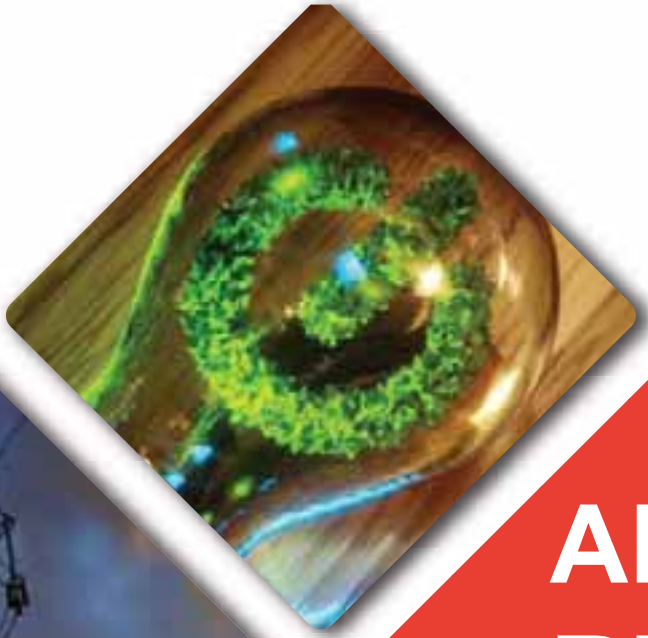


ANNUAL REPORT 2017/18

sonedi

South African National Energy Development Institute


sonedi
South African National Energy
Development Institute


sanedi
South African National Energy
Development Institute

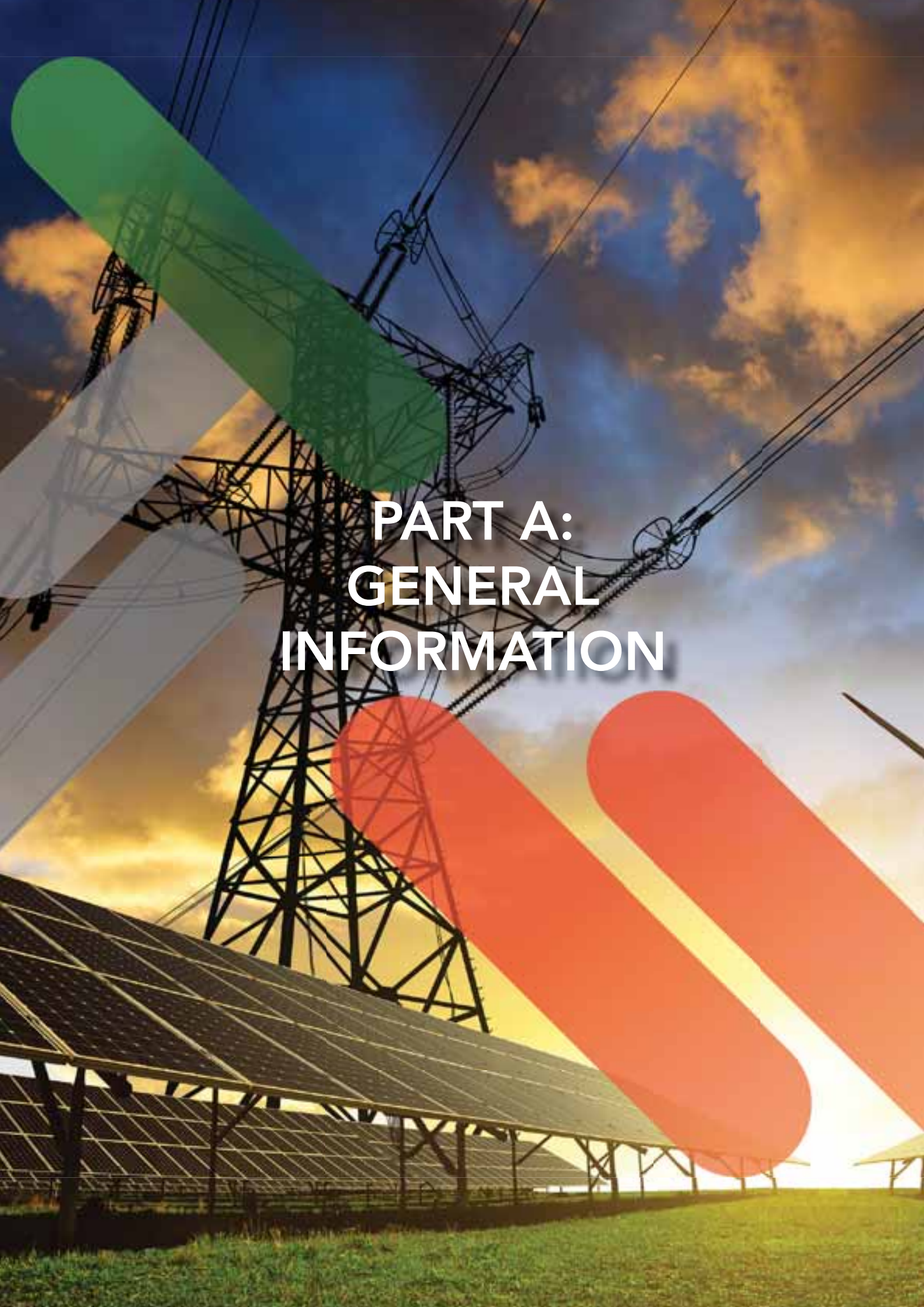
A State-Owned entity established under Section 7 of the National Energy Act 2008, [Act No. 34 of 2008].

Telephone: 011 038 4300
Physical Address: CEF House, Block C,
152 Ann Crescent, Upper Grayston Office Park.
Postal Address: PO Box 9935, Sandton, 2146
Email: exec@sanedi.org.za
Website: www.sanedi.org.za

RP: 409/2018
ISBN: 978-0-621-46848-9

PLEASE RECYCLE THIS REPORT

TABLE OF CONTENTS



PART A: GENERAL INFORMATION

1. GENERAL INFORMATION

Registered Name:	South African National Energy Development Institute (SANEDI)
Physical Address:	CEF House, Block C, Upper Grayston Office Park, 152 Ann Crescent, Strathavon, Sandton
Postal Address:	PO Box 9935, Sandton, 2146
Telephone Number:	(011) 038 4300
E-mail Address:	info@sanedi.org.za
Website Address:	www.sanedi.org.za
External Auditors:	The Auditor-General of South Africa
Bankers:	ABSA
Company / Board Secretary:	Vacant

2. LIST OF ABBREVIATIONS AND ACRONYMS

AFD	French Development Agency
AfDB	African Development Bank
ADMS	Advanced Distribution Management System
AGSA	Auditor-General of South Africa
APP	Annual Performance Plan
ASSA	Academy of Science for South Africa
BARC	Board Audit and Risk Committee
BEE	Black Economic Empowerment
CCS	Carbon Capture and Storage
CCT	Clean Coal Technologies
CEF	CEF Group of Companies formerly known as Central Energy Fund
CEM	Clean Energy Ministerial
CEO	Chief Executive Officer
CER	Centre of Energy Research
CESAR	Centre for Energy Systems Analysis and Research
CGS	Council for Geosciences
CM	Cleaner Mobility
CO_2	Carbon Dioxide
CORDs	Centres of Research and Development
CPI	Consumer Price Index
CRRC	Cool Roofs Rating Council
CSI	Corporate Social Investment
CSIR	Council for Scientific and Industrial Research
CSP	Concentrating Solar Power
CSR	Corporate Social Responsibility

DANIDA	Danish International Development Agency
DBREV	Douglas Banks Renewable Energy Vision
DEA	Department of Environmental Affairs
DFI	Development Finance Institutes
DID	Gauteng Department of Infrastructure Development
DKK	Danish Krone
DoD	Department of Defense
DoT	Department of Transport
DoE	Department of Energy
DSM	Demand Side Management
DST	Department of Science and Technology
DTU	Technical University of Denmark
DPW	Department of Public Works
DTI	Department of Trade and Industry
EA	Executive Authority
ECD	Electricity Chief Directorate
EDI	Electricity Distribution Industry
EDTEA	Economic Development, Tourism and Environmental Affairs
EE	Energy Efficiency
EEDSM	Energy Efficiency and Demand Side Management
EIUG	Energy Intensive User Group
EPWP	Extended Public Works Programme
ERC	Energy Research Centre
ESI	Electricity Supply Industry
EU	European Union

EV	Electric Vehicles
EVIA	Electric Vehicle Industry Association
FMPPI	Framework for Managing Programme Performance Information
GAAP	Generally Accepted Accounting Practice
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	German Agency for International Cooperation
GRAP	Generally Recognised Accounting Practice
HRRC	Human Resource and Remuneration Committee
IAS	International Accounting Standards
IDC	Industrial Development Corporation
IEA	International Energy Agency
IEP	Integrated Energy Plan
IIA	Institute of Internal Auditors
INDC	Intended Nationally Determined Contribution
INED	Independent Non-Executive
IRENA	International Renewable Energy Agency
IRP	Integrated Resource Plan
ISGAN	International Smart Grid Action Network
IT	Information Technology
KW	Kilowatt
LAN	Local Area Network
LEAP	Long-Term Energy Alternative Planning
M&V	Monitoring and Verification
MDMS	Meter Data Management System
MoA	Memorandum of Agreement
MRC	Medical Research Council

MoU	Memoranda of Understanding
MTEC	Medium Term Expenditure Committee
MTEF	Medium Term Expenditure Framework
MTSF	Medium Term Strategic Framework
MW	Megawatt
NAAMSA	National Association of Automobile Manufacturers of South Africa
NBI	National Business Initiative
NCPC	National Cleaner Production Centre
NDA	National Development Agency
NEA	National Energy Act, 2008 (Act No. 34 of 2008)
NECSA	South African Nuclear Energy Corporation
NEEA	National Energy Efficiency Agency
NEES	National Energy Efficiency Strategy
NERSA	National Energy Regulator of South Africa
NRF	National Research Foundation
NT	National Treasury
PAA	Public Audit Act
PASA	Petroleum Association of South Africa
PCSP	Pilot CO2 Storage Project
PDI	Previously Disadvantaged Individual
PFMA	Public Finance Management Act
PFT	Project Facilitation Team
PIU	Project Implementation Unit
PMO	Project Management Office
PPC	Parliament Portfolio Committee
PPP	Public Private Partnership
PV	Photovoltaics

RE	Renewable Energy
RECORD	Renewable Energy Centre for Research and Development
REDIS	Renewable Energy Data and Information Service
REEEP	Renewable Energy and Energy Efficiency Partnerships
R&D	Research and Development
SACCCS	South African Centre for Carbon Capture and Storage
SADC	Southern African Development Community
SAEEC	South African Energy Efficiency Convention
SAfECCS	South Africa - Europe Cooperation on Carbon Capture and Storage
SAGEN	South Africa – German Energy Programme
SANAS	South African National Accreditation System
SANEDI	South African National Energy Development Institute
SANERI	South African National Energy Research Institute
SACSA	South African Cool Surfaces Association
SAPVIA	South African Photovoltaic Industry Association
SARS	South African Revenue Service
SARETEC	South African Renewable Energy Technology Centre
SASGI	South African Smart Grids Initiative
SAWEA	South African Wind Energy Association
SAWEP	South African Wind Energy Programme
SCP	Sustainable Consumption and Production
SDG	Sustainable Development Goals
SETA	Sector Education and Training Authorities
SHS	Solar Home System
SLA	Service Level Agreement
SMME / SME	Small Medium and Micro Enterprises
SMART	Specific, Measurable, Achievable, Realistic and Time-bound
SOLTRAIN	Southern African Solar Thermal Training and Demonstration Initiative
SOC	State Owned Company
SOE	State Owned Entity
SSA	State Security Agency
SSEG	Small-Scale Embedded Generation
SSGT	SANEDI Smart Grids Team
SUNREF	Sustainable Use of Natural Resources Energy Finance
TAF	Technical Assistance Facility
TAI	Tax Allowance Incentive
TIA	Technology Innovation Agency
TVET	Technical and Vocational Education and Training
UCT	University of Cape Town
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organisation
USTDA	United States Trade and Development Agency
WASA	Wind Atlas of South Africa
WEC	World Energy Council
WfE	Working for Energy Programme
WRI	World Resource Institute
WSP	Workplace Skills Plan

3. FOREWORD by the Deputy Chairperson

Mr Nkululeko Buthelezi
Deputy Chairperson

The provision of secure, affordable and modern energy for all citizens is central to poverty reduction and economic growth. The pathway to economic growth has been a result of the shift from an agrarian based economy to industrialisation and knowledge-based economy.

Structural economic changes such as these result in changes in the patterns and levels of energy consumption which lead to subsequent shifts in the types of fuels and energy technologies utilised. Economic and social development thus tends to go hand-in-hand with energy sector transformation. As a country gets more developed, its dependence on the traditional use of biomass tends to decline while the use of electricity and its per-capita energy use rise. For many countries however, the objective of universal energy access has yet to be achieved.

The energy sector is the backbone of the South African economy with SANEDI playing a key role in enabling the advancement of economic growth in South Africa. This is not only from a growth point of view, but also in terms of social upliftment. In this regard, the availability of reliable, affordable and clean energy is central to stimulating productive capacity, leading to sustainable economic and social development.

It is also important to consider the Socio-economic environment within which SANEDI is operating and the context that will determine the strategic direction of the organisation.

Within the DoE State owned institution, SANEDI is the only institution that is mandated to implement applied research and development and demonstration of clean energy interventions, thus SANEDI remains one of the most important institutes in the DoE stable. It is also incumbent upon SANEDI to rise to the occasion and play a meaningful role in the contested clean energy space of its mandate.

The organisation needs to punch above its weight, given the limited resources it currently has at its disposal and would probably have in the foreseeable future. However, as the Board we also note that the clean energy space is highly contested with many stakeholders who are increasing their footprint in what is within the legislative mandate of SANEDI.

This is largely due to plans for government and the private sector to undertake large scale investment in clean energy infrastructure. The finalisation of the 2016 Integrated Resource Plan will also have an impact on investment as it is expected that it will determine the country's energy mix.

In this regard it becomes evident that SANEDI cannot meaningfully participate in the entirety of its mandate, but rather focus on a few high impact focus areas that would make the whole clean energy research and development space more complete and comprehensive, when working in partnership with other players rather than competing to participate in the entire spectrum of the mandate.

The success of SANEDI will not only be predicated on the availability of human and financial resources, but also on effective policies and procedures, systems and relationships in order to enable it to adhere to its governance requirements. While significant progress has been made in refinement of the organizational strategy and the overall performance environment, there is still room for continuous improvement. A number of challenges at strategic level continue to impact on the performance of the organization at the operational milieu.

The general funding issue for the organization is a matter of great concern to the Board and Management is being supported in their endeavours to unlock funding for the organisation in all possible avenues.

By virtue of the economic state of the country and its limited budget allocation, SANEDI is limited in its ability to participate in its designated international platforms. The ability of the organization to be at the leading edge of technology development and policy enhancement may be compromised.

The current Board came into office on 1 December 2016 following an extended period of the absence of a fully functional Board at SANEDI. In the process of resetting the tone for strategic direction for the organisation, the Board instituted an internal analysis study to identify key strengths and weaknesses, opportunities and threats for the organisation for the duration of the term of the Board.

The road ahead looks promising for SANEDI, and the Board has resolved to support the institute in reaching unprecedented levels of achievement for the benefit of the greater South African populous.

In order to enhance the capacity of the Board to exercise oversight over the Institute, the following processes will be undertaken in the next financial year:

- Board performance review,
- SANEDI's organisational review to improve the Institutional impact and effectiveness and set about activities to implement the recommendations,
- Refined strategic focus of the Institute given the limited resources and the contestation in the clean energy space,
- Strengthen the technical and governance components of the Institute, and
- Strengthen the departmental representations as stakeholder representatives in the Board.

I acknowledge the support given to me by the outgoing Chairperson, Dr Ingrid Tufvesson, the Board Members, the interim CEO: Dr Thembakazi Mali, management and staff of SANEDI during these challenging times. Your selflessness in making the Institute a success is not going unnoticed.

Conclusion

I look forward to even greater concerted effort in the year ahead as we strive to make clean energy a topical issue in the South African society at large.

Mr Nkululeko Buthelezi
Deputy Chairperson: SANEDI Board

4. Chief Executive Officer's OVERVIEW

Dr Thembakazi Mali
Interim Chief Executive Officer

During the year under review, the main focus for the South African National Energy Development Institute (SANEDI) was to develop innovative, integrated clean energy and resource efficient solutions that aim to catalyse Socio-economic growth and prosperity. SANEDI has also managed to maintain the momentum built over the years and has consistently managed to leverage its limited funds and capitalise on its relationships with its stakeholders to attract more investment into the organisation. On average, for every R1 allocated by the fiscus, SANEDI leveraged at least R6 more into the organisation towards the implementation of its programmes.

Although there has been great success in attracting funding from external service providers, there has been a significant decline in third-party funds available towards renewable technologies. This is a result of policy changes by some international governments and donors who are beginning to focus on countries less developed than South Africa in the developing world. This significant decline poses a tremendous threat to funding stability of SANEDI, given its already constrained budget. We are also aware of the fiscal challenges faced by the fiscus which has led to a general decline in R&D.

In the previous financial year, SANEDI obtained a unqualified audit from the Auditor-General (AG). The achievement confirmed that our efforts in maintaining high levels of compliance, sound financial management, transparent and efficient procurement systems were and will continue to be successful. This achievement has however, exerted additional pressure on the organisation to continue to grow and entrench the set high compliance achievement.

As technologies such as mini-grid and hybrid solutions continue to develop and mature, opportunities for innovative energy solutions that can make a meaningful contribution towards community development are becoming increasingly relevant towards improved energy access. In this regard, SANEDI's programmes individually and collectively contribute towards energy development and innovation in this area.

Successful collaboration between SANEDI and industry has allowed us to drive several research, development and pilot projects that will contribute to the national energy objectives. In this regard, the Institute has facilitated and supported a number of national and provincial departments to understand possible mitigation actions that would lead to a more efficient and swift deployment of renewable energy in the country.

The Working for Energy (WfE) programme in particular, has focused on the development and demonstration of clean energy solutions suitable to rural and low income urban and peri-urban communities. SANEDI has installed 80 biogas digesters in Gauteng, Limpopo, Eastern Cape and the North West Provinces. Demonstrated use of clean energy interventions serve to refine a blueprint that can be applied for communities country-wide.

The Department of Energy (DoE) in collaboration with SANEDI has been developing and piloting the concept of Smart Grids in South Africa. The programme mainly focused on, "Technology as an enabler for Change" in the municipal environment. Municipalities, are currently under huge financial pressure, largely as a result of poor revenue collection and incorrect tariff designs. The Enhanced Revenue Management projects, piloted in six municipalities, were designed to assist municipalities to collect the electricity revenues. For projects that were properly designed and implemented, results have shown that technology can be used to improve revenue collection while also improving the effectiveness and efficiency of the municipalities thereby returning them to sustainability. A total of ten pilot projects, aligned to the DoE's priorities, have been setup to create an evidence-base on which to develop future policy on Smart Grids.

Cleaner mobility can offer a strategic solution for the country's energy security risks, contribute to balance of payments savings, transport Energy Efficiency (EE) improvements, economic development and climate mitigation.

In recognition of these challenges and opportunities, the Department of Transport (DOT) recently shared a Draft Green Transport Strategy and is currently pursuing a national strategy for green transport for the first time. During the year under review, SANEDI's Cleaner Mobility programme, with support from the United Nations Industrial Development Organisation (UNIDO), has been actively engaging with the DOT as well as various cities to explore and introduce cleaner mobility options. SANEDI has been instrumental in conducting research and demonstration applications regarding the use of electric vehicles and charging batteries using solar PV with good success.

The Cool Surfaces Project is a response to South Africa's need for an energy passive, low cost, low maintenance cooling technology for buildings. It refers to all materials and technologies used in the construction of the building envelope that improves thermal comfort, also surfaces that reflect lots of solar energy and releases lots of stored heat energy (i.e., white roofs, light-coloured pavements, specialised cool coatings.)

The Cool Surfaces Project roadmap progress is as follows:

- The establishment of a Cool Surfaces Association to regulate and promote the industry has been launched – South African Cool Surfaces Association (SACSA),

- Through SACSA, testing standards from the Cool Roofs Rating Council (CRRC) against which Cool Surfaces products are to be measured were adopted and published, and

- A laboratory with equipment to test products, has been established at the University of Pretoria and administrative documentation to make this service available to industry, has been finalised. Other options for bona fide laboratories are currently being investigated.

Through the laboratory, each product will be tested, its efficacy rated, and a label issued so that consumers can easily understand the benefits and suitability. A database of all approved Cool Surfaces products that comply with the criteria is incrementally being built up.

Demonstration projects to assess the suitability of Cool Surfaces for mass application under South African climatic conditions in retrofit building projects, as well as to promoting the highest quality of products at the most affordable prices are currently being rolled out. SANEDI has completed six individual demonstration projects across Gauteng and the Northern Cape Provinces.

An extremely successful large-scale (500 rooftop) Cool Surfaces Project has been completed in !Kheis. There has been a dramatic improvement in the quality of life for the project beneficiaries. SANEDI currently plans to complete one large-scale project in each Province, aimed at indigent communities.

SANEDI as hosting agency and partner to the Renewable Energy and Energy Efficiency Partnership (REEEP), is also involved in the 'Climate Change, Clean Energy and Urban Water in Africa' project. The project promotes market-based deployment of clean energy technologies and services in municipalities. The three year project is funded

by the European Union (EU), implemented by UNIDO and executed by REEEP and seeks to catalyse commercial activity to improve energy and water efficiencies in municipal water and wastewater infrastructure. Besides saving energy, the solutions targeted will also help municipalities save water, improve water quality, improve service delivery and realise cost savings. The project works with two pilot municipalities, with a view to creating a solid base for replication across Sub-Saharan Africa. The two pilot municipalities participating in the pilot project are Nelson Mandela Bay Metropolitan and !Kheis Local Municipality in the Northern Cape.

The municipalities also receive assistance in applying for additional funding sources to implement infrastructure upgrades, including from the National Energy Efficiency Demand Side Management Programme and other financial mechanisms. In addition, the project links into existing capacity building initiatives offering tailored training and skills transfer on energy management systems to municipal staff working in electricity and water departments.

The year under review was the final year of the Danish - South Africa Renewable Energy and Energy Efficiency Programme for implementation of various RE interventions and this collaboration has achieved successful results. The team at Eskom working on renewable energy grid integration has increased capacity. The Wind Atlas of South Africa (WASA) 2 is well under way and from this, WASA 3 was initiated. WASA 3 is a project of the South African Wind Energy Project 2 (SAWEP 2) funded by the Global Environment Facility (GEF) with the DoE as the Executing Agency with UNDP Country Office support (procurement, payment). On completion of WASA 3, the entire country would have been mapped.

The finance agreement entered into between the World Bank and National Treasury on a grant of $23.4 million towards the Pilot Carbon Storage Project (PCSP) has been signed. This will kick-start the project in earnest and we are hopeful that our stakeholder engagements will also yield desirable results culminating with the commencement of the pilot project in 2018/19.

We will continue to provide the requisite support to the SA Revenue Service (SARS) with the implementation of the section 12L tax incentives as prescribed in the relevant Statutes. The programme is oversubscribed and it needs to be reinforced with resources. The GIZ has granted SANEDI funds for the upgrade of the 12L income tax processing system and an additional allocation has been received from treasury for the 2018/19 fiscal year.

I would like to express our gratitude to the DoE and the SANEDI Board for their support and strategic direction as well as guidance. Our international collaboration has continued to yield great results. To this end, I would like to thank our donor partners, namely, the GIZ, UNIDO, REEEP, USTDA, AFD, the EU, World Bank, the Danish Government and others; their support is greatly appreciated.

Sincere gratitude to the SANEDI employees for their invaluable contributions to making the Institute the success it has grown to be. SANEDI has again received a Clean Audit. This is testament to their commitment to always strive to adhere to clean governance.

In conclusion, I have been extremely honoured to work with team SANEDI.

Dr Thembakazi Mali
Interim Chief Executive Officer: SANEDI

5. BOARD MEMBERS

Dr I Tufvesson (Resigned)
Chairperson: SANEDI Board
PhD, BA (MA)

Mr N Buthelezi
Deputy Chairperson: SANEDI Board
Dip Scientific Computing and Software Engineering, Dip Management, Adv Dip Project Management, Post Grad Dip Management, MBA

Mr Mmboneni Muofhe
BSc (Hons), MSc, MBA

Ms Deborah Ramalope
BSc (Hon), MSc, MBL

Mr Mlondolozi Mkhize
BA Soc Sc

Ms Phuthanang Motsielwa
B Acc (CA)(SA)

Ms Nomawethu Qase
M Phil (Energy Studies), Post Grad Dip Management, B Soc Sc (Hons)

Mr Gerhard Fourie
Diploma Mech Eng, B Com Economics, MBA

6. STATEMENT OF RESPONSIBILITY AND CONFIRMATION OF ACCURACY FOR THE ANNUAL REPORT

To the best of my knowledge and belief, I confirm the following:

- All information and amounts disclosed in the Annual Report is consistent with the audited Annual Financial Statements (AFS).
- The Annual Report is complete, accurate and is free from any omissions,
    - The Annual Report has been prepared in accordance with the guidelines on the Annual Report as issued by National Treasury,
    - The AFS (Part E) have been prepared in accordance with the standards applicable to the public entity,
    - The Accounting Authority is responsible for the preparation of the AFS and for the judgements made in this information,
    - The Accounting Authority is responsible for establishing, and implementing a system of internal control that has been designed to provide reasonable assurance as to the integrity and reliability of the performance information, the Human Resources information and the AFS, and
    - The external auditors are engaged to express an independent opinion on the AFS.

In our opinion, the Annual Report fairly reflects the operations, the performance information, the Human Resources information and the financial affairs of the public entity for the financial year ended 31 March 2018.

Yours faithfully

Dr Thembakazi Mali
Interim Chief Executive Officer
SANEDI

7. STRATEGIC OVERVIEW

The following are the key elements of SANEDI's strategy as reflected in the 2017/18 Annual Performance Plan (APP):

7.1 Vision

Sustainable living for growth and prosperity in Africa.

7.2 Mission

Using applied energy research and resource efficiency to develop innovative, integrated solutions that will catalyse growth and prosperity.

7.3 Values

Team work	We are a team.
Accountability	We are responsible and accountable in all we do.
Commitment	We are committed to making a difference in the energy sector.
Respect	We treat each other with the greatest respect.
Integrity	We act with Integrity.
Innovation	We are innovative, creative and forward thinking.
Passion	We are passionate about our contribution.
Ethics	We behave in a manner consistent with what is right and moral.
Entrepreneurship	We bring energy innovation into the market place

8. LEGISLATIVE AND OTHER MANDATES

SANEDI is a Schedule 3A State-Owned entity. SANEDI derives its mandate from the authority and obligations set out in the National Energy Act, 2008 (Act No. 34 of 2008) (NEA). Section 7 (2) of the NEA gave effect to SANEDI's existence and provides for its primary mandate and specific responsibilities.

9. ORGANISATIONAL STRUCTURE

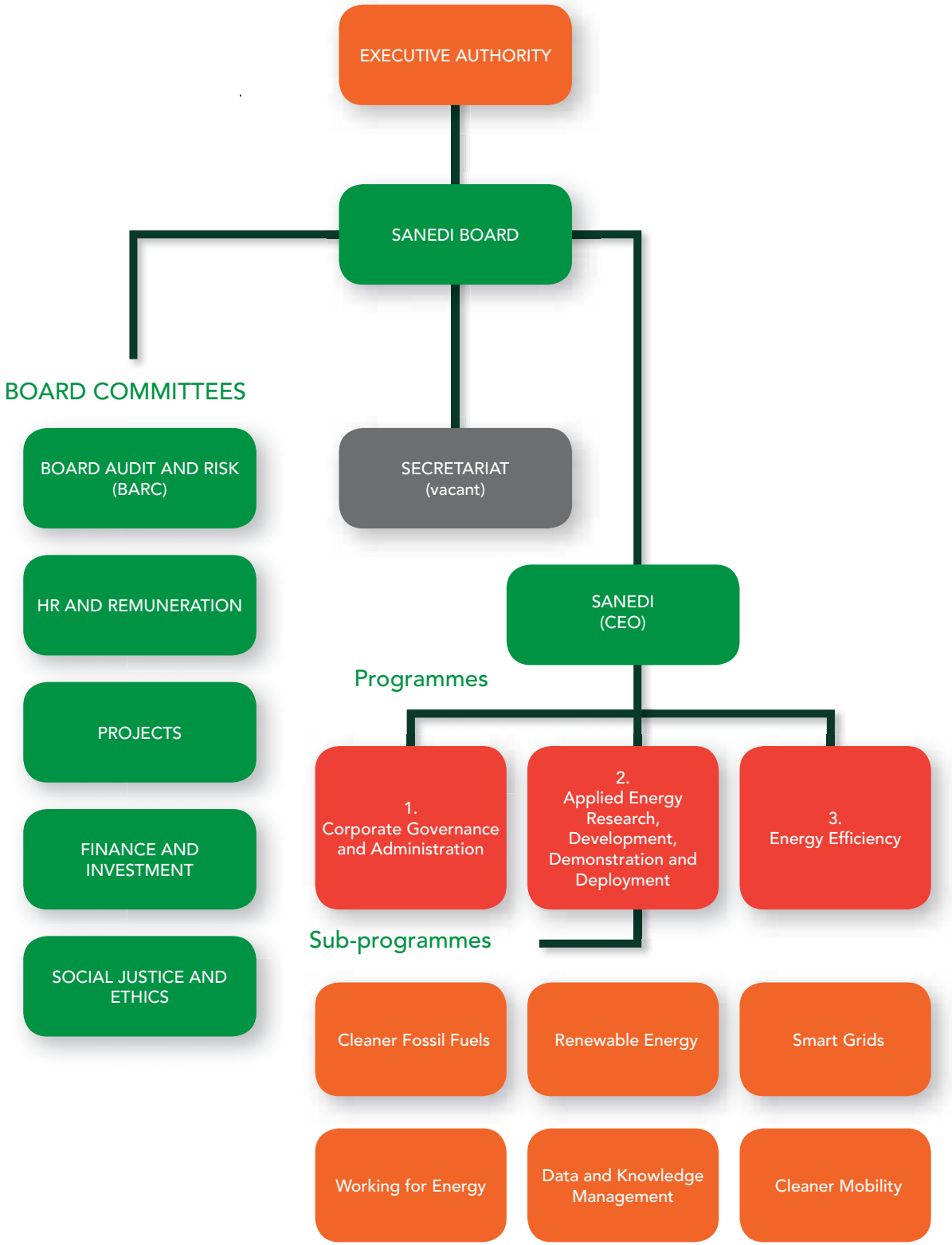


Figure 1: SANEDI Organogram.

PART B: PERFORMANCE INFORMATION

10. AUDITOR'S REPORT: PRE-DETERMINED OBJECTIVE

The AGSA currently performs the necessary audit procedures on the performance information to provide reasonable assurance in the form of an audit conclusion. The audit conclusion on the performance against pre-determined objectives is included in the report to management, with material findings being reported under the pre-determined objectives heading in the Report on other legal and regulatory requirements section of the auditor's report.

Refer to page 97 of the Auditors Report, published as **Part E: Financial Information.**

11. SITUATIONAL ANALYSIS

11.1 Service Delivery Environment

After more than a century of relative consistency, the energy industry is in the process of revolutionary change. The sector is rapidly evolving and many believe it will undergo greater change in the next five years than it did over the previous fifty. Consumers, energy companies and governments throughout the world are struggling with uncertainty in making energy-related decisions in this environment.

The World Energy Council's 7th annual survey of global energy leaders[1] identified innovation and the shift to a low-carbon energy market to be the biggest issues facing the world's energy leaders. While leaders and decision-makers in South Africa participating in the survey echoed these sentiments, they also highlighted corruption, electricity prices, EE and talent as critical action issues for the sector.

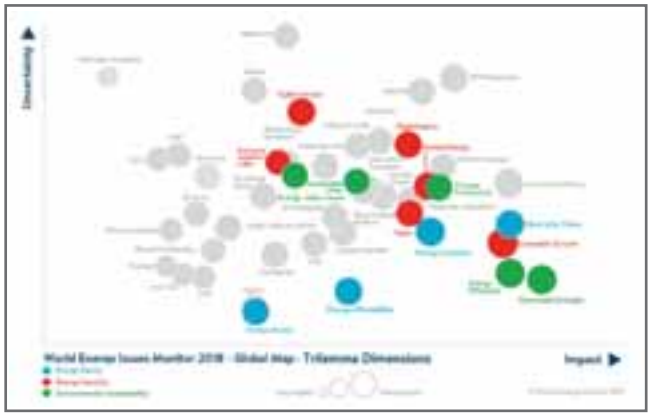


Figure 2: The Global Perspective on the Energy Transition.

The global map in Figure 2 above provides a unique perspective which enables energy leaders to distinguish the signals of change that matter. The 2018 Global Issues Map indicates that innovation is the key area of concern. Issues such as digitalisation, electric storage, market design, decentralised systems and renewable energies are receiving greater attention as their impact grows across the energy industry.

The Global Issues Map also shows a decrease in attention around centralised technologies and greater certainty around electricity prices and energy affordability. We also see that increased impact of digitalisation is facilitating a rapid convergence of alternative technologies such as renewable energies, blockchain and data AI.[2]

1 *2016 World Energy Issues Monitor. The survey tracks the concerns of more than 1,000 global energy leaders.*

2 *2016 World Energy Issues Monitor. The survey tracks the concerns of more than 1,000 global energy leaders.*

Figure 3: The Global Energy Issues and the Energy Trilemma.

The Council's definition of a robust (i.e. timely, well managed and global) energy transition reflects the challenge of balancing- energy security, energy equity and environmental sustainability. Balancing these three goals constitutes a 'policy trilemma' and is the basis for the long-term prosperity and competitiveness of individual countries. To aid the dialogue on improving energy policy and to illustrate potentially conflicting policy drivers, this section brings a fresh analysis of global energy issues through the three dimensions of the Energy Trilemma, as illustrated in Figure 3 above. Moreover, when associated with a long-term analysis, this tool can provide a powerful representation of the directions that the energy transition is taking and the resultant opportunities and challenges that arise.

In the energy equity dimension, energy access and affordability are surprisingly not seen as an urgent global action priority. According to the latest data published by the World Bank, 100% of high income world citizens have access to electricity while only 35% of the low income does. Technology and decentralisation is expected to address this continued divide.

As fast as the world is embracing technology and decentralisation, several countries with a total population of over one billion people are still working towards universal electricity access delivered reliably and affordably. At today's stage of the transition, however, concerns are much more focused on the impact of subsidies and electricity prices as new technologies are being added to the mix and as traditional and new energy resources redefine their space in the global energy economy.

Finally, the environmental sustainability dimension suggests that new market structures first need to be developed to enable successful integration of supportive technologies. Energy efficiency and renewable energy processes will need to evolve before Sustainable Cities, the Energy-Water Nexus and even the Climate Framework challenge

becomes more certain from the perspective of global energy leaders. It should be noted however, that even though many countries are increasingly developing and incorporating clean energy policies, fossil fuels are still an important part of the globe's energy mix. While the incorporation of clean energy is evident, it is crucial to understand the stage of development of each energy resource for a well-informed transition planning. It is worth noting that although there is high uncertainty around innovation issues such as Data AI, IoT Blockchain, Electric Storage and Innovative Transport, this cluster is just lightly reflected in the Trilemma trade-off framework, where resilience issues are not heavily influenced by the role of technology and policy innovation. This will be one of the most exciting spaces to observe as to what extent innovation will be transforming and overcoming the trade-offs for energy equity, security and sustainability.

This rapid evolution presents both risks and opportunities, creating a context within which energy development and innovation is increasingly relevant. The opportunities in particular, are pertinent to developing economies such as ours, where obsolete solutions can potentially be leapfrogged towards a more sustainable energy future. Fully utilising the opportunities for maximum developmental benefit would require taking note of the turn of events, anticipating the important shifts and skillfully moving with the changes. Being at the forefront of energy development and innovation will therefore be key for South Africa to pro-actively engage with the rapid changes in the energy sector.

In December 2015, South Africa was one of 196 countries that adopted the Paris Agreement[3] in which the world agreed to chart a pathway to a low carbon energy system in mitigation against the impacts of climate change. This is a strong political signal, reinforcing South Africa's commitment to a low carbon energy future. South Africa's national response, as presented in the Intended Nationally Determined Contribution (INDC), however recognises both development needs and climate change imperatives.

A seeming contradiction lies in achieving economic growth, employment, improved services and facilities, yet doing so without compromising resource, quality of living and environmental sustainability. Innovative sustainable energy solutions that can support the country's developmental needs while minimising climate change impacts are therefore of significant importance.

After an extended period of electricity supply shortages, South Africans are acutely aware of the importance and value of reliable energy supply. The African Development Bank (AfDB) estimates that power shortages and bottlenecks in the energy sector cost African countries as much as 4% of GDP each year.

South Africa's policy and planning framework acknowledges energy and energy infrastructure development as a key priority to support the country's medium and long-term economic and social objectives. Immediate energy development priorities, as also reflected in the DoE's five-year Strategic include:

- Security of energy supply (DoE Strategic Outcome-Orientated Goal 1, Security of Supply[4]),
- Expanding access to energy (DoE Strategic Outcome-Orientated Goal 4, Universal Access and Transformation[5]), and
- A diversified mix, less reliant on fossil fuels (DoE Strategic Outcome-Orientated Goal 4, Universal Access and Transformation; Goal 5, Environmental Assets[6]; and Goal 6, Climate Change[7]).

As a result of the historical development pathway of the energy sector, South Africa is currently heavily dependent on coal, with a fleet of old and inefficient coal-fired power plants as well as a significant portion of its liquid fuels being generated from coal. While energy is key to unlocking economic and Socio-economic development objectives, unchecked consumption of coal-based energy sources will increase carbon and energy intensity, threatening economic and environmental sustainability and quality of living for South Africans.

South Africa's policy direction and planning framework is aligned with international trends and aspirations, targeting a diversified mix less reliant on fossil fuels. The Integrated Resource Plan (IRP, 2010) charts the generation infrastructure required to meet the forecasted electricity demand in a way that will be more cost effective and deliver a more diversified mix.

The plan foresees Renewable Energy's (RE) share (not including large hydro) growing from 0% in 2010 to 30% in 2030. The IRP 2010 however, is outdated. In that regard, the

3 *Global agreement on the reduction of climate change reached at the 21st United Nations Climate Change Conference held in Paris in December 2015.*

4 *To ensure that energy supply is secure and demand is well managed.*

5 *To ensure there is an efficient and diverse energy mix for universal access within a transformed energy sector.*

6 *To ensure environmental assets and natural resources are protected and continually enhanced by cleaner energy technologies.*

7 *To ensure environmental assets and natural resources are protected and continually enhanced by cleaner energy technologies.*

draft IRP 2016 to 2050 went through public consultation in 2017 and once it is finalised and has been policy adjusted, will replace the IRP 2010 to 2030. The draft IRP 2016 to 2050 is expected to be finalised by mid-August 2018, which will instill much needed investor, business and consumer confidence, not only in the sector, but also the broader economy given electricity's central role in the process of economic growth and development.

The highly competitive procurement conditions of the REIPPPP, combined with excellent domestic natural resource potential, policy support and technological progress has further resulted in rapid cost reductions and competitiveness of renewable energy technologies. For example, average tariffs for solar PV plants and wind farms procured under the REIPPPP in 2016 terms have declined by 83% and 59%, respectively, to around ZAR 0.62 per kilowatt hour (kWh) during the last procurement round in November 2015. Even in 2016 terms, these tariffs are significantly lower than the lifetime cost for baseload coal and nuclear power plants of around ZAR 1.00 per kWh and ZAR 1.09 per kWh, respectively and will therefore help to reduce pressure for even higher electricity prices that South Africans have endured over the past decade, particularly the poor.

As at 31 December 2017, 6 422 MW electrical energy capacity has been procured from 112 renewable IPPs under the REIPPPP across seven bid windows, which have comprised onshore wind, solar PV, Concentrating Aolar Power (CSP), landfill gas, biomass and hydropower electrical production plants. Of these, 62 projects with a combined capacity of 3 773 MW have been connected to the national grid and commenced with commercial operations.

The South African bidding approach (competitive auction model) has been adopted by a number of countries with the further reduction in prices. Announced auction prices indicate much steeper possible cost reductions, ranging from $30-45/MWh for solar PV (India, Mexico, United Arab Emirates, Argentina) to $35-50/MWh for onshore wind (India, Morocco, Egypt, Turkey, Chile). The chosen procurement approach and programme design incorporate bid requirements relating to employment creation, green economy, industrialisation and localisation, creating a platform for sector and economic development.

The contribution of a green economy to economic growth and job creation is promising and South Africa is preparing to play a leading role in RE deployment – not only nationally, but also in the region. Evidence of localised industrialisation is already seen in South Africa. Opportunities for economic development extend beyond the mainstream utility scale solutions to include smaller scale innovations and energy solutions. To fully capitalise on the potential created by this programme, initiatives to develop skills and capacity and promote industry and market development are critical.

South Africa has experienced weak economic growth in the financial year under review. A series of downgrades by credit rating agencies with negative outlooks reducing South Africa to junk status. Poor economic growth has knock-on implications for poverty reduction and possibly social stability in the longer term. Energy has been described as the 'oxygen' of the economy and the life-blood of growth. Steady and reliable energy supplies are crucial to growth in developing and emerging economies such as our own. Accelerated transformation towards a green economy can contribute new avenues of economic prosperity.

Given South Africa's current economic reality, the development focus and available resources, investment in coal-based generation capacity will remain a necessity within the current planning horizon to 2030. While the share of electricity from coal is expected to reduce markedly (declining from 81% in 2010 to 46% in 2030), coal will continue to be a cornerstone of South Africa's energy portfolio for the foreseeable future. If South Africa is to meet its international climate change commitments, extensive measures will be required to mitigate against the associated emissions. One of the most important mitigation options under investigation is carbon capture and storage (CCS). South Africa is currently building regulatory capacity (under the DoE) and technical and human capacity (under SANEDI) with the immediate focus on the storage of carbon. South Africa's CCS initiative is supported by a comprehensive roadmap, targeting commercial roll-out by 2030.

Following the inability to achieve universal access, cabinet in June 2013, adopted the New Household National Electrification Strategy, which targets 10% of the national backlog for off-grid electrification through Solar Home System (SHS) installations, or any other non-grid RE technology that is cost effective (e.g. mini-grid or hybrid systems). This Cabinet decision is significant in that it acknowledges it would take years before all households are electrified via the grid and that non-grid electrification would play a pivotal role in attaining universal access to modern energy services. As technology, mini-grid and hybrid solutions develop and mature, opportunities for innovative energy solutions that can make a meaningful contribution are becoming increasingly relevant to improved energy access. The "Working for Energy" programme has been investigating appropriate solutions for low income and remote communities in South Africa.

In the last decade, South Africa has battled severe electricity supply shortages. Until recently, national efforts were focused on frameworks and initiatives that would assist with alleviating the supply constraints in the short to medium term. Among these were the prioritised implementation of EE measures and facilitation of small-scale embedded generation (e.g. rooftop solar PV). The EE landscape in South Africa has transformed significantly over the last five years, with significantly more role players entering the market. Unfortunately, the urgency required for the uptake of EE seemingly tends to accelerate or decelerate, depending on the progress (or delays) experienced in Eskom's new-build programme. National Energy Regulator of South Africa (NERSA) has published the Small-Scale Embedded Generation (SSEG) draft for public comment, but in the absence of approved regulations, there has been an increase in the number of PV installations for own generation. Similarly, we have seen significant changes and delays in the national Solar Water Heater (SWH) roll-out in the country, making it extremely difficult to form a co-ordinated and consolidated medium to long-term vision for EE in the current climate.

Earlier in 2016, Eskom reported a marked improvement in plant availability and projected continued system performance improvement signaling the end of supply shortages for the foreseeable future. Efforts driven by Eskom as well as other role players to promote EE are unlikely to continue. Within this context, SANEDI's role as champion for improved energy productivity and EE becomes ever more important. A positive development however, has been the implementation of the Section 12I and 12L tax incentives, which are clearly defined in the tax legislation and accompanying regulations. This has enabled SANEDI and the broader commercial and industrial customer base to plan their EE interventions with a greater degree of certainty. Going forward, this appears to be a significant game-changer for the funding/incentivising of EE interventions. In this financial year the 12I and 12L programme has resulted in 5.8 TWh of energy savings.

With the cost of installed solar solutions declining to unprecedented lows[8], rooftop solar is fast becoming a wide spread phenomenon. Internationally, this trend is driven by declining technology costs, a wish for independence, environmental concerns, policy direction and/or incentives. In South Africa, we are experiencing similar trends, a growing demand from the end use sectors. Due to the falling prices of RE technologies and increasing Eskom tariffs, service deliver challenges are an additional issue in South Africa.

By February 2017, 25.8 MW of rooftop PV[9] systems is known to have been installed in the country. At the moment this is occurring without regulatory clarity and without a fully considered enabling environment.

The rapid market growth for distributed generation solutions is not confined to solar PV. Improvements in the cost and performance of other distributed energy technologies (e.g. co-generation, tri-generation and waste-to-energy) and potential breakthroughs in energy storage are continually creating new opportunities for on-site generation and storage. As a consequence, distributed installations are not optimising the potential benefit for the country and are causing confusion within municipalities. This trend may further accelerate, particularly among large and affluent consumers as technology prices continue to fall. A policy and a regulatory framework is urgently needed in this area.

This development augers well for the country's climate commitments, but distributed and variable clean energy options present a further challenge for planning, forecasting demand requirements and planning for infrastructure requirements, among many others. Municipalities that are already challenged by skills and capacity shortages, struggling finances, revenue, resource and asset management challenges and service delivery trials are now facing the added complexities associated with these developments. The implication of the new technologies on the licensed municipal is forcing municipalities to relook at their current business model. The reliance on revenue from electricity sales to cross subsidize other services is not sustainable.

Successful integration of distributed generation options necessitates a robust grid platform that offers more intelligence. A capable and flexible smart grid platform is becoming essential to support the transforming and increasingly complex energy sector. Smart Grids potentially offer solutions to these operational and industry transformation challenges. Smart Grids have however, been punted for years as the solution to all energy network challenges and fortunes have been lost on failed implementation efforts. For this reason, an industry forum (SASGI) has been created to assist municipalities in navigating the numerous components and plethora of technologies, systems, platforms, interfaces and possibilities that forms part of a smart grid. The gap between private-public engagements in the energy sector is also largely untapped, specifically in the municipal sector where service delivery could benefit from the inclusion of private sector companies assisting with municipal service delivery (e.g. private sector bringing in and operating new

8 *Lawrence Berkley National Laboratory. 2015. Tracking the Sun IX and Lawrence Berkley National Laboratory. 2015. Utility-scale Solar 2015.*

9 *A voluntary database of Solar PV rooftop installations in the country.*

RE and EE technologies in waste water treatment plants). At utility-scale, as procured by the REIPPPP, solar and wind technologies have dominated. The development of other technologies such as biomass, small-hydro and landfill gas have been slower than planned. There remains room for cost and technology improvements for these solutions to become more viable. There also remain numerous unexplored opportunities within the RE sector. Energy from waste, utilising the estimated 60 to 70 million m3 of waste generated annually, is readily available and currently under-utilised. Despite limited water availability, unexplored opportunities for micro-hydro applications at specific sites offer opportunities. South Africa also has a world-class wave energy (10 – 50 kW/m crest length) and ocean current (70 – 85 Sv peaking at 2 m/s) resource that is potentially exploited upon the availability of commercially viable technologies. Towards developing and promoting these RE technologies, SANEDI is participating in various technology collaboration platforms of the IEA (including those for Bioenergy, Ocean energy systems and Solar Heating and Cooling) and has established a number of industry platforms to facilitate industry collaboration, knowledge sharing and advancement and is currently participating in the development of Algal Bioenergy and Ocean Energy resource assessment datasets and reports for South Africa.

The transport sector consumes 30% of all energy in South Africa. Oil imports contribute significantly to the country's balance of payments deficit without domestically produced crude oils, South Africa is heavily reliant on oil imports at a scale that contributes negatively to the country's balance of payments and energy security. Transport EE is also exceptionally poor, with only 15% of fuel energy translated to kilometers (85% heat and other losses). As in the rest of the world, traffic congestion and pollution have become some of the biggest challenges for cities throughout South Africa. Cleaner mobility can offer a strategic solution for the country's energy security risks, contribute to balance of payments savings, transport EE improvements, economic development and climate mitigation.

Wind turbines

11.2 Organisational Environment

For the period from July 2017, with the resignation of the Chief Executive Officer (CEO), SANEDI has had an interim CEO appointed as per Section 11 (3) of the National Energy Act, 34 of 2008. Significant internal organisational challenges and developments which affected SANEDI's performance during the financial year has been fiscal pressure and inadequate funding that hindered SANEDI's ability to implement its projects and fund its full mandate. This has had a negative impact on planned performance.

The lack of specialised industry specific technical skills in both core business and support functions makes SANEDI utilise consultants from time to time. SANEDI is committed to resourcing the organisation appropriately to achieve its goals and therefore has initiated an organisational review process for the forthcoming financial year.

SANEDI's budget does not allow us to have these specialist skills and we often have to partner with universities to try and fill the skill's gap.

YEAR	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Energy R&D	R 922 202	R1 074 767	R1 700 671	R 947 554	R 898 173	R 949 880	R 803 948	R 879 294	R 975 877	R 815 030
GERD[11]	R16 520 584	R18 624 015	R 21 041 046	R20 954 677	R 20 253 805	R 22 209 192	R 23 871 219	R 25 660 573	R 29 344 977	R 32 336 679
Energy R&D % of GERD	5.58	5.77	8.08	4.68	4.43	4.28	3.45	3.43	3.33	2.52

Table 10.2.1 Historical Energy Research Funding Trends for South Africa[10] in millions

10 South African National Survey Of Research And Experimental Development, (HSRC, 217).
11 Gross Expenditure on Research and Development.

YEAR	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16
Energy R&D	R 922 202	R1 074 767	R1 700 671	R947 554	R898 173	R949 880	R803 948	R879 294	R975 877	R815 030
GERD[13]	R 16 520 584	R 18 624 015	R 21 041 046	R 20 954 677	R 20 253 805	R 22 209 192	R 23 871 219	R 25 660 573	R 29 344 977	R 32 336 679
Energy R&D % of GERD	5.58	5.77	8.08	4.68	4.43	4.28	3.45	3.43	3.33	2.52

Table 10.2.2 Historical Energy Research Funding Trends for South Africa[12] in millions.

The 2015/16 National Survey of Research and Experimental Development (HSRC, 2017) shows that South Africa spent R 815 million as gross expenditure on research and development (GERD) on energy, amounting to 2.52% of the total GERD. This is a reduction of approximately R160 m from the previous year. With the importance of energy to the South African Economy, it is a worrying trend which shows a large decline in Energy Research spending as a percentage GERD.

Figure 4 below[14], shows the international picture of human and financial resources devoted to R&D. South Africa languishes at the bottom end of the table only ahead of Mexico and Chile.

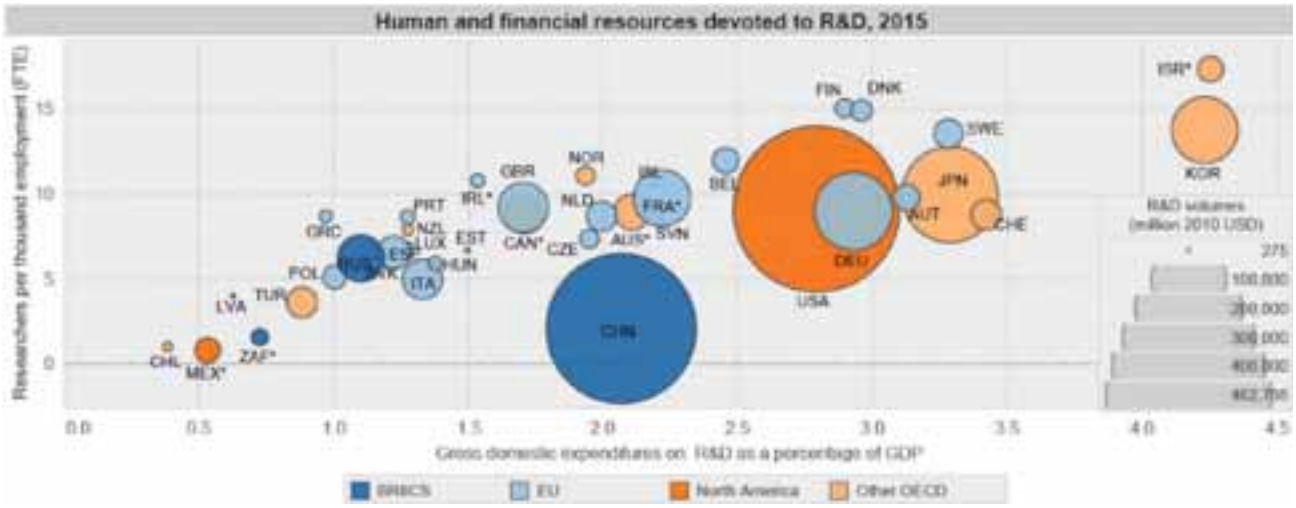


Figure 4: Human & financial resources devoted to R&D.

According to the recommendations of State of Energy Research in South Africa report (2014)[15], "it is recommended that a more substantial portion of the national R&D vote be allocated to energy and energy-related research in line with national priorities. Research programmes should be driven upon agreement by the relevant state departments and based on advice by the proposed national Energy Research and Development Advisory Desk. It is recommended that at least 1.5% of the fiscal appropriation be earmarked for R&D support and that a higher proportion of this be earmarked for energy than is currently the case". It is a concern that this recommendation has fallen on deaf ears and is likely to compromise the sustainability of the Energy sector over the long term and it is for this reason that it is being proposed that the DoE considers and motivates to include the additional research funding requirements, which will address the long term industry sustainability, as part of the MYPD tariff motivation.

12 South African National Survey Of Research And Experimental Development, (HSRC, 217).
13 Gross Expenditure on Research and Development.
14 Source: OECD (2017), OECD Science, Technology and Industry Scoreboard 2017: The digital transformation, OECD Publishing, Paris.
15 ASSAF, 2014.

11.3 Key Policy Developments And Legislative Changes

The following are policy and regulatory developments that were expected to change the context for implementation of RE, EE, embedded and distributed generation:

- The introduction of Carbon Tax,
- Amendments to the Electricity Regulation Act, National Energy Regulatory Act,
- Approval of the post 2015 National Energy Efficiency Strategy (NEES),
- Revisions to the Grid Code, and
- The updated Integrated Resource Plan (IRP).

These were expected during the course of the 2017/18 financial year but as they were not finalised they did not have an impact on SANEDI's focus.

11.4 Strategic Outcome Oriented Goals

For the 2017/18 financial year SANEDI had the following outcome-orientated goals:

GOAL[16]	GOAL STATEMENT
Goal 1. A resilient, effective and enabling delivery environment that is aligned to/ complies with all statutory requirements.	• An effective and efficient internal control environment (unqualified audits), • A team that is adequately staffed, adequately skilled and trained and adequately representative of the national demographics (as defined in the relevant plans for SANEDI), and • Effective risk management and effective and comprehensive stakeholder management.
Goal 2. Energy innovation, knowledge and skills for a less carbon intensive, more environmentally sustainable, affordable and efficient energy system.	• Identify and develop suitable, innovative energy solutions (150 projects), and • Knowledge (9 datasets) and skills (1,000 researchers and trainees supported) towards a less carbon intensive, more environmentally sustainable, affordable and efficient energy system that can support the country's economic and Socio-economic development objective.

16 Goals are those defined in the Board and Minister approved Strategic Plan and APP for 2017/18.

12. PERFORMANCE INFORMATION BY PROGRAMME

INTRODUCTION

The appointment of the new Board brought with it new leadership which aimed to improve, re-invigorate and uplift the organisation. The Board approached the annual strategy review process with the aim to responsively re-align SANEDI with its mandate and bring its relevance and value to the forefront. The SANEDI strategy went through a complete overhaul whereby the organisation's vision, mission and values were redefined to reflect SANEDI's purpose, overall intention and ethical principles in the environment in which it operates. The strategic outcome-orientated goals and associated strategic objectives were redefined during 2017/18 planning cycle.

12.1 Programme Highlights for the Year

SANEDI celebrates another full and successful year of activity in the energy sector. As illustrated in the organisational structure, SANEDI's activities are structured around three main programmes, namely[17]:

- Programme 1: Administration,
- Programme 2: Applied energy research, development and innovation, and
- Programme 3: Energy Efficiency.

Some of the year's highlights from SANEDI's two technical programmes (Programme 2 and Programme 3) are featured below. Subsequent sections (refer sections 11.2 to 11.4) provide an overview of each programme and the respective performance information relevant to the financial year.

12.1.1 Programme 2: Applied energy research, development and innovation

CLEANER FOSSIL FUEL

South Africa is reliant on fossil fuels for most of its primary energy supply. Approximately 90% of primary energy is derived from fossil fuels, 72% of which is coal. Furthermore, coal provides 85% of electricity generation capacity and 92% of electricity production. Coal is also used for the production of liquid fuels including approximately 30% of the petroleum used in South Africa. This reliance on fossil fuels has led to an approximate 400Mt CO_2 emissions per year. South Africa's coal industry contributes significantly to employment opportunities, income generation as well as accounting for 6% of the country's total merchandised exports. Notwithstanding the recent advances made in renewable energies and energy efficiency measures, it is evident that fossil fuels will remain the main contributor to South Africa's energy economy for some decades to come.

During the United Nations Framework Convention for Climate Change Conference (UNFCCC) of Parties in Copenhagen, the South African President committed the country to lower greenhouse gas emissions, provided that international support in the form of funding and technology was forthcoming to assist with such an action. Such a commitment entails the application of a portfolio of clean technologies including Carbon Capture and Storage (CCS).

It had been previously shown by the International Energy Agency that stabilising the carbon dioxide concentration in the atmosphere (and hence address climate change) would globally be less expensive if CCS was included in the menu of options to mitigate carbon dioxide emissions. Since the Paris Conference of Parties of the UNFCCC that set a target of significantly less than 2°C, it is apparent that such a target cannot be achieved globally without CCS. CCS is viewed as a critical transition measure until nuclear and renewables become more dominant in the national energy supply.

The investigation into the viability of CCS in South Africa is being undertaken with the expressed approval and support of government. The South African government has designated the DoE to lead the CCS programme. The South African Centre for Carbon Capture and Storage (SACCCS), has been mandated by the DoE to undertake the technical development of CCS in South Africa. The DoE is undertaking the development of legal/regulatory matters.

The centre is targeting the development of CCS for commercial operation by 2030. Development work is structured into five phases. In the current phase (phase 3), three activities are running in parallel:

- General CCS proof of concept, focused on broader research, business case development, site identification and impact assessments, among others,
- A Pilot Carbon Dioxide Storage Project (PCSP), piloting the injection and storage of carbon dioxide into a suitable geological formation by 2020 on the premise that if there is no suitable storage geology then it would be inappropriate to employ CCS in South Africa, and
- Stakeholder engagement, both to create general awareness of and build capacity for the technology in the country as well as providing support to the

17 A more comprehensive report is submitted on the Stakeholder Engagement Report.

PCSP, engaging with local stakeholders and interested and affected parties in the area identified for pilot implementation.

During the 2017/18 financial year the programme made significant progress in all these three areas. Effectively, with the introduction of the PCSP, the CCS activities are entering a field operations phase an exciting phase that also brings a new set of risks to be managed. The PCSP identified the Zululand basin as the focus for basin characterisation in identifying a suitable location for the storage pilot project. Should current investigations and basin characterisation prove the Zululand basin to be unsuitable, the Algoa basin was identified as a possible alternative. Both regions are on-shore, so it is less expensive than off-shore and facilities are easier to access for capacity building. Basin characterisation comprises of seismic acquisition, seismic processing, aeromagnetic survey, slim hole drilling to recover rock cores and vertical seismic profiles of the well will be conducted. This data will then be analysed to characterise the basin for storage capacity and to identify the injection site.

CCS research and investigations have continued concurrently, focusing on the broader requirements for the development of the technology in South Africa. Two studies were completed during the 2017/18 year:

- The Business Case for continued CCS in South Africa. The aim of the project is to develop a business case for continued research into CCS activities in the country and to assist decision makers with reasons why continued support of CCS is necessary. The final report will assist policy makers and decision makers to make informed decisions regarding the development of CCS, and
- Appraisal of CO_2 utilisation technologies and their suitability for implementation in South Africa.

Instead of storing carbon dioxide, it may be more appropriate to use the gas as a chemical feedstock, especially if one can use renewable energy in the process. The aim of the project is to assess all carbon utilisation technologies currently considered or employed internationally and recommend those that are appropriate for South Africa.

The status of the above projects are as follows:

STUDY	STATUS
The Business Case for continued CCS in South Africa.	Completed
Appraisal of CO_2 utilisation technologies and their suitability for implementation in South Africa.	Completed

Table 12.1.1.1 CSS studies completed for 2017/18.

The CCS programme is benefitting from a comprehensive stakeholder engagement support programme. South Africa has stringent requirements for stakeholder engagement to be conducted as an integral part of environmental authorisation processes. Legislation requires that stakeholders be engaged and be provided with information about the basic principles around the CCS technology as well as benefits and potential risks of its application. This is particularly and immediately relevant to stakeholders who may be affected by the PCSP.

The emphasis of the public and stakeholder engagement regarding the deployment of CCS in South Africa has been on:

- Raising CCS awareness as one of the solutions that mitigate against Climate Change,
- Developing an understanding of CCS, key concepts, subsurface storage and key issues,
- Outlining the benefits and risk management of demonstration and deployment of the CCS technology in South Africa, and
- Placing CCS in the context of South African climate change mitigation, energy production and use, coal use, resource development and job creation, amongst others.

During this period the PCSP completed the dynamic modelling on the limited existing data which concluded that the identified site for injection in the northern part of the Zululand Basin can be injected with 13,000 tons of CO_2. The plume will occupy an area in the subsurface of <150 meters in diameter from the injection wellhead.

The major challenge remains stakeholder consent to proceed with basin characterisation activities. The stakeholder delay is impacting negatively on the schedule which has seen a six(6) month delay in releasing the Request for Proposal for the basin characterisation activities that were originally planned to start in January 2018. This may cause the project to lose the services of Battelle for the processing work and will impact negatively on budget as alternative resources will be engaged at SANEDI's cost to fulfil this task. Fieldwork has been delayed beyond March 2018 therefore seismic acquisition aspect will require a bridging contract in order to retain specialist in this. The Battelle contract has been extended by the World Bank for certain activities to 30 June 2018 and will have to be extended by a bridging contract until PTAS 2 has been awarded. This bridging period is expected to be for a period of nine months.

During the year under review, the 5th Biennial Carbon Capture and Storage conference was held at Coastlands Hotel & Convention Centre in Umhlanga, KwaZulu-Natal (KZN) from 18 to 19 October 2017. The conference was held in order to afford the stakeholders in that area an opportunity to be part of the conference as delegates and speakers. The conference was well attended with 200 delegates on the first day and 160 on day two. The keynote address was given by Mrs Elizabeth Marabwa (Chief Director: Programmes and Projects Management Office) on behalf of the Deputy Minister of Energy, Ambassador Thembisile Majola. The MEC for Economic Development, Tourism and Environmental Affairs (EDTEA), Honourable S. Zikalala welcomed all delegates to the KZN Province and assured support for the CCS project. The Honourable SN Mkhize of the KZN Provincial House of Traditional Leaders was also in attendance and was part of the programme.

Ambassador Trine Skymoen, the Norway ambassador to South Africa pledged further support for the CCS programme in South Africa. She stressed that in order to meet the Paris target of keeping the increase in global temperatures to below 2 degrees, CCS will have to be part of the mitigation strategies implemented otherwise the target will not be achievable and the cost of mitigation will be too high. The outcomes of the conference were that the communities in KZN are most concerned about the risk of CO_2 leakage and wanted to know what mitigation measures would be taken if such an incident were to occur. They were also concerned with the legacy of the project. Overall, the benefit that came out of the conference is that the project is getting support from the KZN Provincial Authorities but they also stressed that they would like to be involved in every aspect of the project to ensure that community needs and expectations are taken into account in all decision making.

The stakeholder engagement programme has however, extended much broader than the vicinity of the PCSP, to also create awareness and build capacity around CCS at a national level. The focus has been predominantly on education and creating interest among South Africa's young scientists.

Several initiatives and events were run during the year, namely:

- Eskom Expo for Young Scientists Science Fairs,
- Career/Science Technology, Engineering, Mathematics and Innovation Exhibitions,
- Educators Training Workshops for the Educational Science Kits, and
- Collaborations with SANBI and SAASTA.

SACCCS also supports human and technical capacity building in CCS through bursary and non-bursary initiatives. The SACCCS bursary programme was started in 2010. The bursary programme offers funding for students studying towards an Honours, Masters or Doctorate degree with research topics relevant to CCS and preferably the PCSP.

To date, ten Masters and three Doctorate students completed their studies and a further six Masters, one Doctorate and one Honours student are currently studying with bursary support from SACCCS. In addition to the bursaries, SACCCS has a non-bursary programme that supports projects or activities that are CCS related and are beneficial to the

PCSP project as well as the recipient in terms of capacity building. Eleven Masters and two Doctorate students have benefitted from such support, which includes participation on and contributions to elements of work related to the CCS programme.

RENEWABLE ENERGY

One of SANEDI's roles is to facilitate and co-ordinate renewable energy research, development and demonstration through local and international co-operation, technology transfer and information exchange, leading to the deployment and commercialisation of sustainable, efficient, reliable, cost-competitive and environmentally sound renewable energy technologies. SANEDI therefore seeks to make optimal use of local resources that diversify energy production and create an environmentally sound energy sector. The Renewable Energy and Energy Efficiency Partnership (REEEP) and the WASA are examples of our international collaboration.

In order to accelerate the research path of scientific innovation to market viable alternatives and grow the pool of energy scientists, SANEDI has established CORDs that focus on coordination in the research, development and innovation space of the energy sector, promotion of technologies, skills development and collaboration. One such centre is the Renewable Energy Centre of Research and Development (RECORD).

The contribution from these initiatives to the sector is steadily growing. A few of the activities from the year are highlighted here:

REEEP

Climate Change, Clean Energy and Urban Water in Africa (Waterworks Project):

The project facilitated energy audits for each pilot municipality (Nelson Mandela Bay and iKheis Local Municipality) through the National Cleaner Production Centre (NCPC), a unit within Council for Scientific and Industrial Research (CSIR), which offered to sponsor the costs associated with the energy audits. This level of audit is a country first under NCPC's Industrial Energy Efficiency (IEE) project as the IEE only services private industry. This forms an innovative component of the project, bringing together public and private sector organisations in addressing municipal energy challenges.

The findings of the energy audit undertaken will inform the energy opportunities in each municipality's water infrastructure. As part of the energy audits in each municipality, technical accredited training is also being conducted through the NCPC for municipal staff in the electricity and water departments. Training on Energy Management and other technical courses was conducted.

In response to the DoE RFP for the EEDSM fund, the project team designed an EEDSM application for each pilot municipality to assist municipalities in accessing funding to address energy savings potential in water infrastructure.

REEEP held a stakeholder engagement information session in October 2017, termed the Municipal Procurement Round Table. The objective of the event was to discuss the challenges that both municipalities and private sector encounter when attempting to engage with one another in the current regulatory framework and how some of these may be overcome. The round table is a key source of critical feedback from stakeholders since they inform project design and appropriate implementation. Furthermore, the round table allowed public and private sector stakeholders to connect and foster communication.

SWITCH Africa Green

REEEP and SANEDI hosted the 4th Energy in Agriculture platform in Cape Town in October 2017. The event showcased RE and EE technology applications available to the Agricultural sector as part of energy savings and energy generation for self-use. SANEDI signed a MoA with Green Cape, a non-profit organisation that drives the widespread adoption of economically viable green economy solutions. It supports the development of the green economy, works with businesses, investors, academia and government to help unlock the investment and employment potential of green technologies and services and support a transition to a resilient green economy. The MoA engaged both parties to work together on the Energy in Agriculture platform to foster green economic development by addressing energy in Agriculture. The monitoring and evaluation of the SWITCH Africa Green project began this on the last quarter of the financial year with ex-post evaluations being undertaken to establish the impact the project has had on project beneficiaries. The project has engaged in a carbon footprint as part of offsetting and greening its activities as part of the wider Sustainable Consumption and Production (SCP) principles set out by the UN.

RECORD

The highlights for RECORD for 2017/18 include attendance, hosting and sponsoring of several very successful events:

REEEP and RECORD hosted the 4th meeting of the Agricultural Platform in Stellenbosch, focussing on renewable and energy efficient technology available to the sector. Topics included "Electrification of Agricultural transport and mobility", "Solar thermal work in Agri-processing" and the greening of Agriculture tool from Green Cape.

Agriculutral Platform meeting held in Stellenbosch.

On 11-13 October, RECORD attended the Ministerial launch of the Department of Science and Technology (DST) supported manganese beneficiation pilot facility in Nelspruit and the following two days of SA-USA energy storage bilateral talks. This event showcased storage technologies and outlined South Africa's potential areas of technology focus expected to lead to economic development. The RECORD team presented the potential of renewable energies to the Department of Defence (DoD), Limpopo Regional Works Formation in Sawong, Phalaborwa. This was an incredibly successful event that has since lead to a plan for a nationwide engagement and collaboration through a Memorandum of Agreement and initiatives to drive this are underway. Subsequent to this, RECORD and Energy Efficiency attended a fact finding field trip to military bases in the Limpopo province towards the coordination for initial interventions for this impending DOD, SANEDI collaboration. During the year under review, RECORD participated in and chaired a session at the 3rd National Biogas Conference hosted by the DOE at DBSA. This 3rd National Biogas Conference (all attended and participated in by SANEDI) offered an opportunity for feedback from the industry, project developers, project owners, academia and other stakeholders to share experiences gathered from the implementation of biogas projects in recent years and through panel discussions unpack how best to move the biogas industry in South Africa forward.

Renewable Energy and Energy Efficiency awareness training with the Department of Defence.

On 22-24 November, RECORD attended and assisted with the SOLTRAIN programme's "Specialised Course on Solar Heat for Industrial Applications". This was oversubscribed and hugely successful in terms of skills development. RECORD also sponsored (through SOLTRAIN funding) the attendance of three delegates for training at the conference.

Soltrain specialised course held in Stellenbosch.

RECORD presented at the SA Energy Storage 2017 conference and exhibition, covering policy, regulatory, economic, technology, business and application issues associated with Energy Storage, both as a disrupting and an enabling technology. This presentation was well received and mentioned in Engineering News (http://www.ee.co.za/article/sa-energy-storage-2017-conference-presentations-papers.html).

Danish programme

The implementation of the programme, following a bilateral agreement between the governments of South Africa and Denmark signed March 2013), started at the beginning of 2014. This was after the implementation agreement between the DoE, SANEDI and Eskom was signed in December 2013. The total grant funding for the programme is 40 million Danish Kronor (DKKK).

The overall immediate objective of the programme is to increase the deployment of low carbon technologies in the energy sector and this has been operationalised into three subsidiary objectives which are aligned with the following three components:

Components	Objective	Funding Received
Component 1: Technical Assistance to DoE	The objective is to strengthen the energy planning capabilities of the DoE in the areas of Climate Change Mitigation, Energy Efficiency and Renewable Energy. The expected outcome is that the DoE will improve its capacity to address critical issues related to Climate Change Mitigation, EE and RE.	R18,949,695
Component 2: Development of Wind Atlas for South Africa (WASA 2)	The objective is to further develop WASA significantly beyond what was achieved in the first phase of WASA1. The expected outcome is that South Africa´s capacity for wind energy assessment will be enhanced.	R23,022,978
Component 3: Technical Assistance to ESKOM	The objective is to provide technical assistance to Eskom for integration of renewable energy in electricity supply. The expected outcome is that Eskom will improve its capacity, systems and processes to integrate renewable energy into the electricity grid.	R4,568,499

Table 12.1.1.2: Danish programme components.

SANEDI's role in the DANISH programme is to provide technical support with the development of the Terms of Reference, procurement and tender processes, contracting and payments of goods and services for the DoE component 1 and the Eskom component 3. SANEDI is responsible for the full implementation of the WASA 2 component 2.

To a large extent, the programme has proven to be a success. Institutional strengthening is the foundation upon which the programme is built. The programme has been relevant to the priorities and policies of the country as well as the various sectors that support the growth of renewable energy and South Africa's transition into low carbon economy.

Component 1 (DoE) Achievements:

The pre-energy audit of 188 public buildings has been completed in collaboration with the Department of Public Works (DPW). This work was further extended to the establishment of a centralised smart metering system for monitoring energy use in municipal buildings in order to enforce energy efficiency measures. A policy brief on the strategy has been prepared for policy makers and an action plan will ensure its effective implementation. A National Energy Efficiency Campaign Strategy has been developed with different events arranged annually to create public awareness of energy efficiency.

A Carbon Offset System Administration has been established at the DoE in preparation for the Carbon Tax Policy by National Treasury. The DoE Energy Planning staff have been trained on the Long-Term Energy Alternative Planning (LEAP) system for modelling the energy demand of the commercial sector and an action plan for collecting the required data for modelling the energy sector has been developed.

Furthermore, the programme has provided support to the South African Renewable Energy Training Centre (SARETEC) for the purposes of building South Africa's service technician training expertise to meet the needs of the renewable energy sector, particularly the wind energy sector. A Renewable Energy Data and Information Service (REDIS) was established and is online at the DoE.

Component 2 (WASA 2) Achievements:

WASA 2 enhanced South Africa's capacity for wind energy assessment and has contributed significantly indocumenting the national potential for wind power and utilising the resource data in strategic energy planning, to improve framework conditions for the utilisation of South Africa's wind resources for low carbon transition of the power sector. This second phase of WASA (WASA 2) has successfully installed five additional wind measurement masts, that are expected to be kept operational for three years ensuring that the data is logged, processed and made publicly available on the WASA download website. These wind measurement masts cover the remaining areas of the Eastern Cape Province, KwaZulu-Natal and parts of the Free State Province which were not covered in WASA 1.

The WASA activities have been hugely successful in documenting and making publicly available documentation for the potential for wind energy in South Africa. WASA 2 has been granted extension until 31 December 2018 to ensure that longer-term data is collected. The outcome of the WASA initiative feeds into the South Africa Wind Energy Program Phase 2 (SAWEP 2) which is undergoing its second phase (SAWEP 2) through Global Environment Facility (GEF) with UNDP support. The SAWEP 2 Programme

will help in sustaining and taking the achievements of the WASA initiative further with a Fast Track (interim) Wind Atlas, Database and resource map, covering all of South Africa.

Furthermore the concurrent operation of the WASA 1, 2 and 3 wind measurement masts enables a long term accurate Wind Data Bank for South Africa which will be invaluable for e.g. investigating and predicting the seasonal and potential climate change impacts on SA's wind resource and for wind power forecasting etc. The WASA initiative has also provided a useful application in the Department of Environmental Affairs' (DEA's) identification of Renewable Energy Development Zones (REDS) in South Africa through a Strategic Environmental Assessment with the aim for effective and efficient roll-out of large scale wind and solar development in South Africa.

Component 3 (ESKOM) Achievements:

The third component of the programme has made significant contribution to capacity building of Eskom regarding efficient planning and technical integration of RE technologies into the South African power system. For improved capacity and competency in the integration of RE into the electricity grid at distribution level, the modality used was to attach Danish/international technical advisors to the Eskom Research, Testing and Development Unit. They subsequently facilitated the rotation of the technical advisors amongst the Eskom Operation Units assisting with capacity building on network operations and control with regards to increasing RE integration. Initially, an assessment was conducted on the actual status of network operation performance and SCADA systems in general and in relation to operation of Renewable Power Plants (RPP) embedded in the distribution network. In addition, distribution network operation manuals were reviewed and subsequently distribution network operators were provided training on network operations and control issues regarding increased integration of (RPP).

At the transmission level, the Eskom projects on System Adequacy, Reserves and Ancillary Services as well as Large-Scale RE Penetration on the Dynamic Stability of the Eskom Power System utilised Danish and international consultants respectively and this modality provided a great opportunity for the Eskom staff to learn from the international best practices through the workshops and training provided.

A Care Group for renewables was formed at Eskom through the initiatives of the Danish Programme to continue internalising the lessons learnt. This will ensure the sustainability of the capacity building attained through the programme.

There were very useful lessons learnt from the programme and components levels. At the programme level, the main challenge was around procurement for the programme within the designed lifetime of the project which emphasised realistic budget and time planning, knowing that any government-related procurement, tender or awarding process has time constraints. The second phase of the programme is in the planning stage for some time and it is expected that the agreement will be signed soon.

SMART GRIDS

Most municipalities in South Africa are facing challenges related to aging infrastructure (water and electricity), maintenance backlogs, service delivery, skills and capacity shortages and revenue collection. The effective deployment of Smart Grids in the Electricity Supply Industry (ESI) and Electricity Distribution Industry (EDI) has been recognised as a key enabler, offering the means for innovative strategies and technologies to accommodate changing system requirements, address operational challenges and help municipalities be economically sustainable.

SANEDI's Smart Grid programme aims to contribute in four areas:

- To provide a common vision for Smart Grids within South Africa,
- To facilitate a Smart Grid knowledge-sharing forum for both the members of the ESI and relevant government departments,
- To implement applied research pilots within municipalities while introducing various smart grid concepts beneficial to addressing the challenges faced within municipalities, and
- To provide strategic inputs to national electricity policy as it relates to Smart Grids.

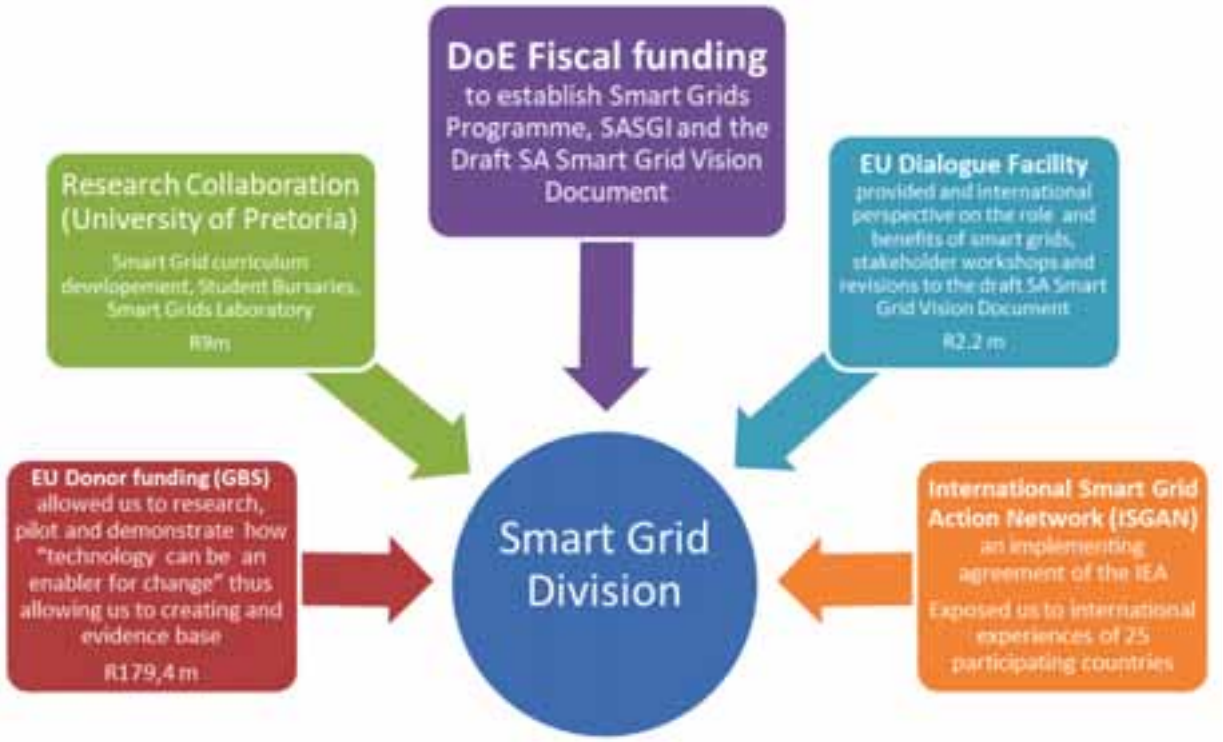


Figure 5: Overview of the SANEDI Smart Grids Divisional Focal Areas and its funding streams.

For the 2017/18 financial year, the Smart Grid Divisional activities have been structured into five focal areas bearing in mind the five areas the division intends contributing within. See table 12.1.1.3 below:

#	Focal Areas of Smart Grids Division for 2017/18	Detail
1.	EU donor-funded Smart Grids Programme.	10 Smart Grid pilot projects within the different categories of municipalities in South Africa.
2.	SA-EU Dialogue Project.	European Union funded project between the SANEDI Smart Grids Division and the DoE (Electricity Policy Directorate).
3.	South African Smart Grid Initiative (SASGI) Forum.	This is the Electricity Supply Industry association managed by SANEDI Smart Grids Division and focused around knowledge sharing and providing common vision on Smart Grids.
4.	Research Collaboration Programme (University of Pretoria).	SANEDI Smart Grids Division and the University of Pretoria's department of Electrical Engineering have jointly developed smart grid training curriculums for municipal officials and relevant National department officials. A Smart Grid laboratory and the provision of bursaries to engineering students with focused research around Smart Grids.
5.	The International Smart Grid Action Network (ISGAN).	SANEDI through the Smart Grids Division is South Africa's representative of ISGAN. The membership allows the Smart Grids Division access to international case studies and a network of industry experts to learn and share valuable industry experience with.

Table 12.1.1.3: Smart Grid Focal Areas.

EU Donor Funded Smart Grids Programme

The programme entails piloting the implementation of Smart Grid solutions within ten municipalities, each designed to address specific municipal challenges and inform specific policy or regulatory questions that were identified by the DoE. The DoE through its Electricity Chief Directorate (ECD) identified four strategic focal areas within the EDI in South Africa. These focal areas require a strategically designed applied research programme to identify gaps within existing policy & regulation as it pertains to the successful introduction of Smart Grids within the EDI. These four areas are as follows:

#	Department of Energy Focal Policy and Regulatory Areas
1.	Active Network Management (ANM).
2.	Advanced Asset Management (AAM).
3.	Energy Efficiency Demand Side Management (EEDSM).
4.	Revenue Enhancement (RE).

Table 12.1.1.4: Four Strategic Focal Areas within EDI.

These four focal areas mentioned in table 12.1.1.4 resulted in the selection of the ten municipalities to participate on the EU Donor Funded Smart Grids Programme as applied research demonstration projects, aimed at understudying the benefits and implications of Smart Grid technologies within the distribution network. The SANEDI Smart Grids Team (SSGT) strategically designed individual projects to provide input to National Policy & Regulation whilst also addressing burning technical issues affecting the performance of these entities.

Pilot Project Case Studies on EU Programme

eThekwini Muncipality – Active Network Management

eThekwini electricity distribution department was one of the project participants on the EU Donor Funded Smart Grids Programme. This pilot project was focused on understanding the implications of active elements within the municipal distribution grid. The system required the deployment of an Advanced Distribution Management System (ADMS). The project therefore focused on supporting critical elements like the Meter Data Management System and a vending system. Both these systems cost the Municipality R66m inclusive of the DoE/SANEDI grant of R15m. A payback period of six months and an R11m improvement in revenue generated within 11 months were achieved. The project is closed from the SANEDI side, however, the project is still active within the municipality as other crucial components are still being added.

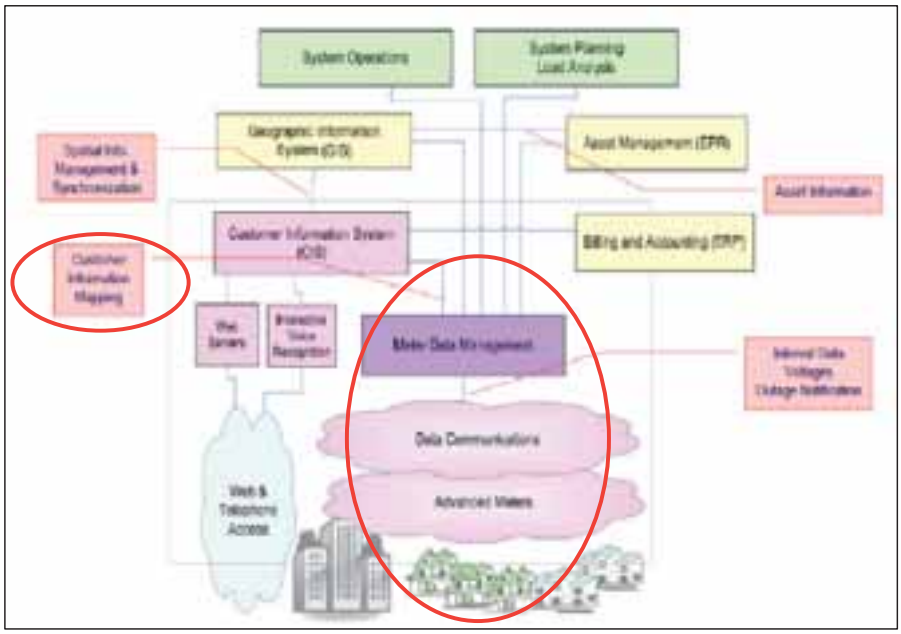


Figure 6: EU Donor Funded Smart Grids programme.

Thabazimbi Local Municipality – Revenue Enhancement Project

The Thabazimbi Revenue Enhancement project was designed around the deployment of 6676 Smart Meters, Meter Data Management System (MDMS), and Vending solutions. The project is jointly funded by DoE/SANEDI and the municipality through its service provider contribution totalling R45 million. There are currently 2900 smart meters installed which account for 43% of the total meters to be installed. The municipality is already experiencing a 30% reduction on electricity losses with a corresponding increase in revenue. It must be also mentioned that this project is quite complicated as the municipality owes Eskom millions over years of its operations. A payment plan is in place using the proceeds of this project to pay Eskom monthly.

Figure 7 below shows the areas covered by the project and other critical areas required in future.

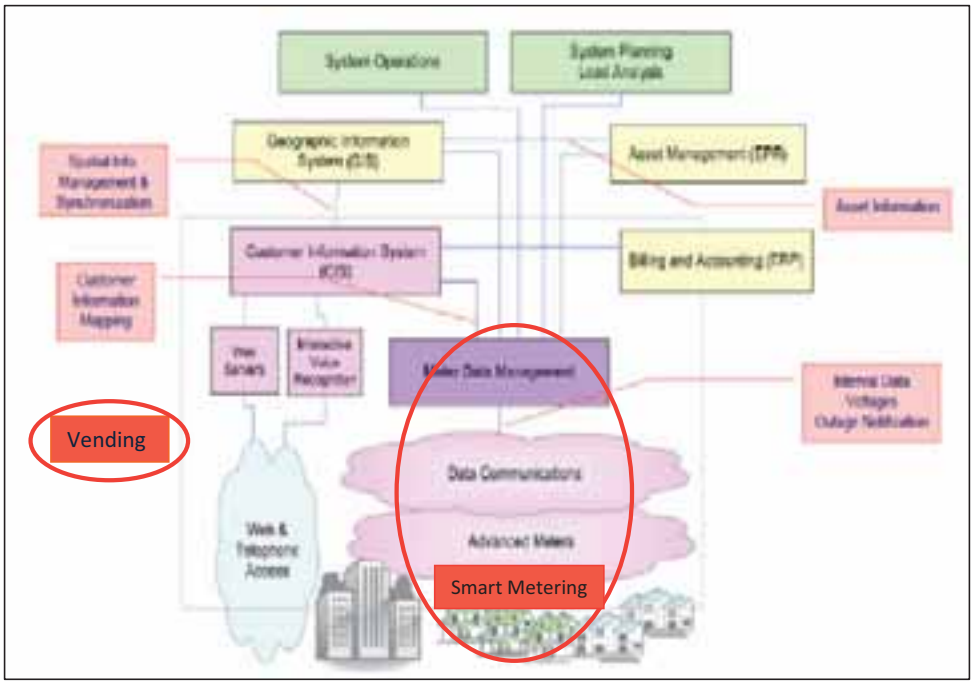


Figure 7: Thabazimbi Local Municipality Revenue Enhancement Project

The EU Donor Funded Smart Grids programme came to an end on the 30th of March 2018. All together four projects have been closed with three projects successfully closed within the 2017/18 financial year, namely:

- **eThekwini Municipality** – This project was formally closed on the 13th of November 2017. Active Network Management addressing the deployment of the Meter Data Management System and Vending systems in the build up to establishing the required Advanced Distribution Management System (ADMS) to proactively manage active elements within its distribution network like rooftop PV panels within customer premises and not duly registered or licensed for grid connectivity.
- **Matatiele Local Municipality** - The Revenue Enhancement project at Matatiele was successfully closed on the 23rd March 2018 and with the municipality formally ended on the 30th of March 2018. SANEDI Smart Grids team intends to continue working closely with the Municipality with the intention of increasing our understanding of the continued benefits and scenarios.
- **Mogale City** – This was a Revenue Enhancement project using an Advanced Metering Infrastructure to demonstrate the benefits of technology as an enabler for change and municipal sustainability. 600 Smart Meters were integrated with substations within a sector and a cloud-hosted Meter Data Management System (MDMS) for data analytics and grid control was put in place. This project was formally closed on 27th of March 2018.

Business Case on Smart Grids

The purpose of the business case study was to provide stakeholders with a standard methodology for compiling a Smart Grid business case and sharing the benefits, costs and risks associated with the implementation of a typical Smart Grid project. Furthermore, the business case may be used as reference to obtain the required investment decisions and to facilitate communication with both local and international investors.

Smart Grid projects require substantial investments and it is therefore important to consider Smart Grid deployment opportunities within the broader capital investment and business improvement requirements. At the heart of utilities and local government is managing finances to deliver services and therefore the development of a Smart Grid business case is essential to motivate the investment decision in terms of the benefits, costs and risks associated with its implementation. Successful Smart Grid implementation will support business efficiency improvements inclusive of the local government turnaround strategy. Smart Grids will contribute to the sustainability of a municipality through efficient use of energy, enhanced revenue management and improved service delivery. A well-defined business case and successful Smart Grid implementation can be used as a blue print for other infrastructure implementations such as water, sanitation, housing and transport because a Smart Grid is a subset of Smart Cities.

The importance of the interdependency between policy, standards and technology must be appreciated. Without an overall integrated approach and enabling policies, the roll out of Smart Grids could result in less than optimal results. This business case has been made available to members of SASGI and the industry at large and is now finalised.

South African – European Union Dialogue Collaboration (SA-EU)

The Smart Grids Vision Document is the strategy roadmap for the Electricity Supply Industry in South Africa. The final workshop on the Vision Document was held at the Birchwood Conference Centre on the 3rd of November 2017. The main aim of the workshop was to present the Strategic National Smart Grid Vision for the South African Electricity Supply Industry and close out the SA-EU Dialogue facility project.

The purpose of the Smart Grid Vision is to describe the aspirational future state of the electricity supply industry in South Africa. The aim was to balance practical realism with a suitably ambitious and aspirational vision so that the economy and society could reap optimal benefits from the significant infrastructure investments that would be required in the immediate future. A broad array of industry stakeholders were invited including all project participants on the EU Donor Funded Smart Grids Programme, National departments and parastatals. The SA-EU Dialogue project was fully funded by the EU and has been successfully concluded. The Smart Grids Vision document is endorsed by the Dti, DoE and SASGI.

South African Smart Grids Initiative (SASGI)

SASGI was created and is managed by SSGT. SASGI hosted a forum session titled "Challenges & Opportunities for Municipal Entities". The purpose of the session was to introduce strategic partnering opportunities to municipalities within South Africa. Opportunities are introduced as a range of presentations on the Public Private Partnership (PPP) through National Treasury, e-mobility opportunities within municipalities, implementing vending solutions for electricity and possible funding alternatives through the Sustainable Use of Natural Resources Energy Finance (SUNREF) team. SUNREF shared ideas on possible funding partnerships models between municipalities, Industrial Development Cooperation (IDC) and with technical assistance from SUNREF.

COLLABORATION WITH THE UNIVERSITY OF PRETORIA

Training and Development

SANEDI Smart Grids Team in collaboration with University of Pretoria Faculty of Engineering hosted the training course sessions at the University of Pretoria. The training sessions were two day events with attendees from the ESI, municipal utility engineers, project managers and measurement and verification professionals. The course was on Smart Grid IT Security Risk Management for Utility and IT Managers based on Cybersecurity essentials.

The objective of this course was to expose Utility and IT Managers to the fundamentals of Cybersecurity. The course started off by giving the delegates guidance on "How to think like a Cybersecurity expert", in other words, how does one analyse and minimise the risk of security incidents occurring in an organisation's hybrid-communications network. The training included explanations on the fundamental concepts of threats, vulnerabilities, risks and different Cybersecurity services. These services include Identification, Authentication, Authorisation, Confidentiality, Integrity, and Privacy. Mechanisms used to implement the different security services, such as encryption and hash-codes, were also discussed.

The course also introduced the NIST frameworks and standards. This framework can be tailored for specific use by different business environments and needs. The course includes multiple practical hands-on sessions to demonstrate all concepts introduced in the course. Lastly, an exercise to analyse a company and make recommendations for security improvements was introduced.

Engineering Student Bursaries

SANEDI, in collaboration with the University of Pretoria, have focused around building Smart Grids capacity in South Africa through the development and capacity building of youths. Electrical Engineering students with interest in research aligned to smart technologies within priority areas were awarded bursaries and grants. The bursaries and grants encourage students to develop themselves within the priority areas of study and contribute to the body of knowledge in Smart Grids. The collaboration with the University of Pretoria was intended to have a profound impact on South Africa's electricity grid and the expansion of the knowledge base, in terms of contributing to skills and capacity to the benefit of the energy sector. The University of Pretoria Student Bursary projects awarded twenty-one students with bursaries ranging from undergraduate, post-graduate and PhD levels.

Smart Grids Laboratory

The South Africa electricity grid is transforming into smarter grids based approach to the advancement of technology and the need to address the current industry challenges. There is a need to have a Smart Grid laboratory focused on stimulating research in the Smart Grid areas and driving customised solutions for South Africa. The objective of the Smart Grid laboratory is twofold: Outline techniques that faculty researchers and smaller undergraduate institutions may employ to develop a practical yet effective power engineering laboratory and addressing emerging technologies to ensure its relevance in the modern engineering world. The key to the laboratory is measurement. The fundamental components are smart metering capability and a cloud based platform for data analysis. The laboratory requires hardware, software and students to be fully functional.

Through the DoE/SANEDI Grant Fund, the Smart Grids laboratory and other collaboration areas mentioned above have been funded for two financial years totalling R9 million.

DATA KNOWLEDGE MANAGEMENT

The data and knowledge portfolio in SANEDI focuses on the collation, development and utilisation of credible, objective and high-quality data and information relating to the areas of SANEDI's responsibility. Most activities under the portfolio are consolidated under the Centre for Energy Systems Analysis and Research (CESAR), funded by the DST.

The centre aims to be the authority in the field of energy data for the purpose of modelling and planning that can support alignment of national and local government energy objectives. For this purpose, CESAR is developing an energy data repository and technical capacity that can, among others:

- Support national and local energy planning and inform policy decisions,
- Inform the country's energy technology R&D strategy, priority and research investments, and
- Monitor and gauge alignment of energy developments in terms of the Integrated Energy Plan (IEP) and National Climate Change Response Strategy.

During the financial year, the funding for CESAR was withdrawn by the DST until further notice. SANEDI aims to continue CESAR activities using available retained funds and a new allocation from Treasury. CESAR will continue to support students by offering bursaries/scholarships, submitting research papers to peer review journals, carrying out relevant policy studies and developing innovative decision support tools for the duration of the programme. CESAR aims to do this by partnering with both government departments and research institutions. This programme will contribute critical tertiary skills and capacity development in the energy sector.

The Data and Knowledge management sub-programme in future will be aligned to DoE activities and will include the industrial energy efficiency database and analysis tools. In addition, the development and implementation of standards and labelling database will be supported. SANEDI is also an active participant with the DoE on the International Energy Agency (IEA) emerging economies programme. SANEDI attended an inception meeting in Paris in December 2017 with UNIDO & UNDP to discuss future collaboration with South Africa.

WORKING FOR ENERGY

The Working for Energy programme is a clean energy initiative of the DoE, incorporate under the Environment and Culture sector of the Extended Public Works Programme (EPWP). Working for Energy projects are subjected to prescribed protocols in terms of job creation, skills development and environmental benefits through clean energy service delivery. The programme therefore gives preference to labour intensive construction methods with the intent of creating employment, particularly for youth, women and people with disabilities.

Funding for the Working for Energy programme has mainly been from earmarked funds from government. When the Mid Term Expenditure Framework (MTEF) funding concluded, all programme activities for this financial year were focused on finalising deliverables that were committed under the programme.

CLEANER MOBILITY PROGRAMME

The Cleaner Mobility Programme exists to research and recommend the most efficient and applicable energy solutions for the South African Transport sector, in order to inform critical policy and implementation decision makers as well as the public of the technologies that hold the potential to improve the movement of people and freight in various cities nationwide. SANEDI is the host and implementing agent of UNIDO's, GEF-funded, Low Carbon Transport Project in South Africa (LCT-SA). The Project Management Unit for the project works through the Cleaner Mobility Programme to ensure the execution and achievement of project deliverables in line with SANEDI's APP.

The LCT-SA Project was established to promote the widespread use of Electric Vehicles (EVs) and Non-Motorized Transport (NMT), as well as the development of the necessary infrastructure, as part of the Green Transport and Green Cities' initiatives of South Africa, mainly through improvements of legislative frameworks and the practical application of pilot projects in cities across the country.

Policy support

A key highlight of the project for the financial year 01 April 2017- 31 March 2018 was the technical support given to the National Department of Transport (NDoT) for the draft of the Green Transport Strategy (GTS). The department has finalised its GTS to attend to the significant contribution of transport to national GHG emissions as this strategy aims to minimise the adverse impact of transport on the environment while addressing current and future transport demands based on sustainable development principles.

The GTS has the potential of addressing some of the key elements promoted through the LCT SA Project. There has been intense involvement with stakeholders responsible for drafting the GTS to ensure that Electric Vehicles and Non-Motorised Transport potential is shared as part of the plan to reaching the country's emission reduction goals amongst other benefits that these transport sectors have to offer.

SANEDI has also been requested to support the process of implementing some of the recommendations of the GTS. This process is expected to begin during the 2018/19 financial year.

The Project has also been involved in the development of the NMT Chapter of the Green paper on Roads Transport Policy for South Africa. A legislation specialist has been appointed to analyse the Roads Transport Policy in order to assist the project with the relevant contributions to be made into the policy once it is published for comment. SANEDI also plans to host an EcoMobility Workshop facilitated by the appointed policy expert in order to ensure that a collective of industry inputs are compiled for the NDoT's consideration in amending the Roads Transport Policy to include the correct definitions and classifications of new mobility technologies that are currently not provided for in the National Policy and therefore deemed illegal by default of exclusion. The policy workshop is to be held in Quarter 1 of the 2018/19 financial year.

Studies and Pilot projects

A study to support a collaboration between the University of Johannesburg and the City of Johannesburg Municipality to pilot a business model to avail bicycles to be used by students, staff and residents working and living in the vicinity of the University corridor was conducted by a service provider appointed by UNIDO. The final study results and recommendations were submitted in the beginning of 2017. The next phase of the project is to implement the feasible recommendation from the study. The terms of Reference has

been drafted up for the designing of the suitable business model coupled with a business mentorship programme to groom potential entrepreneurs for the undertaking of a bicycle share scheme to be operated in the study area.

The City of Johannesburg Metropolitan Municipality are also interested in piloting electric buses for their Bus Rapid Transit routes. SANEDI and UNIDO are currently developing a concept document and proposal to obtain multi-stakeholder support for the work.

A Macro-economic Study to explore the social, environmental and economic impacts of the support and adoption of electric vehicles in South Africa is underway. The investigation is gaining traction from stakeholders anticipating the results of the investigation. The study is a collaborative effort between UNIDO, the dti and SANEDI with support from various experts and consultants. It was therefore thought appropriate to have a central co-ordinating body located between the dti and SANEDI.

Communication and awareness creation

The project has also featured/hosted workshops at the following engagements: (i) NAACAM Show (5-7 April 2017), (ii) Africa Utility Week (16-18 May 2017), (iii) Sustainability Week (13-15 June 2017), (iv) Smart Mobility in Cities Workshop in Cape Town (26 September 2017), (v) 2017 SAEE Conference (14-15 November 2017), (vi) 2017 EVIA Annual Conference Launch (5-6 December 2017), (Vii) Women in Energy Summit (18 February 2018), (viii) Africa Energy Indaba (19-21 February 2018), (ix) SANEA Energy and Mobility dialogues (22 February 2018), (x) Gauteng Transport Future Mobility Workshop (15 March 2018) and (xi) Africa Clean Mobility Week (12-16 March 2018).

The project also received exposure on Talk Radio 702 where the former General Manager for the Cleaner Mobility Programme, Mr. Carel Snyman, gave online master classes to promote the reality and benefits of the development of an EV industry in South Africa. The project has also managed to create a lot of media traction around the potential adoption of EVs in the SA transportation mix in an urban city set up. Since the Project's efforts to launch the EVIA Conference, the media has since followed further developments of SANEDI's Cleaner Mobility Programme and the Low Carbon Transport Project being implemented through the programme. SANEDI, UNIDO, Deloitte and the South African National Energy Association (SANEA) hosted the Energy and Mobility dialogue, as part of the Africa Energy Indaba Week, to initiate discussions on emerging international mobility trends that have already started to affect South Africa.

The discussions were centred on three themes, namely: The evolution of energy sources to power mobility, the transition paths to embracing new technologies to power mobility and the enablement aspects needed to make the necessary transition. UNIDO co-sponsored the event through a 'mega-joule' sponsorship package, while SANEDI sponsored the attendance fees of 20 delegates consisting of government officials and youth members invited through the Technology Innovation Agency (TIA) and the University of Johannesburg.

As part of the 'Energy and Mobility' dialogues programme, Mr. Anthony Dane of Change Pathways, who has been appointed by UNIDO to conduct the Macro-economic study on the impacts of electro-mobility adoption in South Africa, presented the project proposal and engaged the audience of key stakeholders to the process to give input on the approach presented during the event.

Capacity Building

The Low Carbon Transport project shared the call for papers to be submitted for the Electric Vehicle Symposium (EVS30) which took place in October 2017. Upon the selection of two papers submitted by delegates in the project's database, a key stakeholder mission was organised and funded through the Project for a group of officials to visit the EVS30 and to attend an Expert General Meeting (EGM) that was hosted at the UNIDO Headquarters in Vienna. Twenty government officials participated in both activities. The visits were seen as a crucial undertaking to intensify the interest of various government departments in the electrification of the transport sector.

In May 2017, a call was sent out to municipalities to submit proposals for an ideal 'SA Cleaner Mobility Week' campaign to be implemented with the support of the LCT-SA Project. The City of Tshwane submitted a promising proposal which was rewarded with a capacity building opportunity for two decision making officials to attend the Ecomobility World Congress in Kaohsiung in Taiwan to meet global City Mayors implementing similar initiatives in their respective cities. The implementation of the SA Cleaner Mobility Week proposal submitted by the City of Tshwane will take place during Transport in October Month 2018.

The United Nations Institute for Training and Research (UNITAR) offered a 12 week (18 September 2017 - 8 December 2017) online course on Sustainable Urban Mobility in developing countries. The course was targeted at urban and transportation planners, decision-makers from local governments as well as representatives of service providers (national governments, private sector, NGOs) and international organizations involved in the transport sector

worldwide. The LCT-SA Project took this opportunity to sponsor a group of stakeholder delegates to undergo the course as part of the capacity building project component.

Stakeholder Integration efforts for information sharing

The Electric Vehicle Industry Association is a body of public and private stakeholders with common vested interest of advancing the electric vehicle industry in South Africa. SANEDI and UNIDO has been supporting the secretariat of the association to plan and host the annual conference as well as to compile an annual booklet of EV developments and success stories in the local e-Mobility industry.

UNIDO invited Mr. Alexander Koerner as key speaker at the 2017 conference in December 2017. Mr. Koerner delivered an opening speech for the Conference on the UNEP Electric Vehicle Global Programme. This has led to further engagement between UNIDO and UNEP on activities related to transport and electric mobility.

SANEDI and UNIDO have been instrumental in supporting the Association to develop a governance structure. The Association has developed a constitution and a Memorandum of Incorporation (MoI) to formally register EVIA as an independent body. This process is still ongoing and will be followed up by a General Meeting in June 2018, where the Board of Directors will be appointed and the Association is formalised.

12.1.2 Programme 3: Energy Efficiency

The priority of implementing energy efficiency measures has diminished in the eyes of some critics, since load-shedding came to an end in 2014/15 and with the subsequent announcement by Eskom that due to new generating capacity coming on line and a steady decrease in the sale of electricity, resulting in the country having surplus generating capacity, that the focus on EE will be terminated. Many in the industry therefore felt that the entire concept of energy efficiency was at a crossroad, with Eskom now actively pursuing a growth (sale of electricity), strategy. However, these detractors of energy efficiency failed to consider the consumer, the environment and the overall economy (energy affordability) in their argument to phase out energy efficiency in the short-to-medium term.

The International Energy Agency (IEA) highlights in its summary of the 2017 Energy Efficiency report that: "More than ever before, energy efficiency is central to the achievement of a range of policy goals, including energy security, economic growth and environmental sustainability. Strong efficiency gains, despite the recent fall in energy prices (in real terms), have had a significant impact on global energy demand, reducing consumers' energy bills, holding back emissions growth and making energy systems more secure". The report goes on to say that: "Global progress has become dependent on yesterday's policies, with the implementation of new policies slowing. If the world is to transition to a clean energy future, a pipeline of new energy efficiency policies needs to be coming into force. Instead, the current low rate of implementation risks a backward step". It is for this reason that SANEDI's work in the energy efficiency programme must be applauded and accelerated, going-forward.

Notwithstanding these adverse perceptions and limited resources, SANEDI was able to facilitate the saving of 5, 8TWh of energy, through its work in administering the Section 12L EE tax incentives. This incentive has gone from strength-to-strength, with customers becoming more aware of the contribution of the cost of energy to their bottom line and the potential impacts of the proposed Carbon Tax to their business. SANEDI has assisted in this process, by reducing the average processing time of submissions for the tax incentive from two months to approximately three weeks, thus allowing applicants to submit their tax returns timeously.

Similarly, the Section 12I manufacturing incentive, encompassing a strong energy efficiency component, has started approaching saturation level, with the initial R20 billion budget limit being reached. However, SANEDI continues to successfully process the energy efficiency submissions, as the 12I-incentive requires an annual reporting regime of four years, post the bringing of any new assets into operation. Previously, SANEDI has assisted the Department of Trade and Industry (the dti) in compiling the annual progress report to Parliament, but in the 2017/18 financial year, the dti decided to use the original SANEDI report template and compile the report in-house.

SANEDI has furthermore continued supporting the incubation of 9 SMME's in the area of Measurement and Verification (M & V), towards South African National Accreditation System (SANAS) accreditation, which is a mandatory requirement to support the Section 12L tax incentives. These incubatees have now completed all their theoretical training and are currently being mentored by more established M & V bodies with practical projects, towards full accreditation.

A significant additional contribution to overcoming one of the key barriers to the uptake of energy efficiency globally, is the hosting by SANEDI of a Technical Assistance Facility (TAF), to support access to a 'green' credit facility for small-to-medium sized energy efficiency and renewable energy projects in South Africa, referred to as the Sustainable Use of Natural Resources and Energy Financing, (SUNREF II). The funding is provided by the French Development Agency (AFD) and channeled through the Industrial Development Corporation (IDC), with SANEDI hosting the TAF to support both the IDC and potential applicants for this funding. The TAF-component of this unique funding opportunity has generously been supported by the Swiss Development Corporation (SDC).

Furthermore, SANEDI's work in conjunction with the DoE and supported by the GIZ in establishing a platform for the facilitation of a robust market for energy efficiency implementation, including energy audits and efficiency upgrades, has proved very successful, culminating in the first-ever Energy Service Company (ESCo) register in South Africa. This register assists the entire market when choosing an appropriate service provider, by differentiating between three groups of ESCo, i.e. based on experience in the industry, technology knowledge and a range of other criteria. This ESCo Market Development activity will be intensified during the 2018/19 financial year.

On the energy efficiency research front, SANEDI has made significant progress in evaluating the appropriateness and applicability of implementing large-scale 'Cool Surface' technologies in low-cost housing in the country, improving indoor comfort levels and reducing energy consumption through a reduction in the need for mechanical ventilation. Initial feedback from a pilot project conducted on 380 roofs in iKheis Municipality in the Northern Cape has been extremely positive and this has prompted other Municipalities to consider this as a mitigating measure in low-income households in their areas, to potentially assist in diminishing energy poverty in those areas. The key challenge in this initiative has certainly been the acquisition of cost-effective measurement and verification data, due to the large volume of space to be measured and the varying drivers affecting the results, such a weather variations, specific human comfort variances and the quality of the roofs coated.

Furthermore and also in support of SANEDI's energy efficiency and human capital development initiatives, the Energy Efficiency and Demand Side Management (EEDSM) Hub at the University of Pretoria, has now successfully graduated a cumulative total of 156 Masters and Doctorate candidates in the field of Energy Management, using bursary funding from SANEDI. The same Hub now has a cumulative total of 722 registered students, but unfortunately this source of funding from the DST has been terminated as from 31 March 2017 and will probably result in a huge challenge for the current students finalising their post-graduate degrees in Energy Management.

Lastly, the EE programme at SANEDI, especially the processing of the energy efficiency tax submissions has experienced significant resource challenges over the past few years, with a limited budget. However, SANEDI can report that in the mid-term Budget Review in late 2018, the programme was given an extra three-year allocation for this activity and this will go a long way in improving the processing of these applications even further. In addition and of significant importance is the finalization of the development of a new online web-based database for the receipt and processing of the tax incentive submissions, streamlining the administration process even further and funded by GIZ.

12.2 Programme Performance

12.2.1 Programme 1: Administration

12.2.1.1 Purpose

The purpose of Programme 1 is to create a resilient, efficient, effective and enabling delivery environment for SANEDI that is fully compliant with all statutory requirements. The administration programme incorporates the following functions:

PURPOSE
Human Resources,
Information and Communication Technology (ICT),
Corporate Services,
Finance,
Procurement, and
Communications.

12.2.1.2 Sub-programmes

The Administration programme is comprised of the following sub-programmes as defined in the 2017/18 APP:

SUB-PROGRAMMES
Human Resources - which deals with all staff related matters including recruitment, payroll administration, skills development and employee wellness,
Finance - which deals with procurement, financial administration and reporting,
Corporate Services - which incorporates all activities related to the Board and Board Committees, Secretariat services, Strategic Planning and Logistics,
Information and Communication Technology, and
Communications – responsible for all stakeholder engagement activities, annual surveys, public awareness campaigns and media intelligence.

12.2.1.3 Programme 1: Strategic outcome-orientated goals

A strategic objective was formulated for each sub-programme:

Strategic outcome-orientated goal	Goal statement
1. An effective and efficient internal control environment.	• An effective and efficient internal control environment (unqualified audits), • A team that is adequately staffed, adequately skilled and trained and adequately representative of the national demographics (as defined in the relevant plans for SANEDI), and • Effective risk management and effective and comprehensive stakeholder management.

12.2.1.4 Strategic objectives, performance indicators planned targets and actual achievements

The first three columns are as reflected in the approved 2017/18 APP. Achievement against these targets is reflected in the last three columns.

Strategic objectives	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 1: Administration						
1. An effective and efficient internal control environment.	Unqualified audits.	New indicator	Unqualified audit.	Achieved Unqualified audit.		
2. A team that is adequately staffed, adequately skilled and trained and adequately representative of the national demographics.	Vacancy rate maintained within acceptable range.	New indicator	Maintain a maximum 5% vacancy rate of funded positions.	Not Achieved.	10% vacancy rate of funded positions.	The vacancies will be filled in the new financial year. SANEDI is not recruiting as it is awaiting completion of organisational review.
2. A team that is adequately staffed, adequately skilled and trained and adequately representative of the national demographics.	Percentage of personnel trained as per Workplace Skills Plan (WSP).	New indicator	95% personnel trained as per Workplace Skills Plan (WSP).	Achieved Training conducted as per WSP.	n/a	n/a
2. A team that is adequately staffed, adequately skilled and trained and adequately representative of the national demographics.	Percentage deviation from employment equity targets maintained within acceptable range.	New indicator	Less than 5% deviation from the SANEDI approved employment equity targets.	Achieved less than 5% deviation from approved employment equity targets.	n/a	n/a
3. Effective risk management on risk areas affecting SANEDI.	Percentage critical strategic and operational risks factors are identified and mitigated.	New indicator	All (100%) critical strategic and operational risks factors are identified and mitigated.	Achieved Critical strategic risks identified and mitigated.	n/a	n/a
4. Effective and comprehensive stakeholder management.	Percentage implementation of stakeholder engagement plan (SEP).	New indicator	95% implementation of stakeholder engagement plan (SEP).	Achieved Stakeholder engagement plan implemented.	n/a	n/a

12.2.2 Programme 2: Applied Energy Research, Development and Innovation

12.2.2.1 Purpose

The purpose of the applied energy research, development and innovation programme is two-fold:

1. Knowledge creation that can support energy-related planning and decision-making. As such, the programme is concerned with developing a portfolio of assessed and demonstrated energy solutions as well as data assets that can support high confidence energy planning, decision-making and policy development.

2. Accelerating the transformation of the energy market and landscape in the country. This entails building capacity (skills and competencies) and implementing market and/or industry development initiatives that will contribute to the green economy.

12.2.2.2 Sub-programmes

The Programme consists of five active sub-programmes:

Sub-programme	Purpose
Cleaner Fossil Fuel	Alternative low carbon energy and mitigation options to limit serious, negative environmental impacts from conventional energy sources.
Renewable Energy	Support the accelerated and informed development of South Africa's clean energy portfolio and RE sector.
Smart Grids	Demonstrate and assess intelligent energy system infrastructure as an enabler for municipal sustainability.
Data and knowledge management	Collation, development and utilisation of credible, objective and high quality data and information relating to the areas of SANEDI's responsibility.
Cleaner mobility	Developing Cleaner Mobility Solutions for Urban Transportation.
Working for Energy	Demonstrating innovative, sustainable energy solutions for rural and low income urban areas.

MTEF funding for the Working for Energy programme concluded and all activities in the year were focused on finalising deliverables that were committed under the programme. The focus in 2017/18 was on conducting a thorough review of the programme, assessing projects and technologies for performance, sustainability, suitability and applications to identify recommendations for national developments and programmes.

Cleaner mobility was initially functioning on a limited implementation scope and budget. In the context of the new green transport strategy, transport inefficiencies, pollution concerns and maturing clean mobility solutions, it was extended to a fully functional sub-programme as reflected in the 2017/18 APP. This was made possible with the kind support from UNIDO.

12.2.2.3 Programme 2: Strategic outcome-orientated goals

Strategic Outcome-orientated goal	Goal statement
Energy innovation, knowledge and skills for a less carbon intensive, more environmentally sustainable, affordable and efficient energy system.	• Identify and develop suitable, innovative energy solutions (150 projects knowledge (9 datasets) and skills (1,000 researchers and trainees supported) towards a less carbon intensive, more environmentally sustainable, affordable and efficient energy system that can support the country's economic and Socio-economic development objectives.

12.2.2.4 Strategic objectives, performance indicators planned targets and actual achievements

The first three columns are as reflected in the approved 2017/18 APP. Achievement against these targets is reflected in the last three columns.

CLEANER FOSSIL FUELS

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 2: Applied energy research, development and innovation						
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development.						
2.1.1	Number of energy solutions assessed (as confirmed by (i) advisory notes, (ii) feasibility reports, (iii) complete study reports, (iv) case studies, (v) technology roadmaps, and (vi) operational demonstration facilities.)	New indicator	3 Study reports documentingenergy solutions assessed during the year and 1 status report as interim milestone for a 2018/19 study report.	Achieved. Business case for the continuation of CCS in South Africa reviewed; Review of carbon utilisation technologies and recommendations conducted; Status report on the phase PMP- Bongwana project submitted, Report submitted on the assessment of alternative CCS sites for South Africa.	n/a	n/a
2.1.2	Annual energy industry insight (Trends) publication reflecting insights from extensive international and national collaboration, interfacing and forums.	New indicator	1. CFF component developed for SANEDI's annual insight publication.	Achieved CFF has submitted contribution towards SANEDI's annual insight publication.	n/a	n/a

CLEANER FOSSIL FUELS (continued)

	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development. (continued)						
2.1.3	Number of current energy-related datasets maintained.	New indicator	1 Expand and update the geological data inventory for South Africa.	Achieved. Geological data inventory expanded and updated.	n/a	n/a
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy						
2.2.2	Number of industry knowledge sharing events and platforms hosted to promote energy-related market/industry development.	New indicator	1 Host the 5th Biennial International CCS conference as an industry knowledge sharing event.	Achieved. SANEDI hosted the 5th Biennial International CCS conference.	n/a	n/a
2.2.4	Number of recipients of energy- related training facilitated by SANEDI.	New indicator	150 recipients of training offered or facilitated by SANEDI.	Achieved. 1 218 recipients trained.	1068 more recipients were trained.	Due to a cordial working relationship with SANB an opportunity presented itself to train more than the targeted number of recipients.
2.2.5	Number of active researchers contributing to energy research leadership enabled by a SANEDI programme.	Two bursaries were awarded to those who passed evaluation and bursary support was provided to three qualifying students.	1 bursary and 1 non-bursary support awarded for research in the field of CFF. 4 bursary progress report submitted.	Achieved. 1 bursary awarded and 1 non-bursary research project funded. 4 bursary progress reports submitted.	n/a	n/a

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 2: Applied energy research, development and innovation						
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development.						
2.1.1	Number of energy solutions assessed (as confirmed by (i) advisory notes, (ii) feasibility reports, (iii) complete study reports, (iv) case studies, (v) technology roadmaps, and (vi) operational demonstration facilities.	New indicator	8 energy solutions assessed including Wind IPP verification and socio-economic impact study, Solar high temperature technology/industry scan; Storage technology roadmap, SSEG policy information report (policy study for RD&I roadmap), Solar Integration study (RD&I roadmap for DST), REEEP Municipal Wastewater project demonstration facilities.	Not achieved. Two pilot Municipalities participated in the project. They were provided with a bespoke technical assistance plan, developed for each pilot municipality respectively, as well as energy audits conducted in each pilot municipality to assess energy savings and RE opportunities across all water infrastructure.	6 energy solutions were not assessed, namely: Wind IPP verification and Socio-economic impact study, Solar high temperature technology /industry scan, Storage technology roadmap, SSEG policy information report (policy study for RD&I roadmap) and Solar Integration study (RD&I roadmap for DST).	The Wind IPP impact study will commence in the next financial year as the project contract was signed at the end of November 2017. This was due to a delay in the procurement process. SANEDI manages SAWEP 2 while UNDP provides procurement and financial services. The Solar integration study (RD&I roadmap) was affected by the late secondment of the resource from Mintek.
2.1.2	Annual energy industry Insight (Trends) publication reflecting insights from extensive International and national collaboration, interfacing and forums.	New indicator	1 RE component developed for SANEDI's annual insight publication	Achieved. Sector Input has been provided for the annual insight publication.	n/a	n/a

RENEWABLE ENERGY (continued)

	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development. (continued)						
2.1.3	Number of current energy-related datasets maintained.	New indicator	3 expanded and updated Wind Atlas and database, expanded and updated RECORD online data repository and information access tool, Algal bioenergy database.	Not achieved 1 Algal bioenergy database has been maintained.	The expansion and updating of the Wind Atlas and database have been delayed.	The delay in funding from SAWEP 2, resulted in WASA 3 implementation being delayed.
2.1.4	Number of relevant data analyses and reports drawn from available datasets.	New indicator	3 WASA II: Publish interim (i) Wind Atlas, database (ii) resource map, and (iii) first publication of extreme Wind Atlas.	Not achieved. The interim Wind Atlas, database and resource map were released in November.	There was no publication of the extreme Wind Atlas.	The interim Wind Atlas, database and resource map were released in November. These are funded by SAWEP 2 which delayed the funding.

RENEWABLE ENERGY (continued)

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy						
2.2.1	Number of industry roadmaps, sector development plans and industry support tools developed to promote energy-related market/industry development.	New indicator.	4 REMAP SA country study to inform sector development, Status review and analysis of wind education and training in SA to inform training and capacity buildings needs in the country, Industrial manufacturing feasibility study for solar RD&I roadmap (no.1), Municipal Wastewater project Capacity Building plan.	Not achieved. Municipal Wastewater Capacity Building Plan submitted as part of the Climate Change, Clean Energy and Urban Water in Africa final report.	The REMAP SA country study has not been completed. Industrial manufacturing feasibility study for solar RD & I not submitted.	The finalisation and launch of the REMAP SA country study is dependent on the finalisation to the IRP and IEP. The two need to be aligned and thus the study cannot be released ahead of the IRP.
2.2.2	Number of industry knowledge sharing events and platforms hosted to promote energy-related market/industry development.	New indicator.	3 SOLTRAIN and 2 SAREC knowledge events hosted during the year.	Achieved. 1 SOLTRAIN and 2 SAREC knowledge sharing events held.	n/a	n/a

RENEWABLE ENERGY (continued)

	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy (continued)						
2.2.3	Number of commercially viable clean-tech solutions progressed to active business incubation and/or deployment.	New indicator.	Two Solar PV and thermal technologies progressed to active business incubation as part of the Solar RD&I Roadmap.	Not achieved. 0 Solar PV and thermal technologies were progressed to active business incubation.	The Programme Manager was only seconded from Mintek in the last quarter.	Efforts were focused on the inauguration and approval of the requisite governance structures such as the Project Steering Committee and Technical Advisory Group as well as the development of the regulatory framework documents (e.g. ToRs).
2.2.4	Number of recipients of energy- related training facilitated by SANEDI.	New indicator.	186 Trainees trained as a result of RECORD bursaries, SWITCH training, REEEP Municipal Wastewater capacity building training, Biogas technician training course and RECORD bursaries for SARETECT training.	Achieved. 225 trainees were trained as a result of RECORD bursaries, SWITCH training and REEEP Municipal Wastewater capacity.	56 additional people were trained.	The DoD expressed interest in RE and EE and this resulted in additional training.
2.2.5	Number of active researchers contributing to energy research leadership enabled by a SANEDI programme.	New indicator.	1 Douglas Banks bursary awarded for full time energy study.	Achieved. 1 Douglas Banks bursary awarded.	n/a	n/a

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 2: Applied energy research, development and innovation						
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development.						
2.1.1	Number of energy solutions assessed (as confirmed by (i) advisory notes, (ii) feasibility reports, (iii) complete study reports, (iv) case studies, (v) technology roadmaps and (vi) operational demonstration facilities).	New indicator.	Two Research papers presented to industry with information related to smart grid solutions and three Smart Grid guidance documents with findings and recommendations (How to Guide, Business Case and Lessons Learnt report).	Achieved 4 Research papers and 3 smart grid guidance documents submitted namely: Business Case based on consolidated smart grid experience for the EDI were developed; 1 EU Donor Funded Smart Grid Programme Lessons Learnt report and the "How to Guide" submitted.	Two additional research papers were submitted.	A need was identified in the industry to conduct additional research in new areas namely: Smart Grid and Energy Management Systems as well as Optimisation of Grid Connected Hybrid Systems.
2.1.2	Annual energy industry Insight (Trends) publication reflecting insights from extensive International and national collaboration, interfacing and forums.	New indicator.	1 Smart grids component developed for SANEDI's annual Insight publication.	Achieved Smart grid component of annual insight publication submitted.	n/a	n/a

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy						
2.2.1	Number of industry roadmaps, sector development plans and industry support tools developed to promote energy-related market/industry development.	New indicator.	Two Smart Grids strategy document developed in collaboration with the DoE and the dti with support from donor funding and expansion of capacity for the smart metering laboratory.	Achieved. The Smart Grid 2030 Vision document was developed and submitted to the DoE. 1 status report submitted on the expansion of capacity for the smart metering laboratory.	n/a	n/a
2.2.2	Number of industry knowledge sharing events and platforms hosted to promote energy-related market/industry development.	New indicator.	Five Industry knowledge sharing events hosted by SANEDI including 4 quarterly SASGI industry events and 1 industry workshop on Smart Grids.	Not achieved. Three SASGI knowledge sharing events and 2 SASGI industry workshops on Smart Grids were held.	1 less SASGI knowledge event held and 1 more workshop held.	During the financial year it was decied to hold an extra workshop, instead of an event as a need was identified that a more intense and robust session was required.
2.2.4	Number of recipients of energy- related training facilitated by SANEDI.	New indicator.	40 recipients of training on fundamentals and advanced application of smart metering facilitated by SANEDI (in collaboration with UP).	Achieved 45 recipients were trained on Smart Grids fundamentals	5 more reciepients were trained.	More peopled showed interest and were thus invited to the training. The objective is to reach as many people as possible.
2.2.5	Number of active researchers contributing to energy research leadership enabled by a SANEDI programme.	New indicator.	Four bursaries awarded for full time study related to Smart Grids.	Achieved. 21 bursaries were awarded.	17 more bursaries were awarded.	In order to support more students (from the funding available) bursaries were allocated across the different degree levels (PhD, Masters, Honours and Undergraduate.

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 2: Applied energy research, development and innovation						
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development.						
2.1.3	Number of current energy datasets maintained.	New indicator.	1 Functional accurate integrated and user friendly open energy data repository.	Achieved. Functional, accurate, integrated and user friendly data repository maintained.	n/a	n/a
2.1.4	Number of relevant data analyses and reports drawn from available datasets.	New indicator.	Three research papers compiled for publication; and two policy questions answered drawing on energy modelling.	Achieved. 1 SATIM model has been updated to address the following policy question "Quantification of energy in the transport sector". 1 Python model has been developed to address the following policy question "Deployment of hydrogen Fuel Cells in South Africa". 3 Research papers compiled for publication.	n/a	n/a

DATA AND KNOWLEDGE MANAGEMENT (continued)

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy						
2.2.1	Number of industry roadmaps, sector development plans and industry support tools developed to promote energy-related market/industry development.	New indicator.	1 Hydrogen Fuel Cell deployment tool or Mapbook/interactive web map developed.	Achieved. 1 Data Explorer web interactive platform developed. 2 Vehicle Parc Calculator developed which is web interactive.	n/a	n/a
2.2.2	Number of industry knowledge sharing events and platforms hosted to promote energy-related market/industry development.	New indicator.	1 Hydrogen stakeholder workshop.	Achieved. Hydrogen stakeholder workshop held.	n/a	n/a
2.2.3	Number of recipients of energy- related training facilitated by SANEDI.	Number of recipients of energy- related training facilitated by SANEDI.	Host 2 PhD students for on-the-job training (DST funded internships).	Not achieved 0 PhD students were hosted for on-the-job training.	Two Masters students were hosted.	The initial plan was to host Masters or PhD students but the annual target erroneously did not reflect this.

CLEANER MOBILITY

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 2: Applied energy research, development and innovation						
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development.						
2.1.1	Number of energy solutions assessed (as confirmed by (i) advisory notes, (ii) feasibility reports, (iii) complete study reports, (iv) case studies, (v) technology roadmaps and (vi) operational demonstration facilities).	New indicator.	5 cleaner mobility solutions assessed including the UJ Cycle • pilot project, • EV charging station demo project in Cape Town, • PV charging stations phase I report, and • Road policy review public consultation workshop report to inform policy revision and the low carbon transport project policy alignment study: policy and technology roadmap.	Not Achieved. None of the following were achieved: • Assessment of cleaner mobility solutions, • Demonstration of EV charging station, • PV charging stations phase I report, • Road policy review public consultation workshop report as well as the low carbon transport project policy alignment study: policy and technology roadmap.	PV Charging Stations Phase I report prepared. Road Policy Review public consultation workshops held and report prepared in order to inform policy review process. UNIDO, SANEDI and the dti commissioned a study for making a case for EV in the fourth quarter of 2017/18 financial year.	The Head of transport in Cape Town is under investigation which has resulted in the delay of demonstration of the project. The completion date of the study is delayed. The study will be completed end of April 2018.

CLEANER MOBILITY (continued)

	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.1: Energy-related support, information and advice to inform high confidence energy planning, decision-making and policy development. (continued)						
2.2.2	Annual energy industry Insight (Trends) publication reflecting insights from extensive international and national collaboration, interfacing and forums.	New indicator.	1 Cleaner Mobility (CM) component developed for SANEDI's annual Insight publication.	Achieved. The CM insight developed which contributed to SANEDI annual Insight publication.	n/a	n/a
2.1..4	Number of relevant data analyses and reports drawn from available datasets.	New indicator.	1 Macroeconomic economic benefit of accelerated market penetration study drawing on CESAR transport data.	Not achieved. 0 Macroeconomic economic benefit of accelerated market penetration study drawing on CESAR transport data was submitted.	The study is actually a long term study, broken down into phases.	Phase 1 was to develop ToR for the study which paved way for phase 2 of the study. Preliminary results have been presented to key stakeholders at the SANEA conference. The annual target needs to reflect that the study is more than a year.
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy						
2.2.2	Number of industry knowledge sharing events and platforms hosted to promote energy-related market/industry development.	New indicator.	1 EVIA stakeholder platform event.	Achieved 1 EVIA stakeholder platform event hosted.	n/a	n/a

CLEANER MOBILITY (continued)

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 2.2: Accelerated transformation to a less energy and carbon intensive economy (continued)						
2.2.3	Number of commercially viable clean tech concepts progressed to active business incubation and/or deployment.	New indicator.	1 EV charging station concept deployed by the private sector.	Not Achieved. 0 EV charging station concept deployed by the private sector.	EV charging station concept was not deployed.	The Plan was to install 1 EV charging station at CEF building. However this was postponed due major renovations undertaken by CEF. The installation of the EV changing station has been postponed to the 2018/19 financial year.
2.2.4	Number of recipients of energy- related training facilitated by SANEDI.	New indicator.	6 Attendees of capacity building programme hosted by SANEDI and supported by UNIDO for government and city officials.	Achieved. 17 attendees of the capacity building programme were hosted. These were government and city officials.	11 more attendees were actually trained.	An increase in interest resulted in more officials than planned for attending the capacity building programme.

12.2.3 Programme 3: Energy Efficiency (EE)

12.2.3.1 Purpose

The purpose of SANEDI's EE programme is to accelerate a shift towards a resource and particularly, an energy (including gas, liquid fuels, electricity and water) efficient society.
The programme does so by:

- Supporting the implementation of EE interventions with technical assistance,
- Knowledge creation that can support EE related planning and decision-making. As such, the programme is concerned with developing a portfolio of assessed and demonstrated EE solutions as well as data assets that can support high confidence EE planning, decision-making and policy development in the country, and
- Accelerating the transformation of the EE market and landscape in the country. This entails building capacity (skills and competencies) and implementing market and/or industry development initiatives that will contribute to a culture of greater efficiency.

12.2.3.2 Sub-programmes

The EE programme does not have any sub-programmes defined.

12.2.3.3 Programme 3 Strategic outcome-orientated goals

Strategic outcome-orientated goal	Goal statement
Energy innovation, knowledge and skills for a less carbon intensive, more environmentally sustainable, affordable and efficient energy system.	Identify and develop suitable, innovative energy solutions (150 projects) and knowledge (9 datasets) and skills (1,000 researchers and trainees supported) towards a less carbon intensive, more environmentally sustainable, affordable and efficient energy system that can support the country's economic and Socio-economic development objectives.

12.2.3.4 Strategic objectives, performance indicators planned targets and actual achievements

The first three columns are as reflected in the approved 2017/18 APP. Achievement against these targets is reflected in the last three columns.

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Programme 3: Energy Efficiency						
Strategic Objective 3.1: Accelerated adoption of EE solutions to optimise the use of finite resources						
3.1.1	Number of EE solutions implemented (number 12I and 12L, AfD supported projects, cool roofs implemented).	New indicator.	Support the implementation of 43 new/additional EE solutions in the country.	Achieved. 63 new/additional EE solutions were supported.	23 more new/additional EE solutions were supported.	The Section 12L tax incentive rebate was increased from 45c/ kWh to 95c/ kWh, which resulted in a large uptake in the number of applications for this incentive. Although this increase was announced a while back, the result of these increases in approved Performance Assessments were only realised in the 2017/18 financial year.

12.2.3.4 Strategic objectives, performance indicators planned targets and actual achievements (continued)

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 3.1: Accelerated adoption of EE solutions to optimise the use of finite resources (continued)						
3.1.2	Number of EE solutions assessed (as confirmed by (i) advisory notes, (ii) feasibility reports, (iii) complete study reports, (iv) case studies, (v) technology roadmaps, and (vi) demonstration facilities, etc.)	New indicator.	Assess the application of cool surfaces solutions in 3 climatic zones in the country.	Not achieved. 0 assessments on the application of cool surfaces solutions were done.	No assessments were conducted on cool surfaces solutions in planned 3 climatic zones.	SANEDI will assess the opportunity to work with the Medical Research Council (MRC) to obtain the required data, as they are keen on doing in-depth research into the health benefits associated with cool coatings.Two procurement bids took place, with both resulting in tenders being received that were in excess of the available budget for this activity.
3.1.3	Annual EE industry Insight (Trends) publication international and national collaboration, interfacing and forums.	New indicator.	1 EE contribution to annual SANEDI Insight publication.	Achieved. 1 EE sector contribution developed for annual SANEDI Insight publication.	n/a	n/a
3.1.4	Number of current EE datasets maintained.	New indicator.	Six EE-related datasets maintained including the 12 I and 12 L databases, ESCO register, cool surfaces database, CRRC knowledge sharing platform and BigEE database.	Achieved. The following datasets were maintained:12 I database, ESCO Register, 12 L database, BigEE database, Cool surface product database and CRRC knowledge sharing platform.	n/a	n/a

12.2.3.4 Strategic objectives, performance indicators planned targets and actual achievements (continued)

Performance Indicator		Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 3.1: Accelerated adoption of EE solutions to optimise the use of finite resources (continued)						
3.1.5	Number of relevant data analyses and reports drawn from available EE datasets.	New indicator.	2 analyses and reports to Parliament related to 12I and 12L.	Not achieved. 0 analyses and reports to Parliament related to 12L and 12I.	Two Applications not analysed and reported on to Parliament.	the dti decided to produce this report internally, using the SANEDI-developed format and SANEDI assisted with the packaging & printing of the final report to parliament.
3.1.6	Number of industry roadmaps, sector development plans and industry support tools developed to promote EE-related market/ industry development.	New indicator.	Establish a virtual laboratory for cool surfaces product testing, linking to two physical testing laboratories in the country.	Not achieved 1 virtual laboratory for cool surfaces product for testing.	1 First physical testing laboratory for cool surfaces products incorporated onto virtual platform.	The Project partner withdrew from working with SANEDI.
3.1.7	Number of industry knowledge sharing events or platforms hosted to promote EE-related market /industry development.	New indicator.	Hosted 11 industry development and knowledge sharing events including 2 cool surfaces industry association meetings and 9 roadshow events to promote the 12I and 12L tax incentives.	Achieved. Nine 12L and 12 I roadshows held, 3 cool surfaces industry association meetings held.	Conducted 3 cool surfaces industry association meetings instead of 2.	SANDF requested for additional meeting for cool surfaces industry association meetings.

12.2.3.4 Strategic objectives, performance indicators planned targets and actual achievements (continued)

	Performance Indicator	Actual Achievement 2016/17	Planned Target 2017/18	Actual Achievement 2017/18	Deviation from planned target	Comment on deviations
Strategic Objective 3.1: Accelerated adoption of EE solutions to optimise the use of finite resources (cont.)						
3.1.8	Number of recipients of EE- related training facilitated by SANEDI.	New indicator.	Provide training to at least 100 cool surfaces practitioners.	Not achieved. 0 training provided to cool surfaces practitioners.	Training not provided due to budget constraints.	As the EE programme has limited budget constraints, this entailed funds channeled to initiatives with the greatest possible impact. The training was not conducted because of budgetary constraints.
3.1.9	Number of active researchers contributing to EE research leadership supported by a SANEDI programme.	New indicator.	Provide support to 13 researchers to actively contribute to EE research through the EEDSM Hub.	Achieved. Support provided to 15 researchers through the EEDSM Hub at the University of Pretoria	2 additional researchers were supported through the EEDSM Hub.	Surplus funding was received from DST which allowed for the support of 2 additional researchers.

PART C: GOVERNANCE

13. INTRODUCTION

Corporate governance embodies the processes and systems by which public entities are directed, controlled and held to account. In addition to legislative requirements based on SANEDI's enabling legislation and the Companies Act (Act No. 71 of 2008), corporate governance is applied through the precepts of the Public Finance Management Act, 1999 (Act No. 1 of 1999) (PFMA) and run in tandem with the principles contained in the King Report on Corporate Governance. Parliament, the Executive Authority (EA) and the Accounting Authority of the public entity are responsible for corporate governance.

As a public entity in terms of the PFMA, SANEDI is committed to good corporate governance.

14. PORTFOLIO COMMITTEES

The Parliament Portfolio Committee (PPC) on Energy has oversight over SANEDI. During the 2017/18 financial year, SANEDI had no interaction with the PPC.

15. EXECUTIVE AUTHORITY

The EA of SANEDI is the Minister of Energy. As per the compliance requirements, SANEDI submitted the following reports to the EA on the indicated dates:

Report	Date of submission	Issues raised by the EA (where relevant)
First quarter Performance Report for the period 1 April to 30 June 2017.	31 July 2017	None.
Annual Report for 2016/17.	31 August 2017	SANEDI's Annual Report for 2016/17 was approved by the Minister of Energy in September and tabled in Parliament.
First draft APP for 2018/19.	31 August 2017	None.
Second quarter Performance Report for the period 1 July to 30 September 2017.	10 November 2017	The second quarter Performance Report was submitted late as the Board raised fundamental matters that needed to be addressed before the report could be submitted.
Second draft APP for 2018/19.	31 August 2017	None.
Third quarter Performance Report for the period 1 October to 31 December 2017.	31 January 2018	None.
Final draft APP for 2018/19.	31 January 2018	The APP for 2018/19 was accepted by the Minister of Energy and tabled in Parliament on 20 April 2018.
Fourth quarter Performance Report for the period 1 January to 31 March 2018.	26 April 2018	None.

16. THE ACCOUNTING AUTHORITY / BOARD

16.1 Introduction

The Board is the governing body and accounting authority of the State-Owned Entity (SOE). All SOE's should be headed and controlled by an effective and efficient Board, comprising of the appropriate mix of Board members representing the necessary skills to strategically guide the SOE. The Board has absolute responsibility for the performance of the SOE and is fully accountable to the SOE for such performance. Governance principles regarding the role and responsibility of SOE Boards are contained in the PFMA and the Protocol on Corporate Governance. The Board is also responsible for providing the SOE with strategic direction. The SANEDI Board is appointed by the Minister of Energy, in consultation with the Minister of Science and Technology.

The Board meets at least once every quarter and twice more in the year to review and approve critical compliance submissions including the Annual Report, AFS, APP and Five-year SP, as relevant. Further meetings may be called by the Chairperson of the Board as deemed necessary.

In adhering to best practice and sound governance principles, the SANEDI Board subjects itself to an annual assessment on the effectiveness of the Board and its committees.

16.2 The Role of The Board

The Board's role and responsibilities, as captured in the Board Charter and corresponding to the PFMA and the provision of the NEA, are to:

- Act as the focal point for and custodian of, corporate governance by managing its relationship with management and other stakeholders of the Institute along sound corporate governance principles and
- Appreciate that strategy, risk, performance and sustainability are inseparable and to give effect to this by:
  - Contributing to and approving the strategy,
  - Satisfying itself that the strategy and APP do not give rise to risks that have not been thoroughly assessed by management,
  - Identifying key performance and risk areas,
  - Ensuring that the strategy will result in sustainable outcomes, and
  - Considering sustainability as a business opportunity that guides strategy formulation.
- Provide effective and ethical leadership,
- Ensure the Institute is, and is seen to be, a responsible corporate citizen by having regard to not only the financial aspects of the business of the Institute but also the impact that business operations have on the environment and the society within which it operates,
- Ensure the Institute's ethics are managed effectively, and the Institute has an effective Social Justice and Ethics Committee (SJEC),
- Ensure the Institute has an effective and independent Audit Committee,
- Be responsible for the governance of risk,
- Be responsible for information technology (IT) governance,
- Ensure the Institute complies with applicable laws and considers adherence to non-binding rules and standards,
- Ensure there is an effective risk-based internal audit,
- Protect and foster the Institute's image and reputation,
- Ensure the integrity of the Institute's integrated report, and
- Act in the best interests of the Institute by ensuring that individual Board Members:
  - Adhere to legal standards of conduct,
  - Disclose real or perceived conflicts to the Board and to the Minister of Energy ("the Minister") and deal with them accordingly,
  - Evaluate the performance of the CEO, and
  - Impart knowledge and insights to SANEDI.

16.3 Board Charter

The existing SANEDI Board had three members, therefore is was not quorate. Additional members were appointed 1 December 2016 and the Board Charter was adopted on 28 February 2017. The charter is subject to the provisions of the NEA, the PFMA, the Constitution of the Republic of South Africa, Act No. 108 of 1996 (the Constitution) and any applicable law or regulatory provision.

The purpose of the charter is to provide a concise overview of:

- The role, responsibilities, functions and powers of the Board, individual Board Members and the CEO and Management of the Institute,
- The powers delegated to various committees of the Board, and
- The policies and practices of the Board with respect to matters such as corporate governance, declaration of conflicts of interest, Board meeting documentation and procedures, composition of the Board and the induction, training and evaluation of Board Members and Board Committees.

16.4 Composition of the Board

The Board is comprised in terms of section 8 of the NEA. Board Members are appointed by the Minister in consultation with the Minister of Science and Technology. Section 8(2) of the NEA requires the following Board composition:

- Chairperson,
- Deputy Chairperson, and
- Representatives from the following departments:
  - Energy,
  - Trade and Industry,
  - Science and Technology,
  - Environmental Affairs,
  - Tourism,
  - Transport, and
- Two other suitably qualified persons.

New Board members were appointed on 1 December 2016 and alternate members have been appointed from the Department of Energy and Science and Technology. No members representing the Departments of Tourism or Transport were appointed to the Board. The Board consists of the following members:

Table 15.4.1 SANEDI Board composition and meeting attendance during 2017/18 financial year

The first three columns are as reflected in the approved 2017/18 APP. Achievement against these targets is reflected in the last three columns.

Name	Designation	Date appointed/ re-appointed	Resigned/Term ended	Qualifications	Board [1]Directorships	Other committees or task teams	No. of meetings attended
Dr Ingrid Tufvesson.	Chairperson and SJ&E Committee Chair.	01-Dec-16	31-Mar-18	PhD, BA (MA).	1. UNISA. 2. Nonjongo Projects.3. Klapmuts Community Assistance Programme.	Proj, FinCo, SJ&E, HR&Rem (invitee).	Board: 8/9 apology received.
Mr Nkululeko Buthelezi.	Deputy Chairperson and FinCo Chair.	01-Dec-16	n/a	Dip Scientific Computing and Software Engineering, Dip Management, Adv Dip Project Management, Post Grad Dip Management, MBA.	None	Board Audit and Risk Committee (BARC), FinCo, SJ&E.	Board: 9/9.
Mr Mlondolozi Mkhize.	Director and HR & Rem Chair.	01-Dec-16	n/a		1. PSTM Auditors Inc. 2. Director African Women Chartered Accountants. 3. Setshoge Foundation.	BARC, HR&R, SJ&E.	Board: 7/9 no apology for both.
Ms Phuthanang Motsielwa.	Director and BARC Chair.	20-Aug-13 31-Aug-17	31-Mar-2017	B Acc (CA)(SA), RA.	1. The Innovation Hub 2. Biovac.	BARC, FinCO, SJ&E.	Board: 9/9.
Mr Mmboneni Muofhe.	Director and Projects Committee Chair.	01-Dec-16	n/a	BSc (Hons), MSc, MBA.	None	Proj, SJ&E.	Board: 4/9 alternate attended.

Table 16.4.1 SANEDI Board composition and meeting attendance during 2017/18 financial year (continued)

Name	Designation	Date appointed/ re-appointed	Resigned/Term ended	Qualifications	Board[18] Directorships	Other committees or task teams[19]	No. of meetings attended[20]
Dr Rebecca Maserumule.	Alternate Director (DOE). Alternate Director (DST).	26-Jun-12 01-Dec-16	31-Dec-2015	PhD, BSc.	None	Alternate.	Board: 3/5 missed by Mr Muofhe, apology received.
Ms Deborah Ramalope.	Director.	01-Dec-16	n/a	BSc (Hon), MSc, MBL.	None	Proj.	Board: 6/9 apology received.
Ms Nomawethu Qase.	Director.	01-Dec-16	n/a	M Phil (Energy Studies), Post Grad Dip Management, B Soc Sc (Hons).	None	HR & Rem, Proj.	Board: 8/9 apology received.
Mr Thabang Audant.	Alternate Director.	01-Aug-17	n/a		None	Alternate.	Board: 1/1 missed by Ms Qase.
Mr Gerhard Fourie.	Director.	01-Dec-16	n/a	Diploma Mech Eng, B Com Economics, MBA.	None	HR & Rem, FinCo.	Board: 6/9 apology received.

NOTES:

[18] *Reflecting current board directorship/membership.*

[19] *Where BARC | Board audit and risk committee, HR&Rem | Human Resources and Remuneration Committee, Proj | Projects Committee, FinCo | Finance and Investment Committee, SJ&E |. Social Justice and Ethics Committee.*

[20] *Board meetings.*

16.5 Committees

The Board has established several committees to assist it in the discharge of its duties. The new Board established five committees, separating the Projects and Investment Committee into two independent committees (Projects Committee and Finance Committee) to focus on projects and funding and investment matters respectively. The Remuneration Committee, renamed into the HRRC to reflect its broader focus and introducing a SJEC. The SJEC was established in compliance with the provisions of the Companies Act of 2008 and recommendations of the King Code of Conduct.

It is required that all committees operate under Board-approved terms of reference, which may be updated from time to time to align with the latest developments in corporate governance and/or to incorporate revised requirements of the Board. The terms of reference for the committees were prepared and adopted by the Board. The operation of the committees is guided by the defined terms of reference and each committee is chaired by a Board member as appointed by the Board.

Committee	No. of meetings held	No. of members	Name of members and attendance
Board Audit and Risk Committee (BARC).	6	3	Ms Phuthanang Motsielwa (Chair) 6/6. Mr Nkululeko Buthelezi 6/6. Mr Mlondolozi Mkhize 2/6 no apology.
Human Resources and Remuneration Committee.	3	4	Mr Mlondolozi Mkhize (Chair) 2/3 mid-year appointment. Ms Nomawethu Qase 3/3. Mr Nkululeko Buthelezi 2/3 mid-year appointment. Mr Gerhard Fourie 1/3 (resigned). Dr Ingrid Tufvesson 2/3 mid-year appointment.
Projects Committee.	1	5	Mr Mmboneni Muofhe (Chair) 1/1. Ms Deborah Ramalope 1/1. Dr Ingrid Tufvesson 1/1. Ms Nomawethu Qase 0/1 apology received. Mr Gerhard Fourie 0/1 apology received.
Finance and Investment Committee.	1	4	Mr Nkululeko Buthelezi (Chair) 1/1. Ms Phuthanang Motsielwa 1/1. Dr Ingrid Tufvesson 1/1. Mr Gerhard Fourie 1/1.
Social Justice and Ethics Committee.	2	5	Dr Ingrid Tufvesson (Chair). Ms Phuthanang Motsielwa. Mr Nkululeko Buthelezi. Mr Mlondolozi Mkhize. Mr Mmboneni Muofhe.

16.6 Remuneration of Board Members

Independent Non-Executive (INED) members of the Board are remunerated based on the rates specified by Ministerial directive, issued from year to year. Departmental representatives are not remunerated. The Board adopted a policy that guides the conditions under which Board members are paid fees for meetings attended, special engagements and other activities undertaken on behalf of the entity. Travel expenditure, when a Board member is travelling on official SANEDI business or a Board sanctioned event, is paid in accordance with the SANEDI travel and accommodation policy.

The following provides a record of remuneration, allowances and re-imbursements paid to Board members:

Name	Remuneration	Other allowance	Other re-imbursements	Total
Dr Ingrid Tufvesson	R147,112.00	-	-	R147,112.00
Mr Nkululeko Buthelezi	R185,159.00	-	-	R185,159.00
Ms Phuthanang Motsielwa	R140,993.00	-	-	R140,993.00
Mr Mlondolozi Mkhize	R74,712.00	-	-	R74,712.00

17. STAKEHOLDER ENGAGEMENT

INTRODUCTION

The DoE is the most significant stakeholder for SANEDI. Time and attention have been given to opening and maintaining engagement and avoiding internal/ personal conflicts. To this end, the Engagement Objectives in the year under review were to:

- Create a positive, mutual understanding of each other's roles and responsibilities,
- Gather more support from the Department in the furtherance of the mandate and objectives of SANEDI, and
- Encourage and sustain greater responsiveness from the department to SANEDI's requests and actions.

The DoE has been operating, until fairly recently, with an acting Director General for almost two years. A vacuum was left for approximately nine months after the previous Board's tenure came to an end. This left a power vacuum that impacted negatively on the relationship between the DoE and SANEDI. The focus in the year under review was on building strong constructive interpersonal relationships with key stakeholders, particularly with the DoE.

SANEDI relies a great deal on its stakeholders in order for it to fulfil its mandate. These include matters of policy, funding, programme development and implementation as well as collaboration.

The emphasis of the stakeholder Engagement Strategy (SES) is on improving the quality and frequency of interactions with stakeholders in order to create a supportive, collaborative environment within which SANEDI can fulfil its mandate and achieve its strategic priorities.

The Board has approved the SES and engagement plan and a supporting budget to ensure implementation thereof.

SANEDI continues to partner with a number of stakeholders and funding agencies to drive energy development under the context of climate change mitigation and adaptation through the reduction of GHG. As signatories to the Paris Agreement, South Africa has a responsibility to address climate change and the reduction of GHG emissions. SANEDI addresses climate change through various activities including also the application and scale up of clean energy solutions across South Africa cited elsewhere in the preceding SANEDI Programmes.

Rapid urbanization and population growth increasingly exert pressure on fresh water and energy supplies, municipal infrastructure and service delivery, including wastewater systems. Water and wastewater infrastructure accounts for around 35% of the total energy consumed by South African municipal administrations and electricity costs can amount to 40-70% of total operating costs for these facilities. Clean energy solutions have the potential to reduce operational costs for water and wastewater infrastructure and contribute to climate change mitigation as well as adaptation, by reducing the GHG emissions from fossil fuel-based electricity use and increasing water efficiency and resilience to fluctuations in the demand for clean water.

SANEDI as a stakeholder to the EU funded 'Climate Change, Clean Energy and Urban Water in Africa' project, addresses GHG reductions through energy efficiency and renewable energy applications in municipal water infrastructure. The project empowers municipalities to take the lead in designing, funding, implementing and managing energy efficiency and renewable energy interventions in their water infrastructure. These interventions help municipalities save energy, energy costs, reduce water losses, improve service delivery to consumers and reduce CO^2 emissions.

Through its core activities of driving and co-ordinating energy research in South Africa, SANEDI is able to make a positive contribution to the South African green economy. The contribution of SANEDI's project and operations include training and awareness creation across communities and wide stakeholder groups about energy and sustainable energy resources. By building positive and strong relationships with its community stakeholders, SANEDI is able to maintain and strengthen its mandate.

Ongoing engagement sessions with key Stakeholders are inclusive and underpin SANEDI's approach to address stakeholder concerns around energy, creating opportunity for access and scale up of clean energy solutions and to promote appropriate energy stability for resilient community development.

Great efforts were exerted in soliciting support for the deployment of CCS in South Africa. Stakeholder Engagement is key to SANEDI's activities and as such focussed consultation with key stakeholder sectors/groups, including government (national, provincial and local), traditional authorities, public utilities, NGOs and environmental groups, educational fraternity business and commerce, labour, landowners played a pivotal role. As stakeholders are not uniform they require varying levels of consultation, ranging from information sharing to active and in-depth engagement.

Figure 17: Stakeholder Segmentation

CLEANER FOSSIL FUELS

The Cleaner Fossil Fuels Division investigates alternative low carbon energy and mitigation options to limit serious negative environmental impacts from conventional energy sources.

Pilot CO_2 Storage Project (PCSP) Outreach Programme

SANEDI through the SACCCS has reached a critical stage for the PCSP that involves soliciting permission/support from the stakeholders including landowners and AmaKhosi in the potential areas to conduct a basin assessment (including exploration activities) to ascertain existence/non-existence of suitable geological formations to store CO_2 within UMkhanyakude District Municipality.

The basin characterisation phase saw the culmination of synergistic working relations with the KZN stakeholders such as the Office of the Premier through the Provincial Planning Commission, KZN Department of Economic Development, Tourism and Environmental Affairs (EDTEA) amongst others. The KZN Economic Sector and Infrastructure Development Technical & Executive Clusters have given SANEDI an in-principle support for the basin characterisation investigations on the proviso that subsequent phases will have to be tabled at the Executive Cluster for endorsement and/or approval.

SANEDI afforded the AmaKhosi an opportunity to visit an existing CCS project internationally as a fact-finding mission to see first-hand in-situ how the technology is deployed in order to give them comfort, to allay their fears and to dispel the misconceptions upheld about the technology that exist within the communities.

As part of capacity building initiatives SANEDI has conducted workshops with the key Stakeholders in the KZN Province. On 7 December 2017, an all-inclusive stakeholders workshop was held at the UMhlabuyalingana Local Municipality with the main focus on risks associated with the CCS technology and benefits for the communities.

The engagements are focused at the local levels including the municipalities and communities that will be affected by the PCSP activities.

AmaKhosi during a group photo at the SaskPower Carbon Capture and Storage Plant in Canada.

General CCS & Communications

Human capacity is core to the CCS mandate and that is achieved through training, workshops and exhibitions. In the year under review, over 750 planned stakeholders were trained in CCS, Climate Change and provided with information on career paths. The following collaborations were forged to support the objectives of CCS and Stakeholder Engagement.

South African National Biodiversity Education and Empowerment and SANEDI through the Cleaner Fossil Fuels Division entered into collaborative working relations with SANBI since 2015 and the collaboration is reviewed annually. SANEDI leverages on SANBI's existing structures such as the Education Programme to raise CCS & Climate Change awareness to Educators and School Communities whilst at the same time demystifying Maths, Science and Technology (MST).

The collaboration consists of four work packages namely:

- Assistant Education Officers (AEOs),
- Teachers Workshops,
- Climate Change Week, and
- Careers Expo.

The Provinces that were of focus were Gauteng and Mpumalanga while KZN was included in the 2017/18 financial year. In addition, through monitoring and feedback sessions the Education programme has successfully brought about desired results and both parties have agreed to extend the agreement to three years with the focus on the following provinces Gauteng, KwaZulu-Natal, Eastern Cape and Western Cape.

Learners participating at sune 1 the Climate Change workshop.

Eskom Expo for Young Scientists

SANEDI established good working relationships in the 2015/16 financial year with the Eskom Expo for Young Scientists. The Eskom Expo for Young Scientists is an exposition, or science fair, where students have a chance to show others their projects about their own scientific investigations. At the Expo, students discuss their work with judges, educators and students from other schools, with parents and with other interested parties. The Expo's mission is to develop young scientists who are able to identify a problem, analyse information, find solutions and communicate findings effectively.

Learners' project on using smoke to generate electricity.

SANEDI has identified the Eskom Expo for Young Scientists as a suitable platform to raise CCS & Climate Change awareness whilst demystifying STEMI [Science, Technology, Engineering, Mathematics and Innovation] in the country. Partnerships includes working closely in the following areas: exhibitions, CCS Special Awards, Judging & Mentorship. Since 2016, more than 20 learners have received the CCS Special Awards. The table below depicts the number of learners who have been awarded CCS Special awards through the Regionals and International Science Fair Competition in 2017/18.

Year	Number of Learners	Region
2017/18	Six Learners	Gauteng (Ekurhuleni/ Johannesburg and South).
	Four Learners	Far North and Southern KZN.
	Four Learners	International Science Fair.

Mr Wiseman Ngcobo with 2 Learners who received the CCS Award at the Far North KZN Expo-min.

The 5th Biennial CCS Conference

The Fifth Biennial CCS Conference was held at the Coastlands Hotel & Convention Centre in Umhlanga, KwaZulu-Natal, South Africa 18"19 October 2017. Because KZN is an area for potential sites of the Pilot Carbon Capture & Storage Project, the theme of the conference was titled: "Carbon Capture & Storage: National Energy and Climate Change: The value-add of Clean Energy solutions towards a new sustainable economy that is built upon principles of equity, community participation and human rights".

The 5th biennial CCS Conference was aimed at galvanising the society to actively participate in the implementation of the NDP as a roadmap towards radical Socio-economic transformation and social cohesion. The conference focused on providing an update on CCS especially progress made since the 4th Biennial CCS Conference held in Johannesburg during 2015, as well as the Carbon Capture & Storage Technical Workshop that was held in February 2017.

In addition, the Conference also focused on addressing issues, concerns and questions raised by s takeholders through workshops, meetings and other outreach activities. A full report on the conference can be downloaded on the SACCCS website: http://sacccs.org.za/Reports/ .

Ms Polly Modiko, Corporate SE Lead presenting on PCSP Engagements.

Dr I Tufvesson, SANEDI Chair presenting at the CCS Workshop.

RENEWABLE ENERGY

The RE programme supports the accelerated and informed development of South Africa's clean energy portfolio and RE sector. SANEDI is active in a number of projects that provide energy training and awareness creation across various economic sectors including municipalities and agriculture.

Through the SWITCH Africa Green Project (2016-2018) SANEDI and its partners worked with communities in the Free State, Gauteng, North West and the Western Cape, the main aim being to provide energy and agriculture related training to 150 beneficiaries. Many of these beneficiaries have, as a result, successfully employed alternative energy solutions to secure access to sustainable energy.

Through the 'Climate Change, Clean Energy and Urban Water in Africa' project, accredited NCPC energy related training has been provided to the project's pilot municipalities as part of capacity building and skills transfer initiative. A total of 20 people have undergone training.

Abraham sells solar-powered stoves that use wood pellets. These stoves are more cost-effective and pose less of a fire hazard than paraffin stoves and are also less harmful than using firewood. Abraham also assists households with energy audits, advises his community members on lighting and provides assistance with solar PV system selection.

The story of 35-year-old Abraham is most inspiring. Abraham attended two of the SWITCH Africa Green SECP training sessions, which he travelled to by foot as he was not able to afford paying for transport. The training motivated Abraham to start a new business, SEHOJA.

Mr Matsing holding the solar-powered stove.

RECORD SUSTAINABILITY REPORT

Various stakeholders were invited to participate in the solar thermal space for the two SOLTRAIN training sessions conducted in the year under review. The Thermosyphon system and the quality inspector course took place respectively for two days each.

The targeted stakeholders for the thermosyphon course are taken through a theoretical training session which focuses on solar heat, radiation and collectors and many other processes. However, much of the focus is on practical training (applying theory), installation and quality control.

Beneficiaries of the training included the following:

- Technicians and plumbers,
- Teachers of vocational schools,
- Technicians from housing/building/construction companies, and
- Technicians from energy providers/authorities.

A number of 12 stakeholders from various institutions took part in the training and the test. Three women one from vocational schools and two from government departments also participated in the training. The Thermosyphon system training does not qualify anyone to install the systems or train but it gives an introductory perspective to the system.

The first day entailed the theoretical training of the Quality Inspector course which focused on theory covered in the Thermosyphon system training. The session looked at the current markets and technologies in the sector but mostly covering the quality, testing and certification.

Day 2 of the training is the onsite practical session on pumped solar water heating system and practical guided quality check. Beneficiaries included staff of entities that are going to take over the quality inspection in the foreseeable future and they comprised of:

- Post Graduates,
- Delegates from various South African government departments,
- Technical personnel from South African Bureau of Standards (SABS), and
- Technicians and plumbers.

Twenty stakeholders took part in the quality inspector two day course. The same group of females who attended the Thermosyphon course also attended the quality inspector course including a lady from the SABS, whose main responsibility is Quality Inspection on technologies.

SMART GRIDS

Smart Grids demonstrate and assess intelligent energy system infrastructure as an enabler for municipal sustainability.

South African Smart Grid Initiative (SASGI) Forum

SASGI is an industry forum established under the guidance of SANEDI and chaired by the DoE. The main objectives of SASGI are to facilitate co-operation, contribute to policy formulation, provide guidance in the establishment of standards and identify technology functionality and to provide leadership in the deployment of appropriate Smart Grid technologies.

Smart Grid 2030 Vision Document

The South African Smart Grid Initiative (SASGI) has developed the Smart Grid 2030 Vision document for the South African Electricity Supply Industry. This Smart Grid 2030 Vision articulates the long-term aspirations and development objectives for the electricity supply industry in South Africa.

The Vision document was presented by EU Ambassador Marcus Cornaro to Mr. Gerhard Fourie, SANEDI Board Member.

EU Ambassador: Ambassador Marcus Cornaro of the EU to the Republic of South Africa to Mr. Gerhard Fourie.

EU Donor Funded Smart Grid Programme

The EU Donor Funded Smart Grids Programme dealt with the introduction of Smart Grid concepts across the South African Electricity Distribution Industry (municipalities).

The Smart Grids Programme aligns with the strategic objectives of the DoE (Electricity Chief Directorate). Seen in the picture below is a customer with a newly installed smart meter within the jurisdiction of the Matatiele Local Municipality.

A customer with a newly installed Smart meter at Matatiele Local Municipality.

University of Pretoria Training

SANEDI Smart Grids Division in collaboration with the University of Pretoria during its training session for municipal officials seen in the picture below. The aim of the training is to introduce Smart Grid technologies and trends of power system operations and control.

University of Pretoria Training

Smart Grid Laboratory

The South African electricity grid is transforming into Smarter Grids based approach to the advancement of technology and the need to address the current industry challenges. There is a need to have Smart Grid laboratories focused on stimulating research in the Smart Grid areas and driving solutions for the African continent. The fundamental components are smart metering and a cloud platform for data analysis. The development of a Smart Grids laboratory is not a one-time event but rather a journey.

An engineering student at the Smart Grids laboratory situated at the University of Pretoria.

University of Pretoria Bursaries

Twenty-one engineering students were awarded bursaries at the University of Pretoria within the Faculty of Engineering for the 2017/18 financial year. The objective of this initiative was to invest in education in particular in the research fraternity, which is closely aligned to the objectives of the DOE and the goals of the NDP in the space of education, innovation and training.

One of the University of Pretoria's beneficiary of the Smart Grids Bursary programmes.

WORKING FOR ENERGY

Sharpeville Biogas Project

Sharpeville was chosen because of its historical place in the socio-politics of South Africa and poor schools were identified to benefit from the project. The Sharpeville schools biogas project is the last of the Greening of the four Sharpeville interventions (which comprises cool surfaces, efficient lighting and solar water heating) to be completed under the year in review.

The biogas project produces biogas from food and animal waste mixed with waste water produced by the school food kitchen to produce biogas. The biogas is used to offset the use of LPG for cooking in the schools soup kitchens. The biogas production process also produced bio-fertilizer that is used in the schools' food garden to sustain food security. Schools have been encouraged to sell the excess bio-fertilizer to operators of community food gardens as part of the extension of the sustainable development.

This project, in conjunction with interventions installed earlier, help to reduce the carbon foot print of the school, reduces the operation costs of the schools which have been struggling with the upkeep of utility service. The projects also assist to introduce the options and use of cleaner energy technologies to the scholars as the next generation of energy users of the future. Training has also been provided to the staff and management of the schools on the operation and use of biogas, which also helps to popularize the application of clean technologies in the Sharpeville community.

Completed biogas digester in Sharpville with biofertilizer.

Mpfuneko Biogas Project

Similar to the Sharpeville project, the Mpfuneko biogas project (Comprising 53 x households, 1 x place of care, and 1 x Early Childhood Development Centre) is based on the use of animal waste and water to produce biogas. The project has a number of benefits to the beneficiaries and the community at large, namely:

- A quick and clean alternative to wood burning in open flames has been provided, improving the health benefits of the users and their dependents,
- Eliminates the need for women and girls to be looking for firewood, improving their safety,
- Produces bio-fertilizer which is used in the household gardens to enhance crop yield and ensure food security;
- Reduces the energy cost associated with bringing in fuel wood and or LPG,
- Improves the community and stakeholder perceptions and promote awareness about the use of alternative cleaner technologies especially the waste to energy component, and
- Helps to solidify the case for the energy sector with the advocacy for sustainable development, water-energy and food nexus and the circular economy.

Fully functional biogas system in Mpfuneko.

Greening of the Tygerkloof Combined School Project

The Greening of the Tygerkoof project was officially launched by the Minister of Energy during the year and provides biogas (derived from anaerobic digestion of the kitchen waste and animal waste from the farms) to the school kitchen. The project also provided purified water to the solar water geysers that provide hot water needed for all the school's dormitories. The school saves over R100 000 a year due to these interventions.

CLEANER MOBILITY

Cleaner Mobility (CM) can offer a strategic solution for the country's energy security risks, contribute to balance of payments savings, transport Energy Efficiency improvements, economic development and climate mitigation. SANEDI's CM programme, with support key partners such as UNIDO and in partnership with relevant government departments continued to explore various options for the introduction of CM solutions in South Africa.

However, the programme is not sufficiently funded to expand its activities largely confined to specific topic studies, advisory and support role to the industry. SANEDI has allocated its MTEF allocation towards staff costs, in addition to two staff members funded by the UNIDO and assigned to the CM programme. Given these limited resources the program is unable to undertake projects that will have significant impact in communities and the industry. The programme continues to engage external parties with interest in developing the CM industry with the view to attract more funding to enable the programme to expand to more projects that can be implemented on the ground.

During the year under review, CM in partnership with UNIDO undertook various studies which included the macro-economic study for rollout of EV in South Africa. The key objective of the study is to provide a high-level investigation of the impacts (both positive and negative) associated with the electrification of the South African transport sector. The study will amongst others inform the key policy decision by government and investment decisions by industry participants. Although such studies and initiatives undertaken by the CM programme have by nature lower impact in communities at the early stage of industry development, their outcomes are likely to have long term impacts on the industry and its key stakeholders.

ENERGY EFFICIENCY

Energy Efficiency Cool Surfaces Project

The aim of the project is twofold: primarily, to create or retrofit structures that preserve the natural environment, use less energy, last longer and are more comfortable to live and work in, as well as to reduce the impact of heat islands over human settlements on climate change. Additionally, fire retardation and waterproofing of roofs has also been addressed by these cool coatings. To begin with, an industry association was established to regulate product quality in the market. The CRRC standards were adopted and published by the SABS. Pilot and demonstration projects, skills training were undertaken to promote the reflective technology. Data collection on these projects were used to justify passive cooling and reflective technologies' inclusion in the reviewed EE Building Codes.

It is envisioned that the product testing laboratory set up at the University of Pretoria will allow for the reliable testing of products, rating the efficacy of products' performance, standardized EE labels for easy use by consumers and development of a certified product directory, open to the public. Significantly, the first 10 notional South African EE building types were defined and simulated for SABS by the SANEDI Cool Surfaces and University of Pretoria's team. Currently the next 10 notional building types are being developed.

Completed Projects

In 2014 the first pilot project was completed in the Northern Cape, on a corrugated metal informal dwelling. Monitoring this structure proved the efficacy of the technology, cooling the interior of the building by 15-20^{O}C and the external roof surface by 30 -40^{O}C. Thereafter a number of permanent public buildings were coated:

- Groblershoop Municipal Buildings,
- Kimberley Municipal Building complex, and
- Sharpeville's Emmanuel Primary, Kgomoco Primary and Thusanang Primary Schools.

With the demonstration of the dramatic drop in temperature in the individual buildings, these findings justified the next step, that of large scale implementation. The Northern Cape solar corridor proved an ideal site to test Cool Surface technology's potential to significantly cool local atmosphere subjected to urban heat island effect. The Sternham project site, met the criteria wherby the indigent community living in government owned formal housing lived under extreme heat conditions. More than 27,500 square meters of roofing on 380 houses were coated to measure the potential to affect local climate by reducing the impact of heat island effect over human settlements. The most impactful consequences of the project has been the dramatic relief from the intense heat, expressed by the residents of the coated dwellings.

An effective component of the project is the skills training provided by SANEDI, free of charge to the trainees. A combined SANEDI EE training on Cool Surfaces as well as a RE training on Solar Water Heaters and Solar PV installation was presented to 114 SANDF service men and women. This essential training was in preparation for the installations of Cool Surfaces cool coatings and RE rooftop solar PV and solar water heaters at the Limpopo (where the need has been identified to be the greatest) military bases.

Government encourages inter-departmental collaboration, such as this project which is sanctioned by the MoA between the two institutions, simultaneously meeting the mandates of the SANDF and SANEDI, allowing both to maximize government resources. SANEDI already offers annual basic RE and EE training for SANDF during their Environmental & Energy Efficiency Week and further assist with evaluations of SANDF energy and environmental awards. We are working to ensure that this mutually beneficial relationship endures.

Energy Saving Benefits of Cool Surfaces:

- Lowers roof and building temperatures (8 -12°C) and less heat transfer,
- Inexpensive and applicable to both off-grid/ rural and urban buildings,
- Passive cooling where electricity is not available,
- Increased occupant comfort and reduced AC load uses less energy, and
- Improved structural integrity and functioning of roof top HVAC & Solar panels.

Environmental Benefits:

- Less energy consumption and pollution -power plants & domestic burn,
- Cooling effect potential for cities of 2 to 4°C,
- Global warming mitigation: Whitening 100m^2 of roofing cancels warming effect of 10 tons of CO_2 emissions, and
- Globally, cancels 500 medium sized coal power plants worth of greenhouse gas emissions – this is more than CFL deployment.

COMMUNICATIONS

In the 2017/18 financial year, SANEDI participated in Expos and Conferences as per the APP. These included Sustainability Week 2017 in the first quarter of 13-15 June 2017 with the focus being on both supply and demand, with side events in green buildings, agriculture and food security, sustainable energy, transport and mobility, sustainable mining and infrastructure.

In the second quarter, SANEDI participated in the SASOL Techno-X, represented by the CC and Storage team cited elsewhere in the document.

In the third quarter, SANEDI hosted a large stand at the South African Energy Efficiency Convention (SAEEC), showcasing and launching SUNREF Phase 2. After the success of SUNREF phase 1, the AfD decided to extend this program to further enhance sustainable energy lending, specifically towards small and medium sized renewable energy and energy efficiency project developers, since these are still underserved by the South African banking sector.

The SUNREF II credit facility (120 million € nominally split between two South African banks) started in January 2017, but was launched and aimed at a public platform at the SAEEC. As of 2018, the SUNREF TAF is only working with one partner bank, the Industrial Development Bank (IDC), to support and manage the credit line. As for SUNREF I, the Technical Assistance program is hosted by the SANEDI. It supports the partners in identifying and assessing green projects. The technical assistance will also assist the banks and SANEDI with capacity building for renewable energy projects for a period of three years.

The fourth quarter in the year under review saw SANEDI collaborating with the NCPC on the Industrial Energy Efficiency Project stand, with other project implementers on the programme such as the DoE and the CSIR. The expo was successful, in particular, useful information was shared with key stakeholders, not only on the IEEP, but also on SANEDI programmes in general.

The IEEP was established in 2010 in response to the growing need to improve the energy efficiency of South Africa. UNIDO along with the Swiss Secretariat for Economic Affairs, the UK Department of International Development, partnered by the dti and the DoE of South Africa, embarked on a programme to address the global drive for greater energy efficiency. The ultimate goal is to demonstrate the positive impact of energy management as a means of reducing carbon-dioxide emissions and to demonstrate the effectiveness and financial impact of in-plant energy management. The project is hosted by the NCPC-SA at the CSIR and will be integrated into the NCPC-SA after it has completed its four year lifespan.

18. RISK MANAGEMENT

SANEDI's approach to risk management is one of Enterprise Wide Risk Management that is aligned to the principles of good corporate governance as outlined in the King III report, the COSO guidelines and is supported by the PFMA, Act 1 of 1999, and the International standard on Enterprise Risk Management, ISO 31 000.

The requirement for development of a formal risk register is restricted to the 'Strategic Objective' setting level of the organisation. Management at all levels of the organisation must, however, ensure they are able to demonstrate appropriate risk management practices. An annual risk identification and ranking exercise is conducted by the SANEDI Board, SANEDI management and representatives of the DoE in order to determine and rank the current strategic risks facing the organisation. The risk workshop effectively forms part of the strategic planning process within the organisation. A risk register of the identified risks is maintained and presented to SANEDI management monthly and to the the BARC, Board and the DoE every quarter. The risk register was reviewed in November 2018.

The effectiveness of the risk management system is monitored by the BARC. The BARC furthermore advises SANEDI on risk management. Over the preceding year, strengthened controls resulted in the residual risk on several strategic risks being reduced.

The effectiveness of controls and actions to mitigate risks continue to be monitored to inform further improvements and refinements of risk management in the organisation.

19. INTERNAL AUDIT AND AUDIT COMMITTEES

19.1 Internal Audit and Audit Committees

The Audit Committee is constituted as a Board sub-committee with responsibilities as delegated by the Board in terms of Section 51 (1) (ii) of the PFMA and Treasury Regulations.

The Audit Committee has an independent role with accountability to both the Board and Shareholders. The role of the Audit Committee is to provide independent assurance and assistance to the Board on control, governance and risk management. The Audit Committee does not replace established management responsibilities and delegations.

The key activities of the BARC, in correspondence with National Treasury Regulations, are:

- Review the adequacy of policies, procedures and the internal control systems, including information technology security and control, and financial controls,
- Review performance management systems and information for compliance and alignment to company purpose, objectives and commitments,
- Review and approve the scope of activities of the internal audit function, ensuring that it covers the key risks and that there is alignment with the external auditor (AGSA),
- Assess the effectiveness of the internal audit function and
- Review the Auditor-General's audit scope, approach and performance, and review findings, implementation of recommendations by management,
- Review legal and regulatory compliance and effectiveness of systems for monitoring such
- Report to relevant stakeholders, including the Board regarding the committee activities, issues and related recommendations, and
- Report concerns to the EA where relevant.

The BARC was constituted on 27 January 2017, with three independent Board members. The CEO, CFO and internal and external auditors are standing invitees to the BARC.

Table 19.1.1 Disclosed relevant information on the Audit Committee members.

Name	Qualifications	Internal or external	If internal, position in the public entity	Date appointed	Date Resigned	No. of Meetings attended
Ms Phuthanang Motsielwa	B Acc (CA)(SA)	External	n/a	27-Jan-17	n/a	6
Mr Nkululeko Buthelezi	Dip Scientific Computing and Software Engineering, Dip Management, Adv Dip Project Management, Post Grad Dip Management, MBA	External	n/a	27-Jan-17	n/a	6
Mr Mlondolozi Mkhize	B Soc Sc	External	n/a	27-Jan-17	n/a	3

Table 19.1.1: Board Audit Committee Members

20. COMPLIANCE WITH LAWS AND REGULATIONS

SANEDI reports on compliance with the PFMA and Treasury Regulations in its quarterly reports submitted to the DoE and National Treasury. Through the CFO Forum, National Treasury provides a support structure to CFOs of public entities. This interface allows regular engagement with National Treasury that facilitates information sharing, provides training workshops for finance personnel and CFOs and provides updates on recent developments within National Treasury, the Accounting Standards Board (ASB) and financial legislation and regulations.

All policies and procedures approved by the SANEDI Board are maintained in a register of policies and procedures and are complied with. The Secretariat assists with compliance matters and ensures that the company's affairs, as well as the Board proceedings, are properly carried out in accordance with the relevant laws and standards. The DoE furthermore issues an annual Compliance Calendar to which SANEDI adheres.

21. FRAUD AND CORRUPTION

SANEDI is committed to the eradication of fraud, corruption, misconduct and any irregularities and takes a zero-tolerance position towards fraud. A Board approved fraud prevention plan was adopted with measures to address fraud risk management from both a proactive and reactive perspective.

Through the Internal Audit function, SANEDI has contracted the services of an independent hotline service provider for the confidential reporting of fraud, corruption, misuse of public resources and other inappropriate behavior. No calls were received by the Fraud Hotline during the 2017/18 financial year. An incident of fraud was identified at year end which in turn affects the reporting period. The incident had been reported to the authorities and at the date of compiling this report, the matter had not been concluded.

22. MINIMISING CONFLICT OF INTEREST

In accordance with the provisions of the Companies Act and the PFMA, all Board members declare financial interests annually and the declarations of financial interests are submitted to the DoE. Furthermore, any interests are declared at each meeting of the Board or its committees and Declaration of Interest is implemented in line with the PFMA requirements.

An annual Declaration of Interest is signed by all staff members, including those working in supply chain management. A record of these declarations is maintained by the Human Resources department. Every staff member employed in supply chain management has furthermore signed the National Treasury code of conduct for supply chain practitioners. All individuals who are involved in the bidding process (including all supply chain related, evaluation and adjudication meetings) declare their interest prior to proceeding with the process, as required by the PFMA. Any individual who is a member of the Bid Evaluation Committee is not allowed to adjudicate on the same bid if they happen to be a member of the Bid Adjudication Committee.

23. CODE OF CONDUCT

SANEDI adopted a Code of Conduct, approved by the Board in 2015. The Code is universally applicable to all employees and contractors of the organisation and requires a commitment by each and every employee to adhere to the Code. The Code serves as a guide to assist the Board, Executive Management, Staff and Contractors of the organisation in making ethical decisions and engaging in appropriate and lawful conduct. Should there be a breach of the Code of Conduct, a disciplinary process will be followed. No such breach was reported during the year.

24. HEALTH SAFETY AND ENVIRONMENTAL ISSUES

SANEDI endeavors to put the health and safety of its employees and their work environment, including all other persons conducting business on its premises, first as far as is reasonably possible. To this end, SANEDI is committed to the fulfilment of the requirements stipulated in the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) (OHSA) and has developed a Health and Safety Policy and subsequently established a Health and Safety Committee to ensure that all who are in SANEDI's work facilities are in an environment that has eliminated or reduced potential health and safety threats.

25. COMPANY/BOARD SECRETARY

SANEDI had procured Company Secretary services from an external service provider, Acorim Secretariat and Governance (a division of Merchantec (Pty) Ltd). The appointment and removal of the Company Secretary is approved by the CEO. The contract with Acorim came to an end on 31 December 2017 and the Company Secretary post is currently vacant.

The Company Secretary advised the Board on the appropriate procedures for the management of meetings and the implementation of governance procedures and was further responsible for providing the Board collectively and each Member individually, with guidance on the discharge of their responsibilities in terms of the legislation and regulatory requirements applicable to South Africa.

The Board is satisfied that there was an arm's length relationship between the Company Secretary and SANEDI as the Company Secretary is not a Stakeholder in the Organisation and is itself a separate legal entity and at all times maintained open lines of communication with the Board. The Board had unlimited access to the Company Secretary, who advised the Board and its committees on issues including compliance with government policies and procedures, statutory regulations and relevant governance principles and recommendations.

The Company Secretary attended Board and Committee meetings to ensure that comprehensive minutes of meetings were recorded. The organisation supported the Board with any support, resources and information necessary in pursuance of its duties.

26. AUDIT COMMITTEE REPORT

We are pleased to present our report for the financial year ended 31 March 2018.

26.1 Audit Committee Responsibility

The BARC reports that it has complied with its responsibilities arising from Section 51 (1)(a)(ii) of the PFMA and Treasury Regulation 27.1.10. The Audit Committee also reports that it has adopted appropriate formal terms of reference as its Audit Committee Charter, has regulated its affairs in compliance with this charter and has discharged all its responsibilities as contained therein, except that we have not reviewed changes in accounting policies and practices.

26.2 The Effectiveness of Internal Control

Our review of the findings of the Internal Audit work, which was based on the risk assessments conducted in the Public Entity, revealed certain weaknesses, which were then raised with the public entity.

The following internal audit work was completed during the year under review:

- Stakeholder Strategy,
- Human Resources, and
- IT Strategy, IT Infrastructure and Business Continuity Plan.

Whilst the audit revealed some weaknesses in the control environment, there were no material breakdown in internal control which the Audit Committee is concerned about. The Committee is satisfied that the action plan, as presented by management, will result in the correction of the control deficiencies as identified by Internal Audit. Internal Audit will address and will be monitoring progress against the plan on a quarterly basis.

26.3 In-Year Management and Monthly/ Quarterly Report

The Audit Committee has reviewed, on a quarterly basis, quarterly reports as prepared by management and submitted the quarterly reports to the Executive Authority, as is required by the PFMA of 1999.

26.4 Evaluation of Financial Statements

We have reviewed and discussed the audited AFS to be included in the Annual Report, with the AG and the CEO. We have also reviewed the following:

- changes in accounting policies and practices,
- the entity's compliance with legal and regulatory provisions,
- the information on predetermined objectives to be included in the Annual Report, and
- significant adjustments resulting from the audit.

We are satisfied with the quality and timeliness of the financial information availed to us for oversight purposes during the year, such as interim Financial Statements.

27. AUDITOR'S REPORT

We have reviewed the public entity's implementation plan for audit issues raised in the prior year and we are satisfied that the matters have been adequately resolved except for the following:

- Testing of the ICT business continuity plan need to be performed on a regular basis as opposed to the status currently.

The Audit Committee concurs and accepts the conclusions of the external auditor on the AFS and is of the opinion that the audited AFS be accepted and read together with the report of the auditor.

The Audit Committee concurs and accepts the conclusions of the external auditor on the AFS and is of the opinion that the audited AFS be accepted and read together with the report of the auditor.

The Committee further noted AG Management Report and matters contained therein, including management correction actions, which will be monitored in the 2018/19 financial year.

The AG was independent throughout the financial year under review and the Audit Committee met with the AG to ensure that there are no unresolved issues.

Phuthanang Motsielwa

Chairperson of the Board Audit and Risk Committee (SANEDI)

PART D: HUMAN RESOURCE MANAGEMENT

28. INTRODUCTION

28.1 Overview of Human Resource Matters at SANEDI

During the period under review, the HR department continued to focus on developing policies and procedures and implementing fully integrated HR systems to improve related processes such as recruitment and selection, remuneration of employees, career progression, succession planning and training and development.

28.2 HR Priorities for 2017/18

SANEDI recognises that its people, the employees, are the heart of the organisation. In order to obtain the best output from the employees, the environment in which they work in needs to be conducive for them to deliver excellence. It is with this in mind that a full review of all the HR policies was conducted. Due to legacy issues, where SANEDI did not have a particular policy, the organisation would revert back to applying the applicable CEF policy. This brought about its own challenges and necessitated SANEDI to develop its own set of HR policies which are relevant to its own unique environment. At year end the Board were presented with 26 HR policies for approval. SANEDI is also embarking on an organisational review process to ensure that the organisation is optimally structured to deliver on its mandate.

28.3 Workforce Planning Framework

SANEDI continued to support the ongoing development of employees to meet the future needs of the entity through bursaries and internships. SANEDI's internship programme continued to grow during the reporting period. SANEDI continued to leverage its relationships with Stakeholders and academic institutions to provide for the ongoing professional development of employees.

28.4 Performance Management Framework

The Employee Performance Management Framework remained fully integrated and linked to the SANEDI's strategic objectives, thus ensuring synergy between organisational and individual performance.

28.5 Employee Wellness Programme

SANEDI has implemented the Employee Wellness Programme. Many employers recognise the wider potential benefits of investing in wellness and have used it to promote the achievement of other things, such as improving employee engagement, building individual resilience, strengthening the employee value proposition to attract and retain the best talent and building the organisation's reputation and image.

28.6 Policy Development

In line with the Integrated Management System of the SANEDI, 26 HR policies and procedures were reviewed and updated.

28.7 Challenges faced by SANEDI

The fixed-term contracts continued to pose an industry-wide problem. SANEDI stands to lose key resources to other employers who offer greater job security. The transition of contract staff to permanent employ is being investigated to reduce the risk of staff turnover.

28.8 Future HR Plans and Goals

In line with strategic objectives, SANEDI's Executive Management's priority is to increase the ratios of technical staff in regards to support staff as well as increase the number of PDI. Skills development and transformation by advancing employment equity, growing the pipeline of graduates within the entity. Management aspires to develop and improve SANEDI's culture. In this regard SANEDI will be undergoing an organisational review in the new financial year.

29. HUMAN RESOURCE OVERSIGHT STATISTICS

The following section presents statistics relevant to the SANEDI staff complement.
The data and statistics do not include short term contracts.

29.1 Personnel Costs by Programme

Programme/ activity/ objective	Total Expenditure for the entity (R'000)	Personnel Expenditure (R'000)	Personnel exp. as a % of total exp. (R'000)	No. of employees	Average personnel cost per employee (R'000)
Administration	50, 615	16,679	33%	23	522
Applied Energy Research, Development and Innovation	95,309	26,182	27%	30	793
Energy Efficiency	630	744	118%	6	372
TOTAL	146,555	43 623	30%	59	1,687

29.2 Personnel Cost by Salary Band

Level	Personnel Expenditure (R'000)	% of Personnel exp. to total personnel cost (R'000)	No. of employees	Average personnel cost per employee (R'000)
Top Management	2,524	6%	2	1262
Senior Management	12,589	29%	6	1798
Professional qualified	17,044	39%	20	852
Skilled and Semi-skilled	11,465	26%	31	302
TOTAL	43,623	100%	59	4214

29.3 Performance Rewards

Level	Performance rewards	Personnel Expenditure (R'000)	% of Performance rewards to total personnel cost (R'000)
Top Management	425	2,524	17%
Senior Management	2 690	12,589	21%
Professional qualified	3,101	17,044	18%
Skilled and Semi-skilled	1,939	11,465	17%
TOTAL	8,155	43,623	73%

29.4 Training Costs

Programme/ activity/ objective	Personnel Expenditure (R'000)	Training Expenditure (R'000)	Training Expenditure as a % of Personnel Cost	No. of employees trained	Avg training cost per employee
Administration	16,697	204.64	1%	5	41
Applied Energy Research	26,182	1.38	0%	2	1
Energy Efficiency	744	35.10	5%	1	35
TOTAL	43,623	241,12	6%	8	77

29.5 Employment and Vacancies

During 2017/18, six vacancies existed across SANEDI's three programmes:

Programme/activity/objective	2017/18 No. of Employees	2017/18 Approved Posts	2017/18 Vacancies	% of vacancies
Administration	23	2	1	4.3%
Applied energy research, development and innovation	31	4	3	10%
Energy Efficiency	5	-	-	-
TOTAL	59	6	4	14.3%

Programme/activity/objective	2017/18 No. of Employees	2017/18 Approved Posts	2017/18 Vacancies	% of vacancies
Top Management	2	-	-	-
Senior Management	6	-	-	-
Professional qualified	20	3	3	5%
Skilled	27	4	4	7%
Semi-skilled	4	-	-	-
TOTAL	59	7	7	12%

29.6 Employment Changes

Provide information on changes in employment over the financial year.

Turnover rates provide an indication of trends in employment profile of the public entity.

Salary Band	Employment at beginning of period	Appointments	Terminations	Employment at end of the period
Top Management	2	-	1	1
Senior Management	6	-	1	5
Professional qualified	20	3	1	22
Skilled	27	4	4	27
Semi-skilled	4	-	-	4
TOTAL	59	7	7	59

29.7 Reasons for Staff Leaving

Seven staff members left SANEDI during the year. As reflected in the following breakdown of reasons for staff members leaving, all of these employees resigned.

Reason	Number	% of total no. of staff leaving
Death	-	-
Resignation	7	12%
Dismissal	-	-
Retirement	-	-
Ill health	-	-
Expiry of contract	-	-
Other	-	-
TOTAL	7	100%

29.8 Labour Relations: Misconduct And Disciplinary Action

There were no cases of misconduct and disciplinary action during the financial year.

Nature of disciplinary Action	Number
Verbal Warning	None
Written Warning	1
Final Written warning	None
Dismissal	None

29.9 Equity Target and Employment Equity Status

At the end of the year under review, our staff establishment was as follows:

Levels	Male							
	African		Coloured		Indian		White	
	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	-	-	-	-	-	-	-	-
Senior Management	1	-	-	-	1	-	2	-
Professional qualified	5	-	1	-	3	-	3	-
Skilled	6	-	-	-	1	-	-	-
Semi-skilled	1	-	-	-	-	-	-	-
TOTAL	13	-	1	-	5	-	5	-

Levels	Female							
	African		Coloured		Indian		White	
	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	2	-	-	-	-	-	-	-
Senior Management	-	-	-	-	-	-	-	-
Professional qualified	6	-	-	-	-	-	2	-
Skilled	13	-	1	-	1	-	1	-
Semi-skilled	3	-	-	-	-	-	-	-
TOTAL	24	-	1	-	1	-	3	-

PART E: FINANCIAL INFORMATION

30. REPORT OF THE EXTERNAL AUDITOR

Report of the auditor-general to Parliament on South African National Energy Development Institute

Report on the audit of the financial statements

1. I have audited the financial statements of the South African National Energy Development Institute (SANEDI) set out on pages 103 to 142 which comprise the statement of financial position as at 31 March 2018, the statement of financial performance, statement of changes in net assets, cash flow statement and the statement of comparison of budget information with actual information for the year then ended, as well as the notes to the financial statements, including a summary of significant accounting policies.

2. In my opinion, the financial statements present fairly, in all material respects, the financial position of the SANEDI as at 31 March 2018, and its financial performance and cash flows for the year then ended in accordance with Standards of Generally Recognised Accounting Practice (Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA).

Basis of opinion

3. I conducted my audit in accordance with the International Standards on Auditing (ISAs). My responsibilities under those standards are further described in the auditor-general's responsibilities for the audit of the financial statements section of this auditor's report.

4. I am independent of the public entity in accordance with the International Ethics Standards Board for Accountants' Code of ethics for professional accountants (IESBA code) and the ethical requirements that are relevant to my audit in South Africa. I have fulfilled my other ethical responsibilities in accordance with these requirements and the IESBA code.

5. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Responsibilities of the accounting authority for the financial statements

6. The accounting authority is responsible for the preparation and fair presentation of the financial statements in accordance with Standards of GRAP and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA), and for such internal control as the accounting authority determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

7. In preparing the financial statements, the accounting authority is responsible for assessing the SANEDI's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless the accounting authority either intends to liquidate the public entity or to cease operations, or has no realistic alternative but to do so.

Auditor-general's responsibilities for the audit of the financial statements

8. My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes my opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

9. A further description of my responsibilities for the audit of the financial statements is included in the annexure to this auditor's report.

Report on the audit of the annual performance report

Introduction and scope

10. In accordance with the Public Audit Act of South Africa, 2004 (Act No. 25 of 2004) (PAA) and the general notice issued in terms thereof, I have a responsibility to report material findings on the reported performance information against predetermined objectives for selected programmes presented in the annual performance report. I performed procedures to identify findings but not to gather evidence to express assurance.

11. My procedures address the reported performance information, which must be based on the approved performance planning documents of the public entity. I have not evaluated the completeness and appropriateness of the performance indicators included in the planning documents. My procedures also did not extend to any disclosures or assertions relating to planned performance strategies and information in respect of future periods that may be included as part of the reported performance information. Accordingly, my findings do not extend to these matters.

12. I evaluated the usefulness and reliability of the reported performance information in accordance with the criteria developed from the performance management and reporting framework, as defined in the general notice, for the following selected programmes presented in the annual performance report of the public entity for the year ended 31 March 2018:

Programmes	Pages in the annual performance report
Programme 2– Applied energy research, development and innovation	30 - 44
Programme 3– Energy efficiency	44 - 66

13. I performed procedures to determine whether the reported performance information was properly presented and whether performance was consistent with the approved performance planning documents. I performed further procedures to determine whether the indicators and related targets were measurable and relevant, and assessed the reliability of the reported performance information to determine whether it was valid, accurate and complete.

14. I did not raise any material findings on the usefulness and reliability of the reported performance information for the following programmes:

    - Programme 2 - Applied energy research, development and innovation
    - Programme 3 - Energy efficiency

Other matters

15. Although I identified no material findings on the usefulness and reliability of the reported performance information for the selected objectives,I draw attention to the matters below:

Achievement of planned targets

16. Refer to the annual performance report on pages 47; 49-61; 63-66 for information on the achievement of planned targets for the year and explanations provided for the under/overachievement of a significant number of targets.

Adjustment of material misstatements

17. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were on the reported performance information of Programme 2 - Applied energy research, development and innovation and Programme 3 - Energy efficiency. As management subsequently corrected these misstatements, I did not raise material findings on the usefulness and reliability of the reported performance information.

Report on the audit of compliance with legislation

Introduction and scope

18. In accordance with the PAA and the general notice issued in terms thereof, I have a responsibility to report material findings on the compliance of the public entity with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.

19. I did not raise material findings on compliance with the specific matters in key legislation set out in the general notice issued in terms of the PAA.

Other information

20. The accounting authority is responsible for the other information. The other information comprises the information included in the annual report. The other information does not include the financial statements, the auditor's report thereon and those selected programmes presented in the annual performance report that have been specifically reported on in the auditor's report.

21. My opinion on the financial statements and findings on the reported performance information and compliance with legislation do not cover the other information and I do not express an audit opinion or any form of assurance conclusion thereon.

22. In connection with my audit, my responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements and the selected programmes presented in the annual performance report, or my knowledge obtained in the audit, or otherwise appears to be materially misstated. I have nothing to report in this regard.

Internal control deficiencies

23. I considered internal control relevant to my audit of the financial statements, reported performance information and compliance with applicable legislation; however, my objective was not to express any form of assurance on it. I did not identify any significant deficiencies in internal control.

Auditor-General

Pretoria
31 July 2018

AUDITOR-GENERAL
SOUTH AFRICA

Auditing to build public confidence

Annexure – Auditor-general's responsibility for the audit

1. As part of an audit in accordance with the ISAs, I exercise professional judgement and maintain professional scepticism throughout my audit of the financial statements, and the procedures performed on reported performance information for selected programmes and on the public entity's compliance with respect to the selected subject matters.

Financial statements

2. In addition to my responsibility for the audit of the financial statements as described in this auditor's report, I also:

   - identify and assess the risks of material misstatement of the financial statements whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

   - obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the public entity's internal control.

   - evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the board of directors, which constitutes the accounting authority.

   - conclude on the appropriateness of the board of directors, which constitutes the accounting authority's use of the going concern basis of accounting in the preparation of the financial statements. I also conclude, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the South African National Energy Development Institutes' ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my auditor's report to the related disclosures in the financial statements about the material uncertainty or, if such disclosures are inadequate, to modify the opinion on the financial statements. My conclusions are based on the information available to me at the date of this auditor's report. However, future events or conditions may cause a public entity to cease continuing as a going concern

   - evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

Communication with those charged with governance

3. I communicate with the accounting authority regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

4. I also confirm to the accounting authority that I have complied with relevant ethical requirements regarding independence, and communicate all relationships and other matters that may reasonably be thought to have a bearing on my independence and, where applicable, related safeguards.

Annual Financial Statements

STATEMENT OF FINANCIAL POSITION

as at 31 March 2018

	Notes	March 2018 R'000	March 2017 R'000
ASSETS			
Non-current assets		**6 927**	**2 028**
Property Plant and equipment	2	3 013	1 861
Intangibles assets	3	3 914	167
Current Assets		**249 995**	**300 509**
Receivables from exchange transactions	4	2 700	34 277
VAT receivable	4	2 431	10 550
Cash and cash equivalents	5	244 864	255 682
Total Assets		**256 922**	**302 537**
LIABILITIES			
Current Liabilities		**(74 117)**	**(115 898)**
Payables from exchange transactions	8	(16 041)	(15 838)
Unspent conditional grants and receipts	6	(46 940)	(89 501)
Provisions	7	(11 136)	(10 559)
Total Liabilities		**(74 117)**	**(115 898)**
NET ASSETS			
Accumulated surplus		**(182 805)**	**(186 639)**

STATEMENT OF FINANCIAL PERFORMANCE

for the year ended 31 March 2018

	Notes	March 2018 R'000	March 2017 R'000
REVENUE			
Revenue from non-exchange transactions	9,1	(124 853)	(54 177)
Revenue from exchange transactions	9,1	(17 744)	(30 593)
Total Revenue		**(142 597)**	**(84 770)**
EXPENDITURE			
Direct personnel Costs	12	47 984	49 639
Project development costs	11	75 651	44 425
Depreciation	2,3	1 309	1 345
Repairs and Maintenance		1 322	707
Operating expenses	10	10 469	13 654
Exchange Flactuations		96	-
Provision for Doubtful Debts		9 444	629
Impairments		155	31
Loss on Fair value adjustment		-	1
Interest paid		-	-
Total Expenditure		**146 431**	**110 431**
Deficit/(Surplus) for the period		**3 834**	**25 662**

STATEMENT OF CHANGES IN NET ASSETS

for the year ended 31 March 2018

	Notes	Accumulated surplus R'000	Accumulated surplus R'000
Restated opening balance as at 1 April 2016		**212 300**	**212 300**
Deficit for the year ended 31 March 2017		25 662	25 662
Balance at 31 March 2017		**186 639**	**186 639**
Deficit for the year ended period		3 834	3 834
Balance at 31 March 2018		**182 805**	**182 805**

CASH FLOW STATEMENT

for the year ended 31 March 2018

	Notes	March 2018 R'000	March 2017 R'000
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts		**120 793**	**152 290**
Grants		100 654	124 821
Interest income		16 315	21 315
Membership fees and sponsorships		3 823	6 154
Payments		**(125 247)**	**266 782**
Employee costs		(45 401)	(58 070)
Suppliers		(57 436)	(111 267)
Transfers of funds		(22 410)	(97 445)
Net cash flows from operating activities	13	**(4 454)**	**(114 492)**
CASH FLOWS FROM INVESTING ACTIVITIES			
Purchase of property, plant and equipment		(6 363)	(797)
Proceeds from sale of property, plant and equipment		-	-
Purchase of other intangible assets		-	(44)
Net cash flows from investing activities		**(6 363)**	**(841)**
Net increase in cash and cash equivalents		(10 817)	(115 333)
Cash and cash equivalents at the beginning of the year	5	**255 682**	**371 015**
Cash and cash equivalents at end of the year	5	**244 865**	**255 682**

ACCOUNTING POLICIES

1. Presentation of Annual Financial Statements

1.1. BASIS OF PREPARATION

The Annual Financial Statements have been prepared in accordance with the effective Standards of Generally Recognised Accounting Practice (GRAP) including any interpretations, guidelines and directives issued by the Accounting Standards Board.

These Annual Financial Statements have been prepared on an accrual basis of accounting and are in accordance with historical cost convention unless specified otherwise. They are presented in South African Rand.

The Financial Statements have been prepared on a going concern basis and the accounting policies have been applied consistently throughout the period.

1.2. TRANSLATION OF FOREIGN CURRENCIES

Foreign currency transactions

A foreign currency transaction is recorded, on initial recognition in Rands, by applying to the foreign currency amount the spot exchange rate between the functional currency and the foreign currency at the date of the transaction.

At each reporting date:

- Foreign currency monetary items are translated using the closing rate,
- Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rate at the date of the transaction, and
- Non-monetary items that are measured at fair value in a foreign currency are translated using the exchange rates at the date when the fair value was determined.

Exchange differences arising on the settlement of monetary items or on translating monetary items at rates different from those at which they were translated on initial recognition during the period or in previous Annual Financial Statements are recognised in surplus or deficit in the period in which they arise.

When a gain or loss on a non-monetary item is recognised directly in net assets, any exchange component of that gain or loss is recognised directly in net assets. When a gain or loss on a non-monetary item is recognised in surplus or deficit, any exchange component of that gain or loss is recognised in surplus or deficit. Cash flows arising from transactions in a foreign currency are recorded in Rands by applying to the foreign currency amount the exchange rate between the Rand and the foreign currency at the date of the cash flow.

1.3. EVENTS AFTER THE REPORTING DATE

Recognised amounts in the Annual Financial Statements are adjusted to reflect events arising after the reporting date that provide evidence of conditions that existed at the reporting date. Events after the

reporting date that are indicative of conditions that arose after the reporting are dealt with by way of a note.

1.4. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are tangible non-current assets that are held for use in the supply of goods or services or for administrative purposes and are expected to be used during more than one period.

1.4. PROPERTY, PLANT AND EQUIPMENT (continued)

Carrying amounts

All property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment losses.

Cost

The cost of an item of property, plant and equipment is recognised as an asset when:

- It is probable that future economic benefits or service potential associated with the item will flow to the entity or
- The cost or fair value of the item can be measured reliably.

The cost of an item of property, plant and equipment is the purchase price and other costs attributable to bring the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Trade discounts and rebates are deducted in arriving at the cost. Where an item of property, plant and equipment is acquired at no cost, or for a nominal cost, its cost is its fair value as at date of acquisition.

Where an item of property, plant and equipment is acquired in exchange for a non-monetary asset or monetary assets, or a combination of monetary and non-monetary assets, the asset acquired is initially measured at fair value (the cost). If the acquired non-monetary asset's fair value is not determinable, its deemed cost is the carrying amount of the asset given up.

Cost includes costs incurred initially to acquire or construct an item of property, plant and equipment and costs incurred subsequently to add to, or to replace a part of, or service it. If a replacement cost is recognised in the carrying amount of an item of property, plant and equipment, the carrying amount of the replaced part is derecognised. Finance costs directly associated with the construction or acquisition of major assets are capitalised at interest rates relating to loans specifically raised for that purpose, or at the average borrowing rate where the general pool of borrowings is utilised.

Derecognition

The carrying amount of an item of property, plant and equipment is derecognised on disposal or when no future economic benefits are expected from its use.

The gain or loss arising from the derecognition of an item of property, plant and equipment is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the item. Such difference is recognised in the surplus or deficit when the item is derecognised.

Depreciation

Depreciation is charged so as to write off the depreciable amount of the assets, other than land, over their estimated useful lives to estimated residual values, using the straight line method to write off the cost of each asset that reflects the pattern in which the asset's future economic benefits are expected to be consumed by the entity. Where significant parts of an item have different useful lives to the item itself, these parts are depreciated over their estimated useful lives.

The following methods and rates are used during the year to depreciate property, plant and equipment to estimated residual values:

1.4. PROPERTY, PLANT AND EQUIPMENT (continued)

Item	Average useful life
Furniture, fittings and communication equipment	2-15 years
Office equipment	5 years
Motor vehicle	5 years
Computer equipment	3 years
Leasehold improvements	over the period of the lease

Each part of an item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

The methods of depreciation, useful lives and residual values are reviewed annually.

1.5 INTANGIBLE ASSETS

An asset is identified as an intangible asset when it:

- Is capable of being separated or divided from an entity and sold, transferred, licensed, rented or exchanged, either individually or together with a related contract, assets or liability or
- Arises from contractual rights or other legal rights, regardless whether those rights are transferable or separate from the entity or from other rights and obligations. An intangible asset is an identifiable non-monetary asset without physical substance.

Initial recognition

An intangible asset is recognised when:

- It is probable that the expected future economic benefits or service potential that are attributable to the asset will flow to the entity and
- The cost or fair value of the asset can be measured reliably.

Cost

Intangible assets are initially recognised at cost if acquired separately or internally generated or at fair value if acquired as part of a business combination. If assessed as having an indefinite useful life, the intangible asset is not amortised but tested for impairment annually and impaired if necessary. If assessed as having a finite useful life, it is amortised over its useful life using a straight line basis and tested for impairment if there is an indication that it may be impaired.

Research

Expenditure on research (or on the research phase of an internal project) is recognised as an expense when it is incurred.

Development costs

Development costs are capitalised only if they result in an asset that can be identified, and it is probable that the asset will generate future economic benefits and the development cost can be reliably measured. Otherwise it is recognised in surplus or deficit.

1.5 INTANGIBLE ASSETS (continued)

Derecognition

Intangible assets are derecognised on disposal, or when no future economic benefits or service potential are expected from its use or disposal. The gain or loss arising from the derecognition of an intangible asset is determined as the difference between the net disposal proceeds, if any, and the carrying amount of the intangible asset. Such a difference is recognised in surplus or deficit when the intangible asset is derecognised.

Amortisation is recognised in profit and loss, on a straight line basis, to their residual values as follows:

Item	Average useful life
Computer software	2 years

1.6. LEASES

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership. A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incidental to ownership.

Operating lease payments are recognised as an expense on a straight line basis over the lease term. The difference between the amounts recognised as an expense and the contractual payments are recognised as an operating lease asset or liability.

The aggregate benefit of incentives is recognised as a reduction of rental expense over the lease term on a straight line basis over the lease term. Any contingent rent is recognised separately as an expense when paid or payable and are not straight lined over the lease term.

1.7. FINANCIAL INSTRUMENTS

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or a residual interest of another entity.

A financial asset is:
- Cash,
- A residual interest of another entity, or
- A contractual right to:
  - Receive cash or another financial asset from another entity and
  - Exchange financial assets or financial liabilities with another entity under conditions that are potentially favourable to the entity.

A financial liability is any liability that is a contractual obligation to:
- Deliver cash or another financial asset to another entity, or
- Exchange financial assets or financial liabilities under conditions that are potentially unfavourable to the entity.

Financial instruments at amortised cost are non-derivative financial assets or non-derivative financial liabilities that have fixed or determinable payments, excluding those instruments that:
- The entity designates at fair value at initial recognition, or
- Are held for trading.

1.7. FINANCIAL INSTRUMENTS (continued)

Financial instruments at fair value comprise financial assets or financial liabilities that are:

- Derivatives,
- Combined instruments that are designated at fair value, and
- Instruments held for trading.

A financial instrument is held for trading if:

- It is acquired or incurred principally for the purpose of selling or repurchasing it in the near-term,
- On initial recognition it is part of a portfolio of identified financial instruments that are managed together and for which there is evidence of a recent actual pattern of short term profit-taking,
- Non-derivative financial assets or financial liabilities with fixed or determinable payments that are designated at fair value at initial recognition, and
- Financial instruments that do not meet the definition of financial instruments at amortised cost or financial instruments at cost. Financial assets and financial liabilities are recognised on the entity's statement of financial position when the entity becomes a party to the contractual provisions of the instrument.

The entity's principal financial assets are accounts receivable as cash and cash equivalents.

The entity has the following types of financial assets (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Loans receivable	Financial asset measured at amortised cost
Trade and other receivables	Financial asset measured at amortised cost
Cash and cash equivalents	Financial asset measured at amortised cost
Investments	Financial asset measured at amortised cost

Financial liabilities

The entity has the following types of financial liabilities (classes and category) as reflected on the face of the statement of financial position or in the notes thereto:

Class	Category
Trade and other payables	Financial liability measured at amortised cost

Initial recognition

The entity recognises a financial asset or a financial liability in its statement of financial position when the entity becomes a party to the contractual provisions of the instrument.

Initial measurement

The entity measures a financial asset and financial liability at amortised cost initially at its fair value, plus transaction costs that are directly attributable to the acquisition or issue of the financial asset or financial liability.

1.7. FINANCIAL INSTRUMENTS (continued)

Subsequent measurement

The entity measures all financial assets and financial liabilities after initial recognition using the following category:

- Financial instruments at amortised cost.

All financial assets measured at amortised cost, or cost, are subject to an impairment review.

The amortised cost of a financial asset or financial liability is the amount at which the financial asset or financial liability is measured at initial recognition, minus principal repayments, plus or minus the cumulative amortisation using the effective interest method of any difference between that initial amount and the maturity amount and minus any reduction (directly or through the use of an allowance account) for impairment or uncollectibility.

Gains and losses

For financial assets and financial liabilities measured at amortised cost or cost, a gain or loss is recognised in surplus or deficit when the financial asset orfinancial liability is derecognised or impaired, or through the amortisation process.

Trade and other receivables

Trade receivables are measured at initial recognition at fair value and are subsequently measured at amortised cost using the effective interest rate method. Appropriate allowances for estimated irrecoverable amounts are recognised in profit or loss when there is objective evidence that the asset is impaired. Significant financial difficulties of the debtor, probability that the debtor will enter bankruptcy or financial reorganisation and default or delinquency in payments (more than 30 days overdue) are considered indicators that the trade receivable is impaired. The allowance recognised is measured as the difference between the asset's carrying amount and the present value of estimated future cash flows discounted at the effective interest rate computed at initial recognition.

The carrying amount of the asset is reduced through the use of an allowance account and the amount of the loss is recognised in the income statement within operating expenses. When a trade receivable is uncollectable, it is written off against the allowance account for trade receivables. Subsequent recoveries of amounts previously written off are credited against operating expenses in the income statement.

Trade and other receivables are classified as loans and receivables.

Trade and other payables

All financial liabilities are measured at amortised cost, comprising original debt less principal payments and amortisations.

Cash and cash equivalents

Cash and cash equivalents comprise cash on hand and demand deposits, and other short-term highly liquid investments that are readily convertible to a known amount of cash and are subject to an insignificant risk of changes in value. These are initially and subsequently recorded at fair value.

1.7. FINANCIAL INSTRUMENTS (continued)

Derecognition

The entity derecognises financial assets using trade date accounting. The entity derecognises a financial asset only when:

- The contractual rights to the cash flows from the financial asset expire, are settled or waived,
- The entity transfers to another party substantially all of the risks and rewards of ownership of the financial asset or
- The entity despite having retained some significant risks and rewards of ownership of the financial asset, has transferred control of the asset to another party and the other party has the practical ability to sell the asset in its entirety to an unrelated third party, and is able to exercise that ability unilaterally and without needing to impose additional restrictions on the transfer.

In this abovementioned case, the entity:

- Derecognises the asset, and
- Recognises separately any rights and obligations created or retained in the transfer.

The carrying amounts of the transferred asset are allocated between the rights or obligations retained and those transferred on the basis of their relative fair values at the transfer date. Newly created rights and obligations are measured at their fair values at that date. Any difference between the consideration received and the amounts recognised and derecognised is recognised in surplus or deficit in the period of the transfer.

On derecognition of a financial asset in its entirety, the difference between the carrying amount and the sum of the consideration received is recognised in surplus or deficit.

Financial liabilities

The entity removes a financial liability (or a part of a financial liability) from its statement of financial position when it is extinguished, that is when the obligation specified in the contract is discharged, cancelled, expires or is waived.

The difference between the carrying amount of a financial liability (or part of a financial liability) extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in surplus or deficit. Any liabilities that are waived, forgiven or assumed by another entity by way of a non-exchange transaction are accounted for in accordance with the Standard of GRAP on Revenue from Non-exchange Transactions (Taxes and Transfers).

Fair value measurement considerations

The best evidence of fair value is quoted prices in an active market. If the market for a financial instrument is not active, the entity establishes fair value by using a valuation technique. Valuation techniques include using recent arm's length market transactions between knowledgeable, willing parties, if available, reference to the current fair value of another instrument that is substantially the same, discounted cash flow analysis and option pricing models.

If there is a valuation technique commonly used by market participants to price the instrument and that technique has been demonstrated to provide reliable estimates of prices obtained in actual market transactions, the entity uses that technique. The chosen valuation technique makes maximum use of market inputs and relies as little as possible on entity-specific inputs.

It incorporates all factors that market participants would consider in setting a price and is consistent with accepted economic methodologies for pricing financial instruments. Periodically, an entity calibrates the valuation technique and tests it for validity using prices from any observable current market transactions in the same instrument (i.e. without modification or repackaging) or based on any available observable market data.

1.8. PROVISIONS

Provisions are recognised when:

- The entity has a present obligation as a result of a past event,
- It is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and
- A reliable estimate can be made of the obligation.

The amount of a provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date. Where the effect of time value of money is material, the amount of a provision is the present value of the expenditures expected to be required to settle the obligation. The discount rate is a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Where some or all of the expenditure required to settle a provision is expected to be reimbursed by another party, the re-imbursement is recognised when, and only when, it is virtually certain that re-imbursement will be received if the entity settles the obligation. The re-imbursement is treated as a separate asset. The amount recognised for the re-imbursement does not exceed the amount of the provision.

Provisions are reviewed at each reporting date and adjusted to reflect the current best estimate. Provisions are reversed if it is no longer probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation.

Where discounting is used, the carrying amount of a provision increases in each period to reflect the passage of time. This increase is recognised as an interest expense.A provision is used only for expenditures for which the provision was originally recognised. Provisions are not recognised for future operating deficits.If an entity has a contract that is onerous, the present obligation (net of recoveries) under the contract is recognised and measured as a provision.

Contingent assets and contingent liabilities

Contingent assets and contingent liabilities are not recognised.

1.9. REVENUE

1.9.1 Revenue from exchange transactions Exchange

Revenue from exchange transactions transactions are transactions in which one entity receives assets or services, or has liabilities extinguished and directly gives approximately equal value (primarily in the form of cash, goods, services, or use of assets) to another entity in exchange.

Measurement Revenue is measured at the fair value of the consideration received or receivable, net of trade discounts and volume rebates. Sale of goods revenue from the sale of goods is recognised when all the following conditions have been satisfied:

- The entity has transferred to the purchaser the significant risks and rewards of ownership of the goods,
- The entity retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold,
- The amount of revenue can be measured reliably,
- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity and
- The costs incurred or to be incurred in respect of the transaction can be measured reliably Rendering of services.

The amount of revenue can be measured reliably;

- When It is probable that the economic benefits or service potential associated with the transaction will flow to the entity,
- The stage of completion of the transaction at the reporting date can be measured reliably and
- The costs incurred for the transaction and the costs to complete the transaction can be measured reliably.

When services are performed by an indeterminate number of acts over a specified time frame, revenue is recognised on a straight line basis over the specified time frame unless there is evidence that some other method better represents the stage

of completion. When a specific act is much more significant than any other acts, the recognition of revenue is postponed until the significant act is executed.

When the outcome of the transaction involving the rendering of services cannot be estimated reliably, revenue is recognised only to the extent of the expenses recognised that are recoverable.

Service revenue is recognised by reference to the stage of completion of the transaction at the reporting date. Stage of completion is determined by services performed to date as a percentage of total services to be performed.

Interest, royalties and dividends

Revenue arising from the use by others of entity assets yielding interest, royalties and dividends is recognised when:

- It is probable that the economic benefits or service potential associated with the transaction will flow to the entity, and
- The amount of the revenue can be measured reliably.

Interest is recognised in surplus or deficit, using the effective interest rate method.

1.9.2 Revenue from non-exchange transactions

Non-exchange transactions are transactions that are not exchange transactions. In a non-exchange transaction, an entity either receives value from another entity without directly giving approximately equal value in exchange or gives value to another entity without directly receiving approximately equal value in exchange. Stipulations on transferred assets are terms in laws or regulation, or a binding arrangement imposed upon the use of a transferred asset by entities external to the reporting entity. Conditions on transferred assets are stipulations that specify that the future economic benefits or service potential embodied in the asset is required to be consumed by the recipient as specified or future economic benefits or service potential must be returned to the transferor.

Restrictions on transferred assets are stipulations that limit or direct the purposes for which a transferred asset may be used, but do not specify that future economic benefits or service potential is required to be returned to the transferor if not deployed as specified.

Recognition

An inflow of resources from a non-exchange transaction recognised as an asset is recognised as revenue, except to the extent that a liability is also recognised in respect of the same inflow. As the entity satisfies a present obligation recognised as a liability in respect of an inflow of resources from a non-exchange
transaction recognised as an asset, it reduces the carrying amount of the liability recognised and recognises an amount of revenue equal to that reduction.

Measurement

Revenue from a non-exchange transaction is measured at the amount of the increase in net assets recognised by the entity. When, as a result of a non-exchange transaction, the entity recognises an asset, it also recognises revenue equivalent to the amount of the asset measured at its fair value as at the date of acquisition, unless it is also required to recognise a liability. Where a liability is required to be recognised it will be measured as the best estimate of the amount required to settle the obligation at the reporting date, and the amount of the increase in net assets, if any, recognised as revenue. When a liability is subsequently reduced, because the taxable event occurs or a condition is satisfied, the amount of the reduction in the liability is recognised as revenue.

Gifts and donations, including goods and services in-kind gifts and donations, including goods in-kind, are recognised as assets and revenue when it is probable that the future economic benefits or service potential will flow to the entity and the fair value of the assets can be measured reliably. Services in-kind are not recognised.

1.9. REVENUE (continued)

Membership fees

Revenue from membership fees are recognised as revenue from non-exchange revenue and are recognised and measured in accordance with GRAP 23. Conditional grants and receipts revenue received from conditional grants, donations and funding are recognised as revenue to the extent that the entity has complied with any of the conditions embodied in the agreement. To the extent that the conditions have not been met a liability is recognised.

1.10. IRREGULAR, FRUITLESS AND WASTEFUL EXPENDITURE AND UNAUTHORISED EXPENDITURE

Irregular expenditure as defined in section 1 of the PFMA is expenditure incurred in contravention of, or that is not in accordance with:

- A requirement of the PFMA (Act No. 29 of 1999),
- A requirement of the State Tender Board Act (Act No.86 of 1986), or any regulations made in terms of the Act or
- A requirement in any provincial legislation providing for procurement procedures in that provincial government.

All expenditure relating to irregular expenditure is recognised as an expense in the Statement of Financial Performance in the year that the expenditure was incurred. The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the Statement of Financial Performance.

Fruitless expenditure means expenditure which was made in vain and would have been avoided had reasonable care been exercised. All expenditure relating to fruitless and wasteful expenditure is recognised as an expense in the Statement of Financial Performance in the year that the expenditure was incurred.

The expenditure is classified in accordance with the nature of the expense, and where recovered, it is subsequently accounted for as revenue in the Statement of Financial Performance.

Unauthorised expenditure means:

- Overspending of a vote or a main division within a vote and
- Expenditure not in accordance with the purpose of a vote or, in the case of a main division, not in accordance with the purpose of the main division.

All expenditure relating to unauthorised expenditure is recognised as an expense in the Statement of Financial Performance in the year that the expenditure was incurred.

The expenditure is classified in accordance with the nature of the expense and where recovered, it is subsequently accounted for as revenue in the Statement of Financial Performance.

When an Accounting Authority determines the appropriateness of disciplinary steps against an official, the Accounting Authority must take into account:

- The circumstances of the transgression,
- The extent of the expenditure involved and
- The nature and seriousness of the transgression.

All unauthorised, irregular or fruitless and wasteful expenditures are disclosed as a note to the Annual Financial Statements of the entity.

1.11 BORROWING COSTS

Borrowing costs directly attributable to the acquisition, construction or production of qualifying assets are added to the cost of those assets, until the assets are substantially ready for their intended use or sale. Qualifying assets are assets that necessarily take a substantial period to get ready for their intended use or sale. Investment income earned on the temporary investment of specific borrowings pending their expenditure on qualifying assets is deducted from the cost of those assets. Other borrowing costs are recognised as an expense in the period in which they are incurred.

1.12 KEY ACCOUNTING JUDGMENTS AND KEY SOURCES OF ESTIMATION UNCERTAINTY

In preparing the Annual Financial Statements, management is required to make estimates and assumptions that affect the amounts represented in the Annual Financial Statements and related disclosures. Use of available information and the application of judgment are inherent in the formation of estimates. Actual results in the future could differ from these estimates which may be material to the Annual Financial Statements.

Significant judgment includes:

Going concern

Management considers key financial metrics and loan covenant compliance in its approved medium-term budgets, together with its existing term facilities, to conclude that the going concern assumption used in the compiling of its Annual Financial Statements is relevant. For other provisions, estimates are made of legal or constructive obligations resulting in the raising of provisions and the expected date of probable outflow of economic benefits to assess whether the provision should be discounted.

Impairment testing

The recoverable (service) amounts of individual assets and cash-generating units have been determined based on the higher of value-in-use calculations and fair values less costs to sell. These calculations require the use of estimates and assumptions.

The entity reviews and tests the carrying value of assets when events or changes in circumstances suggest that the carrying amount may not be recoverable. If there are indications that impairment may have occurred, estimates are prepared of expected future cash flows for each group of assets.

Useful lives of property, plant and equipment and intangible assets

The entity's management determines the estimated useful lives and related depreciation charges for property, plant and equipment and intangible assets. This estimate is based on the condition and use of the individual assets, in order to determine the remaining period over which the asset can and will be used.

Fair value estimation

The fair value of financial instruments traded in active markets (such as trading and available-for-sale securities) is based on quoted market prices at the end of the reporting period. The quoted market price used for financial assets held by the entity is the current bid price.

The fair value of financial instruments that are not traded in an active market (for example, over-the counter derivatives) is determined by using valuation techniques. The entity uses a variety of methods and makes assumptions that are based on market conditions existing at the end of each reporting period. Quoted market prices or dealer quotes for similar instruments are used for long-term debt. Other techniques, such as estimated discounted cash flows, are used to determine fair value for the remaining financial instruments. The carrying values of trade receivables and payables are assumed to approximate their fair values.

1.13 EVENTS AFTER THE REPORTING DATE

Recognised amounts in the Annual Financial Statements are adjusted to reflect events arising after the reporting date that provide evidence of conditions that existed at the reporting date. Events after the reporting date that are indicative of conditions that arose after the reporting are dealt with by way of a note.

1.14 EMPLOYEE BENEFITS

Short-term employee benefits

Short-term employee benefits are employee benefits (other than termination benefits) that are due to be settled within twelve months after the end of the period in which the employees render the related service. Short-term employee benefits include items such as:

- wages, salaries and social security contributions,
- short-term compensated absences (such as paid annual leave and paid sick leave) where the compensation for the absences is due to be settled within twelve months after the end of the reporting period in which the employees render the related employee service,
- bonus, incentive and performance related payments payable within twelve months after the end of the reporting period in which the employees render the related service and non-monetary benefits (for example, medical care and free or subsidised goods or services such as housing, cars and cellphones) for current employees.

When an employee has rendered service to the entity during a reporting period, the entity recognises the undiscounted amount of short-term employee benefits expected to be paid in exchange for that service:

- as a liability (accrued expense), after deducting any amount already paid. If the amount already paid exceeds the undiscounted amount of the benefits, the entity recognises that excess as an asset (prepaid expense) to the extent that the prepayment will lead to for example, a reduction in future payments,
- a cash refund, and
- as an expense, unless another Standard requires or permits the inclusion of the benefits in the cost of an asset.

The expected cost of compensated absences is recognised as an expense as the employees render services that increase their entitlement or, in the case of non-accumulating absences, when the absence occurs. The entity measures the expected cost of accumulating compensated absences as the additional amount that the entity expects to pay as a result of the unused entitlement that has accumulated at the reporting date.

The entity recognises the expected cost of bonus, incentive and performance related payments when the entity has a present legal or constructive obligation to make such payments as a result of past events and a reliable estimate of the obligation can be made. A present obligation exists when the entity has no realistic alternative but to make the payments.

Post-employment benefits: Defined contribution plans

When an employee has rendered service to the entity during a reporting period the entity recognises the contribution payable to a defined contribution plan in exchange for that service as a liability (accrued expense), after deducting any contribution already paid. If the contribution already paid exceeds the contribution due for service before the reporting date, an entity recognise that excess as an asset (prepaid expense) to the extent that the prepayment will lead to, for example, a reduction in future payments or a cash refund and as an expense, unless another Standard requires or permits the inclusion of the contribution in the cost of an asset.

1.16 RELATED PARTIES

The entity operates in an economic sector currently dominated by entities directly or indirectly owned by the South African Government. As a consequence of the constitutional independence of the three spheres of government in South Africa, only entities within the national sphere of government are considered to be related parties.

Key management are those persons responsible for planning, directing and controlling the activities of the entity, including those charged with the governance of the entity in accordance with legislation, in instances where they are required to perform such functions.

Close members of the family of a person are considered to be those family members who may be expected to influence, or be influenced by, that management in their dealings with the entity. Only transactions with related parties not at arm's length or not in the ordinary course of business are disclosed.

1.17 BUDGET INFORMATION

A reconciliation between the Statement of Financial Performance and the budget has been included in the Annual Financial Statements, as the recommended disclosure as determined by National Treasury, as the Annual Financial Statements and the budget are not on the same basis of accounting. Refer to note 22 - Reconciliation between budget and Statement of Financial Performance.

1.18 NEW STANDARDS AND INTERPRETATIONS

The following Standards and Interpretations of GRAP have been approved, but are not yet effective:

GRAP 20	Related Party Disclosures
GRAP 32	Service Concession Arrangements: Grantor
GRAP 34	Separate Financial Statements
GRAP 35	Consolidated Financial Statements
GRAP 36	Investments in Associates and Joint Ventures
GRAP 37	Joint Arrangements
GRAP 38	Disclosure of Interests in Other Entities
GRAP 108	Statutory Receivables
GRAP 109	Accounting by Principals and Agents
GRAP 110	Living and Non-living Resources

The effective date for the above has not yet been determined. The adoption of these Standards of GRAP, when they become effective, is not expected to have a significant impact on the Financial Statements.

NOTES TO THE ANNUAL FINANCIAL STATEMENTS

2. Property, plant and equipment

	Cost R'000	2018 Accumulated Depreciation	Carrying Values R'000	Cost R'000	2017 Accumulated Depreciation	Carrying Values R'000
Furniture and fixtures	1 862	(918)	944	1 655	(1 205)	450
Office equipment	508	(261)	247	304	(175)	129
Computer equipment	6133	(4 552)	1581	4 903	(3 886)	1 017
Leasehold improvements	177	(92)	85	91	(84)	7
Communication equipment	335	(292)	43	335	(232)	103
Vehicles	211	(98)	113	211	(55)	156
Total	**9 226**	**(6 213)**	**3 013**	**7 499**	**(5 637)**	**1 862**

Reconciliation of property, plant and equipment – March 2018

	Opening Balance R'000	Additions R'000	Disposals/ Impairments R'000	Transfers R'000	Depreciation R'000	Total R'000
Furniture and fixtures	450	972	(155)	-	(323)	944
Office equipment	129	204	-	-	(86	247
Computer equipment	1017	1230	-	-	(666)	1 581
Leasehold improvements	7	86	-	-	(8)	85
Communication equipment	103	-	-	-	(61)	42
Vehicles	156	-	-	-	(42)	114
Total	**1 862**	**2 492**	**(155)**	**-**	**(1 186)**	**3 013**

Reconciliation of property, plant and equipment – March 2017

	Opening Balance R'000	Additions R'000	Disposals/ Impairments R'000	Transfers R'000	Depreciation R'000	Total R'000
Furniture and fixtures	685	40	(6)	-	(269)	450
Office equipment	152	35	-	-	(58)	129
Computer equipment	949	721	(27)	-	(628)	1017
Leasehold improvements	9	17	-	-	(19)	7
Communication equipment	122	1636	-	-	(66)	103
Vehicles	198	47	-	-	(42)	156
Total	2115	**860**	**(32)**	**-**	**(1 082)**	**1 862**

3. Intangible Assets

	Cost R'000	2018 Accumulated Depreciation	Carrying Values R'000	Cost R'000	2017 Accumulated Depreciation	Carrying Values R'000
Computer software	11 970	(8 056)	3 914	8 099	(7 932)	167

Reconciliation of Intangibles Assets – March 2018

	Opening Balance R'000	Additions R'000	Disposals/ Impairments R'000	Transfers R'000	Depreciation R'000	Total R'000
Computer software	167	3871	-	-	(124)	3 914

Reconciliation of Intangibles Assets – March 2017

	Opening Balance R'000	Additions R'000	Disposals/ Impairments R'000	Transfers R'000	Depreciation R'000	Total R'000
Computer software	236	193	-	-	(262)	167

Included in the additions for the current year is software development costs for the 12L database which is still under development and has not yet been use as such these is no amortisation expenditure for the database.

4. Receivables from non-exchange transactions

	March 2018 R'000	March 2017 R'000
4.1 Financial assets at amortised cost		
Receivables from non-exchange transactions	1 518	4 675
Receivables form Project Expenses	-	-
Employee costs in advance	233	84
Prepayments	581	1 034
Project Prepayments	-	29 333
Provision for bad debts	(913)	(1467)
Other receivables	467	-
Recoverable fruitless and wasteful expenditure	-	17
Interest receivable	813	600
	2 700	**34 277**
4.2 Vat receivable		
Vat Receivable	11 800	10 550
Provision for bad debts	(9 369)	-
	2 431	**10 550**

Trade and other receivables are not pledged as security. The entity does not hold any collateral as security. Trade and other receivables past due but not impaired Trade and other receivables which are less than 3 months past due are not considered to be impaired.

At 31 March 2018 R0. million (2017: R0. million) were past due but not impaired.

The prepayments relates to prepayments made on project contracts, straight-lining of leases and prepaid insurance cover.

4.2 Vat receivable (continued)

	March 2018 R'000	March 2017 R'000
The ageing of amounts past due but not impaired is as follows:		
1 – 3 month past due	-	165
3 – 6 months past due	-	-
6 – 12 months past due	-	-

Trade and other receivables impaired

The amount of the provision was R10.2million as of 31 March 2018 (2017 R1.4 million)

The ageing of these receivables is as follows:

Over 6 months	10 282	868

Reconciliation of provision for impairment of trade and other receivables:

Opening balance	1467	868
Additional provision raised	9354	629
Amounts Written off as uncollectable	-	-
Amounts Recovered	(539)	(30)
Provision for doubtful debts	10 282	1 467

The creation and release of provision for impaired receivables have been included in operating expenses in surplus. The maximum exposure to credit risk at the reporting date is the fair value of each class of receivable mentioned above.

5. Cash and cash equivalents

	March 2018 R'000	March 2017 R'000
Cash and cash equivalents consist of:		
Cash on hand	12	15
Bank balances	244 852	255 667
	244 864	**255 682**

Cash and cash equivalents consist of cash on hand and balances with financial institutions and investments in money market instruments.

There are no restrictions placed on the realisation or usability of cash balances. The entity does not have access to any additional undrawn facilities.

6. Unspent conditional grants and Third Party funds

Unspent conditional grants and receipts comprises of:

Unspent grants and Third Party Funds	**46 940**	**89 501**
Movement during the year		
Balance at the beginning of the year	89 501	111 518
Prior period error	-	-
Additions during the year and Interest	44 910	108 715
Income recognition during the year	(65 061)	(33 552)
Reclassified to Receivable from Exchange	-	265
Transfers of RDP funds	(22 410)	(97 445)
Repayment of Grants	-	-
	46 940	**89 501**

6. Unspent conditional grants and Third Party funds (continued)

	March 2018 R'000	March 2017 R'000
European Union Project (COCATE)	375	350
FP7	47	43
CESAR	1 740	3 324
SA COAL RoadMap	638	599
SDC EE Monitoring and Implementation Project	201	201
EU Aid Demo Project	20 147	68 439
Danish Renewable Energy Programme	8 558	3 531
EEDSM Hub	208	194
WASA Support	786	734
Solar Tech Roadmap	12 070	7 750
RECORD	176	414
SAIREC	-	1 368
12L GIZ	625	2 065
Soltrain	989	374
Austin Off-shore	122	114
Solar Payback	220	-
WASA 3	37	-
	46 940	**89 501**

6. Unspent conditional grants and Third Party funds (continued)

RECONCILIATION OF UNSPENT CONDITIONAL GRANTS AND THIRD PARTY FUNDS AT 31 MARCH 2017

	Opening Balance R'000	Additional Receipts R'000	Deferred Income Recognised R'000	Grant Repayments R'000	Other adjustments R'000	Interest Earned R'000	Closing Balance 2017 R'000
European Union Project (COCATE)	350	-	-	-	-	25	375
FP7	43	-	-	-	-	4	47
CESAR	3 324	-	1 753	-	-	169	1 740
SA COAL RoadMap	599	-	-	-	-	39	638
SDC EE Monitoring and Implementation Project	201	-	-	-	-	-	201
EU Aid Demo Project	68 439	18 022	50 419	18 022	-	2 127	20 147
Danish Renewable Energy Programme	3 531	15 069	7 277	3 662	-	897	8 558
EEDSM Hub	194	-	-	-	-	14	208
WASA Support	734	-	-	-	-	52	786
Solar Tech Roadmap	7 750	4 500	753	-	-	573	12 070
RECORD	414	-	250	-	-	12	176
SAIREC	1 368	-	655	726	-	13	-
12L GIZ	2 065	2 069	3 576	-	-	67	625
Soltrain	374	729	143	-	-	29	989
Austin Off Shore	114	-	-	-	-	8	122
Solar Payback	-	455	235	-	-	-	220
WASA 3	-	37	-	-	-	-	37
Total	**89 501**	**40 881**	**65 060**	**22 410**	**-**	**4 029**	**46 940**

6. Unspent conditional grants and Third Party funds (continued)

RECONCILIATION OF UNSPENT CONDITIONAL GRANTS AND THIRD PARTY FUNDS AT 31 MARCH 2018

	Opening Balance R'000	Additional Receipts R'000	Deferred Income Recognised R'000	Grant Repayments R'000	Other adjustments R'000	Interest Earned R'000	Closing Balance 2018 R'000
European Union Project (COCATE)	326	-	-	-	-	24	350
FP7	39	-	-	-	-	4	43
CESAR	5 059	3 000	(5 112)	-	-	376	3 324
SA COAL RoadMap	556	-	-	-	-	42	599
SDC EE Monitoring And Implementation Project	355	-	(1)	-	-	(152)	201
EU Aid Demo Project	77 410	68 460	(5 858)	(73 947)	-	2 374	68 439
REEEP	-	-	-	-	-	-	-
REEEP SWICTH Africa	159	230	(660)	-	265	6	-
Danish Renewable Energy Programme	21 577	22 362	(17 910)	(23 498)	-	1 000	3 531
EEDSM Hub	129	3 000	(3 00)	-	-	65	194
WASA Support	1 025	-	(362)	-	-	72	734
Solar Tech Roadmap	3 000	4 500	(55)	-	-	305	7 750
Green Transport SACN	208	-	(208)	-	-	-	-
RECORD	-	405	-	-	-	9	414
SAIREC	1 385	-	(69)	-	-	52	1 368
12L GIZ	-	2 018	-	-	-	46	2 065
Soltrain	-	485	(131)	-	-	20	374
Austin Off Shore	290	-	(186)	-	-	10	114
Total	**111 518**	**104 459**	**(33 552)**	**(97 445)**	**265**	**4 254**	**89 501**

7. Provisions

RECONCILIATION OF PROVISIONS – MARCH 2018

	Opening Balance R'000	Utilised R'000	Reversed R'000	Additions R'000	Closing R'000
Bonus provision	10 559	8 239	(2 320)	11 136	11 136
Total Provision	**10 559**	**8 239**	**(2 320)**	**11 136**	**11 136**

RECONCILIATION OF PROVISIONS – MARCH 2017

	Opening Balance R'000	Utilised R'000	Additions R'000	Bonus provision R'000
Bonus provision	17 453	17 453	10 559	10 559
Total Provision	17 453	17 453	10 559	10 559

The bonus provision is calculated based on a percentage of the entity's performance and the individual performance ratings of staff members.

8. Payables from exchange transactions

	March 2018 R'000	March 2017 R'000
Trade payables and Accruals	13 569	13 138
HR Related Payables	2 472	2 701
	16 041	**15 839**

9. Revenue

9.1 REVENUE NON EXCHANGE IS MADE UP AS FOLLOWS:

MTEF Allocations	59 775	20 625
Recognition of unspent Conditional Grants	65 078	33 552
	124 853	**54 177**

9.2 REVENUE FROM EXCHANGE TRANSACTIONS IS MADE UP AS FOLLOWS:

	March 2018 R'000	March 2017 R'000
Interest Received	13 410	16 091
Sponsorships and service fees	3 776	4 955
SANEDI refund	-	837
Other Income	-	8 680
Gains on Foreign Exchange	558	30
	17 744	**30 593**
	142 597	**84 770**

Interest is earned on monies in invested in money market accounts with various banks through CEF (SOC) LTD per the service level agreement.

10. Operating expenses

	March 2018 R'000	March 2017 R'000
Administration	405	1 236
Advertising	111	55
Audit costs	1 564	527
Bank charges	39	43
Computer services	822	482
Board Expenses	358	68
Conferences	42	183
Consulting and legal fees	1 387	1 883
Catering and Entertainment	133	105
Lease payments	2 517	3 187
Marketing and promotional expenditure	733	1 142
Insurance	292	282
Other office running expenses	387	34
Printing and Stationery	247	328
Subscriptions and membership fees	59	98
Telephone	450	574
Travel and accommodation	791	1 298
Water and electricity	131	583
Vat Expenditure (SANEDI)	-	1 546
	10 469	**13 654**

11. Project expenses

	March 2018 R'000	March 2017 R'000
Project Implementation Costs	71 570	36 433
Travel	4 047	3 144
Overheads	35	4 848
Project costs	75 651	44 425

Project costs relate to costs directly associated with the entity's mandate (Programme 2 and Programme 3) which range from applied Research expenditure, demostration project expenditure as well as capacity building projects.

12. Employee related costs

	March 2018 R'000	March 2017 R'000
Basic	35 460	35 135
Bonus	8 816	10 559
Medical aid – entity contributions	911	772
UIF	104	98
WCA	55	64
SDL	422	523
Other payroll levies	-	-
Leave pay provision charge	(41)	108
Employee welfare and training	267	585
Recruitment and relocation costs	85	-
Provident and pension contributions	1 368	1346
Travel, motor car, accommodation, subsistence and other allowances	-	251
	47 436	**49 441**

13. Cash generated from operations

	March 2018 R'000	March 2017 R'000
Surplus (Deficit)	(3 834)	(25 661)
adjustments for:		
Depreciation and amortisation	1 309	1 345
Impairments	155	31
Foreign exchange transactions	96	1
Prepaid expenses	29 333	-
Accrued expenses	40 818	(843)
Movement on bonus provision	(577)	(27 701)
Loss on Fair value Adjustments	-	-
Provision for Bad Debts	9 444	629
Provision for bad debts reversal	-	-
Changes in working capital:		
	(81 199)	**(62 293)**
Trade and other receivables	(38 841)	(37 832)
Payables from exchange transactions	203	(2 603)
Unspent conditional grants and receipts	(42 561)	(21 859)
	(4 454)	**114 493**

Directors Remuneration	548	198
Total Employee Related Costs	47 984	49 639

In terms of SANEDI's leave pay policy, employees are entitled to accumulated vested leave pay benefits not taken within a leave cycle, provided that any leave pay benefits not taken within a period of one year after the end of the leave cycle are forfeited.

14. Financial instruments

INTRODUCTION

The entity has a risk management and central treasury function that manages the financial risks relating to the entity's operations. The entity's liquidity, credit, foreign exchange and interest rate risks are monitored continually. Approved policies exist for managing these risks.

RISK PROFILE

The entity utilises the services of risk management and the treasury department in CEF (SOC) Limited to manage the financial risks relating to the entity's operations.

RISK MANAGEMENT OBJECTIVES AND POLICIES

The entity's objective in using financial instruments is to reduce the uncertainty over future cash flows arising from movements in foreign exchange and interest rates. Throughout the year under review it has been, and remains, the entity's policy that no speculative trading in derivative instruments be undertaken.

CREDIT RISK

Financial assets, which potentially subject the entity to concentrations of credit risk, pertain principally to trade receivables and investments in the South African money market. Trade receivables are presented net of the allowance for doubtful debts. The exposure to credit risk with respect to trade receivables is not concentrated due to a large customer base.

The entity manages counter party exposures arising from money market and derivative financial instruments by only dealing with well-established financial institutions of a high credit rating. Losses are not expected as a result of non-performance by these counter parties. Credit limits with financial institutions are revised and approved by the board quarterly.

FAIR VALUE

The entity's financial instruments consist mainly of cash and cash equivalents, trade receivables, trade payables and long term debt. As at 31 March 2018 no financial asset was carried at an amount in excess of its fair value and fair values could be reliably measured for all financial assets that are available for sale or held for trading. The following methods and assumptions are used to determine the fair value of each class of financial instrument:

CASH AND CASH EQUIVALENTS

The carrying amounts of cash and cash equivalents approximates fair value due to the relatively short term maturity of these financial assets.

TRADE RECEIVABLES

The carrying amounts of trade receivables net of provision for bad debt, approximates fair value due to the relatively short term maturity of this financial asset.

TRADE PAYABLES

The carrying amounts of trade payables approximates fair value due to the relatively short-term maturity of these liabilities.

The carrying value of short-term borrowings approximates fair value due to the relatively short-term maturity of these liabilities. The fair values of other long term borrowings are not materially different from the carrying amounts.

MATURITY PROFILE

The maturity profiles of financial assets and liabilities at the statement of financial position date are as follows:

At 31 March 2018

	Less than 1 year R'000	Between 1 and 5 years R'000	Over 5 years R'000	Non-interest R'000	Total R'000
Cash and cash equivalents	244 864	-	-	-	244 864
Trade and other receivables	2 700	-	-	-	2 700
VAT Receivable	795	1 636	-	-	2 431
Total financial assets	248 359	1 636	-	-	249 995
Liabilities	-	-	-	-	-
Trade and other payables	**16 041**	**-**	**-**	**-**	**16 041**

MATURITY PROFILE

The maturity profiles of financial assets and liabilities at the statement of financial position date are as follows:

At 31 March 2017

	Less than 1 year R'000	Between 1 and 5 years R'000	Over 5 years R'000	Non-interest R'000	Total R'000
Cash and cash equivalents	255 682	-	-	-	255 682
Trade and other receivables	34 277	-	-	-	34 277
VAT Receivable	10 550	-	-	-	10 550
Total financial assets	300 509	-	-	-	300 509
Liabilities	-	-	-	-	-
Trade and other payables	**15 838**	**-**	**-**	**-**	**15 838**

Financial instruments by category:

At 31 March 2018

	Loans and receivables R'000	Fair value through Profit and loss –held for trading R'000	Fair value through Profit and loss –designated R'000	Non-interest R'000	Total R'000
Cash and cash equivalents	244 864	-	-	-	244 864
Trade and other receivables	2 700	-	-	-	2 700
VAT Receivable	795	1 636,00	-	-	2 431
Total financial assets	248 359	1 636,00	-	-	249 995
Liabilities					
Trade and other payables	**16 041**	**-**	**-**	**-**	**16 041**

Financial instruments by category:

At 31 March 2017

	Loans and receivables R'000	Fair value through Profit and loss –held for trading R'000	Fair value through Profit and loss –designated R'000	Non-interest R'000	Total R'000
Cash and cash equivalents	255 682	-	-	-	255 682
Trade and other receivables	34 277	-	-	-	34 277
VAT Receivable	10 550	-	-	-	10 550
Total financial assets	300 509	-	-	-	300 509
Liabilities					
Trade and other payables	**15 839**	**-**	**-**	**-**	**15 839**

LIQUIDITY RISK

The entity manages liquidity risk through proper management of working capital, capital expenditure and actual vs. forecasted cash flows. Adequate reserves and liquid resources are also maintained.

15. Operating lease commitments

	March 2018 R'000	March 2017 R'000
Minimum lease payments due –		
Within one year	1 148	831
second to fifth year inclusive	2 393	-
	3 541	**831**

SANEDI also leased unit 1 on the first floor of Block C, Upper Grayston Office Park, located at Erf 20 Simba Township, Sandton, from CEF (SOC) Ltd. The lease commenced on 1 May 2017 and the rent shall be payable monthly, on the anniversary date. The lease terminates on 30 April 2021. The Lease is for a period of four years and SANEDI has the option to renew the lease for another four years.

SANEDI also leased unit 1 on the ground floor of Block E, Upper Grayston Office Park, located at Erf 20 Simba Township, Sandton, from City Square Trading 522 (Pty) Ltd. The lease commenced on 1 January 2013 and the rent payable shall annually, on the anniversary date, escalate by 8.25%. The lease terminated on 31 December 2017.

PRINTING EQUIPMENT

Operating lease commitments for printing equipment

	March 2018 R'000	March 2017 R'000
Minimum lease payments due –		
Within one year	-	73
second to fifth year inclusive	-	-
	-	**73**

SANEDI has entered into a lease agreements for photocopiers, one lease being for a 24 month period ending 30 November 2017 for four Printers. This lease has no escalation clause and is payable monthly in advance.

DEFAULTS AND BREACHES

There was no default during the period of principal, interest, sinking fund or redemption terms of loans payable. No terms were renegotiated before the Financial Statements were authorised for issue.

16. Contractual commitments

	March 2018 R'000	March 2017 R'000
Project Related	40 698	66 351
Administration	3 921	168
	44 619	**66 519**
Within one year	43 852	66 519
Second to fifth year inclusive	767	168
	44 619	**66 519**

SANEDI has entered into various contracts with service providers for the achievement of its key deliverables for the Danish Renewable energy programme, working for energy (WfE) programme, the Centre for Energy Systems Research, the Carbon Capture and Storage Pilot and various projects under the Clean Energy Programme.

Capital commitments approved not contracted for:

	March 2018 R'000	March 2017 R'000
Within one year	126 100	126 100
	126 100	**126 100**

17. Contingencies

SURPLUS FUNDS

SANEDI has no surpluses for the year ended 31 March 2018 (Surplus 2017: R0 million). Cash surpluses as disclosed in the statement of financial position are fully committed.

CONTINGENT LIABILITIES

The entity is also involved in a number of legal matters involving former employees. At the date of this report the amounts involved have been estimated to amount to R2.4 million.

18. Related parties

Compensation to key management –

31 March 2018

	Basic Salary R'000	Allowances R'000	Performance Bonus # R'000	Subsistence andm travel (Reimbursed) R'000	Leave R'000	2018 R'000
Mr KM Nassiep - Chief Executive Officer	464	33	-	-	270	767
Ms L Manamela - Chief Financial Officer	1 161	58	425	1	-	1 644
Dr AD Surridge	1 350	150	425	16	-	1 941
Mr Dr T Mali	1 300	513	425	3	-	2 241
Dr M Bipath	1 288	126	425	32	-	1 871
Mr C Snyman	1 006	112	339	2	-	1 459
Mr D Mahuma	1 416	62	393	14	-	1 885
Mr B Bredenkamp	1 348	66	425	12	-	1 851
	9 334	**1 120**	**2 855**	**80**	**270**	**13 659**

* SANEDI operates on a cost to company system, employees contributions to the provident and other benefit funds are allocated from their overall costs to company.

31 March 2017

	Basic Salary R'000	Allowances R'000	Performance Bonus # R'000	Subsistence and travel (Reimbursed) R'000	Leave R'000	2017 R'000
Mr KM Nassiep - Chief Executive Officer	1 951	132	1 678	51	78	3 892
Ms L Manamela - Chief Financial Officer	1 131	24	1 022	-	-	2 177
Dr AD Surridge	1 321	108	959	23	-	2 410
Mr Dr T Mali	1 275	66	836	21	-	2 197
Dr M Bipath	1 254	84	919	17	-	2 273
Mr C Snyman	1 185	24	697	4	-	1 910
Mr D Mahuma	1 379	24	711	34	-	2 147
Mr B Bredenkamp	1 336	24	961	24	-	2 346
	10 832	**486**	**7 783**	**174**	**78**	**19 352**

SANEDI operates on a cost to company system, employees contributions to benefit funds are allocated from their overall costs to company.

	March 2018 R'000	March 2017 R'000
Directors Remuneration	**548**	**198**

Board Members' emoluments

Ms P Motsielwa	141	46
Dr I Tufvesson (Chairperson)	147	68
Mr Buthelezi (Deputy Chairperson)	186	50
Mr M Mkhize	74	34
	548	198

Board members who are representatives of National Departments are not remunerated in their personal capacity for serving on the SANEDI Board and sub-committee.

GRANTS RECEIVED

SANEDI has been established by the DoE and in terms of national legislation. SANEDI is ultimately controlled by the Department of Energy.

	March 2018 R'000	March 2017 R'000
Department of Energy	59 775	20 625
Department of Science and Technology	4 500	10 850

All transactions with related parties are arm's length and will not be disclosed separately.

19. Fruitless and wasteful expenditure

	March 2018 R'000	March 2017 R'000
Reconciliation of fruitless and wasteful expenditure		
Opening balance	-	-
Fruitless and wasteful expenditure – relating to current year	-	-
Less: Amounts Recovered	-	-
Less: Amounts condoned by the Board of Directors	-	-
Fruitless and wasteful expenditure awaiting condonation	-	-

There is no fruitless and wasteful expenditure in current year.

20. Irregular expenditure

	March 2018 R'000	March 2017 R'000
Reconciliation of Irregular expenditure		
Opening balance	-	120
Irregular expenditure– relating to current year	66	-
Less: Amounts condoned by Board	-	(120)
Irregular expenditure awaiting condonation	**66**	**-**

Irregular expenditure was incurred as a result of 3 quotes not being obtained from service providers prior to award.

21. Prior period errors

	2018 R'000	2017 R'000	Restated 2016 R'000
The correction of the error(s) results in adjustments as follows:			
Receivables from Exchange transactions	-	-	425
Accruals	-	-	(37)
Accumulated Surplus	-	-	(1847)
Deferred Income	-	-	1 835

Statement of Financial Performance

	2018 R'000	2017 R'000	Restated 2016 R'000
Revenue from Non exchange	-	-	1 385
Project Costs	-	-	(1385)
Operating expenses	**-**	**-**	**2 209**

PRIOR PERIOD ERROR

The deferred income for the SAIREC project (2015: R0 million) was understated during the 2015/16 reporting by R1,384 million period as a result of an erroneous allocation of a R2, 161 million non-project invoice to the project. As a result of this incorrect allocation, accounts receivable from non-exchange we overstated by R0,788 million, Project expenses were overstated by R1,384 million and operating costs by R2,161 Million .

Receivables from exchange were understated by R0,268 million as a result of a lease deposit incorrectly expensed resulting in retained surpluses being understated by the same amount.

Accruals were understated by R 0.037 million as a result of several invoices relating to the previous financial received after the financial year end and project expenses being under stated by the same amount.

22. Budget Disclosures

		Original Actual outcome as a Budget	Budget Adjustments	Final budget	Final outcome	Variance	Actual outcome as a percentage of original	Actual outcome as a percentage of Final budget
Financial Performance								
Grants and other receipts	1	(238 919)	-	(238 919)	(142 597)	(96 322)	40%	40%
Total Income		(238 919)	-	(238 919)	(142 597)	(96 322)	40%	40%
Employee costs	2	46 512	-	46 512	47 984	(1 472)	(3%)	(3%)
Depreciation and asset impairment		2389	-	2 389	1 309	1 080	45%	45%
Project costs	3	171 896	-	171 896	75 651	96 245	56%	56%
Operating expenditure	4	18 122	-	18 122	21 486	(3 364)	(19%)	(19%)
Total expenditure		238 919	-	238 919	146 431	92 488	39%	39%
Deficit for the year		-	-	-	3 834	-3 834		

NOTES:

1 *Revenue included estimates of donor funds that did not come through due delays in finalisation of financial agreements.*
2 *Employee costs were higher than budgeted figures due to an increase in leave pay-outs. There was an increase in board committees meetings,special committees were appointed resulting in increased costs.*
3 *Projects development costs were less due to funding not being received from donor funders.*
4 *Operating costs were less due to cost containment measures that were adopted by the entity.*