ANNUAL **REPORT** 2016/2017

sanedi

South African National Energy Development Institute

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PART A

General Information

1. SANEDI General Information

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

2. List of abbreviations and acronyms

AFD	French Development Agency
AGSA	Auditor-General of South Africa
APP	Annual Performance Plan
ASSAF	Academy of Science for South Africa
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
CO2	Carbon Dioxide
CORDs	Centres of Research and Development
CPI	Consumer Price Index
CSI	Corporate Social Investment
CSIR	Council for Scientific and Industrial Research
CSR	Corporate Social Responsibility
DANIDA	Danish International Development Agency
DEA	Department of Environmental Affairs
DFI	Development Finance Institutes
DID	Gauteng Department of Infrastructure Development
DKK	Danish Krone
DoT	Department of Transport
DoE	Department of Energy
DSM	Demand Side Management
DST	Department of Science and Technology
DTU	Technical University of Denmark
DBREV	Douglas Banks Renewable Energy Vision
DTI (the dti)	Department of Trade and Industry
EDI	Electricity Distribution Industry
EE	Energy Efficiency
EEDSM	Energy Efficiency and Demand Side Management
EIUG	Energy Intensive User Group
EPWP	Expanded 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
IAS	International Accounting Standards
IDC	Industrial Development Corporation
IEA	International Energy Agency
IEP	Integrated Energy Plan
IIA	Institute of Internal Auditors
IRENA	International Renewable Energy Agency
ISGAN	International Smart Grid Action Network
IT	Information Technology
kW	Kilowatt
LAN	Local Area Network
M&V	Monitoring and Verification
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
NDA	National Development Agency
Necsa	South African Nuclear Energy Corporation
NEEA	National Energy Efficiency Agency
NRF	National Research Foundation
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
PV	Photovoltaics
RE	Renewable Energy
RECORD	Renewable Energy Centre for Research and Development

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
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
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
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
TAF	Technical Assistance Facility
TAI	Tax Allowance Incentive
the dti (see also DTI)	Department of Trade and Industry
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
UNIDO	United Nations Industrial Development Organisation
USTDA	(Unites States Trade and Development Agency
WASA	Wind Atlas of South Africa
WfE	Working for Energy Programme
WRI	World Resource Institute

3. Foreword by the CHAIRPERSON

Dr Ingrid Tufvesson
Chairperson: SANEDI Board

The exciting thing about new leadership, is that it holds the potential to improve, re-invigorate, and uplift that which falls within its purview. It is with this in mind and a keen commitment to excelling that the new Board of SANEDI asks the following questions: What is it that keeps the world rotating as it orbits the sun? What is the essential essence that has brought humankind from the caves to its current state of development? What is it that is indispensable to existence, but to which most of the world's peoples do not have satisfactory access?

ENERGY

It is energy that drives all humankind's endeavours. Being forcefully removed from hunter-gatherer to agrarian to industrial ways of living, we now live in a world where humankind has walked on the moon and is even contemplating the establishment of a colony on Mars. In fact, the technological advancements and achievements that span the globe occur with such speed and frequency that most of it passes by without being noticed by what is a significant proportion of the South African population. Here, I speak of those who are unavoidably disadvantaged by access to modern affordable and environmentally friendly sustainable energy; the very element required to even know about the technological explosion.

Pragmatically, the maintenance and improvement of current energy supplies must be supported, but being able to equitably and equally satisfy the energy needs of all South Africa's peoples and that of the continent as a whole, is an imperative. The fundamental outlook on energy as a human right must also shape all we do.

SANEDI (the South African National Energy Development Institute), established by the National Energy Act, 2008, Act No. 34, is directed by its mandate, which is to meet government's commitment to provide and ensure access to appropriate energy provision for all. Addressing the three identified factors that continue to plague South Africa, namely, inequality, unemployment and poverty, it would be disingenuous to not identify the key role of energy in either alleviating or further entrenching these debilitating factors.

Globally, the appetite for energy is easier to satiate for those who can afford it. The increasing costs of energy and the satiation of the growing hunger for energy, obdurately raises the need to pay attention to ensuring a sustainable future. The greatest current environmental threat is climate change, which has destabilised the equilibrium of the planet causing unexpected and unplanned for catastrophes that leave immense devastation in their wake. The ever increasing volume of greenhouse gas emissions serve to exacerbate climate change and hence there is a global drive to realise low-carbon energy economies, which has been responded to by SANEDI through its programmes. Notably and appropriately so then, the Institute focuses on energy provision in poor areas; renewable energies; smart grids; energy efficiency; electric vehicles; and cleaner fossil fuels, which indicate great strides made in these areas during the 2016/17 period. The challenge for 2017/18 is building on earlier achievements, responsively re-aligning with its mandate, and bringing SANEDI's relevance and value to the fore.

Meeting our challenges in a holistic manner requires collaborations, co-operations and collective sharing of

It is energy that drives all humankind's endeavours. Being forcefully removed from hunter-gatherer to agrarian to industrial ways of living, we now live in a world where humankind has walked on the moon and is even contemplating the establishment of a colony on Mars.

resources. To this end, SANEDI has established and continues to establish germane strategic local, continental and international relationships. These links have significantly strengthened and increased SANEDI's activity efficiencies. Our local links enable SANEDI to access national expertise that supplements its own capacity, and builds local capacity. Research and development transcend commonly identified boundaries, whether geographic or subject-wise. The international interactions in the pursuit of supply, access and affordability of sustainable and environmentally friendly energy, affords South African technology essential resources needed for its development, and numbers the country as one amongst those nations who are at the forefront of science and technology. International and local advancements further our country's pursuit to meet the energy needs of all of its peoples, particularly the energy impoverished. In this regard, SANEDI regularly participates in local and international activities, and maintains its memberships in leading international organisations such as the International Energy Agency (IEA).

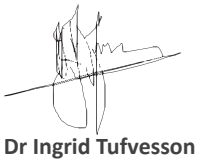
Achieving SANEDI's goals essentially requires a well-functioning Board. To this end, at the end of 2016 and under section 8(2) of the National Energy Act, 2008, the then Minister of Energy appointed a new Board to SANEDI. In terms of the Act, the Board must, inter alia, exercise governance oversight on the all-round performance of SANEDI. To do so effectively, Board members have undergone a comprehensive induction process, prior to immersing itself in the Institute's historical, technical, procedural, systemic and governance. Supported by the SANEDI staff, such knowledge will equip the Board to effectively undertake its duties.

The challenges, strengths and potentials of SANEDI have set the tone for the new Board's year ahead. Primarily, its objective will be to continue and accelerate the world class research and development being undertaken by SANEDI and to hone its focus towards fulfilling its mandate. At no point can the Board or the Institute as a whole efficiently realise any of its goals without the human beings engaged in the nuts and bolts of SANEDI. Qualified, responsive, creative, knowledgeable and driven staff forms the backbone of the Institute and promise of responsible and sustainable energy leadership into the future. Therefore, the transformative agendas of mentorships, succession planning, skills training and transfer, and growing our own timber, must form part of SANEDI's endeavours prominently.

Financial investment in SANEDI and support for funding the Institute, is one of the most prominent challenges faced by the Board. The reverberating effect of financial challenges has resulted in 'doing more with less', which has meant the short-staffing of technical staff. The international funding, which provides significant support for SANEDI's research and development programmes, cannot be lauded enough and hence the Institute does its utmost to utilise every possible opportunity to showcase its achievements internationally. Hope and encouragement has been given to the SANEDI Board through the new Minister of Energy, the Honourable Ms Mmamoloko 'Khensani' Kubayi, who gave an undertaking in her recent and maiden budget speech to reinstate the SANEDI budget to R59,8m, which had been drastically reduced during the 2016/17 period when the Institute had no duly constituted Board.

The forthcoming year will be busy as we undertake our annual strategy review and then set about activities to implement such.

In conclusion, but also as a call to join and support us, may I, on behalf of the Board, acknowledge and thank all the staff of SANEDI for the help and support they have so readily given us, the new Board, as we take up our role. Moreover, we acknowledge the trust placed in us by the former and current Minister of Energy. We undertake a commitment to fulfilling our duties and to ensuring the supply, access, affordability and reliability of the life-blood of humankind's endeavours, namely, energy.



Dr Ingrid Tufvesson
Chairperson: SANEDI Board
31 July 2017

3. CEO overview

Kadri Nassiep
Chief Executive Officer

The 2016/17 year has been significant in many respects, not least of which is the appointment of the new Board of Directors during December 2016. The injection of fresh blood has been rejuvenating for the organisation and both management and staff are excited at the prospect of working closely with the newly appointed Board.

Once again SANEDI has continued its proud tradition of obtaining an unqualified audit opinion. In 11 years of its existence, SANEDI and its predecessor SANERI has not obtained less than an unqualified audit opinion. This year, SANEDI obtained a clean audit opinion from the Auditor-General, which is testament to the dedication and commitment to the highest levels of compliance that is now entrenched in the corporate culture. A realignment of the vision, mission and values of the organisation, with a greater emphasis on transparency, integrity and accountability has contributed greatly to the improvement in systems and controls within SANEDI.

Key highlights

Fostering a culture of resource efficiency in the country: Energy Efficiency

The year has also been noteworthy in terms of critical developments in key programmes that are administered by SANEDI on behalf of the state. Some of these key highlights will be shared with you in this report but they do not do justice to the pivotal role played by SANEDI in assisting in transforming our economy to a sustainable, low carbon trajectory. In particular, the strides made in the development and implementation of Sections 12I and 12L of the Income Tax Act have had a marked impact on the uptake of energy efficiency measures by local industry. One of the stand out projects launched during the year was the energy efficient floating dry dock installed in Durban Harbour. The 80m long floating dock was purchased by the Dormac marine engineering company and the unit was constructed in the Ukraine. The floating dock was towed to South Africa over the course of a few months. This floating dock is a first for South Africa and presents an opportunity to increase the maintenance and shipbuilding capacity of the country. There are several other examples of such innovation that highlight the commitment of National Treasury, the DTI and SANEDI in driving innovation and energy efficiency in industry.

Our association with donor governments around the world has continued to yield positive results for the country.

In particular, the support from GIZ through the South African – German Energy Partnership continues to play a critical role in developing a policy and strategic framework for energy efficiency rollout in South Africa. The French Development Agency, AFD, together with the Swiss Government play an important role in the financing of clean energy technologies and the successful SUNREF 1 programme has been replaced with SUNREF 2. This programme, supported by several commercial banks, provides funding to clean energy projects. SANEDI currently administers the Technical Advisory Facility that provides assistance to project developers who require guidance on developing bankable projects.

Creating a smarter, more resilient and customer-centric network: Smart Grids

The Renewable Energy and Energy Efficiency Partnership continues to play a significant role in coordinating regional efforts to fast track renewable energy deployment in the SADC region.

Our smart meter pilot project, championed by the Department of Energy and funded by the European Union, has delivered spectacular results at several municipalities. This is despite the delays experienced in work undertaken in the municipalities as well as the delays in sourcing the funding via the RDP Fund. Results obtained at Naledi Municipality have indicated a drop in revenue losses from 26% to 6%, an improvement of 77%. The positive benefits that have been realised at the 10 pilot municipalities has resulted in a request from National Treasury to work with Eskom and other Metros and municipalities to begin a wider rollout programme nationally. A proposal for funding in this regard has been submitted to the DBSA to access funding from the EU.

The partnership established to drive the smart grid vision for South Africa, namely SASGI (South African Smart Grid Initiative) continued to play a pivotal role in coordinating the efforts of utilities, municipalities and government to develop a framework for the rollout of smart grids in SA. This initiative is championed by Government, through the Department of Energy and is instrumental in the development of tariff structures, standards, metering infrastructure and communication protocols. This will enable South African networks to be more resilient to power fluctuations, responsive to customer needs and able to accommodate a variety of supply and demand side initiatives.

Ensuring a climate-resilient energy economy is developed: Carbon Capture and Storage

Following on the success of the South African Centre for Carbon Capture and Storage (SACCCS) in identifying suitable high level geological storage sites for carbon dioxide in SA, efforts turned to specific geotechnical studies to pinpoint the most suitable reservoirs. The Pilot Carbon Storage Project, or PCSP, is the initiative designed to identify the most suitable site for a pilot project, whereafter several tens of thousands of tons of carbon dioxide will be stored underground in that reservoir. A monitoring programme will assist in ensuring that carbon dioxide does not escape from its reservoir over time.

Funding for the project has been secured from the World Bank and an agreement for the $23 million made available for the PCSP project will be signed off in 2017/18. The raising of this funding is testament to the work done by the South African team to date and I wish to commend the team from SANEDI, supported by the Council for Geoscience for their sterling efforts.

Creating sustainable job opportunities using energy as an enabler: Working for Energy

The Working for Energy Programme (WfE) has finally demonstrated its potential after initial growing pains. A programme that was initially designed to take invasive vegetation and convert it to energy, thereby creating job opportunities, has been remodelled to focus on a wider array of technologies and resources. With the cooperation of several universities, such as Fort Hare University and UNISA, NGOs, the Expanded Public Works Programme (EPWP) and community leadership, the WfE team has brought energy to communities in the Eastern Cape, Limpopo and the North West Provinces. Just about 100 biogas digesters alone were installed in Limpopo during this year alone. This, despite the impact the national drought has had on livestock and its concomitant supply of feedstock.

An association with corporates who wish to spend their Corporate Social Responsibility funding on community-based energy projects is the current focus of the programme. There are like-minded corporates out there who wish to make a difference in the lives of the disenfranchised who are subjected to energy poverty and these corporates obtain the benefit of partnering with a state-owned entity that has developed a tried and tested model for distributed generation and energy supply.

Transforming the manner in which we move people: Cleaner Mobility Programme

An often overlooked area of energy demand is the transport sector. In Cape Town alone, almost 70% of primary energy demand is for liquid fuels. Cape Town in fact is acknowledged as the most congested city in South Africa, beating even Johannesburg in taking dubious honours for this feat. The ever increasing car pool in South Africa is due to the failure (in general) of our public transport systems. While there are noteworthy exceptions such as Gautrain in Gauteng and MyCiti bus service in Cape Town, the majority of public bus and train systems are in disrepair and unreliable. Safety also plays a big role in discouraging the use of non-motorised transport such as cycling and walking.

An important contributor to a turnaround strategy in this area is the use of electric vehicles and electric rail options. In particular, the Cleaner Mobility Programme has concentrated on determining the feasibility of ultralight rail or personal rapid transportation as it is also known. Developing a framework for the rollout of charging infrastructure nationally has also been a big priority for SANEDI and this ambition has culminated in the establishment of the Electric Vehicle Industry Association or EVIA that brings together government departments, vehicle manufacturers, battery manufacturers as well as financiers. Through EVIA, SANEDI is creating a platform for the rapid deployment of electric vehicle technology around the country. An important partner in this project is UNIDO, who have funded various interventions designed to use cleaner mobility as a means to effect a shift to a lower carbon trajectory for the country. The City of Cape Town has indicated its intent to acquire electric buses, which will be delivered in 2017/18 and has also indicated its willingness to examine the feasibility of an ultralight rail system for the City.

Diversifying the energy mix and promoting green power: Renewable Energy Programme

The success of the REIPPP programme in South Africa has thrust renewable energy into the spotlight. Despite the current challenges faced by the industry as a result of Eskom not signing PPAs for 37 projects under Round 4B of REIPPP, there is an expectation that the industry will flourish, particularly if it is driven at the local government level. SANEDI, through its RECORD Centre continues to coordinate the efforts of the researchers active in the renewable energy space. To date, collaborative platforms have been established for bioenergy, algae, storage, solar thermal and PV research. These platforms provide a space for researchers to share information, develop joint projects and design strategies for taking those sectors forward.

RECORD continues to support the development of skills in the country and is an active participant in the management of the SARETEC Training Centre in the Western Cape. This centre provides training for artisans in the areas of PV and wind energy. RECORD also supports the allocation of bursaries under the DBREV initiative, a scholarship made available to deserving candidates who study alternative energy provision. The scholarship is named after the late Dr Douglas Banks, the pioneer of alternative energy provision in South Africa. RECORD also has acknowledged the outstanding contribution of several researchers, through the RERE awards, that are offered in conjunction with the SANEA awards.

The Renewable Energy and Energy Efficiency Partnership continues to play a significant role in coordinating regional efforts to fast track renewable energy deployment in the SADC region. With the support of the REEEP secretariat in Vienna, SANEDI has been at the forefront of two major projects, namely SWITCH (targeting energy provision) and Waterworks (Waste water treatment plant project). With strong international backing, the rollout of these projects into the SADC region is being effectively fast-tracked.

Naturally, the year itself is not only about highlights – there are also challenges that need to be addressed going forward. In particular, the ongoing challenge of raising sufficient funds to support larger, more capital intensive projects is a priority. SANEDI sits with a multitude of projects that are designed to make a quantum shift in the energy sector paradigm and more attention at Treasury level is needed to bring about rapid economic growth.

I would like to thank the donors and project partners, such as GIZ, AFD, World Bank, Swiss government and its agencies, the Danish Government, USTDA, UNIDO and others who contribute tirelessly to the South African cause. Your contribution is gratefully acknowledged.

I would also like to thank the staff of SANEDI, the intellectual capital of the organisation, who continue to punch above their weights and deliver outputs of such outstanding quality. It is an honour to have led this team for the past 11 years.

Kadri M. Nassiep
Chief Executive Office
SANEDI

5. Members of the Board

For the period from April 2016, with the expiration of several Board member terms, to end November 2016, SANEDI did not have a quorate Board. In the interim, the Accounting Authority of the Company resided with the CEO of SANEDI as per the provisions contained in Section 49 (2)(b) of the Public Finance Management Act (PFMA) (Act No. 1 of 1999).

New Board members were appointed on 1 December 2016, allowing the Board to resume its oversight duties.

Dr I Tufvesson
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 Mlondolozi Mkhize

Ms Phuthanang Motsielwa
B Acc (CA)(SA)

Mr Mmboneni Muofhe
BSc (Hons), MSc, MBA

Ms Deborah Ramalope
BSc (Hon), MSc, MBL

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. The annual financial statements have been audited by the Auditor-General.
- The annual report is complete, accurate and is free from any omissions.
- The draft annual report has been prepared in accordance with the guidelines on the annual report as issued by National Treasury.
- The Annual Financial Statements (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 annual financial statements 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 annual financial statements.
- The external auditors are engaged to express an independent opinion on the annual financial statements.

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 2017.

Yours faithfully

Dr Ingrid Tufvesson
Chairperson: SANEDI Board
31 July 2017

7 Strategic overview

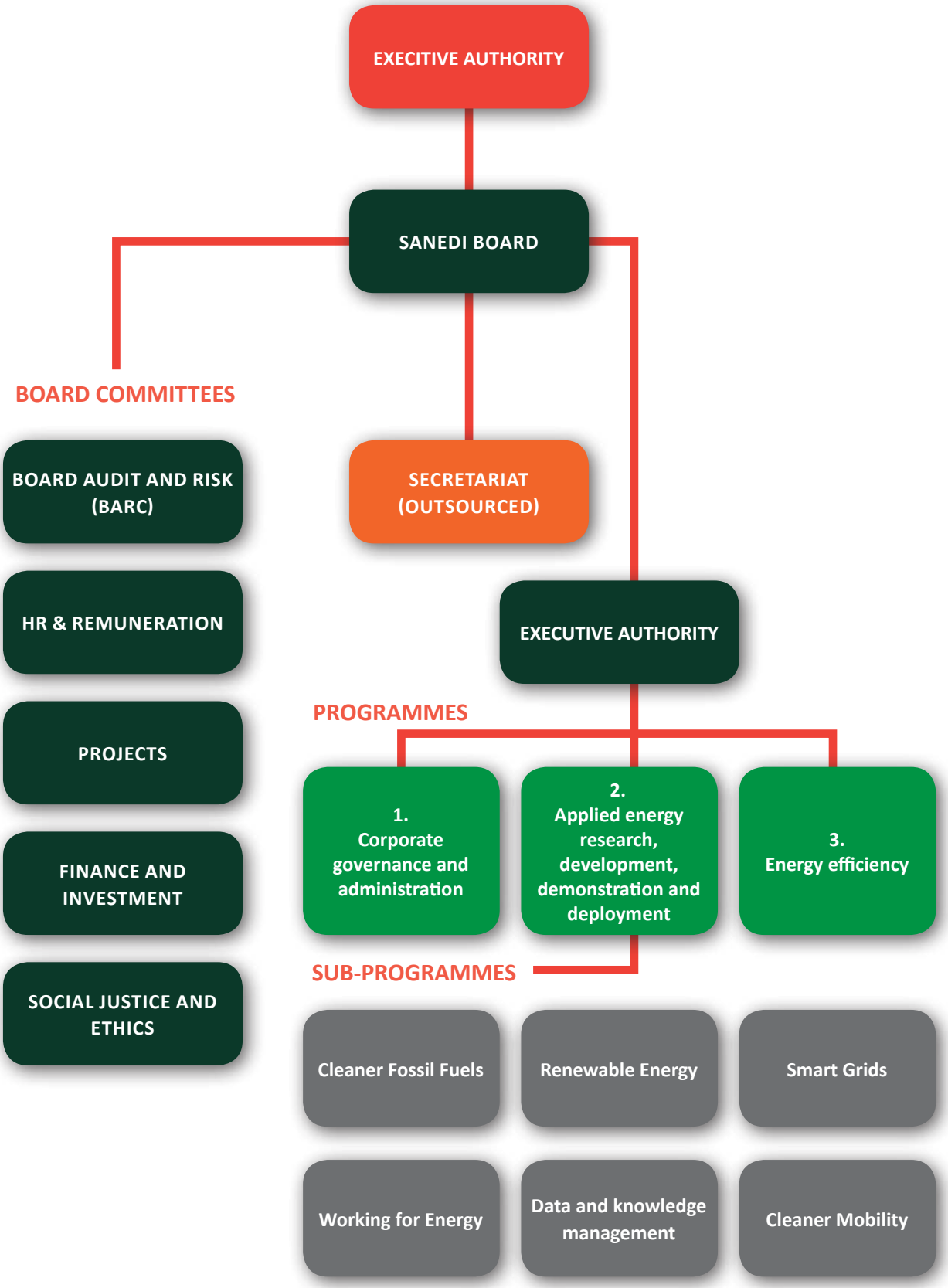
The following are the key elements of the SANEDI strategy as reflected in the 2016/17 Annual Performance Plan (APP):

VISION	Leading clean energy solutions provider for a low-carbon South Africa	
MISSION	Accelerating the implementation of energy research and development, improving energy efficiency and increasing the uptake of renewable energy to the benefit of South Africa.	
VALUES	• Innovation	we are innovative, creative and forward thinking
	• Accountability	we are responsible and accountable in all we do
	• Transparency	we are open and honest in our communication and activities
	• Batho Pele	we subscribe to the Batho Pele principles
	• Integrity / honesty	we act with Integrity

8 Legislative and other mandates

SANEDI is a Schedule 3 A state owned entity. SANEDI's mandate is derived from the authority and obligations set out in the National Energy Act, 2008 (Act No. 34 of 2008) (NEA). The NEA, Section 7 (2) gave effect to SANEDI's existence and provides for its primary mandate and specific responsibilities. The Act provides for SANEDI to direct, monitor and conduct energy research and development, promote energy research and technology innovation as well as undertake measures to promote EE throughout the economy.

9. Organisational structure



PART B

Performance Information

10 Auditor General's Report: Predetermined objectives

The Auditor-General 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 predetermined objectives is included in the report to management, with material findings being reported under the Predetermined Objectives heading in the Report on other legal and regulatory requirements section of the auditor's report.

The report of the Auditor-General is included in Part E: Financial Information, Report of the external auditors, on page 88 of the Annual Report.

11. Situational analysis

11.1 SERVICE DELIVERY ENVIRONMENT

Next to water and food, clean, affordable and reliable energy access is one of the most important requisites for decent living standards. Clean, affordable, highly efficient and sustainable renewable energy is one key pillar to better living standards, health, education, gender balance and learning conditions, which in turn can facilitate economic and socio-economic development and environmental protection.

In recognition, the Sustainable Development Goals (SDGs), adopted in September 2015 by 193 United Nations (UN) member countries, explicitly included clean energy[1] for the first time as one of seventeen (17) goals targeting an end to poverty, protection of the planet and ensuring prosperity for all. It states that "energy is central to nearly every major challenge and opportunity the world faces today. Be it for jobs, security, climate change, food production or increasing incomes, access to energy for all is essential."

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. The principles of the SDGs, and a commitment to universal access to electricity for all South African households, had been embedded in South African policy and legislative frameworks as far back as 1998[2]. South Africa continues to make progress towards these ambitions, with nearly 90% of the population having access to electricity[3]. However, practical and cost-effective implementation for remote rural and rapidly growing urban communities remains a challenge.

The SDGs identify proactive innovation as key to phasing out of energy poverty in developing countries by 2030. The SDGs state that addressing energy poverty will require viable, sustainable energy access solutions for energy-poor people in developing countries to be identified, demonstrated, replicated and scaled up. Energy innovation is therefore recognised as a crucial stepping stone to realising social and energy justice, and for leapfrogging obsolete technologies towards a more sustainable energy future.

In this context, SANEDI's focus on developing innovative, integrated clean energy and resource efficient solutions that aim to catalyse growth and prosperity, becomes even more significant. As technologies, 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.

SANEDI's Working for Energy, Smart Grids, Energy Efficiency and Renewable Energy programmes all contribute to energy development and innovation in this area. The Working for Energy programme, in particular, has focused on developing and demonstrating energy solutions suitable to rural and low-income urban and peri-urban communities. During the financial year, 80 biogas digester and greening projects were constructed in Gauteng, Limpopo, Eastern Cape and the North West Province. Demonstrated use of clean energy and energy efficiency technologies serves to refine a blueprint that can be applied to communities countrywide.

Expectations for innovative, clean energy solutions to contribute significantly to future energy provision in developing countries are reinforced by rapid downward technology price trends, making such solutions more cost-effective than many conventional alternatives. Since 2013, annual global installations of new renewable energy[4] exceeded that of coal, natural gas and oil combined, and in 2016 the average installed system cost[5] for both solar and wind power, at utility scale, fell to roughly half the price of competing coal power. The average solar energy price fell 12% over the year and continues to fall. The same trend is evident for small-scale applications[6].

Technology and price trends are enabling the shift to clean energy solutions, particularly in countries such as our own where additional electricity capacity, both at utility and smaller scale, is required to deliver on universal access goals and contribute towards economic and socio-economic development objectives. In the face of such swift technology developments, it is fast becoming an imperative for South Africa, through state-owned entities such as SANEDI, to proactively engage with and steer technology developments in the energy sector.

Some bold predictions (based on technology cost curves, business model innovation and product innovation)[7] suggest that the pace and scale of the clean energy transition may well exceed all expectations, rendering conventional transportation and energy obsolete as early as 2030. Development and innovation in four technology categories (i.e. energy storage/batteries, electric vehicles (EVs), self-driving vehicles and solar energy) is promising to disrupt energy and transportation in the same way that digital cameras disrupted film, the web disrupted publishing and mobile phones disrupted fixed-line services.

1 *Goal 7, Ensure access to affordable, reliable, sustainable and modern energy for all.*
2 *1998 White Paper on Energy Policy*
3 *Stats SA key findings from the Annual General Household Survey, released 4 June 2016 (as published on Eskom website, accessed 18 May 2017)*
4 *Bloomberg New Energy Finance (BNEF). Power generation capacity additions (GW), 2013.*
5 *Bloomberg New Energy Finance (BNEF). Disclosed capex for onshore wind and PV projects in 58 non-OECD countries*
6 *Lawrence Berkeley National Laboratory (LBNL). (1) Tracking the Sun IX and (2) Utility-Scale Solar 2015.*
7 *Seba, T. Clean Disruption of Energy and Transportation: How Silicon Valley Will Make Oil, Nuclear, Natural Gas, Coal, Electric Utilities and Conventional Cars Obsolete by 2030. 20 May 2014*

In South Africa, the transition to EVs has been very gradual, owing predominantly to affordability and lack of infrastructure, but even here global enthusiasm is becoming infectious. During 2016, the Electric Vehicle Industry Association (EVIA) was formed by several role-players in South Africa's emerging EV industry to assist the roll-out of electric mobility in the country. The association is endorsed by the Department of Trade and Industry (the dti) and SANEDI is one of the founding members, alongside BMW South Africa, Gridcars, Nissan South Africa and the uYilo, a programme of the Technology Innovation Agency (TIA).

The importance of cleaner mobility solutions is gradually being recognised in South Africa. The transport sector consumes 30% of all energy in the country. 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. Transport EE is also exceptionally poor, with only 15% of fuel energy translated to kilometres (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. In recognition of these challenges and opportunities, the Department of Transport (DoT) recently shared a Draft Green Transport Strategy[8] and is now for the first time pursuing a national strategy for green transport. During the year, SANEDI's Cleaner Mobility programme, with support from the United Nations Industrial Development Organisation (UNIDO), has been actively engaging with the DoT and various cities to explore and introduce cleaner mobility options.

Accelerated market growth for renewable energy, distributed generation solutions, electric vehicles and potential breakthroughs in energy storage, among the many other developments in the energy sector, may be beneficial for the country's climate commitments and universal access aspirations, but complicate the demands on energy network infrastructure and management. 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 distributed and variable energy options.

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 are increasingly recognised as an essential component for utilities and municipalities to fulfil their strategic objectives of providing secure, reliable and affordable electricity, while ensuring sustainable operations and enhanced revenue management. 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, the South African Smart Grid Initiative (SASGI), has been created to assist municipalities in navigating the numerous components and plethora of technologies, systems, platforms, interfaces and possibilities that form part of a smart grid. SANEDI's Smart Grids Programme also focuses on assessing and demonstrating various solutions to support the industry. During the financial year, SANEDI, under the EU Donor Funded Smart Grid Programme, collaborated with nine municipalities – ranging from small, rural municipalities to metros – to demonstrate the value-add of smart grids within the municipal environment as a result of improved visibility, control and automation of systems, processes and technology.

Despite significant progress, successful deployment of renewable and clean energy technologies on a large scale still require significant research and innovation on technology level, both for adapting appropriate solutions to the South African context and from an energy-system integration perspective. In recognising that innovation adds critical momentum to the structural economic change that is needed for economic growth, job creation and improved quality of living, the South African government is seeking to increase[9] the country's investment in research and development (R&D) by 100%, from R29 billion in 2014/2015 to about R60 billion a year by 2020. In terms of percentage of gross domestic product (GDP), this would involve an increase from 0.77% to 1.5%. At 0.77% of GDP, investment in R&D has been well below the OECD average of 2.3% and far below that of the top ten investing countries (average 3.3% of GDP)[10].

SANEDI has directly experienced the R&D investment shortfall in the energy sector. SANEDI's funding allocation under the Medium-term Expenditure Framework (MTEF) remained at establishment grant level since inception and was reduced by 66% for the 2016/17 financial year. Budget cuts coincide with a critical juncture of transformation in the energy sector – with the demand for innovation, development and skills in the

8 *https://www.arrivealive.co.za/news.aspx?s=1&i=24049&page=Green-Transport-Strategy-stakeholders-workshop*

9 *'R&D Survey 2014/2015' in Pretoria on 11 April 2017. This is the latest edition of the Department of Science and Technology's (DST's) survey of R&D in South Africa.*

10 *OECD (2016). Main Science and Technology Indicators, Volume 2016 Issue 1, OECD Publishing, Paris. Most recent data as at 2012 https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm*

energy sector at its peak. SANEDI has been very successful with leveraging its funding allocation, supplementing it through development partnerships and donor funds. In 2016/17, 86% of the actual income of the organisation had been from third party funds (over and above the MTEF allocation), enabling SANEDI to deliver on a much larger portfolio of activities and making a more meaningful contribution in the sector. SANEDI is also actively investigating alternate funding sources that will decrease its reliance on the fiscus.

South Africa has experienced weak economic growth during the preceding two years. A series of downgrades by credit rating agencies with negative outlooks reflect deteriorating economic prospects. 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 further contribute new avenues of economic prosperity.

Entrepreneurship is often recommended as a solution for joblessness and as a means to enlarge the economy by innovative enterprises. The relevance of entrepreneurship to economic development is well established and it is well recognised that education and training opportunities play a key role in cultivating future entrepreneurs. South Africa is demonstrating its commitment to a more sustainable future growth path by supporting renewable energy and energy efficiency measures, together with skills development and job creation through fostering a green economy. During the 2016/17 year, SANEDI supported the development of more than 300 academic and technical players in the energy sector through training courses, workshops, bursaries and non-bursary support. Work also continued on identifying and progressing cleantech technologies and solutions into active business incubation and/or deployment, with a waste-to-energy plant built for demonstration and an incubation process launched to commercialise solar technologies over the next three years.

Rising electricity prices, increasingly competitive international markets and the introduction of more stringent sustainability indicators and standards across supply chains, are intensifying/reinforcing the importance of improved energy efficiency for economic productivity and growth in the country.

After an extended period of supply constraints, 2016 saw a marked improvement in power plant availability and system performance – signalling the end of electricity supply shortages in the country for the foreseeable future. The downside to this is that efforts driven by Eskom, as well as other role-players, to promote energy efficiency are unlikely to continue with the same urgency as they had been during the period of supply constraints. Within this context, SANEDI's role as champion for improved energy productivity and EE becomes ever more important.

The introduction of the Section 12I and 12L tax incentives, which are clearly defined in the tax legislation and accompanying regulations, offers assistance for addressing high-energy prices, increasing energy productivity and improving business competitiveness. These are important measures towards unlocking the country's energy efficiency potential and decoupling economic performance, in terms of value-add, from energy consumption. SANEDI is providing technical support to both these tax incentives. 102 applications are currently in the system in various stages of processing. Submissions have grown by 44% since 2015. The tremendous interest is wonderful for the economy and environmental sustainability, but has placed unexpected demands on the SANEDI team and the volunteers that have assisted with technical evaluations of complex or specialist technology proposals. Current resources and infrastructure have not been able to keep up with the volumes, leading to turnaround times for processing of applications exceeding the six-week target. SANEDI is actively engaging with the DoE, NT and SARS to obtain additional support for this function.

11.2 ORGANISATIONAL ENVIRONMENT

For the period from April 2016, with the expiration of several Board member terms, to end November 2016, SANEDI did not have a quorate Board. In the interim, the Accounting Authority of the Company resided with the CEO of SANEDI, as per the provisions contained in Section 49 (2)(b) of the Public Finance Management Act (PFMA) (Act No. 1 of 1999). New Board members were appointed on 1 December 2016, allowing the Board to resume its oversight duties.

Recent years have seen a decline in the annual allocations received from the NT. Reduction in MTEF allocations are due to baseline adjustments across the board, resulting from fiscal pressures faced by the Treasury. This, in turn, had an impact on the planned programme activities of SANEDI. At present 86% of the actual income of the organisation had been from third party funds. Budget cuts coincide with a critical juncture of transformation in the energy sector – with the demand for innovation, development and skills in the energy sector at its peak. This challenge will be partially addressed by reverting to future budget estimates in order to enable SANEDI's continued contribution in this sector. SANEDI is also actively investigating alternate funding sources that will not add a further burden to the fiscus.

SANEDI's operating structure is based on the matrix[11] management model. Effectively, this structure establishes a pool of people who can be utilised across the different functional areas to optimise the limited capacity and the available skillset, and to allow for greater development opportunities.

SANEDI acknowledges that the structure introduces a higher level of internal complexity and additional management challenges, but these are considered manageable with the small permanent staff complement. As the number of employees increase, this model may be reconsidered and adjusted to suit the changing environment.

The operational model SANEDI has chosen also relies on the establishment of Centres of Research and Development (CORDs)[12]. The CORDs are structured as partnerships between SANEDI, universities and industry. These centres, either located within SANEDI or externally, rely on human capital to provide for key services. It is the objective of SANEDI to leverage additional funds, from sources such as donors, Development Finance Institutions (DFIs), the National Research Foundation (NRF) and Sector Education and Training Authorities (SETAs), etc. to enhance the capacity available to these CORDs. Many of the postgraduate students graduating today have little prospect of finding employment at the university itself. This is simply due to the number of students that graduate and the ever-present budget constraints that limit employment opportunities at these institutions. SANEDI, through its CORDs, intends to deploy some of the postgraduate students that are currently funded by SANEDI in the tertiary institutions. In so doing, the students will continue to add to the body of knowledge and will also be a research resource for SANEDI. The payment of remuneration that is more in line with market norms will also serve to aid in staff retention.

A baseline survey of stakeholders completed in 2015/16 achieved 53% positive feedback. As a service-orientated organisation, SANEDI's stakeholders are of critical importance. Stakeholder engagement has therefore been prioritised and a concerted effort will be made to strengthen stakeholder relationships and interfaces.

During the financial year, SANEDI invested in the development of a Project Management Office (PMO) and formalisation of project management practices to ensure better delivery of organisational objectives, including the efficient initiation, management and execution of projects. As part of the process, the PMO introduced project management policies, procedures, templates and training to support effective management of projects and service delivery. The new policies and procedures are also intended to support improved stakeholder engagement and communication.

The PMO will primarily be responsible for project support, monitoring and process standardisation while having a greater role in strategy development, project selection and capacity building in the organisation. As such, the (short-term) role of the PMO is to significantly improve organisational capability while effectively utilising a 'roadmap' to achieve longer term objectives, including improved resource utilisation.

11.3 KEY POLICY DEVELOPMENT AND LEGISLATIVE CHANGES

There have been no changes to the legislative or other mandates as reflected in the 2015 - 2020 five-year Strategic Plan.

Several significant, draft policy-related documents were released for public comment during the latter part of the year, signalling the intended direction for the energy sector. These include:

- Draft licensing exemption and registration notice under the Electricity Regulation Act, 2016 (Act No. 4 of 2006), pertaining to small-scale embedded generation (gazetted 2 December 2016)
- Draft post-2015 National Energy Efficiency Strategy (gazetted 23 December 2016)
- National Energy Act, (34/2008): Integrated Energy Plan (gazetted 25 November 2016)
- Integrated Resource Plan (IRP Update: Assumptions, base case results and observations: October 2016 (gazetted 25 November 2016)

SANEDI takes cognisance of the strategic direction reflected in these and will continue to ensure alignment with policy direction as the relevant schedules, strategies and plans are finalised.

Other policy and regulatory developments that are likely to change the context for implementation of RE, EE, embedded and distributed generation, include the anticipated introduction of Carbon Tax and amendments to the National Energy Regulatory Act and revisions to the Grid Code. SANEDI's focus will further be informed by these policy developments as they are finalised.

11 *In the matrix structure, the personnel and other resources that a project manager requires are not permanently assigned to the project, but are obtained from a pool controlled and monitored by a functional manager. Personnel required to perform specific functions in a particular project are detailed for the period necessary, and are then returned to the control of the functional manager for reassignment.*

12 *Three CORDs are active i.e.: RECORD, the Centre for Energy System Analysis and Research (CESAR) in collaboration with the University of Cape Town and the Energy Research Centre (ERC) and the Energy Efficiency Demand-side Management (EEDSM) Hub in collaboration with University of Pretoria.*

11.4 STRATEGIC OUTCOME-ORIENTATED GOALS

SANEDI had revisited its outcome-orientated goals during the preceding planning cycle and had defined the following goals for the 2016/17 financial year:

Table 1: SANEDI strategic outcome orientated goals

Goal[13]	Goal statement
Goal 1. Ensure universal access to affordable, reliable and modern energy.	By 2030, SANEDI will aim to ensure that there is universal access to affordable, reliable and modern energy services by contributing through energy research, development, demonstration and deployment.
Goal 2. Increase substantially the share of RE in the global energy mix.	By 2030, SANEDI will increase substantially the share of RE in the global energy mix through actively stimulating 'green' energy industry development, capacity building, skills development and job creation in response to the immediate concern of job scarcity, and also support economic development and the critical transformation of the South African economic structure/activities to less energy and carbon intensive activities during the transition period identified by national commitments (new growth path, climate change commitments).
Goal 3. Double the global rate of improvement in EE.	Actively influence consumer consciousness and behaviour to improve the energy efficiency of existing economic activity and energy consumption by 10% during the short term (period of supply constraints) and to contribute to achieving an energy resource efficient society (described by energy intensity levels on par with international benchmarks) in the medium to long term (2020).
Goal 4. Enhance international cooperation to facilitate access to clean energy research and technology.	By 2030, international cooperation will be enhanced to facilitate access to clean energy research and technology, including RE, EE and advanced and cleaner fossil fuel technology, and promote investment in energy infrastructure and clean energy technology.
Goal 5. Expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all.	Goal Statement. Expand infrastructure and upgrade technology by 2030 for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing states and landlocked developing countries, in accordance with their respective programmes of support.

13 Goals are those defined in the Board and Minister approved strategic plan and APP for 2016/17.

12. Performance information by programme

12.1 PROGRAMME HIGHLIGHTS FOR THE YEAR

SANEDI celebrates another full / successful year of activity in the energy sector.

As indicated in the organisational structure, SANEDI's activities are structured around three programmes:

- Programme 1: Corporate governance and administration
- Programme 2: Energy research, development, demonstration and deployment
- Programme 3: Energy efficiency

Some of the year's highlights from SANEDI's two technical programmes are featured below (refer Sections 12.1.1 and 12.1.2 and Figure 1).

Subsequent sections (refer sections 12.2 to 12.4) provide an overview of each programme and the respective performance information relevant to the financial year.

Figure 1: Programme highlights for 2016/17

Out of seven SANEDI employees who received study support from SANEDI during 2016/17, **six women and four youths benefitted**[14]. SANEDI furthermore facilitated bursary and non-bursary support to 35[15] students in the field of clean energy in the financial year. In total, SANEDI supported the development of more than 300 academic and technical players in the energy sector through training courses, workshops, bursaries and non-bursary support during 2016/17.

12.1.1 Programme 2: Applied energy research, development, demonstration and deployment

Cleaner Fossil Fuels (CFF)

Survival for all life that has made its home on Earth is dependent on an appropriate supply of energy. It was Homo sapiens (Latin: 'wise man') that harnessed energy for more than mere survival, for which the first to be utilised was what is now known as 'renewable energy'. Wood taught us how to harness the energy released by fire; beasts of burden supplied conveyance; wind enabled global transport – all driven by the power of the sun. However, the low energy density of such sources eventually gave way to the high-density energy contained in the fossil fuels that were formed during the Carboniferous Period, long before the era of the dinosaurs. The utilisation of fossil fuels was responsible for the rapid technological advances over the past few centuries and have made it possible to support a global population of over 7 billion people. But fossil fuels are finite, and the most common practice of extracting the energy, combustion, has detrimental impacts on the environment, including climate change. Notwithstanding such impacts and the ever-increasing utilisation of renewable energies and implementation of energy efficiency measures, the global use of fossil fuels is

14 *Inclusive of performance rewards*
15 *New positions approved and filled during the 2016/17 financial year*

forecast to continue for decades. As humankind transitions from a fossil fuel energy economy to a clean energy future, it is essential to ensure that we wean ourselves from fossil fuels in the most environmentally sensitive manner as is possible. Such is the purpose of the CFF programme of SANEDI.

Although pursuing topics such as gas and fossil/renewable hybrids, the main current thrust is Carbon Capture and Storage (CCS). CCS entails capturing carbon dioxide, typically emitted from burning fossil fuels, before it is released into the atmosphere and safely and permanently storing it in a deep geological formation. Such geological formations are greater than 800 meters deep, more likely to be 1-2 km deep, and therefore disconnected from near-surface formations such as water. Depriving the atmosphere of such a greenhouse gas will lower those emissions and assist to ameliorate climate change. Although the technology has been successfully applied worldwide, it is essential to ascertain whether South Africa has the appropriate geology, and to build human and technical expertise in the field.

CCS is driven by the SANEDI South African Centre for CCS (SACCCS), established as a partnership with national and international stakeholders. 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 PCSP, engaging with local stakeholders and interested and affected parties in the area identified for pilot implementation.

During 2016/17 the programme made significant progress in all three these 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 exploration in identifying a suitable location for the storage pilot project. Should current investigations and exploration 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 facilitates are easier to access for capacity building.

Major achievements during the year include the review of all historical data from the 1960's and 1970's Soekor exploration. With the assistance of our partners, Council for Geosciences (CGS), Petroleum Association of South Africa (PASA) and Eskom, seismic data were analysed and synthetic seismograms were contracted using the Kingdom and Petrel software suite. A static sedimentary basin model was thus created.

Currently, an additional 33 existing seismic profiles are being digitised and some 233 borehole samples analysed for porosity, permeability, mineralogy and velocity data. Further dynamic and static models are in progress, which will identify target areas for more intensive seismic acquisition and large diameter borehole cores.

Strong financial support for the PCSP has materialised from the National Treasury through the Department of Energy and the World Bank CCS Trust Fund. Through the CCS Trust Fund, the World Bank appointed Battelle, a US-based specialist in carbon storage, as a technical advisor to the project under a Project Technical Assistance Services (PTAS-1) contract during October, 2016. Battelle is providing specialised technical support to the local professionals assembled in various workgroups such as geology, geophysics, project risk, monitoring, drilling and capacity building. The Battelle Project Technical Advisory Services (PTAS) contract has completed 10 tasks, mainly focused on data review, planning and scoping.

Other major achievements of the PCSP during 2016/17 include:

1. completion of the Risk Assessment Management Plan;
2. a call for proposals from service providers to express interest in the seismic exploration programme;
3. awarding of contracts for the CO2 monitoring for ground water, air and soil under Phase II of the Bongwana project;
4. extensive review of all historical data of the Zululand basin;
5. sampling and assays of existing boreholes; and
6. establishment of a database to manage the geological data.

Work has also progressed to determine local drilling capability and the drafting of a proposal for drilling exploration is well advanced.

A further highlight for the year has been the successful negotiation of the World Bank Grant Agreement, the Project Agreement and the Project Appraisal Document by all

parties, and signature of the final negotiation minutes by the Department of Energy and National Treasury. The next action in finalising the World Bank CCS Trust Fund Grant Agreement and related ancillary documents is the signing of the Grant Agreement between National Treasury and the World Bank. On signature, a further $23 million will become available specifically for the PCSP.

CCS research and investigations continued concurrently, focused on the broader requirements for the development of the technology in South Africa. Four studies were initiated during the 2016/17 year:

a) **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.

b) **Appraisal of CO2 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. This investigation was recommended by CCS stakeholders attending the 4th CCS Conference in 2015.

c) **Alternative sites for the PCSP and high level techno-economic analysis for demonstration and commercial CCS**. The aim of the project was to look at the alternative sites for the PCSP if no suitable site is found onshore or the suitable site identified is not available. The project also looked at the requirements for commercial CCS in South Africa. The project addressed (i) siting the PCSP, (ii) identifying appropriate sites for a demonstration CCS plant as well as (iii) suitable sites for commercial roll-out.

d) **Impact of a Carbon Tax on CCS**. The aim of the study was to ascertain to what extent the proposed Carbon Tax in South Africa would incentivise CCS in the country. The study found that the current tax structure and uncertainty in the level and future of the tax is not conducive to large-scale mitigation projects such as CCS. It also showed that internationally, stand-alone carbon taxes were not adequate to drive CCS. However, if well designed, for instance allowing carbon sequestration to qualify under the tax, and when implemented in combination with government support, it could provide an effective incentive for CCS.

The status of the above projects is as follows:

Study	Status
The Business Case for continued CCS in South Africa	In progress (target date for completion: December 2017)
Appraisal of CO2 utilisation technologies and their suitability for implementation in South Africa	Commenced (target date for completion: March 2018)
Alternative sites for the PCSP and high level techno-economic analysis for demonstration and commercial CCS	Completed
Impact of a Carbon Tax on CCS	Completed

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.

All stakeholder engagement activities are informed by the World Resources Institute (WRI) principles.

As part of the stakeholder engagement, a CCS technical workshop was held in the KwaZulu-Natal (KZN) Province, the area of interest for the PCSP. The workshop was organised by SANEDI in partnership with the DoE. The original planning anticipated around 50 delegates, but the workshop attracted more than 150 participants. Attendees included geologists, geophysics specialists, government officials from the departments of Economic Development, Tourism and Environmental Affairs, Water and Sanitation, Cooperative

Governance and Traditional Affairs, Energy, City of uMhlathuze, uMhlabuyalingana Local Municipality, Ugu District and Umuziwabantu Local Municipalities, environmental NGOs, academia, international peers and the general public. The large number of stakeholders demonstrated a growing interest in CCS among non-CCS specialists.

Figure 2: Delegates participating in the CCS technical workshop in KZN

SANEDI has further collaborated with the district municipalities in the area for stakeholder engagement and capacity building. During the year, a CCS 101 workshop was conducted with more than 30 educators and conservation officers at the Ndumo Game Reserve in the Umkhanyakude District Municipality. This resulted in a more formalised collaboration with the Ndumo Environmental Education Centre, allowing SANEDI to make use of the centre's existing environmental education structures for CCS capacity building in Umkhanyakude District Municipality.

Figure 3: Mrs. Polly Modiko (SANEDI) addressing questions from delegates during the CCS Workshop.

Figure 4: Mr. Rofhiwa Raselavhe conducting a CCS desktop experiment.

SANEDI further conducted a successful two-day Educators' Workshop on 22 and 23 March, focusing on climate change and CCS. The workshop was held in the uMkhanyakude District Municipality, which is one of the potential sites for the Pilot CO2 Storage Project. Mr Kevin Nassiep, the CEO of SANEDI, handed over sixteen Educational Science Tool kits to seven primary schools, one combined school and seven secondary schools under the uMkhanyakude Education District (UKED). The purpose of the workshops was to raise awareness on climate change (focusing on the effects, causes and solutions) and CCS, as well as to train educators and Subject Advisors/ Specialists who will in turn educate the learners and the school communities about CCS as one of the Climate Change mitigation measures.

Figure 5: Mrs. Polly Modiko (SANEDI) addressing questions from delegates during the CCS Workshop.

Figure 6: SANEDI CEO, Mr Kevin Nassiep, handing over Educational Science Tool Kits to UKED Deputy Education Specialist Mr Shwala.

SANEDI also participated in the Environmental Graduates Seminar hosted by the Ugu District Municipality's Environmental Services and the KZN Department of Economic Development and Environmental Affairs (EDTEA). Participating graduates were provided with information on career opportunities in CCS and energy sectors, as well as bursary and non-bursary funding opportunities offered by SACCCS as part of its capacity building programme.

The stakeholder engagement programme has, however, extended much wider than the vicinity of the PCSP, to also create awareness and build capacity around CCS at a national

Figure 7: Attendees of the Ugu District Municipality Environmental Graduates Seminar.

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, many done in collaboration with the South African National Biodiversity Institute (SANBI) and the Department of Basic Education:

- The SANEDI/SANBI career expo was held at the SANBI Environmental Education Centre on 7 October 2016. The event attracted more than 120 learners from grades 10 and 12.
- SANEDI, in collaboration with SANBI, hosted the 2016 Climate Change Week at the National and Walter Sisulu Botanical Gardens in Pretoria and Roodepoort, respectively. Information-sharing sessions held during the Climate Change week took place from 16 to 19 August 2016 and reached more than 260 learners and educators.
- A CCS category was introduced in the Eskom Expo for Young Scientists (October 2016) to popularise the technology amongst the learners and educators alike. In the CCS category, there were two winners of the CCS Special Award. Each of the two winners received a laptop, a R1 000 education voucher and 16GB USB drive loaded with educational materials.
- In tandem with the Eskom Expo, SANEDI hosted a Pilot Schools Project initiative aimed at identifying and unleashing innovation amongst the young people, whilst at the same time demystifying the subjects of maths, science and technology.
- Workshops held for environmental educators, with participation from at least eight education circuits.
- A two-day workshop held in Pretoria with SANBI assistance education officers.
- Participation in the 16th Sasol TechnoX Career Expo for three days in August where as many as 15 000 people were exposed to the SANEDI stand during the three-day period. The stand featured CCS technology and engaged visitors with related activities and demonstrations. This attracted significant attention from learners from grades 7 – 12 as well as educators and the general public.

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, seven Masters and three Doctorate students completed their qualifications and a further seven Masters students 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. Ten Masters and one Doctorate student 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 Wind Atlas of South Africa (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 centres of research and development (CORDs, refer section 11.2) 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:

During the year, the DST appointed SANEDI to implement the Solar Energy Technology RDI Roadmap. This three-year project is envisaged to support South African innovations in solar energy that will assist government in dealing with the triple challenge (poverty, inequality and unemployment) through stimulating local manufacturing in the solar energy industry.

In 2013, SANEDI, in collaboration with national and provincial government and a consortium of Western Cape Universities and colleges, established a national training and technology centre for renewable energy in the Western Cape. The South African Renewable Energy Technology Centre (SARETEC) will eventually cover the full spectrum of renewable energy training, but its initial focus is wind energy. The project is supported by GIZ (Gesellschaft für Internationale Zusammenarbeit) under auspices of the South African German Energy programme (SAGEN), implemented with the main objective to improve framework conditions and capacity for enhanced investments in renewable energy and energy efficiency in South Africa.

During September 2016, GIZ provided further support for the centre by organising a study tour to wind energy training centres and leading wind energy industry organisations and businesses across Denmark and Germany.

The outcomes of the study tour included an improved understanding of the way in which training centres are managed and operated internationally, as well as the training needs and contents for wind energy technician training. Participants furthermore had the opportunity to interact with important commercial wind energy role-players and lobby for their collaboration with SARETEC in terms of their service technician training needs. This tour was deemed highly successful in terms of accomplishing commitments from most of companies visited to use SARETEC either as a venue and/or for expertise in wind turbine technician training. Also through this interaction, two contracts have already been signed with international OEMs (Original Equipment Manufacturers) to this effect and a third is in process.

In the interest of developing and promoting training and implementation strategies for solar thermal technologies in South Africa, two SOLTRAIN workshops were hosted in 2016. The overall aim of the SOLTRAIN project, which is now in its third phase, is to promote solar thermal energy by supporting policy, through installation subsidies and technical courses, to increase knowledge about the systems. Secondary to this is job creation at small and medium enterprise level and to initiate and/or to strengthen political support mechanisms for solar thermal systems. This project is financed by the Austrian Development Agency (ADA) and implemented by the Institute for Sustainable Technologies, Austria (AEE INTEC) in cooperation with project partners from South Africa (SANEDI, who only joined as partner in the third phase, and Stellenbosch University), Namibia, Botswana, Zimbabwe, Mozambique and Lesotho.

In September, SANEDI was invited to present two studies at the International Conference on Solar Technologies and Hybrid Mini-grids to Improve Energy Access, which took place in Bad Hersfeld, Germany. SADC representatives that had their papers selected were hosted at the conference with support from the SOLTRAIN project. In addition to having two papers accepted for presentation at the conference, RECORD's centre manager, Dr. Surridge-Talbot, was invited to chair the "Solar Cooking, Desalination, Water Pumping" session at the conference. The SANEDI contribution was singled out, during the final conference wrap-up plenary, as being very valuable for learning in the solar water heating space for Africa.

Also in September, Dr. Karen Surridge-Talbot was appointed as the ENERGY co-national contact point (NCP), in partnership with Mr Stephen Koopman of the CSIR, for the Department of Science and Technology (DST) South African-European Horizon 2020 programme (previously FP7). Horizon 2020 is the largest European Union research and innovation programme, making nearly €80 billion of funding available over seven years (2014 to 2020). This funding hopes to stimulate scientific and technology breakthrough and attract private investment that will move great concepts from the laboratories to the markets. As new national contact points, Dr Karen Surridge-Talbot and Mr Stephen Koopman were invited to attend the "20 Year celebration dinner of the SA-EU STI Cooperation" at The Castle in Cape Town, co-hosted by the DST and the European Commission (EC) on 3 October 2016 to celebrate the 20 years of SA-EU STI Cooperation. The

Figure 8: Dr. Karen Surridge-Talbot and Ms. Khothatso Mpheqeke with their respective poster presentations at the International Conference on Solar Technologies and Hybrid Mini-grids to Improve Energy Access, in Bad Hersfeld, Germany, on 21-23 September 2016.

event was in the form of a dinner hosted by Her Excellency Mrs Naledi Pandor, Minister of DST in South Africa and His Excellency Mr Marcus Cornaro, Ambassador of the EU in South Africa. The event included a series of keynote speakers and a showcase of SA-EU projects that have contributed significantly to the evolution and success of the SA-EU STI cooperation across the collaboration sectors.

The Renewable Energy programme collaborated with the Gordon Institute of Business Science (GIBS) Enterprise Development Academy (EDA) together with J.P. Morgan on their Small Business Boost Programme (funded by J.P. Morgan), which aims to promote small business growth and job creation for those involved in providing solutions for the green economy. The programme provides four months of business and management education and six months of support services to 100 small businesses in Gauteng. It seeks to empower entrepreneurs with the knowledge, skills and resources to grow in this niche sector. Dr Surridge-Talbot was invited to speak in a panel discussion entitled "Africa growth strategies for small businesses in the green economy" – the second in a series of four dialogue evenings. The panel discussion was an engaging forum, rich in content and intended to empower attendees and small businesses to become even more active in the green economy.

The annual SANEA / SANEDI Energy Awards ceremony was held on 19 September 2016 where the 2016 SANEDI / RECORD Renewable Energy Research Excellence (RERE) Awards were presented. RERE award categories include the Young Researcher Award and the Commercial Application Award, both aimed at promoting research and innovation that have the potential to address future energy needs in a sustained and responsible manner.

The prestigious event celebrated excellence in the energy sector, paying tribute to the many men and women who are striving daily to ensure that South Africa enjoys a stable and secure energy future.

From left to right: Dr. Karen Surridge-Talbot, Toyosi Craig, Dr Thembakazi Mali, Imke Meyer

Figure 9: SANEDI/RECORD Renewable Energy Research Excellence (RERE) Young Researcher Award 2016: Imke Meyer, Student at the University of Stellenbosch; and a commendation of excellence to Toyosi Craig, PhD student at the University of Stellenbosch.

From left to right: Dr. Karen Surridge-Talbot, Lionel Jacobs, Vernon Harding, Dr. Thembakazi Mali

Figure 10: SANEDI/RECORD Renewable Energy Research Excellence (RERE) Commercial Application Award 2016: Eternity Power Thermal Harvesting – Vuselela Energy (Represented by Vernon Harding).

The 2016/17 Douglas Banks Renewable Energy Vision (DBREV) bursary was awarded to Kyle Swartz. Originally from Cape Town, he is now undertaking an M Phil in Renewable and Sustainable Energy Studies at Stellenbosch University. The trust aims to attract, identify and mentor bright, capable young people who would like to continue their studies in Renewable Energy and have a desire to solve the challenges of Africa's future energy needs. This was the fifth bursary awarded by the trust towards building intellectual capital in the field of Renewable Energy.

During 2016, RECORD and GIZ also supported the training of six wind turbine service technicians, through bursaries provided by SARETEC, to build essential skills in the technical area of the renewable energy industry.

Four more technology research platforms were launched during 2016 viz. the Solar Water Heating Research Platform (June 2016), the Photovoltaic Research Platform (July 2016), the Wind Energy Research Platform and Energy in Agriculture Platform (both November 2016). The four platforms add to the three platforms that had been established since 2013. These expert, technology-specific research platforms intend to coordinate and drive collaborative research among the key researchers, stakeholders and role-players in a certain sector. The platforms help identify research priorities and assist with leveraging funding towards this research.

On 5 August 2016, RECORD hosted and facilitated a Women's day/month discussion at the University of Pretoria where the topic "Women in Science, Business and the World" was discussed. This looked at approaches for success and gender equality for women, through a presentation and a panel discussion with successful women in the sector. This was very well received and is envisioned to be repeated during Women's month 2017. Also in the gender equality space, Dr. Karen Surridge-Talbot chaired a session on "Strategies and opportunities to realise participation by women in the energy sector" at the Women in Energy section of the Africa Energy Indaba on 20 February 2017.

One of the most exciting and topical research studies concluded during the year focused on energy storage business cases for South Africa. The study was initiated by SANEDI and IDC with funding support from the Unites States Trade and Development Agency (USTDA). The study was overseen by a steering committee that consisted of representatives from Eskom, Independent Power Producers Office, Energy Intensives User Group (EIUG,) the dti, DST, IDC, South African Photovoltaic Industry Association (SAPVIA), South African Wind Energy Association (SAWEA), CSIR, City of Johannesburg and NT. As project originators, SANEDI and IDC respectively served as chair and deputy chair to the steering committee. The long-awaited study, entitled "South Africa Energy Storage Technology and Market Assessment" was completed in March 2017. The USTDA released a public version of the report on 10 April 2017 and a formal launch is planned for June 2017. Dissemination on digital platform to all stakeholders will follow the launch. The objective of this study was to show the benefit of energy storage technologies in the South African energy context. This effort included market research; technical, economic and financing assessments; developmental, environmental and legal/ regulatory assessments; and a plan that recommended steps, milestones and timelines for the adoption of energy storage technologies in South Africa through 2030. The focus of this study has been on utility-scale (over 1 megawatt) energy storage technologies. The report has been requested by the dti, DST and IPP Office to inform planning and decision-making going forward. The REEEP Regional Secretariat for Southern Africa has been hosted at SANEDI since 2009. REEEP is an international organisation that advances markets for clean energy in developing countries. Founded during the Johannesburg UN Conference on Sustainable Development in 2002, REEEP has built up unparalleled experience in managing funds and delivering outcomes for nearly two hundred clean energy projects in the developing world. For REEEP, 2016 has represented a continued international recognition and commitment to the principles it was first established around.

This year saw the launch of the SWITCH Africa Green project in South Africa under REEEP. South Africa is one of six African countries where SWITCH Africa Green is being implemented to support their transition to an Inclusive Green Economy, promoting a shift towards sustainable consumption and production (SCP) practices and patterns in agriculture.

Despite being home to some of the world's fastest economic growth rates, Africa faces persistent development challenges and deep-seated poverty, as well as risk of increased environmental degradation from new economic activity. To ensure that Africa's economic boom is economically, ecologically and socially sustainable, it must be driven by an energy revolution: one leveraging renewable energy and energy efficient innovation, taking advantage of technological and commercial advancements and powered by dynamic private sector entrepreneurship. Technologies such as efficient solar powered irrigation systems, small hydro-powered agrifood processing, and waste-to-energy systems are already cost-effective in many low-income markets, and businesses have developed new models for raising awareness and building customer bases; for empowering and providing finance to clients with limited resources; or for helping customers' access new markets for their own goods.

With funding provided by the United Nations Environment Programme (UNEP) and the European Union (EU), REEEP is laying the groundwork for South African small and micro enterprises (SMEs) and eco-entrepreneurs in the agricultural and agricultural waste management sectors as they begin and manage this transition. This is done through increasing awareness, up-take and successful implementation of SCP practices and sustainable energy opportunities for SMEs in agricultural food value chains in South Africa, interlinking with established initiatives and training workshops.

The target group and final beneficiaries of the program are SMEs in the agriculture sector in South Africa. A stakeholder platform, the Energy Agriculture Platform, has been established, with two sessions already held in Johannesburg and Stellenbosch. The platform seeks to provide knowledge sharing and improving networks, technical assistance and input into policy and regulation, to enable funding for SMEs (via external funding mechanism), to create a focus on technology applications and to keep an inventory of initiatives and projects.

REEEP, as a strategic partner of UNIDO, and in partnership with key South African Government stakeholders, is the executing agent for a new project titled "Climate Change, Clean Energy and Urban Water in Africa" (Waterworks). The project focuses on promoting market-based deployment of clean energy technologies and services in municipal waterworks. Water and wastewater infrastructure accounts for around 35% of the total energy consumed by South African municipal administrations. There is a strong need for water efficiency, especially since South Africa is a water-scarce country, and water demand exceeds supply on a national level. Along with ageing infrastructure, the level of non-revenue water stands at 35%. To add to the challenges, more than half of treatment plants in South Africa do not currently meet the required effluent standards.

Energy efficiency and clean energy measures in urban water and wastewater services offer water, energy and cost savings, improved water quality and better service delivery to constituents. At a national level, such interventions contribute to climate change mitigation and adaptation.

It is a pilot initiative focused on creating a basis for market-based replication and scale-up in South Africa and across the SADC region. The project revolves around four key components:

1. The project will select up to three municipalities for investment in pilot projects to optimise pumping and water treatment systems, and deploy renewable energy systems to replace coal-fired electricity production.

2. The project will facilitate knowledge-sharing between municipalities, as well as relevant private sector service and technology providers, to support municipalities in: Establishing viable energy management and data collection systems, planning appropriate low-cost/high-return clean energy deployment, developing detailed tendering documents and "bankable" proposals, and implementing planned activities, monitoring progress, and evaluating and verifying results.

3. The project will focus on simple and cost-effective technological solutions to improve efficiency and renewable energy production, and decrease carbon footprints.

Figure 11: Participants in the SWITCH SECP training workshop in Stellenbosch, identifying key energy issues and working through practical solutions and applications with project beneficiaries (March 2017).

4. To ensure sustainable impact beyond the project lifespan, the project will create a critical mass of capacity for market enablers and market players. The project will provide targeted training to municipalities on identifying, developing, implementing and managing clean energy investments in their waterworks. Training will also be developed for potential service providers, including financial service providers, technical experts and technology suppliers.

Monitoring and evaluation, together with practice-based policy research, will generate lessons learned and present practical solutions for clean energy deployment in waterworks and the concrete finance and business models behind them.

A critical review into clean energy potentials of municipal waterworks in South Africa will complement the practical implementation of demonstration projects. This review will be accompanied by targeted research aiming at practice-based policy and market insights, and recommendations for replication.

The demonstration projects will act as lighthouses for South Africa and the SADC region, focusing on highly replicable and scalable business propositions. Replication will be stimulated through peer-to-peer learning forums with selected satellite municipalities in South Africa, where lessons learned from the projects can be promoted and investigated.

As an international climate initiative, the project has the potential to increase the ambition levels of a large group of countries, exploiting achievable emissions reduction options at very low (or even negative) cost levels, while increasing local prosperity.

The DoE, SANEDI and International Renewable Energy Agency (IRENA) signed a project charter in July 2016 for the REmap South Africa project, part of a comprehensive REmap country report under the framework of the IRENA Roadmap for a Renewable Energy Future REmap 2030 programme.

The project aims to answer six research questions that will help with developing pathways, characterising potentials, and quantifying the cost and benefits of RE technology options for South Africa to 2030:

Figure 12: Site visits to municipalities identifying key energy opportunities and challenges in municipal water infrastructure. (Source: Photos courtesy of Pegasys Consulting, who undertook the site visit and due diligence reports).

1) What are the recent trends in the renewables and in South Africa's total energy system?

2) What are the drivers for renewables in South Africa?

3) What is the current policy as well as legislative and regulative framework for renewables in South Africa?

4) What are the planned levels of renewable energy technology deployment by 2030 (i) with projections up to 2050 at high level of technology resolution, (ii) according to the current government policies and targets? Also, which technologies and sectors may have further deployment potential beyond what is being planned?

5) What are the costs and benefits of deploying renewables beyond government policies and targets in South Africa by 2030 and with projections up to 2050?

6) What are the barriers and opportunities for accelerated deployment of RE technologies at sector and technology levels, and what policies are required to accelerate the uptake of renewables in South Africa to 2030 and with projections up to 2050?

To answer the research questions, the project will focus on the following five tasks:

- Review of the current renewables and total energy system situation at technology level, current policy framework, drivers, barriers and opportunities for renewables in South Africa;
- Based on data provided by the DoE and data collected from other authoritative sources, and by employing the IRENA REmap methodology, assess the level of renewables deployment at a high technology resolution to 2030 and with projections up to 2050, (i) according to a baseline represented by current government policies and targets, and (ii) if the potential of renewables beyond this baseline was to be implemented;
- Assess the cost and benefits of renewables in 2030 and with projections up to 2050 based on the IRENA methodology, and assist to identify recommendations for policy makers to accelerate the uptake of renewables in view of the estimated potential;
- Assist in organising two country meetings for the internal and external review of the report as well as a country launch event of the report;
- Assist in taking into account the review comments and improving the South Africa report to its final format.

Delivery of the final REmap report has been structured into six deliverables, concluding with the final report and a country launch event. Since inception in July, the first two deliverables (i.e. detail definition of the report outline and development of initial, draft chapters) have been completed and work has started on the third deliverable that will produce a second draft of the report.

Implementation of the South African Wind Energy Project, Phase 2 (SAWEP 2) started with an inception workshop on 7 October 2016. SAWEP 2, which will run until 2019, follows on the successful implementation of SAWEP 1 (2007 – 2010). The project is funded by the Global Environment Facility (GEF), supported by the UNDP South Africa Country Office with the DoE as the Executing Entity/Implementing Partner. SANEDI, on request of the DoE, is providing project management services to support the delivery of the project.

The project objective is to assist the South African Government and industry stakeholders to overcome any strategic barriers that could prevent the successful delivery of 8.4 GW new build, wind power generation by 2030 – the target as reflected in the IRP 2010. The project consists of four main components:

- Component 1: Supporting a review of the REIPPPP economic development criteria and to make recommendations towards the achievement of optimal socio-economic benefit and wind industry growth;
- Component 2: Resource-mapping and wind corridor development support for policy makers that will focus on the extension of the Wind Atlas of South Africa (WASA) to the remaining areas of South Africa and support of the Department of Environmental Affairs' Strategic Environmental Assessment phase 2;
- Component 3: Support for the development of small-scale wind sector through the identification and assistance for a small-scale pilot wind project; and
- Component 4: Training and human capital development for the wind energy sector which, jointly with the SARETEC and participating Technical and Vocational Education and Training (TVET) colleges, extend the implementation of training programmes focusing on wind farm operations and nascent local value-chains. This would include the acquisition of selected training equipment and kits for SARETEC and participating TVET colleges.

The WASA project (refer Component 2), is an initiative of the South African government, the DoE, and is funded by the GEF via SAWEP with UNDP support and co-funded by DANIDA (Danish International Development Agency). Through this initiative, South Africa is participating in the International Renewable Energy Agency (IRENA) Global Atlas for Renewable Energy, which is used in the verification of the Danish Energy Agency funded Global Wind Atlas.

The development of the Wind Atlas was achieved as a collaboration between several institutions, each contributing specialised skills and knowledge to the project team. SANEDI (South African National Energy Development Institute) has been responsible for management, coordination, contracting and information dissemination as well as the extension of the WASA wind resource map that was developed with support from SAWEP 1 and the Danish Government

In addition to WASA, SANEDI also continued development work on resource maps and detailed resource information, such as the updated solar radiation data with the South African Universities (SAURAN). Timeous delivery of such data has contributed to the success of South Africa's globally acclaimed RE programme and the incredible growth in RE in the country since 2010.

Working for Energy

The Working for Energy programme is a clean energy initiative of the DoE, incorporated under the Environment and Culture sector of the Extended Public Works Programme (EPWP). Working for Energy aims to develop clean energy solutions for rural and low-income urban communities. Under the EPWP, all Working for Energy projects are subjected to prescribed protocols in terms of job creation, skills development and environmental benefits through clean energy services 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. The following EPWP figures were reported by the programme:

Total number of beneficiaries	Total number of workdays	Full time equivalents (FTEs)[16]	Total number of training days
27	1,553.8	7	62

Working for Energy also contributes to capacity building and community outreach initiatives through its Youth Development-Internship Programme. In 2016, the youth development programme participated at the TechnoX career Expo in Sasolburg, engaging with young children interested in making a career in the energy sector.

During the 2016/17 financial year, the programme delivered several clean energy projects to rural and low-income urban communities, with special emphasis on natural resources, appropriate technologies, cost-effectiveness and the socio-economic benefit to the communities involved. Working for

Figure 13: School Community outreach through the Youth Development Programme at the Techno X in Sasolburg.

Figure 14: Handover of the joint UNISA-SANEDI-University of Fort Hare project in Melani Village by the Vice Chancellors and the CEO of SANEDI.

16 *FTE = working days / 230 days*

Energy projects in 2016/17 were implemented in Sharpeville, the Melani Village in the Eastern Cape, Mpfuneko Village in the Limpopo Province and Vryburg in the North West Province.

The Working for Energy Programme undertook the "greening" of four schools in Sharpeville a few years ago. Under this initiative, the schools were retrofitted with efficient lighting, provided with solar water heating and benefitted from "cool surfaces" applications that insulates the buildings against excessive heat ingress or loss, maintaining comfortable temperatures without requiring cooling or heating. The second phase of the project started this year and involved the installation of balloon digesters in all four schools. These biogas digesters use organic or bio waste to produce energy in the form of biogas that can be used for various applications such as cooking.

Construction of the biogas digesters was unexpectedly hampered by water logged geology and high water tables. Consequently, excavations were continually flooded despite efforts to drain seepage water, preventing construction work on the project. During March 2017, the water table had receded sufficiently for construction to start. Current expectations are that the project will be completed in the next financial year.

The Melani biogas project is implemented as a collaboration between SANEDI, the University of Fort Hare and UNISA. During the financial year, 16 balloon and fixed dome digesters were successfully installed in the Melani Village.

Since its inception in 2014/15, construction on the project had been hindered by shallow bedrock. Rocky ground means that the holes for building digesters are taking longer and costing more than anticipated, impacting on delivery timelines and budgets. Various alternatives were investigated to ensure delivery; however, revised implementation budgets indicated that the project is no longer viable using the original design. Subsequently, the contract has been suspended and a new turnaround strategy for the project and contract is being negotiated.

The Mpfuneko biogas project is located in the Greater Giyani Municipality in Limpopo, installing biogas digesters for households in the Mpfuneko Village. To date, 51 household digesters have been completed and 31 are fully operational. The severe drought experienced over the preceding two years posed severe challenges to the operation and construction of the digesters. Water shortages lead to reduced livestock numbers in the area, impacting the availability of feedstock. Water shortages also delayed construction of new digesters as water is required in the construction. The situation was

Figure 15: Shallow bedrock encountered in the Melani area.

aggravated by delays with the Municipal water reticulation project. To proceed, an agreement was reached with the ZZ2 farm in Moeketsi for the supply of biomass. The biomass had to be transported from the farm to the village, covering more than 50km and adding to the project costs. Available water was recycled as much as possible to reduce the impact on scarce resources and costs. The support from the ZZ2 farm enabled the project to proceed despite the challenges and formal handover of the digesters is planned for the new financial year.

The year saw the successful completion and handover of the Tygerkloof Combined School Greening project in Vryburg in the North West Province. The project implemented 20 Solar Water Heaters (SWH) in all the dormitories on campus. This is linked to a water purification system since the underground

Figure 16: One of completed and operational biogas digester systems operational in Mpfuneko Village.

water that is used is hard and clogs the water reticulation systems of the facility. The greening project also incorporated a 20m3 bladder biogas digester, fed with kitchen waste and cow dung from the school farm. By reducing the need for electricity to warm water and for cooking, the school realised a net saving of more than R100 000 in the first year of full operation.

The project had the honour of a formal handover to the community by the former Minister of Energy on 17 March 2017.

Figure 17: Greening of Tygerkloof Combined School as an EPWP project.

Figure 18: Operational Biogas Digester at Tygerkloof Combined School.

Over the eight years of implementation, the Working for Energy Programme has experienced a range of successes and challenges as a result of varying climatic conditions, weather patterns, population densities, geological terrain and prevalence of natural resources. All these conditions inform what would be the most appropriate and adequate energy solution(s) for different areas in the country.

Figure 19: The former Minister of Energy, accompanied by the Chairperson of the SANEDI Board and Tygerkloof Combined School Boards, the North West Province MEC for Finance and the District Mayor, Dr. Ruth Segomotsi Mompati, attending the handover event of the Tygerkloof Greening Project, in Vryburg.

Figure 20: Former Minister of Energy, Ms. Tina Joemat-Pettersson, unveiling a handover plaque at Tygerkloof Combined School.

Drawing on the extensive and varied experience that has been gained because of the programme, Working for Energy commissioned a study to assess the viability and implementation options for renewable energy in rural and low-income urban areas in South Africa. The objective of this study is to ascertain the feasibility of and the most suitable design for a national implementable programme that could service millions of South African citizens who do not have adequate access to sustainable energy, by using available renewable energy resources through technologies appropriate to their respective poverty nodes. The study has been concluded and is subject to a final round of review before being released early in 2017/18.

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. This year several defaulting municipalities faced having power supply discontinued for non-payment.

The effective deployment of smart grids in the electricity supply industry (ESI) 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:

- provide a common vision for Smart Grids in South Africa;
- facilitate a Smart Grid knowledge-sharing forum for both the ESI and relevant government departments;

- implement applied research pilots within municipalities to introduce various smart grid concepts; and
- provide strategic policy inputs, related to smart grids and the ESI.

These activities are roughly structured into four focus areas i.e. (i) EU donor-funded Smart Grid Programme, (ii) SA-EU Dialogue, (iii) South African Smart Grid Initiative (SASGI), and (iv) the International Smart Grid Action Network (ISGAN).

A significant share of the focus is on the EU donor-funded, Smart Grids Programme. The programme entails the pilot implementation of smart grid solutions in nine municipalities, each designed to address specific municipal challenges and inform specific policy or regulatory questions that were identified by the DoE.

The programme achieved several important milestones during the year, effectively demonstrating the value of targeted smart grid solutions within the municipal environment.

Improved municipal revenue management is one of the most pressing priorities, both at a national and local government level. In its efforts on improving the financial capability of municipalities, National Treasury announced several "game changers" early in 2017, with the aim of addressing the high number of defaulting municipalities. One of these is enhanced revenue management, which includes appropriate tariff-setting, regular billing and effective collection systems, as provided by the Smart Grid Initiative. Towards this purpose, National Treasury is leading a working group to design a national revenue management framework for municipalities and working with the Department of Energy, SANEDI, Eskom and the National Energy Regulator of South Africa (NERSA) to develop guidelines on electricity tariff setting and demand management.

The Naledi Municipality in the North West has been one of the municipalities threatened with power cuts for non-payment. During 2016/17, smart grid implementation at the Naledi Municipality, with the focus on revenue management, contributed to reduce electricity revenue losses from 23% to 9%, greatly improving the municipality's ability to recover revenue to pay its electricity bills.

The success of this project was showcased during the Ministerial Imbizo held at the Naledi Local Municipality, in Vryburg on 17 March 2017. The former Minister Tina Joemat-Pettersson had the opportunity to visit the back office of the municipality, where she could witness first-hand how the deployment of smart meters was assisting improvement of the municipality's revenue collection.

Other examples of successes include the following:

- The Mogale City Local Municipality successfully completed the refurbishment of old kiosks with tamper-proof kiosks and the deployment of 600 fully functional smart meters which are integrated into the municipality's existing billing and vending system as part of their revenue enhancement project.

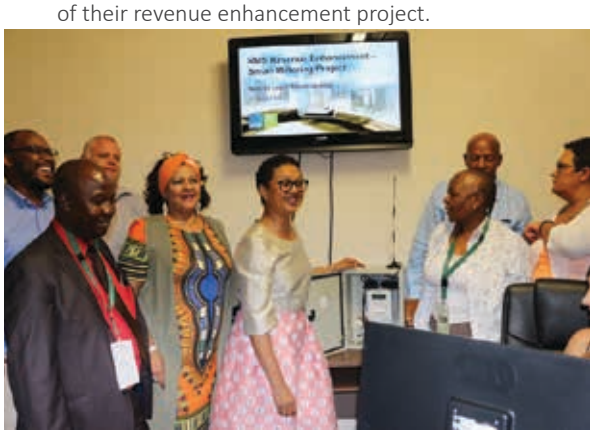


Figure 21: The former Minister of Energy, Chairperson of the SANEDI Board and the Smart Grids team being presented with the details of Smart Grid Revenue Enhancement project at the Naledi Municipality during the Ministerial Imbizo.

- The Nelson Mandela Bay Metro Municipality (NMBM) successfully deployed remote surveillance cameras at strategic locations to support critical utility assets, as well as broadband communication and hotspots to support the future rollout of Smart Meters, field devices and free Internet services for customers within certain communities.

Results and learnings from the pilot implementations are being documented into case studies, "how to" guides and a business case intended to serve as support for other municipalities. Results and learnings are also actively shared with stakeholders through the SASGI platform.

SASGI has been established to facilitate stakeholder engagement and knowledge sharing. Participation in the forum reflects an all-inclusive stakeholder grouping of relevant government departments, utilities and industry-related representative organisations. SASGI holds quarterly meetings throughout the year, hosting stakeholders ranging from policy makers, technical experts, researchers, utilities and municipal officials within the industry. Moreover, SASGI's meetings have been instrumental in shaping and guiding the direction the industry is taking.

The forum is also participating in the development of a National Smart Grid Vision that was initiated by the SA-EU Dialogue

Project. This project is intended to bring together policy makers and technical experts within relevant departments and other organs of state to develop a Smart Grid Vision for the country that can direct a coherent, national roll-out of smart grids, cognisant of the South African energy context. During the year, the project appointed a technical expert to support the refinement of the Smart Grid Vision and initiated a stakeholder engagement process to seek broader industry participation in the development of this document.

The Association of Municipal Electricity Utilities (AMEU) – an association of municipal electricity distributors as well as national, parastatal, commercial, academic and other organisations that have a direct interest in the electricity supply industry (ESI) in Southern Africa – hosts an annual convention aimed at knowledge sharing and capacity building. Mr. Teslim Yusuf and Ms. Lerato Libate from the SANEDI Smart Grids team presented two papers, sharing relevant findings from the municipal smart grid pilot projects. SANEDI is very proud to have received the AMEU award for best paper at the Convention in 2016, delivered by Mr Yusuf, reinforcing the value of the contribution the work on smart grids is making to the industry.

Through ISGAN, the opportunity for knowledge sharing is broadened to include international developments. South Africa's involvement in ISGAN creates the opportunity for the country to leverage on international case studies and lessons learned. SANEDI represents South Africa on this international forum and ensures that all relevant information is shared with industry through SASGI.

Figure 22: The SANEDI Smart Grids team with award plaque for the best paper at the AMEU Convention, 2016 (from left, Ms. L Libate, Mr. T Yusuf, Dr. M Bipath and Ms. N Faleni).

Through ISGAN, South Africa also contributes to developments in the broader sector and activities within the international community. As a member of this forum, South Africa participates in the development of international standards and policy direction which support the objectives of sustainable energy and clean energy solutions. We also have the opportunity to share lessons and experience with other developing countries. India has engaged with South Africa during and following ISGAN events, finding the South African experience particularly valuable for their smart grid implementation.

SANEDI has also formalised their contribution to skills and capacity building in the industry with the development of a smart grid training curriculum in collaboration with the University of Pretoria. The curriculum has been structured into a set of three short courses relevant to both technical and non-technical personnel within the electricity distribution industry.

Acknowledging that the concept of smart grids is relatively new in South Africa, the material has been structured to introduce the concept in the first course, followed by more advanced modules tackling more specific issues. The training courses were launched during the financial year and two short courses were held. The first, titled "Smart grids for beginners", held at the end of 2016 and the second, titled "Grid interconnection and power quality", held early in 2017, were both attended by 20 participants.

Data and 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

Figure 23: Participants in the 1st training course: "Smart grids for beginners."

Figure 24: University of Pretoria teaching staff (from left Dr. Dlamini, Dr. Raj and Professor Bansal).

Analysis and Research (CESAR), funded by the DST. CESAR was established in May 2009 as one of the CORDs (refer section 11.2) hosted by SANEDI.

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:

1. support national and local energy planning and inform policy decisions;
2. inform the country's energy technology R&D strategy, priority and research investments; and
3. monitor and gauge alignment of energy developments in terms of the Integrated Energy Plan (IEP) and National Climate Change Response Strategy.

The use of energy data from the central repository to inform policy direction is illustrated below:

A collaboration agreement between the Energy Research Centre (ERC) at the University of Cape Town and SANEDI was put in place in 2014 for the period from 2014 to 2017. Under the agreement, the ERC will capacitate and train SANEDI-appointed energy modellers with relevant technology skills and knowledge. During the 2016/17 year, four SANEDI

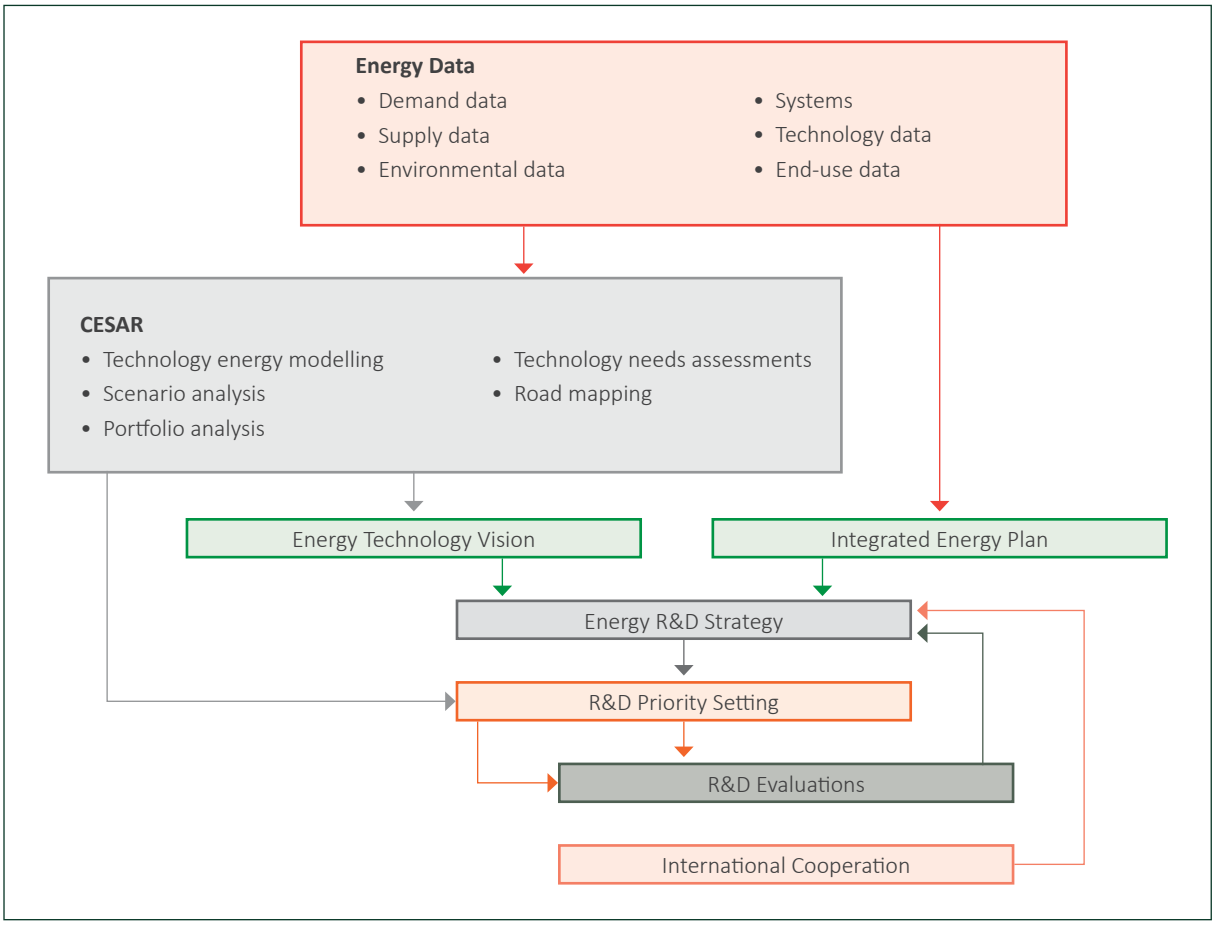


Figure 25: Illustration of how energy data flow, modelling and analysis is used to inform policy direction.

resources benefitted from training and capacity building in energy modelling.

During the second quarter of 2016/17, the data repository, populated with project datasets, models and reports, was shared through an open energy data portal. Stakeholders can view and use this portal and share their specific data and projects online (http://energydata.uct.ac.za). Concurrently, leveraging off CESAR project work, the ERC developed a visualisation platform where model results can be viewed online (https://ercviz.shinyapps.io/gdxplore/). Throughout the year, the open energy data portal was extended with new project datasets, models and reports.

In addition to this major milestone, CESAR had a very productive year. A mini-grid energy model was developed and the South African TIMES model was updated with transport sector information. A new modelling and analysis study, focused on Hydrogen fuel cells for rural off-grid application, was also initiated and successfully completed, on request of DST.

From the research data and modelling, seven research papers were compiled for submission to peer-reviewed journals. The studies span a broad range of topics including (i) energy in transport, (ii) increased RE integration using demand side management with 'smart' loads, (iii) energy distribution infrastructure considerations for fuel switching and (iv) Hydrogen fuels cells for rural off-grid application. Study input data, assumptions, methodologies and results were disseminated in presentations to several conferences and workshops.

12.1.2 Programme 3: Energy Efficiency

Energy Efficiency in South Africa entered a new phase in 2016, with no load-shedding incidents and the National Energy Regulator of South Africa (NERSA), keeping electricity tariff increases within reason. However, these developments do not detract from the importance of maintaining the momentum of transitioning South Africa to a low-carbon economy, to meet the stringent climate change targets that have been agreed to in the Paris Accord, and for South Africa to remain relevant in a global context, where energy efficiency is receiving even more prominence than ever before. SANEDI - Energy Efficiency has contributed significantly to this new-found drive in the ground-breaking work that is being done in the areas of Cool Surfaces, energy efficiency tax incentives, human capital development and the sharing of information across a wide range of both local and international stakeholders. Unfortunately, the single largest barrier to this work is related to the limited resources available to the portfolio to fulfil its mandate in terms of the Energy Act.

12L Tax Incentives

Since the inception and promulgation of the 12L Tax Incentives on the 1st of November 2013, the implementation of the incentive has completed its 12th quarter of execution.

The table displays the total number of the projects and phases for the 2016/17 financial year:

Phases	Value
Performance Assessment	10
Baseline Completed	33
Baseline in Progress	16
Inactivated Applications	43
Certificates Issued	32
Total projects in the system	102

SMME Incubation

In February of 2016, an Expression of Interest was sent out to the public for small, medium and micro enterprises (SMME) for training on CMVP and SANAS accreditation. This incubation opportunity would increase the number of SANAS accredited M&V bodies. By mid-June, 10 SMMEs had been selected to participate in the incubation process. Once certified, this should markedly increase the capacity in the country for the M&V projects qualifying under the tax incentive.

Online System

SANEDI undertook the task of appointing a suitable candidate to upgrade the IT system that supports the processing and data capturing for the tax incentive applications. The upgrades are necessary to make the processes more efficient, accurate and effective in terms of applications, communications, evaluation, approvals and certificate generation. The system ensures no duplication of projects during the application process as well as identification and verification of applicant with SARS. Furthermore, for applicants with numerous projects, the system will identify differences in projects and the accounting applicants from the same company. The system will notify the project manager and IT personnel promptly when a new project is registered on the system. A request for quotations was sent out and a suitable candidate was selected and approved. Work on the upgrade will commence early in the next financial year.

12I Tax Incentives

The 12I Tax Allowance Incentive (TAI) was introduced in support of national economic development priorities with the particular focus on stimulating investment, growth and

employment, supporting enterprise, industrial development and export promotion in the manufacturing sector. The 12I TAI aims to encourage greater energy productivity and therefore cost-competitiveness within the sector. While not exclusively focused on incentivising energy efficiency, improved energy performance is incorporated as one of the key criteria on which projects are assessed.

The purpose of the 12I TAI programme is twofold:

- To support investment in manufacturing assets, with a view to improving the productivity (including energy productivity) of the South African manufacturing sector; and
- To support personnel training, with a view to improving labour productivity and the skills profile of South Africa's labour force.

SANEDI's role is to focus more on the energy efficiency prerequisites for qualification by:

- confirming and verifying the technical evaluation and reports from Measurement and Verification Professionals (MVPs), submitted by the claimants; and
- tracking and reporting on the aggregated impact associated with the tax allowance in terms of energy efficiency.

From April 2016 to March 2017 46 submissions were received. During this year, progress was reported by the dti against the complete database[17] of projects as follows:

Project status	2016/17
Expected to start production during the financial year[18]	10
Approved	32
Cancelled	0
Certificates issued by SANEDI[19]	6

Of these, seven projects have been successfully completed and have received the qualifying tax certificate to claim the allowance.

A number of companies have accessed the 12I TAI more than once for different projects. This suggests that the predictable hassle factor of the due application process is not a barrier for participation in the 12I TAI. We hope to receive more projects in future so we can achieve the reduction of energy consumption, greenhouse gas emissions and contribute to security of energy supply.

National Hub for Energy Efficiency and Demand Side Management (EEDSM Hub)

The EEDSM Hub saw many targets achieved in the 2016/17 year. These were achieved through the DST's R3 million funding:

- 16 journal papers and three conference papers were published.
- 13 students were financially supported.
- 10 bursary supported students obtained their degrees.
- R2.5 million external funding was leveraged with 30 externally funded projects carrying on.

The funding for students mainly include three forms, namely bursary support, research activity support and travel support for attending conferences. In this section, only the students for whom the Hub is paying bursaries through the DST funding are listed. In total, there were 13 students supported, including seven PhD students, two M Eng students and four Honours students.

Cool Surfaces Programme

After the successful implementation of five individual cool roof projects, a scaled-up demonstration project was conducted in !Kheis Municipality, Sternham, in order to assess the suitability of Cool Surfaces technology under South Africa's climatic conditions over a wider surface area. The immediate goal of the project is to economically and passively cool buildings without using energy. The ultimate aim of this intervention is to mitigate the impact of Greenhouse gases on global climate change as suggested by international studies. The studies indicate an average cooling of between 2 – 4°C over human settlements. A total of 25 000m^2 roof surfaces in the Karoo semi-desert region (!Kheis) were coated with Cool Coating. Project implementation comprised of the following: SCQA accredited paint application training of 15 local youths, purchase of the locally manufactured, SABS-accredited cool coating and the creation of 25 skilled, semi-skilled and unskilled jobs (using local labour). Awareness of Cool Surfaces technology was promoted via social media competitions and regular updates (Cool Surfaces Facebook account).

Sustainable Use of Natural Resources Fund (SUNREF II)

The AFD (Agence Française de Developpement), a French public entity, is a bilateral development finance institution,

17 *Projects that have achieved the milestones reflected here, relate to submissions received across all years since the tax incentives was introduced.*
18 *Production dates have not been confirmed for all scheduled projects. Please note that projects that have reached production phase were approved during prior financial years.*
19 *Certificates are issued for projects that have demonstrated energy savings i.e. at least one year post production.*

acting on behalf of the French government. Its mission is to finance development according to France's Official Development Assistance policies. Key strategic objectives of the AFD include poverty reduction, economic growth and combating climate change. The AFD has made a soft-credit facility available to finance sustainable energy initiatives in South Africa. The overall objective of SUNREF II is to contribute to the development of South African economy, particularly small and medium enterprises, promote low-carbon energy consumption and reduced GHG emissions, while producing a positive social impact. The specific objective is to contribute to building a sustainable market for renewable energy and energy efficiency financing in South Africa. This will be achieved with two different, interrelated activities:

- A dedicated 120 € million Credit Facility signed between AFD and two South African financial institutions (Partner Banks);
- A three-year Technical Assistance Facility, housed at SANEDI, which oversees the deployment of technical assistance to Partner Banks, project sponsors and other stakeholders. The type of technical assistance ranges from financial structuring, engineering reviews to policy and legal advice and training activities.

The immediate outcome of SUNREF II will be a pipeline of bankable EE and RE projects financed by the two Partner Banks. The long-term goal is that this initiative stimulates the banking and energy sectors and that a vibrant, sustainable market for Energy Efficiency (EE) and Renewable Energy (RE) products and services is developed in South Africa.

The operation of the TAF for SUNREF II officially began on Jan 30, 2017 in Johannesburg. TAF day-to-day operations are structured around four project components:

- Component 1: Marketing and Communication;
- Component 2: Project Pipeline Development;
- Component 3: Capacity Building; and
- Component 4: Project Administration, including Monitoring and Evaluation

In terms of implementation priorities, Component 1 will be a priority during the first year of the TAF. Components 2 and 4 will be continuous during the three-year duration of the TAF, while Component 3 will be intermittently spread out according to the needs of the clients and the respective capacity building activities.

Big EE

The bigee.net platform informs users about energy efficiency options and savings potentials, net benefits and how policy can support achieving those savings. Targeted information is paired with recommendations and examples of good practice. To ensure there is targeted, quick and easy access, information about buildings, appliances and policies is presented in three different intuitive guides.

The SANEDI/bigEE project commenced on March 2013 and continued until December 2016. The project has produced energy efficiency knowledge for South Africa in the appliances and building sector. Within the appliances sector, the South African version of the bigEE produced data on various appliances.

12.2 PROGRAMME 1: CORPORATE GOVERNANCE AND ADMINISTRATION

12.2.1 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:

- Human Resources (all staff-related matters including skills development, payroll administration and employee wellness)
- Information and Communication Technology (ICT)
- Corporate Services (incorporating activities related to the Board and Board Committees, Secretariat services, strategic planning and printing of all annual reports)
- Finance
- Procurement
- Communications (limited to stakeholder engagement and annual surveys, public awareness campaigns in collaboration with the DoE and media intelligence)
- Logistics (including building rental, water and electricity and repairs and maintenance)

12.2.2 Sub-programmes

Within the corporate governance and administration programme, four sub-programmes were defined in the 2016/17 APP as:

- Corporate Governance
- Finance
- Human Resources
- Corporate and programme marketing and communication services

A strategic objective was formulated for each sub-programme:

Table 2: Programme 1 strategic outcome-orientated goals

Strategic Objectives	Objective statement
1. Compliance with the Department of Energy's compliance calendar in respect of strategic plans, annual performance plans, annual reports and quarterly reports.	Ensure compliance with the Department of Energy's compliance calendar in respect of strategic plans, annual performance plans, annual reports and quarterly reports for state entities reporting to the Department
2. Effective payments systems in place ensuring timely settlement of trade creditors.	Ensure that 97% of all creditors are paid within 30 days after relevant documents are received
3. Highly motivated team of employees who are managed according to best practice, thereby contributing optimally to the achievement of organisational goals.	SANEDI needs to have its own HR policies and procedures
4. Corporate and programme marketing and communications. Effective and comprehensive stakeholder management, achieving 60% positive feedback by end of 2016/17.	Provide corporate and programme marketing and communication services that will adequately support the promotion and knowledge sharing SANEDI activities both internally and externally.
Ensure that the stakeholder engagement plan is in place and is being implemented	

Performance in terms of these strategic objectives is reported below.

12.2.3 Strategic objectives, performance indicators planned targets and actual achievements

The first four columns (coloured in grey) are as reflected in the approved 2016/17 APP. Achievement against these targets is reflected in the last three columns.

Table 3: Programme 1 objectives, indicators and performance

Programme 1: Corporate Governance and Administration						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
Compliance with the Department of Energy's compliance calendar in respect of strategic plans, annual performance plans, annual reports and quarterly reports for state entities reporting to the Department.	Timely submitted strategic plans to the Executive Authority. Timely submitted annual performance plans to the Executive Authority. Timely submitted annual report to the Executive Authority. Timely submitted quarterly reports to the Executive Authority.	100% submission of all mandated plans and reports to the Executive Authority.	Compliance in terms of Department of Energy's compliance calendar in respect of strategic plans, annual performance plans, annual reports and quarterly reports for state entities reporting to the Department of Energy.	All submissions in terms of the DoE compliance calendar were made as scheduled. This included the 2015/16 Annual report, the 2017/18 APP and all quarterly reports for 2016/17.	None	N.A.
Effective payment systems in place, ensuring timely settlement of trade creditors.	% of creditors paid within 30 days after all relevant documentation has been received.	100% creditors paid on or within 30 days.	97% of all creditors paid within 30 days after all relevant documentation has been received.	97% of all creditors paid within 30 days after all relevant documentation has been received.	None	N.A.
To have a highly motivated team of employees who are managed according to "best practice", thereby contributing optimally to the achievement of the organisational goals.	Number of HR policies approved by Board.	Development of 8 basic HR policies to help develop and implement a culture to address accountability and leadership gaps.	Development of all other HR policies which will help develop a culture to address accountability and leadership gaps.	Not achieved	Seven policies were developed and submitted to the Human Resources and Remuneration (HR&R) Board sub-committee for review and recommendation to Board and two further policies are being prepared for review by the HR&R committee. Of a total of 16 new HR policies, 6 remain to go through the process of Board evaluation i.e. 38% outstanding.	SANEDI did not have a quorate board from 1 April – 30 November 2017. The HR&R sub-committee was constituted on 27 January 2017 and the first meeting held 21 February. As a consequence, the review and approval of HR policies were delayed.

Programme 1: Corporate Governance and Administration						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
Effective and comprehensive stakeholder management, achieving 60% positive feedback by end of 2016/17.	A stakeholder engagement plan and an implementation plan in place and implemented.	Executed 85% of the stakeholder engagement plan; and 53.46% positive feedback from stakeholder surveys.	An effective and comprehensive stakeholder plan and 60% positive feedback.	Not achieved	The stakeholder plan (SEP) was updated (revised plan reviewed by the Board 28/02/2017) i.e. achieved. Stakeholder feedback improved slightly to 53.6%, but did not meet the target of 60%.	The SEP was developed during the course of the 2016 calendar year. Implementation was initially delayed to allow for consultation with the anticipated appointment of the Board. Towards the end of 2016,a decision was taken to proceed with implementation in the absence of a Board. Implementation of the SEP commenced in January 2017, allowing limited time to build and improve stakeholder engagement practices before the follow up survey that was done in March 2017. The updated SEP contains a detailed action plan for stakeholder engagement and consultation. Implementation of the plan will continue throughout the year to build stronger stakeholder relationships.
As above	At least 4 exhibitions per annum, 80% attendance of DOE events, monthly updated website and distribution of quarterly newsletters as per distribution list and channels.	Not previously reported.	4 Exhibitions per annum, monthly updated website and 4 quarterly newsletters compiled and distributed.	The SANEDI website was updated, 4 quarterly newsletters were published and SANEDI participated in more than 4 exhibitions during the financial year (Energy Indaba, February 2016; Sustainability Week, June 2016; Women in Energy, September 2016; SAEE, November 2016; and CSIR Science Forum, December 2016).	N.A.	N.A.

12.3 PROGRAMME 2: APPLIED ENERGY RESEARCH, DEVELOPMENT AND INNOVATION

12.3.1 Purpose

Energy research and development constitutes the first step in the energy development innovation chain that SANEDI is actively involved in. The focus is on identifying research opportunities that can be adapted and applied within the South African context and have the potential to diversify or contribute to the energy sector.

12.3.2 Sub-programmes

Several of SANEDI's thematic areas contribute towards the research, development, demonstration and deployment programme. The contributions from these areas constitute the four active sub-programmes:

Sub-programme	Purpose
Cleaner fossil fuels	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.
Working for Energy	Demonstrating innovative, sustainable energy solutions for rural and low income urban areas.
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.

The cleaner mobility sub-programme was newly established as an unfunded programme. The focus for the year was on formulating the scope of activities and strategic objectives of the sub-programme. As such, no targets were reflected in the APP.

Two additional sub-programmes were identified in the 2016/17 APP, but were not formally established, pending consultation with the SANEDI Board. These are listed in the APP as Cleantech Energy Development and Human Development Capital.

A total of fourteen strategic objectives were defined for the energy research, development, demonstration and deployment programme:

Table 4: Programme 2 strategic outcome-orientated goals

Strategic Objectives	Sub-programme	Objective statement
1. Technical Report addressing the implications and recommendations for the exploitation of shale gas in SA.	Cleaner Fossil Fuel	Determination of the potential for Shale Gas in the energy economy of South Africa.
2. Proof of concept and capacity building for carbon dioxide storage in SA.	Cleaner Fossil Fuel	The determination of the potential and appropriateness of geological storage of carbon dioxide in South Africa – Pilot CO2 Storage Project (PCSP).
3. Determination of a business case for the commercialisation of carbon capture and storage.	Cleaner Fossil Fuel	Oversight of the implementation of the National Carbon Capture and Storage Road Map and associated capacity building – South African Centre for Carbon Capture and Storage (SACCCS).
4. Increased deployment of renewable energy.	Renewable Energy	To provide a centre that coordinates and promotes RE research, development and demonstration in SA through collaboration and funding.
5. Increased renewable energy and energy efficiency awareness.	Renewable Energy	Provide technical and management support through tendering, contracting, payment and reporting to the Danish RE EE programme's DoE and ESKOM components

Strategic Objectives	Sub-programme	Objective statement
6. Raised SA's renewable energy R&D profile through international collaboration and capacity building.	Renewable Energy	Foster international collaboration to (i) globalise expertise and leverage research funding and (ii) gain knowledge
7. Increased wind energy integration and deployment in SA.	Renewable Energy	Develop maps, database, tools and guidelines for effective wind siting and decision making for the national wind programme
8. To research essential aspects of clean energy relating to the provision of clean energy solutions to rural and low income communities.	Working for Energy	Undertake various Research Studies to advance sustainable access and use of clean energy solutions by rural and low income communities
9. To implement clean energy technologies and services to low income communities.	Working for Energy	Undertake selected clean energy projects to demonstrate the use of various renewable energy applications in low income rural and urban communities for possible national roll-out as alternative mode of energy provision in various applications.
10. On the job training.	Working for Energy	To enhance the capability of selected practitioners to implement clean energy solutions
11. Electricity supply industry capacity building through workshops, knowledge sharing, international and local collaboration.	Smart Grids	To manage industry participation and contributions in South Africa through local and international collaboration for the development of smart grid policy recommendations and industry capacity building
12. EU donor funded smart grid programme demonstration projects with "How to Guides", business case and policy recommendations.	Smart Grids	To use technology as an enabler of change in the municipal environment in following areas: - Enhanced revenue management - Advanced asset management - Active network management - Free Basic Electricity (FBE), Inclining Block Tariff (IBT) and Time of Use (TOU) demonstration
13. Trained energy modellers to undertake energy modelling research.	Data and knowledge management	To capacitate CESAR with the necessary resources (people and tools) to be able to undertake energy modelling research
14. Policy recommendations based on research projects conducted and energy modelling database.	Data and knowledge management	To provide energy policy guidance through energy modelling research

The contribution towards achieving the strategic objectives is provided in the subsequent tables.

12.3.3 Strategic objectives, performance indicators, planned targets and actual achievements

The first four columns (coloured in grey) are as reflected in the approved 2016/17 APP. Achievement against these targets is reflected in the last three columns.

Table 5: Programme 2 objectives, indicators and performance

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
Sub-programme 1: Cleaner Fossil Fuels						
1. Technical report addressing the implications and recommendations for the exploitation of shale gas in SA.	Completed reports on: - carbon dioxide as an extraction agent - CO2 reduction potential - demand and supply match - water and waste issues - risk assessment - geography and surface issues - Syntheses Report	Completed reports on: - carbon dioxide as an extraction agent - CO2 reduction potential - demand and supply match - water and waste issues - risk assessment - geography and surface issues	Completion of syntheses report	The syntheses report was successfully completed	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
2. Proof of concept and capacity building for carbon dioxide storage in SA (The determination of the potential and appropriateness of geological storage of carbon dioxide in South Africa – Pilot CO2 Storage Project (PSCP)).	Exploration, design, engineering, construction and operation of a pilot carbon dioxide storage plant.	New indicator. Not previously reported.	Exploration plan	An exploration plan was compiled	N.A.	N.A.
			Seismic exploration contracted	Not achieved	The placement of the seismic exploration contract has been delayed by 6 months to allow further technical data, such as the digitizing of 33 existing seismic lines and static modeling, to be completed first.	It was discovered late in the process that PASA had additional, historical seismic information available that could be used to inform the exploration. This information was however not digitised and needed to be converted before it could be used for modelling purposes. The decision to delay the contract placement was taken because drafting and implementing a seismic survey without utilising all available historical data to its maximum may lead to unnecessary expenditure. To date, this data analysis has already reduced the seismic survey from 500km to 330km. The benefit of this analysis is that (i) the seismic exploration will be more focused in areas of higher storage potential, and (ii) that will allow closer grid spacing and higher quality data. This will in turn reduce the characterisation schedule and quite likely the costs in the next phase of the project exploration. It is expected that the 6 month delay will be made up over the course of the pilot carbon dioxide storage plant.
	Determination of the commercialisation for carbon dioxide storage in SA.	New indicator. Not previously reported.	Stakeholder engagement status report regarding concerns and resolutions	Stakeholder engagement status report regarding concerns and resolutions successfully compiled	N.A.	N.A.
	Protocols for the monitoring of carbon dioxide.	New indicator. Not previously reported.	Phase 2 PMP – Bongwana Report of CO2 monitoring protocols	The Phase 2 PMP – Bongwana Report of CO2 monitoring protocols was successfully compiled, with respect to (i) Atmospheric monitoring of CO2; (ii) Soil CO2 gas and flux; (iii) Surface and Groundwater monitoring; and (iv) Ecosystem Impacts.	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
3. Determination of a business case for the commercialisation of carbon capture and storage (Oversight of the implementation of the National Carbon Capture and Storage Road Map and associated capacity building – South African Centre for Carbon Capture and Storage (SACCCS)).	Bursary and non-bursary support report on the number of students and their research topics and publications (bursars and non-bursar award letters).	100% award of bursaries to qualifying applicants	Award of bursary/ support to those who pass evaluation.	Two bursaries were awarded to those who passed evaluation and non-bursary support was provided to three qualifying students	N.A.	N.A.
	CCS stakeholder engagement reports on concerns raised (stakeholder engagement status report).	New indicator. Not previously reported.	Stakeholder engagement status report regarding popularisation of CCS.	Stakeholder engagement status report regarding popularisation of CCS delivered	N.A.	N.A.
	Research and development project reports.	New indicator. Not previously reported.	One CCS general R&D project completed – Final Report. One R&D Project Progress Report. One R&D project commenced.	A final report was completed for (i) Alternative sites to PCSP and (ii) Carbon Tax and CCS in SA projects. A project progress report was delivered for the Business case for continued CCS in South Africa project. The Carbon Capture and Utilisation research project commenced.	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
Sub-programme 2: Renewable Energy (RE)						
4. Increased deployment of renewable energy (to provide a centre that coordinates and promotes RE research, development and demonstration in SA through collaboration and funding.	Number of collaborative projects and platforms with industry, government and government entities with respect to: - Policy improvement - Knowledge sharing - Advisory - Research collaboration	Solar water heating platform established and 4 platform meetings held for the algal bioenergy platform (2 meetings), solar high temperature platform and waste to energy platform.	Planning and development of SANEDI knowledge sharing and advisory projects and platforms: - 1 solar water heating platform - 1 solar high temperature platform meeting	Four more technology research platforms were launched during 2016 viz. the Solar Water Heating Research Platform (June 2016), the Photovoltaic Research Platform (July 2016), the Wind Energy Research Platform and Energy in Agriculture Platform (both November 2016). The solar high temperature platform meeting was held in Q3 and the annual waste-to-energy meeting was hosted in Q4.	Three additional platforms were established during the year	Industry interest and participation made it possible to establish three additional platforms that could facilitate industry development and engagement related to the topics of Photovoltaic Research, Wind Energy and Energy in Agriculture.
	Numbers of events hosted by SANEDI.	3 events were co-hosted by SANEDI.	Two SANEDI co-hosted events.	The annual SANEA/ RERE award ceremony and South African Renewable Energy Council (SAREC) event were hosted.	N.A.	N.A.
	Number of expert reference group and steering committee meetings attended.	3 meetings attended.	Meetings attended per invitation (4 meetings listed as quarterly targets).	Four SARETEC advisory board meetings were attended	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
	Number of collaboration arrangements entered into.	2 collaboration agreements were entered into on RE research projects.	Collaboration arrangement entered into on RE research projects.	Agreements were established with the CSIR for the development of an algal bioenergy species database and North West University for solar high temperature testing, training and research facility that is being established in phases as money is sourced	N.A.	N.A.
	Number of bursaries awarded.	2 bursaries were awarded.	2 Bursaries per year RE skills development and training in collaboration with training institutions and postgraduate associations.	DBREV bursary and 5 SARETEC bursaries were awarded in Q4.	Four additional bursaries were awarded	Funding for an additional 4 bursaries was obtained from GIZ to support studies at SARETEC.
	2 RE projects completed.	4 RE projects completed.	Collaboration and coordination across the RE sector focusing on solar and biomass/ waste energy as well as energy storage.	One RE project was completed, delivery of the second was delayed.	1. Commissioning of the Waste-to-Energy demonstration plant has been delayed by two months. 2. National solar resource measurement/ assessment project was completed and handed over on schedule.	Commissioning and handover of the plant was scheduled for March 2017. Thereafter six months were scheduled for operation of the plant and optimisation. A faulty generator was delivered mid 2016 by the suppliers. This resulted in extended delays to get a replacement for the generator. The replacement generator was delivered late in 2016 with a faulty component. This part had to be replaced, causing further delays with commissioning. All parts have been sourced and commissioning plan presented by Cummins (supplier). Commissioning is under way and scheduled for completion end of May. Optimisation and permanent installation will proceed thereafter, targeting completion in December 2017.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
5. Increased renewable energy and energy efficiency awareness (Provide technical and management support through tendering, contracting, payment and reporting to the Danish RE EE programme's DoE and ESKOM components).	Number of progress and financial reports (a report on status progress and audit of programme to date).	All procurement executed as per the procurement plan.	Update of procurement plan, issue tenders, sign contracts and facilitate payments per procurement plan.	Procurement plan was updated, tenders issued, contracts signed and payments facilitated as approved by DoE	N.A.	N.A.
			Bi-annual financial and progress reports to the DoE.	Two bi-annual financial and progress reports submitted to the DoE (May and Oct 2016)	N.A.	N.A.
			Conclude programme with final report and audit.	Not achieved	The target was incorrectly stated. An extension for the project was granted by the Danish government. This extension was not in place at the time of formulating the annual target. As a consequence, the programme is only scheduled to conclude in 2017/18. Accordingly a final report is only applicable with final audit and closure of the Danish RE EE Program, Phase I in 2017/18.	The SANEDI 2015/16 annual audit report, that incorporates the Danish Programme, was delivered December 2016. The final programme audit will be conducted in Q3 2017/18 to produce the final programme audit report.
6. Raised SA's renewable energy R&D profile through international collaboration and capacity building (Foster international collaboration to (i) globalise expertise and leverage research funding and (ii) gain knowledge).	Representation of South Africa in international fora to exchange technical knowledge / expertise and seek research funding.	4 international meetings attended and SAIREC conference hosted in October 2015.	4 international meetings attended.	Two international IEA EXCO meetings were attended Through networks and engagements SANEDI had successfully leveraged an extra R6 from donors, research and development partners for every R1 allocated via the MTEF.	The IEA Bioenergy EXCO meeting in May 2016 and SHC EXCO meeting in June 2016 were attended. Travel arrangements for subsequent IEA EXCO meetings were not approved by the Minister.	On 30 June 2016 the Minister of Energy communicated a decision for all travel to be approved by herself in support of Government commitments to contain costs and curtail travel abroad. A new process for travel applications was therefore introduced and amended twice during the financial year. In the process, some responses to applications were not received or approvals were received after the due departure date. As a consequence, approval was not obtained timeously to allow attendance of subsequent EXCO meetings.
	Number of IEA implementation agreements.	New indicator. Not previously reported.	3 memberships (OES, bioenergy, SHC).	3 IEA memberships (OES, bioenergy and SHC) in place.	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
	Number of joint projects under South Africa secretariat of REEEP.	New indicator. Not previously reported.	At least 2 joint projects with REEEP.	Switch Africa Green and Climate Change, Clean Energy and Urban Water in Africa (Waterworks) project initiated during 2016/17.	N.A.	N.A.
7. Increased wind energy integration and deployment in SA (Develop maps, database, tools and guidelines for effective wind siting and decision making for the national wind programme).	Report on status, progress of programme to date.	4 x Quarterly reports on WASA II implementation to Danish Embassy with minutes of meetings and attendance registers.	4 x Quarterly reports on WASA II implementation to Danish Embassy to date with minutes of meetings and attendance registers.	Four quarterly reports were compiled and delivered to the Danish Embassy; 2 WASA II Project Implementation Unit (PIU) meetings were held (April and Nov 2016) for which minutes and attendance registers were compiled.	N.A.	N.A.
Sub-programme 3: Working for Energy						
8. To research essential aspects of clean energy relating to the provision of clean energy solutions to rural and low income communities.	Undertake various research studies to advance sustainable access and use of clean energy solutions by rural and low income communities.	1 final and 1 draft research report submitted to the DoE.	1 completed research project.	A study to assess the viability and implementation options for renewable energy in rural and low-income urban areas in South Africa was completed in March 2017.	N.A.	N.A.
9. To implement clean energy technologies and services to low income communities.	Undertake selected clean energy projects to demonstrate the use of various renewable energy applications in low income rural and urban communities for possible national roll-out as alternative mode of energy provision in various applications.	4 demonstration projects commissioned, 1 launched and 10 integrated demonstration projects under construction.	90 biogas digester / greening projects constructed.	25 Bio-gas digesters were constructed during the year	72.22% variance from the planned target. Overall 80 Digesters were delivered by SANEDI during the year. Including those that were constructed in the previous financial year but had not been commissioned at the end of the previous financial year. Completion of 10 of the targeted 90 digesters / greening projects were delayed i.e. 11% short of target.	Delays were caused by (i) the suspension of the Melani Village project because of rocky geology, and (ii) soil being waterlogged at the Sharpeville project after recent rains. A new turnaround strategy for the Melani Village project is being negotiated and other options are being investigated. Completion of the outstanding 10 digesters will proceed once new agreements have been reached. The last 10 will proceed on finalisation of contracts and are expected to be completed by latest December 2017.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
10. On the job training.	To enhance the capability of selected Practitioners to Implement Clean Energy Solutions.	New indicator. Not previously reported.	2 training programmes implemented.	2 training implemented.	N.A.	N.A.
Sub-programme 4: Smart Grids						
11. Electricity supply industry capacity building through workshops, knowledge sharing, international and local collaboration (To manage industry participation and contributions in South Africa through local and international collaboration for the development of smart grid policy recommendations and industry capacity building)[20].	Number of workshops held with industry associations evidenced by reports and minutes.	4 meetings held.	4 workshops.	Four SASGI workshops were held.	N.A.	N.A.
	Number of students awarded bursaries.	New indicator. Not previously reported.	Report on number of bursaries awarded progress i.e.: 6 Masters, 4 Hons and 1 PhD.	Bursaries were awarded for the 2016/17 financial year in collaboration with University of Pretoria. A progress report was delivered in March 2017.	N.A.	N.A.
	Report on a smart metering code.	1 research brief on the South African metering code.	Report on smart metering code.	Report on smart metering code was delivered	N.A.	N.A.
	Report on advanced metering infrastructure guideline.	New indicator. Not previously reported.	Report on advanced metering infrastructure guideline.	The advanced metering infrastructure guideline report was delivered	N.A.	N.A.
	Report on advanced metering security guideline.	New indicator. Not previously reported.	Report on advanced metering security guideline.	The advanced metering security guideline report was delivered	N.A.	N.A.
	Smart meter short course curriculum developed.	Smart meter short course curriculum.	Report on smart meter short course curriculum.	The smart meter short course curriculum was developed, two courses were presented with 20 participants each and a report compiled	N.A.	N.A.

20 *Quarterly targets were reported against three sub objectives i.e. 1.1 SASGI: to manage industry participation and collaboration towards the sustainable development of a smart grid in South Africa, 1.2 To collaborate with the University of Pretoria to address the critical Electricity Industry Challenges through research and capacity building, and 1.3 International Smart Grid collaboration through participation in the international Smart Grid Action Network (ISGAN).*

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
	Smart metering lab.	New indicator. Not previously reported.	Report on Smart metering Lab development progress.	The smart metering lab was originally established in 2015/16. Work continues to scale up the facility and add equipment. A report that reflects the 2016/17 facility development progress was delivered.	N.A.	N.A.
	Participation in biannual EXCO meeting.	1 SANEDI report on ISGAN EXCO shared with SASGI forum.	2 SANEDI Reports on ISGAN EXCO meetings to be shared with SASGI forum.	Two reports on ISGAN EXCO meetings were shared with the SASGI forum.	N.A.	N.A.
12. EU donor funded smart grid programme demonstration projects with "How to Guides", business case and policy recommendations (To use technology as an enabler of change in the municipal environment in following areas: (i) Enhanced revenue management, (ii) Advanced asset management, (iii) Active network management, and (iv) Free Basic Electricity (FBE), Inclining Block Tariff (IBT) and Time of Use (TOU) demonstration).	Implementation guidelines for each of the 4 project areas and each of the 7 project phases[21]: • Consolidated Lesson Learned Report,	New indicator. Not previously reported.	A Consolidated Lesson Learned Report for the Electricity Distribution Industry	A Consolidated Lesson Learned Report for the Electricity Distribution Industry was delivered	N.A.	N.A.

21 *Project areas: 1. EEDSM, 2. active network management, 3. asset management and 4. advanced metering infrastructure. Phases: 1. initiation, 2. assessment, 3. design, 4. development, 5. integration, 6. install and support, 7. handover research and capacity building, and 1.3 International Smart Grid collaboration through participation in the international Smart Grid Action Network (ISGAN).*

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
	• Business case,	New indicator. Not previously reported.	A Consolidated Business Case for the Electricity Distribution Industry	Not achieved	The timelines for this programme were formally extended with 12 months by the DOE, to conclude March 2018.	The funding for this project was not released until November 2016. As a consequence, the DoE has granted an extension of the programme for another full financial year. The Consolidated Business Case for the electricity supply industry is dependent on data from municipalities participating in the EU Smart Grid Programme. With the extension, this data will now be collected over six additional months, to deliver better quality inputs to the business case.
	• How to guide for the Electricity Distribution Industry, and	New indicator. Not previously reported.	A Consolidated How to Guide manual for Electricity Distribution Industry	Not achieved	The timelines for this programme were formally extended with 12 months by the DOE, to conclude March 2018.	The funding for this project was not released until November 2016. As a consequence, the DoE has granted an extension of the programme for another full financial year. The Consolidated How to Guide development was therefore postponed to incorporate the findings over an additional six months – to deliver more meaningful outputs- before finalisation.
	• Policy recommendations paper for the DoE on Strategic priorities addressed by projects	New indicator. Not previously reported.	Policy recommendation on DoE Strategic priorities	Policy recommendation on DoE Strategic priorities was successfully delivered in Q4	N.A.	N.A.
Sub-programme 5: Data and knowledge management						
13. Trained energy modellers to undertake energy modelling research (To capacitate CESAR with the necessary resources (people and tools) to be able to undertake energy modelling research).	Number of training programmes initiated.	New indicator. Not previously reported.	2 energy training programmes.	2 energy training programmes.	N.A.	N.A.

Programme 2: Energy research, development, demonstration and deployment						
Strategic Objectives	**Performance indicator**	**Actual Achievement 2015/16**	**Planned Target 2016/17**	**Actual achievement 2016/17**	**Deviation from planned target**	**Comment on deviations**
14. Policy recommendations based on research projects conducted and energy modelling database (To provide energy policy guidance through energy modelling research).	Number of research reports finalised.	New indicator. Not previously reported.	3 completed working papers (approved by Project Facilitation Team): - Phase 2 Transport Study - Fuel switching - Renewable energy integration for demand side management using smart loads	Seven research papers were compiled for submission to peer-reviewed journals. These papers included the planned (i) energy in transport, (ii) increased RE integration using demand side management with 'smart' loads and (iii) energy distribution infrastructure considerations for fuel switching topics.	Four additional papers were delivered.	Additional research topics and papers were identified during the year and additional funding was made available by the DST to enable the delivery of 4 additional research papers for publication.
	Energy modelling database updated.	An energy efficiency data repository populated.	Database with projections populated and updated.	The open energy database was updated and extended with new project datasets, models and reports	N.A.	N.A.
			South African TIMES model updated.	The South African TIMES model was updated with transport sector information		

12.4 PROGRAMME 3: ENERGY EFFICIENCY (EE)

12.4.1 Purpose

The purpose of SANEDI's Energy Efficiency 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:

1. supporting the implementation of EE interventions with technical assistance;
2. 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
3. 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.

12.4.2 Sub-programmes

The EE programme does not have any sub-programmes defined. Three strategic objectives were defined for the programme:

Table 6: Programme 3 strategic outcome-orientated goals

Strategic Objectives	Objective statement
1. Provide assurance to SARS on energy savings claims, in line with published regulations, and perform a reporting function to key stakeholders (DoE, National Treasury, SARS (through National Treasury), and DTI) by issuing Energy Efficiency tax certificates for approved and compliant applications and copying them to the Revenue Service.	Provide an energy efficiency support function for the certification of energy savings for tax reduction claims and monitoring impacts and benefits.
2. To support and provide capability building through designed programmes in the area of energy efficiency.	Continue the Energy Efficiency Hub initiative to strengthen energy related research, human capacity development, and market transformation and enterprise development initiatives that will be tracked against a comprehensive existing set of KPIs.
3. To fulfil the role of a national energy efficiency champion through collaborative activities with industry partners aimed at the promotion of new technologies thereby increasing the uptake of energy efficient technologies.	Support industry stakeholders and the DoE, towards achieving improved energy efficiency in collaboration with local and international partners, by various initiatives.

12.4.3 Strategic objectives, performance indicators, planned targets and actual achievements

The first four columns (coloured in grey) are as reflected in the approved 2016/17 APP. Achievement against these targets is reflected in the last three columns.

Table 7: Programme 3 objectives, indicators and performance

Programme 3: Energy Efficiency						
Strategic Objectives	Performance indicator	Actual Achievement 2015/16	Planned Target 2016/17	Actual achievement 2016/17	Deviation from planned target	Comment on deviations
Provide assurance to SARS on energy savings claims, in line with published regulations, and perform a reporting function to key stakeholders (DoE, National Treasury, SARS (through National Treasury), and DTI) by issuing Energy Efficiency tax certificates for approved and compliant applications and copying them to the Revenue Service.	Processing of applications within 6 weeks of receipt	On average application process exceeded 6 weeks	Process all applications within 6 weeks of receipt	40.74% of applications were processed within 6 weeks of receipt.	59.26% variance from planned targets. Processing timelines have exceeded the six week delivery target. The actual variance cannot be quantified due to limitations with the current database. Plans are underway to upgrade the 12L database to include additional functionalities.	SANEDI has received no additional funding or resources to support the provision of this service. The number of applications have grown in number (44% increase from 2015) and complexity. The size and complexity of some projects, limited capacity from volunteer reviewers combined with escalating numbers of applications are causing a backlog and delays. It has become impossible to meet the required turnaround times with the current available resources. This will remain a challenge unless additional resources (administrative and technical reviewers), can be made available. A submission has been made to the Department of Energy, National Treasury and SARS to assess the situation and appeal for additional capacity support.
	Number of reports submitted to key stakeholders as required by legislation	4 reports submitted to National Treasury and SARS	Quarterly 12L reports to DoE and National Treasury	Quarterly 12L reports were submitted to the DoE and National Treasury.	N.A.	N.A.
			Annual 12I draft report submitted to the dti for comments	A draft annual report on 12I was submitted to the dti for comments.	N.A.	N.A.

Programme 3: Energy Efficiency						
Strategic Objectives	Performance indicator	Actual Achievement 2015/16	Planned Target 2016/17	Actual achievement 2016/17	Deviation from planned target	Comment on deviations
To support and provide capability building through designed programmes in the area of energy efficiency	Number of energy efficiency capacity building programmes undertaken	Funds transferred to the Hub as per contractual agreements. 10 reports submitted to DST	2 Energy Efficiency capacity building programmes undertaken i.e.: - EEDSM Hub	Energy Efficiency capacity building through the EEDSM Hub was achieved. With the available support, 13 students were supported for post graduate studies in Energy Management. Of these students, 1 was female and all were PDIs. 9 journal and 16 Conference publications were delivered.	N.A.	N.A.
				Certification of M&V professionals	Not achieved	The target to certify M&V professionals was not achieved.

Programme 3: Energy Efficiency						
Strategic Objectives	Performance indicator	Actual Achievement 2015/16	Planned Target 2016/17	Actual achievement 2016/17	Deviation from planned target	Comment on deviations
To fulfil the role of a national energy efficiency champion through collaborative activities with industry partners aimed at the promotion of new technologies thereby increasing the uptake of energy efficient technologies	Number of projects undertaken	4 secondary data submissions to Wupperthal 4 workshops held during the year 1 cool roofs conference held in South Africa 6 demonstration projects	3 energy efficiency projects undertaken to champion energy efficiency i.e.: - Quarterly management of the BigEE database - Cool roofs training and demonstration project - New project agreement signed and implementation according to plan	3 energy efficiency projects undertaken to champion energy efficiency i.e.: - Quarterly management of the BigEE database continued throughout the year.	N.A.	N.A.
				- The cool roofs training and demonstration project was implemented according to schedule.	N.A.	N.A.
				- The SUNREF II Technical Assistance Facility agreement was signed with the AFD.	N.A.	N.A.

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 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 Parliamentary Portfolio Committee (PPC) on Energy has oversight of SANEDI. During the 2016/2017 financial year, SANEDI had no interaction with the PPC.

In October 2016 SANEDI submitted a request to the Chief Director: Monitoring, Evaluation & SOE Oversight at the Department of Energy to facilitate an engagement with the PPC and relevant ANC study group. An opportunity for such an engagement, both in terms of feedback on activities and obtaining strategic guidance, was considered of great importance in the absence of the Board as immediate governance and oversight body to SANEDI. Unfortunately, other pressing priorities and schedules for the year did not allow an interaction with these fora.

15 Executive Authority

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

Table 8: Submissions to the Executive Authority during 2016/17

Report	Date of submission	Issues raised by the EA (where relevant)
First quarter performance report for the period 1 April to 30 June 2016	31 July 2016	None
Annual report for 2015/16	31 August 2016	SANEDI's annual report for 2015/16 was approved by the Minister of Energy in September and tabled in Parliament on 12 September 2016.
First draft annual performance plan (APP) for 2017/18	31 August 2016	Feedback on the first draft was received from the DoE in October 2016. Further clarification was sought from the Department on the requirements and then incorporated into the second draft submission.
Second quarter performance report for the period 1 July to 30 September 2016	30 October 2016	SANEDI received feedback on the second quarter report in January 2017. Consequently, the quarterly report format was revised in consultation with the department to address the requirements of the DoE.
Second draft APP for 2017/18	31 August 2016	The DoE provided SANEDI with feedback on the second draft APP in January 2017. These inputs informed the finalisation of the APP for 2017/18.
Third quarter performance report for the period 1 October to 31 December 2016	31 January 2017	None
Annual performance plan for 2017/18	31 January 2017	The APP for 2017/18 was accepted by the Minister of Energy and tabled in Parliament on 16 March 2017.
Fourth quarter performance report for the period 1 January to 31 March 2017	26 April 2017	None

16 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 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[1]. 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, Annual Financial Statements, Annual Performance Plan and five-year Strategic Plan, 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 National Energy Act, 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;
- appreciate that strategy, risk, performance and sustainability are inseparable and to give effect to this by:
    - o contributing to and approving the strategy,
    - o satisfying itself that the strategy and annual performance plans do not give rise to risks that have not been thoroughly assessed by management,
    - o identifying key performance and risk areas,
    - o ensuring that the strategy will result in sustainable outcomes,
    - o 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;
- 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;
- act in the best interests of the Institute by ensuring that individual Board Members:
    - o adhere to legal standards of conduct, and
    - o 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 Chief Executive Officer; and
- impart knowledge and insights to SANEDI.

16.3 BOARD CHARTER

The Board Charter was adopted on 28 February 2017, at the second meeting of the Board after appointment on 1 December 2016. The charter is subject to the provisions of the Energy Act, the Public Finance Management Act, Act No. 1 of 1999 (the PFMA), the Constitution of the Republic of South Africa, Act No. 108 of 1996 (the Constitution) and any applicable law or regulatory provision.

22 *Protocol on Corporate Governance in the Public Sector, 2002 (adopted by Cabinet in 2003)*

The purpose of the charter is to provide a concise overview of (i) the role, responsibilities, functions and powers of the Board, individual Board Members and the Chief Executive Officer and Management of the Institute; (ii) the powers delegated to various Committees of the Board; and (iii) 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.

Given the short implementation timeline, no evaluation has been done regarding compliance with the adopted charter. An evaluation will be done during the 2017/18 financial year.

16.4 COMPOSITION OF THE BOARD

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

- a Chairperson;
- a Deputy Chairperson;
- representatives from the following Departments:
    - o Minerals and Energy;[23]
    - o Trade and Industry;
    - o Science and Technology;
    - o Environmental Affairs;[24]
    - o Tourism[25]; and
    - o Transport.
- and two other suitably qualified persons.

For the period from April 2016, with the expiration of several Board member terms, to end November 2016, SANEDI did not have a quorate Board. In the interim, the Accounting Authority of the Company resided with the CEO of SANEDI as per the provisions contained in Section 49 (2)(b) of the PFMA (Act No. 1 of 1999).

New Board members were appointed on 1 December 2016, allowing the Board to resume its oversight duties. The Board consists of the following members, appointed by the Minister of Energy. Alternate members have not been identified at this time.

No members representing the Departments of Tourism or Transport were appointed to the Board.

[23] *Previously Department of Minerals and Energy, now Department of Energy*
[24] *Previously formed part of the Department of Environmental Affairs and Tourism*
[25] *Previously formed part of the Department of Environmental Affairs and Tourism*

Table 9: SANEDI Board composition and meeting attendance during 2016/17 financial year

Name	Designation	Date appointed	Date resigned	Qualifications	Area of expertise	Board Directorships[26]	Other committees or task teams[27]	No. of meetings attended[28]
Dr Ingrid Tufvesson	Chairperson (SJ&E Committee Chair)	01-Dec-16	N.A.	PhD, BA (MA)	Social justice and transformation	1. UNISA 2. Nonjongo Projects 3. Klapmuts Community Assistance Programme	Proj; FinCo; SJ&E; HR&Rem (invitee)	Board: 3 Committee: 2
Mr Nkululeko Buthelezi	Deputy Chairperson (FinCo Chair)	01-Dec-16	N.A.	Dip Scientific Computing and Software Engineering, Dip Management, Adv Dip Project Management, Post Grad Dip Management, MBA	Management and technology	None	BARC; FinCo; SJ&E	Board: 3 Committee: 3
Mr Mlondolozi Mkhize	Member	01-Dec-16	N.A.		Youth Development	None	BARC; HR&R; SJ&E	Board: 2 Committee: 2
Ms Phuthanang Motsielwa	Member (BARC Chair)	20-Aug-13	N.A.	B Acc (CA)(SA), RA	Finance	1. PSTM Auditors Inc 2. Director African Women Chartered Accountants 3. Setshoge Foundation	BARC; FinCO; SJ&E	Board: 3 Committee: 3
Mr Mmboneni Muofhe	Member (Projects Committee Chair)	01-Dec-16	N.A.	BSc (Hons), MSc, MBA	Research and innovation	1. The Innovation Hub 2. Biovac	Proj; SJ&E	Board: 1 ommittee: 0
Ms Deborah Ramalope	Member	01-Dec-16	N.A.	BSc (Hon), MSc, MBL	Environmental sustainability	None	Proj	Board: 3 Committee: 0
Ms Nomawethu Qase	Member (HR&Rem Committee Chair)	01-Dec-16	N.A.	M Phil (Energy Studies), Post Grad Dip Management, B Soc Sc (Hons)	Energy	None	HR&Rem; Proj	Board: 3 Committee: 1
Mr Gerhard Fourie	Member	01-Dec-16	N.A.	Diploma Mech Eng, B Com Economics, MBA	Green economy, localisation, commercialisation	None	HR&Rem; FinCo	Board: 3 Committee: 1

[26] *Reflecting current board directorship/membership*

[27] *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*

[28] *Board meetings only. Attendance of Board committee meetings are reflected in*

16.5 BOARD COMMITTEES

The Board has established several committees to assist it in the discharge of its duties. Previously there were three Board committees, i.e. Board Audit and Risk Committee (BARC), Projects and Investment Committee and the Remuneration Committee (REMCo). The new Board established five committees, separating the Projects and Investment Committee into two independent committees to focus on projects and funding and investment matters respectively, renaming the REMCo to reflect its broader focus and introducing a Social Justice and Ethics Committee. The Social Justice and Ethics Committee 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. At the end of the financial year, the terms of reference for three committees had been prepared and recommended to Board for approval. The Board adopted these on 9 May 2017. The terms of reference for two committees has been drafted for review during the first committee meetings to be held.

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.

Table 10: Board committees and membership

Committee	No. of meetings held	No. of members	Name of members
Board Audit and Risk Committee (BARC)	1	3	Ms Phuthanang Motsielwa (Chair) Mr Nkululeko Buthelezi Mr Mlondolozu Mkhize
Human Resources and Remuneration Committee	1	3	Ms Nomawethu Qase (Chair) Mr Mlondolozi Mkhize Mr Gerhard Fourie
Projects Committee	0	4	Mr Mmboneni Muofhe (Chair) Ms Deborah Ramalope Dr Ingrid Tufvesson Ms Nomawethu Qase
Finance and Investment Committee	1 (non-quorate)	4	Mr Nkululeko Buthelezi (Chair) Ms Phuthanang Motsielwa Dr Ingrid Tufvesson Mr Gerhard Fourie
Social Justice and Ethics Committee	0	5	Dr Ingrid Tufvesson (Chair) Ms Phuthanang Motsielwa Mr Nkululeko Buthelezi Mr Mlondolozu Mkhize Mr Mmboneni Muofhe

16.6 BOARD REMUNERATION

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:

Table 11: Board remuneration

Name	Remuneration	Other allowance	Other re-imbursements	Total
Dr Ingrid Tufvesson	R 68,073.00	-	-	R 68,073.00
Mr Nkululeko Buthelezi	R 49,674.00	-	-	R 49,674.00
Ms Phuthanang Motsielwa	R 46,181.00	-	-	R 46,181.00
Mr Mlondolozi Mkhize	R 34,930.00	-	-	R 34,930.00

17 Risk management

SANEDI adopted a suite of CEF policies, including the CEF Enterprise-wide Risk Management Policy, when SANEDI was established as Schedule 3 A state-owned entity, independent of the CEF group, in 2011. In adopting this policy, the Board and CEO of SANEDI committed the organisation to a process 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, as supported by the Public Finance Management Act (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 top ten risks is maintained and presented to SANEDI Management monthly and to the BARC, Board and the DoE every quarter.

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.

18 Internal audit and audit committees

18.1 INTERNAL AUDIT

SANEDI has a Service Level Agreement with CEF for the provision of internal audit services. The scope of services includes internal audits as per an annually agreed Internal Audit Plan, risk workshop facilitation, provision of a fraud hotline as well as related ad hoc services.

In the absence of a Board and Board Audit and Risk Committee during the first three quarters of the financial year 2016/17, the CFO and the CEO (Interim Accounting Authority at the time) authorised an interim Internal Audit Plan which was to cover three audits viz.:

- Funding strategy
- Procurement processes
- Training and development

However, subsequent to approving the Internal Audit Plan, the CFO requested that an audit on Performance Information be prioritised ahead of the planned audit on the Funding Strategy. Two of the three audits planned for the period under review were conducted. One audit was completed during the reporting period:

- 3048 Procurement, Tenders and Payments

One audit is at a reporting stage, still awaiting management comments to finalise i.e.:

- 3059 Performance Information

The funding strategy and training and development audits will be rolled over to the next financial year.

18.2 BOARD AUDIT AND RISK COMMITTEE (BARC)

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 27.1.1.

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 NT 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 (Auditor-General of South Africa); assess the effectiveness of the internal audit function;
- Review the Auditor-General's audit scope, approach and performance, and review findings and 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;
- Report concerns to the EA where relevant.

The BARC was constituted during the first Board meeting on 27 January 2017, with three independent Board members. The CEO, CFO, internal and external auditors are standing invitees to the BARC. Only one BARC meeting was held before the end of the financial year. The table below discloses relevant information on the committee members:

Table 12: BARC Composition and meeting attendance during 2016/17 financial year

Name	Qualifications	Internal or external	If internal, position in the public entity	Date appointed	Date resigned	Number of meetings attended
Phuthanang Motsielwa	B Acc (CA)(SA), RA	External	N.A.	20 Aug 13	N.A.	1
Nkululeko Buthelezi	Dip Scientific Computing and Software Engineering, Dip Management, Adv Dip Project Management, Post Grad Dip Management, MBA	External	N.A.	1 Dec 2016	N.A.	1
Mlondolozi Mkhize	B Soc Sc	External	N.A.	1 Dec 2016	N.A.	1

19 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 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.

20 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 providing for the confidential reporting of fraud, corruption, misuse of public resources and other inappropriate behaviour. No calls were received by the Fraud Hotline during the 2016/17 financial year.

An incident of fraud was identified after year end and affects the reporting period. The incident is currently under investigation by the State Security Agency (SSA). At the date of compiling this report, the investigation had not been concluded.

21 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. Further, 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.

The latest Supply Chain Management Policy was approved by the Board in February 2015, corresponding with the PFMA and National Treasury Regulations. 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.

22 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.

During 2016/17, the SANEDI employees also participated in redefining the values for the organisation. Through a consultative process in a workshop environment, staff members identified those values pertinent to the SANEDI environment and culture. From this process, seven values were selected by staff members to most closely reflect that of the organisation:

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

With the appointment of the new Board, Board members requested the addition of two further values, placing specific emphasis on ethics as an organisational value:

Ethics	we behave in a manner consistent with what is right and moral
Entrepreneurship	we bring energy innovation into the market place

This set of values has been incorporated into the 2017/18 APP.[29]

Ethics as an organisational value was further reinforced with the establishment of a Social Justice and Ethics Board sub-committee. The committee was established to align with the provisions of the Companies Act of 2008 and recommendations of the King IV Code of Conduct with the purpose to:

- Monitor activities with regards to legislation and legal requirements;
- Advise the Board on issues related to Social Justice;
- Oversee the development and implementation of a Social Justice Charter and ensure its ongoing alignment with the Organisation's Strategic Plan;
- Provide practical action, support and decision-making to promote initiatives arising from the Social Justice Charter; and
- Ensure that principles of equity, social inclusion, and social justice are embedded in the Organisation's planning and operations.

SANEDI has also developed a Social Justice Charter in consultation with the SANEDI Social Justice and Ethics Board committee to reflect the organisation's commitment to principles of equity, community participation and human rights. The Charter will guide decision making and provide a leadership framework for advocacy on social justice and human rights and to guide SANEDI's activities and exploration of related opportunities.

We believe that SANEDI has established a solid foundation that promotes a culture of the highest ethical standards in the organisation.

23 Health, safety and environment issues

SANEDI endeavours 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) 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.

24 Company/Board secretary

SANEDI has procured Secretariat 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 Chief Executive Officer.

The Company Secretary advises the Board on the appropriate procedures for the management of meetings and the implementation of governance procedures, and is 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 is 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 maintains open lines

[29] *These new values were incorporated into the planning documents for the 2017/18 year. They do not correspond to the values stated early in this Annual Report as this report reports against the information presented in the 2016/17 APP. The new values are included here to highlight the inclusive process followed to identify values that effectively steer the code of conduct of SANEDI and the greater emphasis placed on ethics by the new Board.*

of communication with the Board. The Board has unlimited access to the Company Secretary, who advises 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 attends Board and Committee meetings to ensure that comprehensive minutes of meetings are recorded.

The organisation is supporting the Board with any support, resources and information necessary in pursuance of its duties.

25 Social responsibility

SANEDI participated in several corporate social responsibility initiatives during the course of 2016/17.

Every year on his birthday, 18 July, South Africa commemorates the life and legacy of former President Nelson Mandela. On this day, South Africans are encouraged to commit at least 67 minutes of their day to take action against poverty in a way that will bring about sustainable change. In 2016, SANEDI participated in the Mandela Day celebrations, alongside the DoE and other energy sector partners, at the Sizwile School for the Deaf in Dobsonville, Soweto. The school was established in 1978 and is the only special education needs school in the Johannesburg West District. It currently services approximately 300 learners, both from the surrounding communities as well as learners from other provinces.

The school received stationery, toiletries, food and cleaning materials, and a solar geyser and biogas digester were also donated to assist the school in reducing their energy bill. The participants also pledged to get more involved with energy efficiency equipment to further reduce electricity costs for the school, allowing the available financial resources to be spent on other pressing needs.

In addition to experiencing the simple joy of giving, it was a revelation to spend time with this special community of deaf children, to learn more about their community, to mingle and play with them and to realise that language is not a barrier for truly connecting with other human beings. Mandela Day was once again a celebration of our collective power.

The 16th Sasol TechnoX, Sasol's flagship career exhibition, was held from 14 – 19 August under the caption: "Today's minds; Tomorrow's future". The exhibition attracts more than 20 000 visitors every year from South Africa and neighbouring countries. The event showcases science and technology displays, workshops, tours, talks and hands-on activities aimed at enthusing learners, students and the general public about the endless possibilities of science and technology. The exhibition was initiated in response to the National Development Plan's target to develop at least thirty thousand (30 000) qualified artisans per year by 2030.

SANEDI's participation at the event was led by the South Africa Centre for Carbon Capture and Storage (SACCCS) team. The exhibition aimed to raise awareness on climate change and energy issues, provide career guidance to learners interested in the fields of science, technology and mathematics, SANEDI programmes and careers within the energy sector, build the SANEDI brand and introduce Carbon Capture and Storage (CCS) as a new category at the Eskom Expo for Young Scientists. The SANEDI stand was very popular with learners from grades 7 – 12, but also attracted attention from educators and the public. Approximately 15 000 people participated in the activities at the SANEDI stand during the three-day period.

As SANEDI is tasked with developing human capital in the energy research sector, this auspicious event is a great platform to connect with the learners who are aspiring to be engineers, scientists and other related field specialists.

For two days in September, SANEDI partnered with the DoE to host a Women in Energy Business Summit at the Birchwood Hotel in Johannesburg. The event was a continuation of the August Women's Month celebrations and a DoE commitment towards economic empowerment of South African women. The summit was a culmination of provincial workshops held throughout the country during 2014 and 2015. The summit was themed "Women in Energy united in Moving South Africa Forward". The two-day summit was aimed at encouraging women from all provinces to participate in the energy sector as entrepreneurs, investors, professionals and leaders within the energy field. It also aimed to raise awareness on pertinent energy issues and promote programmes such as energy efficiency.

Transport Month in October launched with a strong focus on sustainable mobility. A partnership between the Gauteng Department of Roads Transport and the City of Tshwane resulted in the unveiling of two electric vehicle charging stations sponsored by South African Cities Network, SANEDI and UNIDO. One of the solar-powered charging stations is located at the Lyttleton Municipal Offices and the other at the Tshwane Metro Police Department Logistics Offices in Bosman Street.

During the month, the City of Tshwane, in partnership with the National Department of Transport and the South African Cities Network, also hosted a Sustainable Transport Seminar to present and discuss the status quo, opportunities and challenges in advancing sustainable mass mobility and low-carbon mobility. Carel Snyman, the General Manager of the Cleaner Mobility Programme at SANEDI, sat on the panel to give a structured critique of the city's initiatives related to the implementation of sustainable transport programmes and projects.

Sustainability Week is an annual event aimed at advancing the green economy through the sharing of knowledge and

experience across disciplines, sectors and markets. The event actively seeks to develop and accelerate sustainability-oriented project pipelines. SANEDI once again participated in this "green event" with an exhibition stand, and provided subject matter input at various forums. The exhibition creates an opportunity for SANEDI's different programmes to create awareness around sustainable energy solutions. The type of questions that were handled at the exhibition – which covered topics such as waste to energy, solar parks, wind energy, biofuels, gas-powered vehicles, bioenergy and smart grid management – clearly demonstrated the growing and diverse interest in sustainable energy solutions.

During 2016, SANEDI helped raise money for Dignity Dreams, a non-profit organisation that supplies reusable sanitary towels to schools from disadvantaged and less privileged communities. SANEDI staff contributed R6 770. Nosisa Garane, the SANEDI staff member who spearheaded the initiative, obtained a further donation of R140 000 from the Milpark Business School by compiling a winning funding proposal with her syndicate group. The syndicate group took the initiative further, approaching their respective organisations for further donations. Despite most organisations having already committed their CSI budgets, contributions were made by SANEDI (R30 000), BMW (R30 000) and Murray and Roberts (R10 000), raising the total contribution to R216 770. The amount fell short of R45 000 for the targeted 300 packs, but Dignity Dreams committed to top this up, ensuring that two schools identified in KwaZulu-Natal will receive packs for all the girls. Delivery was made during the fourth quarter.

This seemingly small gift makes a significant difference, enabling girls to continue their education, contributing to their future and ultimately contributing to alleviate poverty in the benefitting communities.

SANEDI also had the privilege of sharing in the wonderful achievement of Mandisa Xaba, a grade 12 learner from Sakhwele Secondary School at eZakheni, KZN, who won the gold medal in the Beijing Youth Creation Competition on 26 March 2017. Mandisa was discovered by the SANEDI CCS stakeholder engagement team in September 2016. Rofhiwa Raselavhe and Wiseman Ngcobo, two members of the stakeholder engagement team, started mentoring Mandisa and in October 2016 she won the CCS Special Award of the Eskom Expo for Young Scientists International Science Fair. From here she entered the Beijing competition and scooped gold. Her winning project, titled "Production of Heat Energy from CO2 Emissions: The Effect of Forces on the Chemical Composition and Thermal Behaviour of CO2 (the mathematical study)" focused on converting carbon dioxide (CO2) from vehicles and power industries into heat energy. The SANEDI team is exceptionally proud to have been part of her journey and will be keeping an eye on the contribution of this future scientist to the energy sector.

26. Audit committee report

We are pleased to present our report for the financial year ended 31 March 2017.

26.1 Audit Committee Responsibility

The Board Audit and Risk Committee reports that it has complied with its responsibilities arising from Section … of the Public Finance Management Act and Treasury Regulation 3.1.13. The Board Audit and Risk Committee also reports that it has adopted appropriate formal terms of reference as its Board Audit and Risk Committee Charter, has regulated its affairs in compliance with this charter and has discharged all its responsibilities as contained therein.

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.

Figure 26: The SANEDI stakeholder engagement team with Mandisa Xaba and educators from Sakhwele Secondary school before her departure to the Beijing International Youth Creation Competition

Figure 27: Mandisa Xaba flanked by the other two participants during the Beijing Youth Creation Competition

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

- Performance Information for SANEDI (3059)
- Procurement, Tenders and Payment for SANEDI (3048)

The audit of Performance Information was prioritised on the request of SANEDI Management to verify the level of compliance with the Framework for Managing Programme Performance Information.

Both audits found that the objectives were partly met. Four findings were identified by each audit of which seven potentially had a medium impact and one low impact.

The majority of the findings (seven of the eight) could immediately be addressed and have already been closed.

26.3 In-Year Management and Monthly/ Quarterly Report

The public entity has submitted quarterly reports to the Executive Authority.

26.4 Evaluation of Financial Statements

We have reviewed the audited annual financial statements prepared by the public entity.

26.5 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 majority of matters have been adequately resolved. We are also satisfied that issues that remain in progress do not indicate a material weakness in the controls of the organisation.

The Board Audit and Risk Committee concurs with and accepts the conclusions of the external auditor on the annual financial statements and is of the opinion that the audited annual financial statements should be accepted and read together with the report of the auditor.

Phuthanang Motsielwa
Chairperson of the Board Audit and Risk Committee (SANEDI)

PART D

Human Resource Management

27 Introduction

27.1 OVERVIEW OF HUMAN RESOURCE MATTERS AT SANEDI

The objective of the Human Resources (HR) department is to be a strategic partner to the organisation by providing HR programmes that attract, develop, retain and engage a skilled and diverse workforce.

The department provides overall policy direction on human resource management issues and administrative support functions related to the management of employees across the organisation. During the preceding two years, several new HR policies were developed and were made accessible to all SANEDI employees. The organisation and job structure is in place and sufficient employee file data collated and populated on the system to effectively interface with payroll. There are time and attendance systems established and a project is currently underway to migrate these to one integrated system.

27.2 HR PRIORITIES FOR 2016/17

The HR department identified the top two focus areas for the organisation as (i) attracting and retaining the right skills for the organisation, and (ii) helping the organisation to mature its HR environment with the associated changes that it brings about. Included in this process are the following:

- The transition to a new job-grading system continues,
- SANEDI staff has engaged the organisation with the possibility of unionisation,
- SANEDI is introducing a provident fund for staff members, and
- the transition of contract staff to permanent employ is being investigated.

To improve employee engagement, SANEDI will be investing in more programmes designed to improve health, engagement and productivity. The HR team is also placing greater emphasis on developing leaders from within the organisation.

27.3 WORKFORCE PLANNING FRAMEWORK

A workforce plan had been developed for the 2016/2017 financial year to ensure that the staff complement matches the organisation's requirements and financial resources. In support of this plan, an integrated Human Capital Management database was also initiated that will contain relevant demographic information such as age, gender, race, qualification or experience profile that, in turn, is linked to both employment equity and succession planning. The linking of these systems and plans will greatly contribute towards facilitating growth and development of individuals in the organisation.

27.4 PERFORMANCE MANAGEMENT FRAMEWORK

During the year, SANEDI initiated the implementation of a performance management system with end May 2017 targeted for completion and implementation. The performance management system is intended to provide a cross-company, strategy-driven, top-down framework that is more people-centric, simplifies the setting of measurable processes and goals, and offers the tools with which to measure them. More specifically, the system is expected to deliver significant improvements in the following five areas:

- Improved purpose, allowing more proactive control when implementing business strategies or performance targets.
- Improved overall performance as a result of more accurate identification, definition and ownership of key performance indicators, coupled with round-the-clock visibility of performance to all stakeholders.
- Improved process oversight allows for the continuous monitoring of all current processes throughout the organisation with regard to efficiency, quality and compliance.
- Improved project management offers the means to sustain the delivery of planned business benefits by ensuring that the various company initiatives remain in sync with their planned timelines.

27.5 EMPLOYEE WELLNESS PROGRAMME

During the year, SANEDI embarked on a procurement process to source a service provider that can offer a wellness programme to employees. The procurement process is almost complete, a preferred bidder was identified and the recommendation is subject to approval by the relevant committee before an award can be made.

27.6 POLICY DEVELOPMENT

SANEDI has made significant progress towards developing a complete suite of HR policies. Approval of these was delayed during 2016/17 because SANEDI did not have a quorate Board. During the last quarter of 2016/17, seven policies were tabled to the Board Human Resources and Remuneration committee for consideration, after which they will be submitted to the Board for approval. A further two policies are being finalised for Board sub-committee and Board submission.

SANEDI has started a process of transition from a paper-based to an online system to manage HR processes. An HR policy and procedure manual, supported by process flow diagrams, forms and templates will be made available on the intranet from where employees can access, complete and submit these online. Development work commenced during the third quarter of 2016/17 and should be operational by mid-2017.

27.7 ACHIEVEMENT HIGHLIGHTS

During 2016/17 several controls were introduced or strengthened to support the HR function within SANEDI. These include the following:

- The automation of a self-service leave system became fully operational. This system significantly improves control over leave management in the organisation.
- The organisation's time and attendance system was extended during the year to enable monitoring attendance against agreed flexi hours and put corrective measures in place if required.
- An HR Job Evaluation sub-committee was introduced to review job descriptions and ensure alignment with the grading, and that remuneration correlates with market-related salaries.

In the financial year, SANEDI supported six new bursaries to further the skills development of SANEDI staff. This adds to the seven employees who are already benefitting from financial support for their studies.

27.8 HR CHALLENGES FACED BY SANEDI

Limited or fixed-term contracts pose a threat to the stability of the organisation, as SANEDI stands to lose key resources to other employers who offer greater job security. In this financial year alone, SANEDI lost two resources who opted to join other employers for better job security. As indicated earlier, the transition of contract staff to permanent employ is being investigated to reduce the risk of staff attrition.

27.9 FUTURE HR PLANS AND GOALS

The HR department aspires to develop all SANEDI employees as future leaders in the energy sector in South Africa. This begins with a culture of accountability in the organisation and education of employees. The department will therefore encourage and grow the investment in training opportunities, development of mentorship and other leadership development programmes within SANEDI.

28 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 (i.e. two contractors).

28.1 PERSONNEL COSTS BY PROGRAMME

Programme name	Total expenditure for the entity (R'000)	Personnel Expenditure (R'000)	Personnel exp. as a % of the total exp.	No. of employees	Average personnel cost per employee (R'000)
Administration and corporate governance	33,905.49	12,405.60	37%	21	590.74
Applied energy research, development, demonstration and deployment	70,467.59	20,214.86	29%	28	721.96
Energy efficiency	10,498.99	2,415.39	23%	4	603.85
Total	**114,872.06**	**35,035.85**		**53**	**661.05**

28.2 PERSONNEL COSTS BY SALARY BAND

Level	Personnel Expenditure (R'000)[30]	% of personnel exp.to total personnel cost	No. of employees	Average personnel cost per employee (R'000)
Top Management	3,368.50	10%	2	R 1,684.25
Senior Management	9,279.54	26%	7	R 1,325.65
Professional Qualified	12,077.61	34%	18	R 670.98
Skilled	9,891.21	28%	28	R 353.26
Unskilled	418.98	1%	5	R 83.80
Total	**35,035.85**	**100%**	**60**	**R 583.93**

It should be noted that the table reflects a total of 60 employees, incorporating all employees that had left and joined the services of SANEDI during the year.

28.3 PERFORMANCE REWARDS

Programme name	Performance rewards (R'000)	Personnel expenditure [31] (R'000)	Percentage of performance rewards to total personnel cost (R'000)
Administration and corporate governance	3,444.02	15,849.62	22%
Applied energy research, development, demonstration and deployment	5,681.89	25,896.75	22%
Energy efficiency	721.55	3,136.94	23%
Total	9,847.45	44,883.30	

[30] *Employee expenditure does not reflect bonuses paid. Performance rewards are reflected separately below.*

[31] *Inclusive of performance rewards*

28.4 TRAINING COSTS

Programme name	Personnel Expenditure (R'000)	Training Expenditure (R'000)	Training expenditure as a % of personnel costs	No. of employees trained	Average training cost per employee (R'000)
Administration and corporate governance	12,405.60	184.09	1%	4	46.02
Applied energy research, development, demonstration and deployment	20,214.86	253.68	1%	15	16.91
Energy efficiency	2,415.39	141.91	3%	3	47.30
Total	35,035.85	579.68		22	26.35

SANEDI facilitated bursary and non-bursary support to 22 students in the field of clean energy in the financial year. The reflected training costs include bursary awards and study assistance to qualifying employees. Out of seven SANEDI employees who received study support from SANEDI during 2016/17, six women and four youths benefitted.

28.5 EMPLOYMENT AND VACANCIES

During 2016/17, five vacancies existed across SANEDI's three programmes:

Programme name	2015/16 no. of employees	2016/17 approved posts[32]	2016/17 no. of employees	2016/17 vacancies	% of vacancies (as % of total positions)
Administration and corporate governance	20	3	21	1	5%
Applied energy research, development, demonstration and deployment	32	3	28	4	13%
Energy efficiency	4	-	4	-	-
Total	56	6	53	5	

It should be noted that not all positions from 2015/16 remain relevant as some were project related and will not be filled in future.

The SACCCS Manager position was approved and filled internally, creating a vacancy for a professionally qualified position. Two new professional positions were created and one became vacant with the resignation of the corporate planner.

All these positions were advertised. A suitable candidate was identified for one position that will be filled early in the new financial year. Recruitment for one other continues and is expected to be filled by mid-2017. Recruitment for one position was placed on hold.

[32] *New positions approved and filled during the 2016/17 financial year*

For one position, no suitable candidate could be found using the normal recruitment process of advertising in national newspapers and on the SANEDI website. A recruitment agency is being commissioned to source suitable candidates on behalf of SANEDI.

On average, positions have been vacant for at least six months.

SANEDI has, and continues to benchmark positions and remuneration against the market to ensure suitably qualified candidates can be attracted and existing staff retained. SANEDI is also establishing a leadership development programme to offer growth and development opportunities to all staff members within the organisation.

Level	2015/16 no. of employees	2016/17 approved posts	2016/17 no. of employees	2016/17 vacancies	% of vacancies
Top Management	2	-	2	-	-
Senior Management	7	-	7	-	-
Professional Qualified	18	3	17	4	23.5%
Skilled	26	2	23	1	4.4%
Unskilled	3	1	4	-	-
Total	56	6	53	5	

The categorisation of employee levels were reviewed during the 2016/17 year, removing semi-skilled as a category. Positions previously reported as semi-skilled are now, more correctly, incorporated under skilled positions.

28.6 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.

Level / salary band	Employment at the beginning of the period	Appointments	Terminations	Employment at the end of the period
Top Management	2	-	-	2
Senior Management	7	-	-	7
Professional Qualified	18	-	1	17
Skilled	26	2	5	23
Unskilled	3	1	0	4
Total	56	3	6	53

In addition, three interns were appointed on contract during the year, moving from internships to employees with the organisation.

28.7 REASONS FOR STAFF LEAVING

Six staff members left SANEDI during the year. As reflected in the following breakdown of reasons for staff members leaving, three of these employees resigned to pursue other opportunities and one contract expired:

Reason	Number of employees	Percentage of total no. of staff leaving
Death	-	-
Resignation	5	83%
Dismissal	-	-
Retirement	-	-
Ill health	-	-
Expiry of contract	1	17%
Other	-	-
Total	6	100%

28.8 LABOUR RELATIONS: MISCONDUCT AND DISCIPLINARY ACTION

There were no cases of misconduct and disciplinary action during the financial year. As indicated earlier, an incident of fraud was identified at year end. Depending on the outcome of the SSA investigation, any associated case of misconduct and disciplinary action will be addressed during the next financial year.

Nature of disciplinary action	Number of employees
Verbal warning	None
Written warning	None
Final written warning	None
Dismissal	None
Total	None

28.9 EQUITY TARGET AND EMPLOYMENT EQUITY STATUS

SANEDI remains committed to fair, transparent and equitable employment practices. At the end of the 2016/17 financial year, SANEDI had 24 male (45%) and 29 female (55%) staff members employed. With reduced financial resources and the ongoing challenges associated with retaining contract employees, SANEDI's equity plan for 2016/17 had set out to maintain the status quo as at end 2015/16. The targets shown below therefore reflect the representation as reported for 31 March 2015/16.

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

Level	MALE							
	African		Coloured		Indian		White	
	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	-	-	1	1	-	-	-	-
Senior Management	1	1	-	-	1	1	3	3
Professional Qualified	6	6	1	1	3	3	2	2
Skilled	4	4	-	-	1	1	-	-
Unskilled	1	1	-	-	-	-	-	-
Total	12	12	2	2	5	5	5	5

Level	FEMALE							
	African		Coloured		Indian		White	
	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	1	1	-	-	-	-	-	-
Senior Management	2	2	-	-	-	-	-	-
Professional Qualified	3	3	-	-	-	1	2	2
Skilled	14	16	1	1	1	1	2	2
Unskilled	3	2	-	-	-	-	-	-
Total	23	24	1	1	1	2	4	4

PART E

FINANCIAL INFORMATION

Accounting Authority's responsibilities and approval

In terms of the Public Finance Management Act, 1999 (Act No. 1 of 1999), the SANEDI Board of Directors (the board) are required to maintain adequate accounting records and are responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is the responsibility of the board to ensure that the annual financial statements fairly represent the state of affairs of the entity, as at the end of the financial year, including the results of its operations and cash flows for the reporting period.

The annual financial statements have been prepared in accordance with Standards of Generally Recognised Accounting Practice (GRAP), including any interpretations, guidelines and directives issued by the Accounting Standards Board. The annual financial statements are based on appropriate accounting policies, consistently applied and supported by reasonable and prudent judgments and estimates.

The board acknowledges that it is ultimately responsible for overall internal financial controls established by the entity and places considerable importance on maintaining a strong control environment. To enable the board to meet these responsibilities, the Accounting Authority has set standards for internal controls, aimed at reducing the risk of error or deficit in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties, to reduce and/ or avoid risk to the entity. These controls are monitored throughout the entity and all employees are required to maintain the highest ethical standards in ensuring the entity's business is conducted in a manner that, in all reasonable circumstances, is above reproach. The focus of risk management in the entity is on identifying, assessing, managing and monitoring all known forms of risk across the entity. While operating risk cannot be fully eliminated, the entity endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined policies and procedures.

The board is of the opinion that, based on the information and explanations given by management, the internal controls in place provide reasonable assurance that the financial records can be relied on for the preparation of the annual financial statements. Although extreme diligence is applied, these internal financial controls can only provide reasonable, and not absolute assurance against material misstatement or deficit.

The Accounting Authority is primarily responsible for the financial affairs of the entity.

The external auditors were engaged to express an independent opinion on the annual financial statements and have been given unrestricted access to all financial records and related data.

The audited annual financial statements set out on pages 95 to 129 which have been prepared on a going concern basis, were approved by the Accounting Authority on 31 July 2017 and were signed on its behalf by:

Dr Ingrid Tufvesson
Chairperson: SANEDI Board

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

Report on the audit of the financial statements

Opinion

1. I have audited the financial statements of the South African National Energy Development Institute (SANEDI) set out on pages 95 to 129, which comprise the statement of financial position as at 31 March 2017, and the statement of financial performance and other comprehensive income, statement of changes in net assets, and 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 SANEDI as at 31 March 2017, and its financial performance and cash flows for the year then ended in accordance with South African Standards of Generally Recognised Accounting Practice (SA Standards of GRAP) and the requirements of the Public Finance Management Act of South Africa, 1999 (Act No. 1 of 1999) (PFMA).

Basis for 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 my 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) together with 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.

Emphasis of matter

6. I draw attention to the matter below. My opinion is not modified in respect of this matter.

Restatement of corresponding figures

7. As disclosed in note 19 to the financial statements, the corresponding figures for 31 March 2016 have been restated as a result of an error in the financial statements of the public

entity at, and for the year ended, 31 March 2017.

Other matter

8. The following other matter paragraphs will be included in our auditor's report to draw the users' attention to matters regarding the audit, the auditor's responsibilities and the auditor's report:

Unaudited supplementary schedules

9. The supplementary information set out on pages 8 to 87 does not form part of the financial statements and is presented as additional information. I have not audited these schedules and, accordingly, I do not express an opinion thereon.

Responsibilities of the accounting authority for the financial statements

10. The Council members, which constitutes the accounting authority, is responsible for the preparation and fair presentation of the financial statements in accordance with SA Standards of GRAP and the requirements of the 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.

11. 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

12. 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 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 the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

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

Report on the audit of the annual performance report

Introduction and scope

14. 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.

15. 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.

16. 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 2017:

Programmes	Pages in the annual performance report
Programme 2 - Energy research, development, demonstration and deployment	49 – 61
Programme 3 - Energy efficiency	62 – 65

17. 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.

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

    - Programme 2 - Energy research, development, demonstration and deployment
    - Programme 3 - Energy efficiency

Other matter

Although I identified no material findings on the usefulness and reliability of the reported performance information for the selected programmes, I draw attention to the following matters

Achievement of planned targets

19. Refer to the annual performance report on pages 45 to 65 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

20. I identified material misstatements in the annual performance report submitted for auditing. These material misstatements were on the reported performance information of Energy research, development, demonstration and deployment. As management subsequently corrected the misstatements, I did not raise any material findings on the usefulness and reliability of the reported performance information.

Report on audit of compliance with legislation

Introduction and scope

21. 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 entities with specific matters in key legislation. I performed procedures to identify findings but not to gather evidence to express assurance.

22. We did not identify any instances of material non-compliance with selected specific requirements of applicable legislation, as set out in the general notice issued in terms of the PAA.

Other information

23. The SANEDI 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.

24. 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.

25. 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. If, based on the work I have performed on the other information obtained prior to the date of this auditor's report, I conclude that there is a material misstatement of this other information, I am required to report that fact. I have nothing to report in this regard.

Internal control deficiencies

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 thereon. I did not identify any significant deficiencies in internal control.

Auditor - General

Pretoria

02 August 2017

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 the 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's internal control.

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

   - conclude on the appropriateness of the energy regulator, 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 SANEDI 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 the auditor's report. However, future events or conditions may cause a public entity to cease to continue 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 here applicable, related safeguards.

Statement of Financial Position

as at 31 March 2017

	Notes	2017 R'000	Restated 2016 R'000
ASSETS			
Non-current assets		**2 028**	**2 351**
Property, plant and equipment	2	1 861	2 114
Intangibles assets	3	167	236
Current assets		**300 509**	**378 169**
Receivables from exchange transactions	4	34 277	5 749
VAT receivable		10 550	1 405
Cash and cash equivalents	5	255 682	371 015
Total assets		**302 537**	**380 520**
LIABILITIES			
Current liabilities		**(115 898)**	**(168 220)**
Payables from exchange transactions	8	(15 838)	(18 441)
Provision for Tax Liability		-	(20 803)
Unspent conditional grants and receipts	6	(89 501)	(111 518)
Provisions	7	(10 559)	(17 457)
Total liabilities		**(115 898)**	**(168 200)**
NET ASSETS			
Accumulated surplus		**(186 639)**	**(212 300)**

Statement of Financial Performance

for the year ended 31 March 2017

	Notes	2017 R'000	Restated 2016 R'000
Revenue			
Revenue from non-exchange transactions	9	54 177	186 948
Revenue from exchange transactions	9	30 593	19 679
Total revenue		**84 770**	**206 627**
Expenditure			
Employee related costs	11	(49 639)	(44 643)
Project costs		(44 425)	(145 911)
Depreciation and amortisation	2,3	(1 345)	(3 693)
Finance Costs		-	(107)
Repairs and maintenance		(707)	(167)
Bad debts provision		(629)	(568)
Operating expenses	10	(13 654)	(17 206)
Loss on foreign exchange		(1)	-
Loss on Fair value adjustment		-	(58)
Impairments	2	(31)	(8)
Total expenditure		**(110 431)**	**(212 361)**
Deficit for the year		**(25 662)**	**(5 734)**

Statement of Financial Position

as at 31 March 2017

	Notes	Accumulated surplus R'000	Total net assets R'000
Restated opening balance as at 1 April 2015		**217 672**	**217 672**
Deficit for the year ended 31 March 2016		(3 525)	(3 525)
Opening balance as at 31 March 2016		**214 147**	**214 147**
Prior Period Errors 2016	19	(1 847)	(1 847)
Restated opening balance as at 1 April 2016		**212 300**	**212 300**
Deficit for the year ended 31 March 2017		(25 661)	(25 661)
Balance at 31 March 2017		**186 639**	**186 639**

Cash Flow Statement

for the year ended 31 March 2017

	Notes	2017 R'000	Restated 2016 R'000
CASH FLOWS FROM OPERATING ACTIVITIES			
Receipts		**152 290**	**308 089**
Grants		124 821	281 236
Interest income		21 315	22 883
Membership fees and sponsorships		6 154	3 970
Payments		**(266 782)**	**(300 980)**
Employee costs		(58 070)	(34 333)
Suppliers		(111 267)	(160 085)
Transfers of funds		(97 445)	(106 562)
Net cash flows from operating activities	12	**(114 492)**	**7 109**
Cash flows from investing activities			
Purchase of property, plant and equipment		(797)	(879)
Proceeds from sale of property, plant and equipment		-	-
Purchase of other intangible assets		(44)	(67)
Net cash flows from investing activities		**(841)**	**(946)**
Net increase in cash and cash equivalents		(115 333)	6 163
Cash and cash equivalents at the beginning of the year	5	371 015	364 852
Cash and cash equivalents at end of the year	5	**255 682**	**371 015**

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.

Carrying amounts

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

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, it's 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:

ITEM	AVERAGE USEFUL LIFE
Furniture, fittings and communication equipment	2 – 15 years
Office equipment	5 years
Computer equipment	3 years
Motor Vehicles	5 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 of 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.

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. Non-current assets held for sale and disposal groups

Non-current assets and disposal groups are classified as held for sale if their carrying amount will be recovered principally through a sale transaction rather than through continuing use. This condition is regarded as met only when the sale is highly probable and

the asset (or disposal group) is available for immediate sale in its present condition. Management must be committed to the sale, which should be expected to qualify for recognition as a completed sale within one year from the date of classification.

Non-current assets held for sale (or disposal group) are measured at the lower of their carrying amount and fair value less costs to sell.

A non-current asset is not depreciated (or amortised) while it is classified as held for sale, or while it is part of a disposal group classified as held for sale.

Interest and other expenses attributable to the liabilities of a disposal group classified as held for sale are recognised in surplus or deficit.

1.7. Impairment of non-cash-generating assets

Cash-generating assets are those assets held by the entity with the primary objective of generating a commercial return. When an asset is deployed in a manner consistent with that adopted by a profit-orientated entity, it generates a commercial return.

Non-cash-generating assets are assets other than cash-generating assets.

Identification

The entity assesses at each reporting date whether there is any indication that a non-cash-generating asset may be impaired. If any such indication exists, the entity estimates the recoverable service amount of the asset.

Recoverable service amount is the higher of a non-cash-generating asset's fair value less costs to sell and its value in use.

When the carrying amount of a non-cash-generating asset exceeds its recoverable service amount, it is impaired.

Irrespective of whether there is any indication of impairment, the entity also tests a non-cash-generating intangible asset with an indefinite useful life or a non-cash-generating intangible asset not yet available for use for impairment annually by comparing its carrying amount with its recoverable service amount. This impairment test is performed at the same time every year. If an intangible asset was initially recognised during the current reporting period, that intangible asset is tested for impairment before the end of the current reporting period.

Value in use

Value in use of an asset is the present value of the asset's remaining service potential.

The present value of the remaining service potential of an asset is determined using the following approaches:

Depreciated replacement cost approach

The present value of the remaining service potential of a non-cash-generating asset is determined as the depreciated replacement cost of the asset. The replacement cost of an asset is the cost to replace the asset's gross service potential. This cost is depreciated to reflect the asset in its used condition. An asset may be replaced either through reproduction (replication) of the existing asset or through replacement of its gross service potential. The depreciated replacement cost is measured as the reproduction or replacement cost of the asset, whichever is lower, less accumulated depreciation calculated on the basis of such cost, to reflect the already consumed or expired service potential of the asset.

The replacement cost and reproduction cost of an asset is determined on an "optimised" basis. The rationale is that the entity would not replace or reproduce the asset with a like asset if the asset to be replaced or reproduced is an overdesigned or overcapacity asset. Overdesigned assets contain features which are unnecessary for the goods or services the asset provides. Overcapacity assets are assets that have a greater capacity than is necessary to meet the demand for goods or services the asset provides. The determination of the replacement cost or reproduction cost of an asset on an optimised basis thus reflects the service potential required of the asset.

Restoration cost approach

Restoration cost is the cost of restoring the service potential of an asset to its pre-impaired level. The present value of the remaining service potential of the asset is determined by subtracting the estimated restoration cost of the asset from the current cost of replacing the remaining service potential of the asset before impairment. The latter cost is determined as the depreciated reproduction or replacement cost of the asset, whichever is lower.

Recognition and measurement

If the recoverable service amount of a non-cash-generating asset is less than its carrying amount, the carrying amount of the asset is reduced to its recoverable service amount. This reduction is an impairment loss.

An impairment loss is recognised immediately in surplus or deficit.

After the recognition of an impairment loss, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

Reversal of an impairment loss

The entity assesses at each reporting date whether there is any indication that an impairment loss recognised in prior periods for a non-cash-generating asset may no longer exist or may have decreased. If any such indication exists, the entity estimates the recoverable service amount of that asset.

An impairment loss recognised in prior periods for a non-cash-generating asset is reversed if there has been a change in the estimates used to determine the asset's recoverable service amount since the last impairment loss was recognised. The carrying amount of the asset is increased to its recoverable service amount. The increase is a reversal of an impairment loss. The increased carrying amount of an asset attributable to a reversal of an impairment loss does not exceed the carrying amount that would have been determined (net of depreciation or amortisation) had no impairment loss been recognised for the asset in prior periods.

A reversal of an impairment loss for a non-cash-generating asset is recognised immediately in surplus or deficit.

After a reversal of an impairment loss is recognised, the depreciation (amortisation) charge for the non-cash-generating asset is adjusted in future periods to allocate the non-cash-generating asset's revised carrying amount, less its residual value (if any), on a systematic basis over its remaining useful life.

Redesignation

The redesignation of assets from a cash-generating asset to a non-cash-generating asset or from a non-cash-generating asset to a cash-generating asset only occurs when there is clear evidence that such a redesignation is appropriate.

1.8. 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 is not straight lined over the lease term.

1.9. 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.

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; or
- On initial recognition 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.

Financial assets

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.

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 uncollectability.

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 or financial 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.

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, i.e. 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.

1.10. 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 reimbursement is recognised when, and only when, it is virtually certain that reimbursement will be received if the entity settles the obligation. The reimbursement is treated as a separate asset. The amount recognised for the reimbursement 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, but disclosed in the notes.

1.11. Revenue

1.11.1 Revenue from exchange transactions

Exchange 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

When the outcome of a transaction involving the rendering of services can be estimated reliably, revenue associated with the transaction is recognised by reference to the stage of completion of the transaction at the reporting date. The outcome of a transaction can be estimated reliably when all the following conditions are satisfied:

- 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;
- 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.

1.11.2 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, 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.

Membership fees

Revenue from membership fees is recognised as revenue from non-exchange revenue and is 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.

1.11. 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 Public Finance Management Act, 1999 (Act No. 29 of 1999) (PFMA); or
- A requirement of the State Tender Board Act, 1986 (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, is subsequently accounted for as revenue in the statement of financial performance.

When the 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.

1.12. 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.

1.13. 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 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.

Other provisions

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.

1.14. 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 or
- 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 recognises 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.

1.15. 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.

1.16. 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 23- Reconciliation between budget and statement of financial performance.

1.17. Prior period error

Prior period errors are omissions from, and misstatements in, the entity's financial statements for one or more prior periods arising from a failure to use, or misuse of, reliable information that was available and could reasonably be expected to have been obtained and taken into account in preparing these financial statements. Such errors result from mathematical mistakes, mistakes in applying accounting policies, oversights and/or misinterpretations of facts.

A prior period error shall be corrected by retrospective restatement except to the extent that it is impracticable to determine either the period-specific effects or the cumulative effect of the error.

Any prior period error affecting the third set of comparable financial statements shall be disclosed as a narrative note to the prior period error note. The statement of changes in net assets will be amended in the prior year comparative financial statements as one line item.

1.18. New standards and interpretations

Standards and interpretations effective and adopted in the current year

In the current year, the entity has adopted the following standards and interpretations that are effective for the current financial year and that are relevant to its operations:

Standards and interpretations not yet effective or relevant

The following approved Standards of GRAP that have been issued, but are not yet effective, are likely to affect the annual financial statements when they are adopted, as these Standards will be used to formulate and inform the accounting policies and disclosures:

1. GRAP 20: Related Party Disclosures
2. GRAP 32: Service Concession Arrangements: Grantor
3. GRAP 37: Joint Arrangements
4. GRAP 38: Disclosure on Interests in Other Entities
5. GRAP 108: Statutory Receivables
6. GRAP 109: Accounting by Principals and Agents
7. GRAP 110: Living and non-living resources

Adoption of the amendments to the Standards of GRAP issued in 2012 and various interpretations of the Standards of GRAP did not have a significant effect on the financial statements.

Notes to the Annual Financial Statements

2. Property, plant and equipment

	2017			2017		
	COST R'000	ACCUMULATED DEPRECIATION R'000	CARRYING VALUES R'000	COST R'000	ACCUMULATED DEPRECIATION R'000	CARRYING VALUES R'000
Furniture and fixtures	1 655	(1 205)	450	1 615	(930)	685
Office equipment	304	(175)	129	269	(117)	152
Computer equipment	4 903	(3 886)	1 017	4 209	(3 260)	949
Leasehold improvements	91	(84)	7	74	(65)	9
Communication Equipment	335	(232)	103	288	(166)	122
Vehicles	211	(55)	156	211	(13)	198
Total	**7 499**	**(5 637)**	**1 862**	**6 666**	**(4 551)**	**2 115**

Reconciliation of property, plant and equipment – 2017

	OPENING BALANCE R'000	ADDITIONS R'000	DISPOSALS/ IMPAIRMENTS 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	47	-	(66)	103
Vehicles	198	-	-	(42)	156
Total	**2115**	**860**	**(32)**	**(1 082)**	**1 862**

Reconciliation of property, plant and equipment – 2016

	OPENING BALANCE R'000	ADDITIONS R'000	DISPOSALS/ IMPAIRMENTS R'000	DEPRECIATION R'000	TOTAL R'000
Furniture and fixtures	956	-	(5)	(266)	685
Office equipment	144	52	(1)	(43)	152
Computer equipment	1 478	616	(2)	(1 143)	949
Leasehold improvements	24	-	-	(15)	9
Communication Equipment	179	-	-	(57)	122
Motor Vehicle	-	211	-	(13)	198
Total	**2 781**	**879**	**(8)**	**(1 537)**	**2115**

Management has reviewed useful lives at 31 March 2017 and concluded that they fairly reflect the expected usage of assets. The condition of the assets and technological obsolescence were considered in determining whether the asset should be impaired. There are no restrictions on title and disposal of property, plant and equipment and none have been pledged as securities for liabilities.

3. Intangible assets

31 March 2017	2017 COST R'000	2017 ACCUMULATED DEPRECIATION R'000	2017 CARRYING VALUES R'000	2016 COST R'000	2016 ACCUMULATED DEPRECIATION R'000	2016 CARRYING VALUES R'000
Computer software	8 099	7 932	167	7 906	(7 670)	236

Reconciliation of intangible assets– 2017

	OPENING BALANCE R'000	ADDITIONS R'000	AMORTISATION R'000	TOTAL R'000
Computer software	236	193	(262)	167

Reconciliation of intangible assets– 2016

	OPENING BALANCE R'000	ADDITIONS R'000	AMORTISATION R'000	TOTAL R'000
Computer software	2 326	67	(2 157)	236

4. Receivables

	2017 R'000	Restated 2016 R'000
Financial assets at amortised cost		
Trade receivables	2 828	2 271
Deposits	362	362
Employee costs in advance	51	13
Prepayments	1 034	1 063
Project prepayments	29 333	1 318
PAYE control	34	-
Lease Smoothing	244	-
UIF control	-	-
Provision for bad debts	(1 467)	(868)
Recoverable fruitless and wasteful expenditure	17	23
Interest receivable	600	1 567
Receivables from exchange transactions	**33 036**	**5 749**
Receivables from non-exchange transactions	**1 240**	**-**
	34 277	**5 749**

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. However conditions should not exist that indicate impairment.

At 31 March 2017 R0 million (2016: R0.165 million) were past due but not impaired.

4. Receivables (continued)	2017 R'000	Restated 2016 R'000
The ageing of amounts past due but not impaired was as follows:		
1 – 3 months past due	-	165
3 – 6 months past due	-	-
6 – 12 months past due	-	-

Trade and other receivables impaired

The amount of the provision was R1 467 million as of 31 March 2017 (2016: R868 million)

The ageing of these receivables was as follows:		
Over 6 months	1 467	868

Reconciliation of provision for impairment of trade and other receivables:		
Opening balance	868	5 180
Amounts written off as uncollectable	-	(4 542)
Additional provision	629	568
Amounts Recovered	(30)	(338)
Provision for doubtful debts	**1 467**	**868**

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

Cash and cash equivalents consist:		
Cash on hand	15	5
Bank balances	255 667	371 010
	255 682	**371 015**

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	2017 R'000	Restated 2016 R'000
Unspent conditional grants and receipts comprises:		
Unspent grants and third party funds	89 501	111 518
Movement during the year		
Balance at the beginning of the year	111 518	115 890
Additions during the year and interest	108 715	223 512
Income recognition during the year	(33 552)	(122 088)
Reclassified to receivable from non-exchange	265	767
Transfers*	(97 445)	(106 562)
	89 501	**111 518**

*An amount of R97 million was repaid, on 10th and 11th May 2016, to the RDP Fund for the EU AID demo project and the Danish renewable energy programme.

These amounts are invested in money market accounts and interest accrues to the invested money.

Unspent conditional grants and receipts comprises:

Danish Commercial Building Project	-	-
European Union Project (COCATE)	350	326
FP7	43	39
Centre for Energy Systems and Research	3 324	5 059
SA Road Map	599	556
SDC EE Monitoring and Implementation Project	201	355
EU Aid Demo Project	68 439	77 410
REEEP	-	-
REEEP Switch Africa	-	159
Wind Resource Mapping (WASA 1)	-	-
Danish Renewable Energy Programme	3 531	21 577
EEDSM HUB	194	129
WASA Support	734	1 025
Solar Technology Roadmap	7 750	3 000
Green Transport SACN	-	208
RECORD	414	-
SAIREC	1 368	1 385
12L GIZ	2 065	-
Soltrain	374	-
Austin Off Shore	114	290
	89 501	**111 518**

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 R'000
Danish Commercial Building Project	-	-	-	-	-	-	-
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 & Implementation Project.	355	-	(1)	-	-	(152)	201
EU Aid Demo Project	77 410	68 460	(5 858)	(73 947)	-	2 374	68 439
REEEP	-	-	-	-		-	-
REEEP Switch Africa	159	230	(660)	-	265	6	-
Wind Resource Mapping (WASA 1)	-			-	-	-	-
Danish Renewable Energy Programme	21 577	22 362	(17 910)	(23 498)	-	1 000	3 531
EEDSM Hub	129	3 000	(3 000)	-	-	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)	-	-	-	-
Green Transport ECO	-	-	-	-	-	-	-
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**

6. Unspent conditional grants and third party funds (continued)

Reconciliation of Unspent conditional grants and third party funds at 31 March 2016

	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 R'000
Danish Commercial Building Project	460	-	-	(462)	-	2	-
European Union Project (COCATE)	457	-	(162)		-	31	326
FP7	135	-	(102)	-	-	6	39
CESAR	4 984	2 150	(2 455)	-	-	380	5 059
SA Coal Roadmap	522	-	(1)	-	-	36	556
SDC EE Monitoring & Implementation Project.	-	2 865	(2 598)		(20)	108	355
EU Aid Demo Project	94 343	151 592	(80 767)	(93 639)	-	5 881	77 410
REEEP	431	-	(435)	-	-	4	-
REEEP Switch Africa	-	187	(29)	-	-	1	159
Wind Resource Mapping (WASA 1)	415	-	-	(415)	-	-	-
Danish Renewable Energy Programme	13 589	31 078	(12 369)	(12 046)	-	1 325	21 577
EEDSM Hub	179	3 000	(3 058)	-	-	8	129
WASA Support	-	1 154	(188)	-	-	59	1 025
Solar Tech Roadmap	-	3 000	-	-	-	-	3 000
Green Transport SACN	375	250	(417)	-	-	-	208
Green Transport ECO	-	3 200	(3 200)	-	-	-	-
RECORD	-	450	(456)	-	-	6	-
SAIREC	-	16 288	(15 750)	-	787	60	1 385
Austin Off Shore	-	391	(101)	-	-	-	290
TOTAL	**115 890**	**215 605**	**(122 088)**	**(106 562)**	**(767)**	**7 907**	**111 518**

7. Provisions

Reconciliation of provisions – 2017	OPENING BALANCE R'000	UTILISED R'000	ADDITIONS R'000	CLOSING R'000
Bonus provision	17 453	17 453	10 559	10 559

Reconciliation of provisions – 2016	OPENING BALANCE R'000	UTILISED R'000	ADDITIONS R'000	CLOSING R'000
Bonus provision	7 511	(24)	9 966	17 453

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	2017 R'000	Restated 2016 R'000
Trade payables	412	473
Accruals	12 726	14 559
PAYE control	-	671
WCA	53	36
UIF control	8	15
SDL control	-	26
Salary control	-	-
Spouse Life Cover	-	2
Pension Fund	186	186
Funeral Fund	-	1
Social Club	-	5
Garnishee control	-	-
Medical aid fund control	-	27
Operating Lease Accrual	-	95
Leave provision	2 454	2 345
	15 838	**18 441**

9. Revenue

9.1 Revenue non exchange is made up as follows:

MTEF allocation	20 625	64 860
Recognition of unspent conditional grants	33 552	122 088
	54 177	**186 948**

9. Revenue (continued)	2017 R'000	Restated 2016 R'000
9.2 Revenue from exchange transactions is made up as follows:		
Interest received	16 091	15 477
Services rendered	4 955	-
Membership fees and sponsorships	837	3 860
Other income	8 680	77
Gains on Foreign exchange	30	265
	30 593	**19 679**
	84 770	**206 627**

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

9.2.1 Other Income		
Income from tenders	-	44
Other debtors written-off	30	-
VAT receivable	8 589	-
Profit on sale of assets	-	-
Refund	61	33
PV of creditors	-	-
	8 680	**77**

10. Operating expenses		
Administration	1 236	2 252
Advertising	55	198
Audit costs	527	1 002
Bank charges	43	60
Computer services	482	334
Board Expenses	68	43
Conferences	183	220
Consulting and legal fees	1 883	1 635
Catering and entertainment	105	149
Lease payments	3 187	3 121
Marketing and promotional expenditure	1 142	887
Insurance	282	227
Other office running expenses	34	287
Printing and stationery	328	509
Subscriptions and membership fees	98	1 531
Telephone	574	577
Travel and accommodation	1 298	1 501
Water and electricity	583	464
Vat Expenditure (SANERI)	1 546	-
	13 654	**14 997**

11. Employee related costs

	2017 R'000	Restated 2016 R'000
Basic	35 135	31 417
Bonus	10 559	9 970
Medical aid – entity contributions	772	617
UIF	98	92
WCA	64	68
SDL	523	312
Other payroll levies	-	6
Leave pay provision charge	108	-
Employee welfare and training	585	354
Recruitment and relocation costs	-	3
Provident and pension contributions	1 346	1 366
Travel, motor car, accommodation, subsistence and other allowances	251	292
	49 441	**44 497**
Directors Remuneration	198	146
Total Employee Related Costs	**49 639**	**44 643**

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.

12. Cash generated from operations

Surplus (Deficit)	**(25 661)**	**(3 525)**
Adjustments for:		
Depreciation and amortization	1 345	3 693
Impairments	31	8
Foreign exchange transactions	1	(265)
Accrued expenses	(843)	(24)
Movement on bonus provision	(27 701)	9 947
Loss on Fair value Adjustments	-	58
Provision for Bad Debts	629	568
Provision for bad debts reversal	-	(337)
Changes in working capital		
	(62 293)	**(3 015)**
Trade and other receivables	(37 832)	(566)
Payables from exchange transactions	(2 603)	3 308
Unspent conditional grants and receipts	(21 859)	(5 757)
	114 493	**7 109**

13. Commitments

	2017 R'000	Restated 2016 R'000
Operating lease commitments: CEF (SOC) Limited		
Minimum lease payments due –		
• Within one year	-	475

Block C, Upper Grayston Office Park, 152 Ann Crescent, Strathavon, Sandton.

The entity has leased Portion 13, remaining Extent of Erf 14, Portion 1 of Erf 14 Simba Township, together with the building erected thereon from CEF (SOC) Limited. The agreement commenced on 1 April 2012 and the rent payable shall escalate annually, on the anniversary date, escalate by 10% or alternatively, shall escalate in accordance with the CPI, whichever is greater. Either party shall be entitled to terminate this lease on six months' written notice to the other party.

Operating lease commitments: City Square Trading 522 (Pty) Ltd		
Minimum lease payments due –		
Within one year	831	3 399
second to fifth year inclusive	-	922
	831	**4 321**

Block E, Upper Grayston Office Park, Erf 20 Simba Township, Sandton.

SANEDI leased units 9 – 12 on the second 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 May 2012 and the rent payable shall escalate annually, on the anniversary date by 8.25%. The lease terminates on 30 April 2017. SANEDI has the option to extend the lease for another 5 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 escalate annually, on the anniversary date by 8.25%. The lease terminates on 31 December 2017. SANEDI has the option to extend the lease for another five years.

Printing equipment		
Operating lease commitments for printing equipment		
Minimum lease payments due –		
Within one year	73	111
second to fifth year inclusive	-	¬73
	73	**184**

SANEDI has entered into a lease agreement, for photocopiers, one lease being for a 24 month period ending 30 November 2017 for 4 printers. This lease has no escalation clause and is payable monthly in advance. Another lease agreement ends June 2016 for one copier with the same supplier.

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.

13. Commitments

	2017 R'000	Restated 2016 R'000
Contractual commitments		
Within one year	66 351	84 170
Second to fifth year inclusive	168	971
	66 519	**85 141**

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 but not contracted for		
Within one year	126 100	964
	126 100	**964**

These are capex commitments budgeted for and approved by the board but not contracted for.

Financing agreement, as well as the Project Concept Notes for the Carbon Capture and Storage Pilot were approved during the financial year by all relevant stakeholder. The financing agreement is under review by the relevant arms of Government for signature by the Minister of Finance.

14. Contingencies

Surplus funds

SANEDI has no surpluses for the year ended 31 March 2017 (Surplus 2016: R0 million). Cash surpluses as disclosed in the statement of financial position are fully committed.

15. Related parties

Compensation to key management – 31 March 2017

	BASIC SALARY R'000	ALLOWANCES R'000	PERFORMANCE BONUS # R'000	SUBSISTENCE AND TRAVEL (REIMBURSED) R'000	LEAVE R'000	ENTITY CONTRIBUTIONS* 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
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**

the entity operates a performance based incentive scheme that is approved annually at the discretion of the Accounting Authority. The Performances bonus amounts as reported includes bonuses for the financial year ended 2014/15 as well as 2015/16. The incentive bonuses for the financial year ended were paid out during the month of April whereas incentives for the financial year ended March 2015/16 were paid out during the month of November.

* 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.

15. Related parties (continued)

Compensation to key management – 31 March 2016

	BASIC SALARY R'000	ALLOWANCES R'000	PERFORMANCE BONUS # R'000	SUBSISTENCE AND TRAVEL (REIMBURSED) R'000	LEAVE R'000	ENTITY CONTRIBUTIONS* R'000	2017 R'000
Mr KM Nassiep- chief executive officer	1 832	89	-	119	315	22	2 377
Ms L Manamela-Chief Financial Officer	1 075	24	-	1	13	13	1 126
Dr AD Surridge	1 254	73	-	33	143	15	1 518
Mr Dr T Mali	1 206	49	-	77	116	15	1 463
Dr M Bipath	1 189	59	-	25	85	15	1 373
Mr C Snyman	1 124	24	-	51	117	15	1 331
Mr D Mahuma	1 308	24	-	63	257	17	1 669
Mr B Bredenkamp	1 249	24	-	48	138	15	1 474
	10 237	**366**	**-**	**417**	**1 184**	**127**	**12 331**

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

	2017 R'000	Restated 2016 R'000
Directors Remuneration	198	146

Board Members' emoluments

Ms N Mlonzi (Chairperson)	-	27
Mr J Marriott (Deputy Chairperson)	-	15
Dr D Hildebrandt	-	21
Ms P Motsielwa	46	82
Dr I Tufvesson (Chairperson)	68	-
Mr Buthelezi (Deputy Chairperson)	50	-
Mr M Mkhize	34	-
	198	**145**

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 Department of Energy and in terms of national legislation. SANEDI is ultimately controlled by the Department of Energy.

Department of Energy	20 625	64 860
Department of Science and Technology	10 850	8 000
Development Bank of South Africa	-	1 154

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

16. 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 and trade payables.

As at 31 March 2017 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:

16. Financial instruments (continued)

At 31 March 2017	Less than 1 year	Between 1 and 5 years	Over 5 years	Non-interest	Total
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

At 31 March 2016	Less than 1 year	Between 1 and 5 years	Over 5 years	Non-interest	Total
Cash and cash equivalents	371 015	-	-	-	371 015
Trade and other receivables	5 749	-	-	-	5 749
VAT receivable	1 405	-	-	-	1 405
Total financial assets	**378 169**	**-**	**-**	**-**	**378 169**
Liabilities					
Trade and other payables	18 441	-	-	-	18 441

Financial instruments by category:

At 31 March 2017	Loans and receivables	Fair value through Profit and loss – held for trading	Fair value through Profit and loss – designated	Non-interest	Total
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

At 31 March 2016	Loans and receivables	Fair value through Profit and loss – held for trading	Fair value through Profit and loss – designated	Non-interest	Total
Cash and cash equivalents	371 015	-	-	-	371 015
Trade and other receivables	5 749	-	-	-	5 749
Loans receivable	1 405	-	-	-	1 405
Total financial assets	**378 169**	**-**	**-**	**-**	**378 169**
Liabilities					
Trade and other payables	18 441	-	-	-	18 441

16. Financial instruments (continued)

Liquidity risk

The entity manages liquidity risk through proper management of working capital, capital expenditure and actual versus forecasted cash flows. Adequate reserves and liquid resources are also maintained. The table below analyses SANEDI's financial liabilities based on the remaining period at the statement of financial position to the contractual maturity date. The amounts disclosed in the table are the contractual undiscounted cash flows. Balances due within 12 months equal their carrying balances as the impact of discounting is not significant.

At 31 March 2017	Less than 1 year	Between 1 and 5 years	Over 5 years	Non-interest	Total
Liabilities					
Trade and other payables	15 838	-	-	-	15 838
Commitments	66 419	-	-	-	66 419
Total financial liabilities	**82 257**	**-**	**-**	**-**	**82 257**

At 31 March 2016	Less than 1 year	Between 1 and 5 years	Over 5 years	Held to maturity investments	Total
Liabilities					
Trade and other payables	18 441	-	-	-	18 441
Commitments	77 920	-	-	-	77 920
Total financial liabilities	**96 361**	**-**	**-**	**-**	**96 361**

Currency Risk

The entity is exposed to foreign currency risk to the extent on its foreign currency denominated receivables and trade payables relating to both Exchange and non-exchange transactions. Our Foreign currency policy provides for hedging. However, the foreign currency risk has been reviewed and assessed not to be significant in relation to our levels of exposure. These exposure levels are monitored on an ongoing basis by the Treasury Department.

17. Fruitless and wasteful expenditure

Reconciliation of fruitless and wasteful expenditure	2017 R'000	Restated 2016 R'000
Opening balance	128	36
Fruitless and wasteful expenditure – relating to current year	-	129
Less: Amounts condoned by the Board of Directors	(128)	(36)
Less: Amounts Recovered	-	(1)
Fruitless and wasteful expenditure awaiting condonation	**-**	**128**

18. Irregular expenditure

Reconciliation of irregular expenditure		
Opening balance	120	426
Irregular expenditure – relating to current year	-	120
Less: Amounts condoned by Board	(120)	(426)
Irregular expenditure awaiting condonation	**-**	**120**

18. Irregular expenditure (continued)

	2017 R'000	Restated 2016 R'000
Contravention of legislation (Preferential Procurement Policy Framework Act)		
Goods and services not evaluated		
• Goods and services were procured without the evaluation of services providers as required by the PPPF Act. R0. (2016: R0.044).		
Deviation not approved by the appropriate authority		
• Goods and services amounting to R0 (2016: R0.75) were procured without deviations being approved by the appropriate authority.		
Reconciliation of irregular expenditure		
Opening balance	3 846	19 528
Irregular expenditure – relating to current year	-	-
Less: Amounts condoned by National Treasury	-	-
Less amounts written off	(3 846)	(15 682)
Irregular expenditure awaiting condonation	**-**	**3 846**

Condonation of irregular expenditure

National Treasury has condoned irregular expenditure amounting to R14.589 million relating to 2012/13 to 2013/14 financial years. An amount of R5.842 million from the previous financial year was not condoned by National Treasury, as well as an amount of R0.760 million relating to irregular expenditure incurred during the previous financial years (2014/15 and 2015/16). The amounts are not recoverable in law and will thus be written off.

19. Prior period errors

	Restated 2016 R'000
The correction of the error(s) results in adjustments as follows:	
Statement of financial position	
Receivables from Exchange transactions	425
Accruals	(37)
Accumulated Surplus	(1 847)
Deferred Income	1 385
Statement of financial performance	
Revenue from Non exchange	1 385
Project Costs	(1 385)
Operating expenses	2 209

The deferred income for the SAIREC project (2015: R0 million) was understated during the 2015/16 reporting period by R1, 385 million as a result of an erroneous allocation of a R2, 171 million non-project invoice to the project. As a result of this incorrect allocation, accounts receivable from non-exchange were overstated by R0, 788 million, Project expenses were overstated by R1, 385 million and operating costs by R2,171 million .

Receivables from exchange were understated by R0, 362 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 year being received after the financial year end and project expenses being understated by the same amount.

20. Statement of comparative and actual information

	NOTES	ORIGINAL BUDGET	BUDGET ADJUSTMENTS	FINAL BUDGET	FINAL OUTCOME	VARIANCE	ACTUAL OUTCOME AS A PERCENTAGE OF ORIGINAL BUDGET	ACTUAL OUTCOME AS A PERCENTAGE OF FINAL BUDGET
Financial performance								
Grants and other receipts	1	(191 245)	-	191 245	(84 770)	(106 475)	-44%	-44%
Total income		**(191 245)**	**-**	**191 245**	**(84 770)**	**(106 475)**		
Employee costs		32 156	17 483	49 639	49 639	-0.23-	154%	100%
Depreciation and asset impairment		5 607	-	5 607	2 005	3 602	36%	36%
Project costs	2	135 438	-	135 438	44 425	91 013	33%	33%
Operating expenditure	3	19 065	-	19 065	14 361	4 704	75%	75%
Total expenditure		**192 266**	**-**	**209 749**	**110 431**	**99 318**		
Surplus for the year					**25 661**	**(7 157)**		

Notes

1. The variance between budgeted figures and the actual revenue recognised was as a result of under-expenditure in the EU Smart metering project due to delays in receipt of funds back from the RDP fund. There was also a delay with the finalisaton of the financing agreement for the Carbon Capture and Storage pilot resulting in delays in spending.

2. The variance in projects expenses was mainly as a result of delays in the EU Smart metering project and SACCCS projects.

3. Stringent cost cutting measures were employed to keep operating costs as low as possible to redirect costs towards project related expenses.

NOTES:

NOTES:

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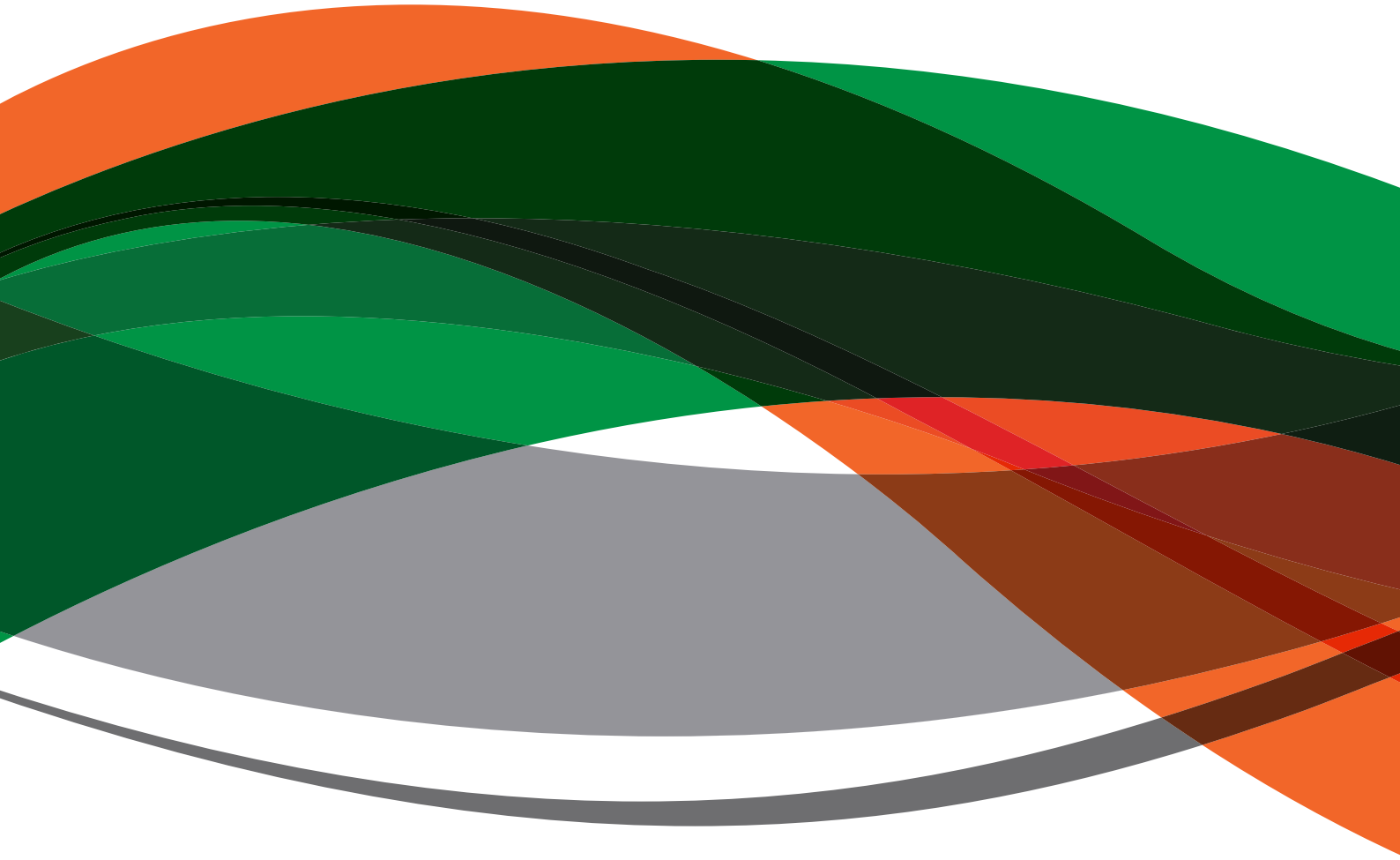

sanedi

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).

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