Of Calculation / Assessment	Count of knowledge sharing events hosted.
Means Of Verification	Registers, recordings, pictures of Knowledge sharing events records.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM.

#### PROGRAMME PERFORMANCE INDICATORS – BALANCING ENERGY SUPPLY AND DEMAND

<b>INDICATOR TITLE</b>	<b>NUMBER OF ENERGY SOLUTIONS ASSESSED BY EITHER ADVISORY NOTES OR FEASABILITY REPORTS OR STUDY REPORTS OR CASE STUDIES, OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES</b>
Definition	Assess and/or demonstrate energy solutions for relevance in South Africa.
Source Of Data	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Method Of Calculation / Assessment	Count of Number of energy solutions assessed either Advisory notes or Feasibility Reports or Study Reports or Case studies, or Technology Roadmaps and Demonstration projects/ facilities
Means Of Verification	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.

Assumptions	Outputs not published or released to the public or intended recipients because of Government moratorium, preference, or sensitivity of content.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM

#### PROGRAMME PERFORMANCE INDICATORS - BIOFUELS

<b>INDICATOR TITLE</b>	<b>NUMBER OF ENERGY SOLUTIONS ASSESSED BY EITHER ADVISORY NOTES OR FEASIBILITY REPORTS OR STUDY REPORTS OR CASE STUDIES, OR TECHNOLOGY ROADMAPS AND DEMONSTRATION PROJECTS/FACILITIES</b>
Definition	Assess and/or demonstrate energy solutions for relevance in South Africa.
Source Of Data	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Method Of Calculation / Assessment	Count of Number of energy solutions assessed either Advisory notes or Feasibility Reports or Study Reports or Case studies, or Technology Roadmaps and Demonstration projects/facilities.
Means Of Verification	(i) Advisory notes, (ii) Feasibility Reports, (iii) Complete Study Reports, (iv) Case studies, (v) Technology Roadmaps, (vi) Operational demonstration facilities/ projects, pilot studies among others, (vii) Business cases, and (viii) Proof of concepts.
Assumptions	Outputs not published or released to the public or intended recipients because of Government moratorium, preference, or sensitivity of content.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM

#### 14.3 PROGRAMME 3: ENERGY EFFICIENCY - PERFORMANCE INDICATORS PROGRAMME PERFORMANCE INDICATORS – SECTION 12L TAX INCENTIVES

<b>INDICATOR TITLE</b>	<b>12L EE TAX CERTIFICATES ISSUED</b>
Definition	Assess EE solutions for relevance to local applications.
Source Of Data	Section 12L projects fully approved and Tax Certificates issued.
Method Of Calculation / Assessment	Count of EE solutions implemented including Section 12L projects fully approved and Tax Certificates issued.
Means Of Verification	Proof of approved 12L projects and issued Tax Certificates.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Spatial Transformation (Where Applicable)	specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM for EE.

INDICATOR TITLE	GHG EMISSIONS REDUCED (Mega tonnes CO <sub>2</sub> )
Definition	To track the reduction of GHG emissions because of Section 12L projects and Cool Surface product application.
Source Of Data	Online data repository dedicated for Section 12L tax incentives applications and procurement documents for Cool Surface.
Method Of Calculation / Assessment	Report on GHG emissions reduced
Means Of Verification	Report on GHG emissions reduced
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Spatial Transformation (Where Applicable)	
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GMs for EE.

#### PROGRAMME PERFORMANCE INDICATORS – SECTION 12L TAX INCENTIVES CONTINUED

INDICATOR TITLE	NUMBER OF EE ENERGY-RELATED DATASETS (12L) MAINTAINED PER ANNUM
Definition	This a collection of related sets of information on an Excel sheet relevant to particular project/research work or topic or area.
Source Of Data	Datasets developed and maintained. Databases must reflect the reported outputs Quarterly, Annual and performance from Programme/ Project Inspection. The Database can be manual (Excel spreadsheet) or from an automated system
Method Of Calculation / Assessment	Simple count of datasets maintained.
Means Of Verification	Proof of maintained data sets.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Spatial Transformation (Where Applicable)	
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GMs for EE.

#### PROGRAMME PERFORMANCE INDICATORS – ENERGY PERFORMANCE CERTIFICATES (EPC)

INDICATOR TITLE	A REPORT DETAILING THE NUMBER OF NEW EE SOLUTIONS (EPCs) ASSESSED
Definition	To track the number of energy solutions assessed for relevance to local applications.
Source Of Data	Report
Method Of Calculation / Assessment	Count of reports.
Means Of Verification	Report detailing number of new EE Solutions (EPCs) assessed
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the



Spatial Transformation (Where Applicable)	disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM for EE.

INDICATOR TITLE	NUMBER OF EE ENERGY-RELATED DATASETS (EPCs) MAINTAINED PER ANNUM
Definition	This a collection of related sets of information on an Excel sheet relevant to particular project/research work or topic or area.
Source Of Data	Datasets developed and maintained. Databases must reflect the reported outputs Quarterly, Annual and performance from Programme/ Project Inspection. The Database can be manual (Excel spreadsheet) or from an automated system
Method Of Calculation / Assessment	Simple count of datasets maintained.
Means Of Verification	Proof of maintained data sets.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should
Spatial Transformation (Where Applicable)	specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM for EE.

#### PROGRAMME PERFORMANCE INDICATORS – ESCO MARKET DEVELOPMENT

INDICATOR TITLE	NUMBER OF EE ENERGY-RELATED DATASETS (ESCO) MAINTAINED PER ANNUM
Definition	This a collection of related sets of information on an Excel sheet relevant to particular project/research work or topic or area.
Source Of Data	Datasets developed and maintained. Databases must reflect the reported outputs Quarterly, Annual and performance from Programme/ Project Inspection. The Database can be manual (Excel spreadsheet) or from an automated system
Method Of Calculation / Assessment	Simple count of datasets maintained.
Means Of Verification	Proof of maintained data sets.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GM for EE.

INDICATOR TITLE	A REPORT DETAILING THE NUMBER OF RECIPIENTS OF ENERGY- RELATED TRAINING FACILITATED (excluding SANEDI staff)
Definition	This indicator tracks the training offered or facilitated by SANEDI.
Source Of Data	Report
Method Of Calculation / Assessment	Count of recipients of energy-related training facilitated (excluding SANEDI staff).
Means Of Verification	Report detailing recipients of energy-related training facilitated (excluding SANEDI staff).
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial

Spatial Transformation (Where Applicable)	transformation (municipalities, gender, jobs created, woman, people with disabilities).
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	Respective GM.

#### PROGRAMME PERFORMANCE INDICATORS – STANDARDS AND LABELLING

INDICATOR TITLE	A REPORT DETAILING THE NUMBER OF NEW EE SOLUTIONS (Standards & Labelling) IMPLEMENTED
Definition	Assess EE solutions for relevance to local applications.
Source Of Data	Report
Method Of Calculation / Assessment	Count of reports.
Means Of Verification	Report detailing number of new EE solutions (standards and labelling) implemented
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable. A report detailing number of new EE Solutions assessed should specify spatial transformation (municipalities, gender, jobs created, woman, people with disabilities)
Spatial Transformation (Where Applicable)	
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in APP or better.
Indicator Responsibility	GMs for EE.

#### PROGRAMME PERFORMANCE INDICATORS – DMRE STRATEGIC INITIATIVES

INDICATOR TITLE	APPROVED REPORT DETAILING THE NIUMBER OF DMRE STRATEGIC INITIATIVE IMPLEMENTATION
Definition	Strategic initiatives implemented for the Department of Mineral Resources and Energy (DMRE), as detailed and approved in an official report.
Source Of Data	Report detailing the number of DMRE strategic initiative implementation
Method Of Calculation / Assessment	Count of a report
Means Of Verification	Report detailing number of DMRE Strategic initiative implementation
Assumptions	Assumes that the DMRE maintains accurate records of strategic initiatives and their implementation status, and that official reports are appropriately approved.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly
Desired Performance	The organization aims to implement its strategic initiatives as planned and detail them in official reports for transparency and accountability. Specific targets may vary based on the DMRE's strategic goals.
Indicator Responsibility	GM GMs for EE

## PROGRAMME PERFORMANCE INDICATORS – BALANCING ENERGY SUPPLY AND DEMAND LARGE SCALE ROLLOUT (PMO – MINISTRY OF ELECTRICITY)

INDICATOR TITLE	APPROVED REPORT DETAILING THE NUMBER OF LARGE-SCALE ROLLOUT OF BALANCING ENERGY SUPPLY AND DEMAND
Definition	The count of large-scale rollouts or initiatives related to balancing energy supply and demand, as detailed and approved in an official report.
Source Of Data	Report detailing number of Large-Scale Rollout of Balancing Energy Supply and Demand
Method Of Calculation / Assessment	Count of a report
Means Of Verification	Report detailing number of Large-Scale Rollout of Balancing Energy Supply and Demand
Assumptions	Assumes that the organization maintains accurate records of energy supply and demand initiatives and their implementation status, and that official reports are appropriately approved.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly
Desired Performance	The organization aims to implement large-scale initiatives that optimize the balance between energy supply and demand, and to detail them in official reports for transparency and accountability. Specific targets may vary based on the organization's energy goals.
Indicator Responsibility	GM GMs for EE

## PROGRAMME PERFORMANCE INDICATORS – LIGHTING

INDICATOR TITLE	REPORT DETAILING IMPLEMENTATION OF HIGHLY EFFICIENT LIGHTING ROLLOUT WITHIN METRO'S AND/OR MUNICIPALITIES IN LINE WITH ADOPTED STANDARDS
Definition	The extent to which highly efficient lighting systems, compliant with adopted standards, have been successfully implemented within metropolitan areas and/or municipalities. This indicator measures the progress of adopting energy-efficient lighting practices.
Source Of Data	Report detailing implementation of highly efficient lighting rollout within metros and/or municipalities in line with adopted standards
Method Of Calculation / Assessment	Count of a report
Means Of Verification	Report detailing implementation of highly efficient lighting rollout within metros and/or municipalities in line with adopted standards
Assumptions	Assumes that the organization actively implements energy-efficient lighting projects, maintains accurate records, and complies with adopted standards.
Disaggregation Of Beneficiaries (Where Applicable)	Specify if the rollout targets specific municipalities or areas within metros, if necessary.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year to date)
Reporting Cycle	Quarterly
Desired Performance	The organization aims to achieve a high level of implementation of energy-efficient lighting systems in line with adopted standards, contributing to energy savings and sustainability. Specific targets may vary based on energy efficiency goals.
Indicator Responsibility	Energy Efficiency Department, Municipal Lighting Implementation Team, or individuals responsible for implementing and tracking energy-efficient lighting projects.

#### 14.4 PROGRAMME 4: THE ENERGY SECRETARIAT - PERFORMANCE INDICATORS

##### PROGRAMME PERFORMANCE INDICATORS –

##### PMO for DSI

##### Coal CO<sub>2</sub>-X RDI

##### Energy Storage RDI

##### Hydrogen SA (Hy SA)

##### Renewable Energy Hub and Spokes

INDICATOR TITLE	APPROVED REPORT DETAILING THE NUMBER OF UNIVERSITY OF TECHNOLOGY (UoT)/ TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) GRADUATES OFFERED EXPERIENTIAL LEARNING OPPORTUNITIES IN THE ENERGY SECTOR
Definition	This indicator tracks the number UoT/TVET graduates offered experiential learning opportunities in the energy sector through the Energy Secretariat.
Source Of Data	Report detailing number of University of Technology (UoT)/ Technical Vocational Education and Training (TVET)
Method Of Calculation / Assessment	A simple count of reports produced.
Means Of Verification	Report detailing number of University of Technology (UoT)/ Technical Vocational Education and Training (TVET)
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP/Energy Secretariat MoU.
Indicator Responsibility	GM of ES.

INDICATOR TITLE	APPROVED REPORT DETAILING NUMBER OF INTELLECTUAL PROPERTY RIGHTS (IPRs) FILED BASED ON ENERGY RDI
Definition	This indicator tracks the number of IPRs filed based on energy RDI under the auspices of the Energy Secretariat.
Source Of Data	Report detailing Intellectual property rights records/database.
Method Of Calculation / Assessment	A simple count of reports produced.
Means Of Verification	Report detailing number of Intellectual Property Rights (IPRs) filed based on energy RDI
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP/Energy Secretariat MoU.
Indicator Responsibility	GM of ES.

**PROGRAMME PERFORMANCE INDICATORS**

**PMO for DSI**

**Coal CO<sub>2</sub>-X RDI**

**Energy Storage RDI**

**Hydrogen SA (Hy SA)**

**Renewable Energy Hub and Spokes**

INDICATOR TITLE	APPROVED REPORT DETAILING NUMBER OF STATIONARY FUEL CELLS/CLEAN ENERGY TECHNOLOGIES DEPLOYED IN PARTNERSHIP WITH MUNICIPALITIES/DISTRICT MUNICIPALITIES
Definition	Assess and/or demonstrate the number of stationary fuel cells and clean energy technologies deployed at the sub-national level, particularly in Municipalities.
Source Of Data	Report detailing number of stationary fuel cells/clean energy technologies
Method Of Calculation / Assessment	Count of outputs collated.
Means Of Verification	Reports detailing number of stationary fuel cells/clean energy technologies deployed in partnership with Municipalities/District Municipalities.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	This information is not possible to determine currently. However, during reporting the disaggregation will be provided where applicable.
Spatial Transformation (Where Applicable)	This information is not possible to determine currently. However, during reporting the spatial transformation will be provided where applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP/Energy Secretariat MoU.
Indicator Responsibility	GM of ES.

INDICATOR TITLE	APPROVED REPORT DETAILING NUMBER OF SMALL, MEDIUM AND MICRO ENTERPRISES (SMMEs) ASSISTED/SUPPORTED WITH BUSINESS DEVELOPMENT AND COMMERCIALISATION
Definition	This indicator tracks the number of SMMEs supported by the Energy Secretariat.
Source Of Data	Report number of SMMEs
Method Of Calculation / Assessment	A simple count of reports produced.
Means Of Verification	Report detailing number of Small, Medium and Micro Enterprises (SMMEs) assisted/supported with business development and commercialisation.
Assumptions	Resources are available.
Disaggregation Of Beneficiaries (Where Applicable)	Not applicable.
Spatial Transformation (Where Applicable)	Not applicable.
Calculation Type	Cumulative (year-to-date).
Reporting Cycle	Quarterly.
Desired Performance	Achieve at least the stated target in the APP/Energy Secretariat MoU.
Indicator Responsibility	Respective GM



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