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Foundation**



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Draft Annual Performance Plan

2015/16-2017/18

Programme 4

SOUTH AFRICAN ENVIRONMENTAL OBSERVATION NETWORK (SAEON)

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1. SITUATIONAL ANALYSIS

1.1. Overview

The South African Environmental Observation Network (SAEON) is a comprehensive, sustained, coordinated and responsive national network of *in situ* environmental observatories that delivers long-term reliable data for scientific research; and that also informs decision-making for a knowledge society and improved quality of life. SAEON offers public value through long-term multi-disciplinary observation programmes and platforms that are designed to clarify earth system dynamics and changes over multiple scales, and to distinguish between natural and anthropogenic environmental change. Public value is also created through the development of open-access data systems and tools.

1.1.1 SAEON's contribution to the strategic goals of Programme 4

1. Human Capacity Development	<ul style="list-style-type: none"> • Scientists supervise post-graduate students at various universities • Scientists do part-time teaching of undergraduate and post-graduate students at various universities • Financial and other forms of support are provided to staff members pursuing studies for higher educational qualifications • Financial and other forms of support are provided to the SAEON-affiliated national Graduate Student Network (GSN) • Training and development opportunities are provided to staff members to enhance their knowledge base, and improve skills and competencies • Scientists mentor DST/NRF interns • Research career awards fellows and other post-graduate fellows are hosted and supervised by established SAEON scientists • A fully-fledged programme on science education and outreach is run as one of the core business thrusts
2. Research Infrastructure	<ul style="list-style-type: none"> • Environmental observatories (field stations and research sites) are equipped with arrays of instrumentation for environmental monitoring and research • Laboratories are equipped with apparatuses for conducting bio-physical and chemical tests on environmental phenomena • Data portal has been developed and is being continuously populated with data • Domain-specific data centres such as the southern African Data Centre for Oceanography (SADCO) are supported financially and logistically • Research vessels and off-road vehicles have been acquired • Video-conferencing facilities and other advanced information and communication technology (ICT) hardware and software have been acquired
3. Knowledge Generation	<ul style="list-style-type: none"> • Scientists conduct research to calibrate new technologies for detecting, predicting and monitoring environmental change • Scientists conduct research to establish drivers of environmental change in specific eco-zones • Scientists conduct research to understand the effect of, and the response to environmental change in specific eco-zones • Scientists undertake client-directed research and development to enhance decision-

	<ul style="list-style-type: none"> making in natural resource management • Scientists generate publications, technical reports and conference proceedings that report on generated knowledge
4. Internationalisation and Mobility	<ul style="list-style-type: none"> • Scientists participate in international alliances and networks, for example, ILTER, ICSU, IPBES, SGA • Scientists sit on international scientific panels and commissions • Scientists collaborate with their counterparts from overseas institutions on specific research projects • From time-to-time SAEON hosts post-graduate students from overseas universities
5. Retail opportunities	<ul style="list-style-type: none"> • These are not yet developed at SAEON
6. Support and Administration	<ul style="list-style-type: none"> • Shared service model was adopted to reduce overhead costs, and improve effectiveness and efficiency • Finance, supply chain and human resource services are provided from a central location, the National Office • Offices of SAEON have administrative support staff • Scientists are supported by a sizeable complement of technical support staff
7. Science Engagement	<ul style="list-style-type: none"> • Science education: projects to capacitate secondary school teachers, and to engage secondary school learners in practical school-based environmental science projects • Science awareness: participation in national science awareness platforms such as national science week, science festival (SciFest), national marine and water weeks • Science communication: disseminating science information through newsletter articles, presentation in conferences and symposia

1.1.2 SAEON's contribution within the NSI

The mandate of SAEON is to serve as the national instrument for detecting and translating environmental change, and for predicting the impact of such change on terrestrial and marine ecosystems. SAEON carries out this mandate by establishing and maintaining state-of-the art observation and monitoring sites and systems; driving and facilitating research on long-term change of South Africa's terrestrial biomes, coastal and marine ecosystems; developing and maintaining collections of accurate, consistent and reliable long-term environmental databases; promoting access to data for research and/or informed decision making; and contributing to capacity building and education in environmental sciences.

SAEON spearheads the national agenda of ensuring that long-term data is archived and extrapolated for large-scale interpretation, as a national asset for generations to come. Making data sets accessible and available to researchers online eliminates much of the frustration that researchers would normally face, and therefore affords them the opportunity to increase their research outputs. SAEON also provides decision makers access to the data that they require to make informed decisions on matters of national importance.

The science education and outreach programme of SAEON seeks to empower science teachers and influence high school learners to develop interest in environmental sciences. Independent assessors commended the objectives and implementation process of the programme, and its positive results are increasingly being acknowledged by key stakeholders in the human capacity development sector nationally.

SAEON has also created a structured forum for post-graduate students that are pursuing studies in fields that relate to SAEON's mandate. The forum is officially known as the SAEON Graduate Student Network (GSN), and it facilitates interaction and sharing of ideas among the students. SAEON funds GSN activities which include annual research training and conference. SAEON also supports GSN members through partial funding for their attendance of international conferences.

As a public organisation SAEON offers public value as illustrated in Figure 1 below. The primary value drivers are found in the way the organisation is structured and relates with its stakeholders (society, scientists, government, and industry). These drivers are 'comprehensive, sustained, coordinated, and responsive', and they work together to deliver the 'currency', or Primary Public Value, of SAEON which is 'Long-term Reliable Environmental Data'. SAEON has sufficient (though not total) control over these drivers to allow their use as Key Value Drivers.

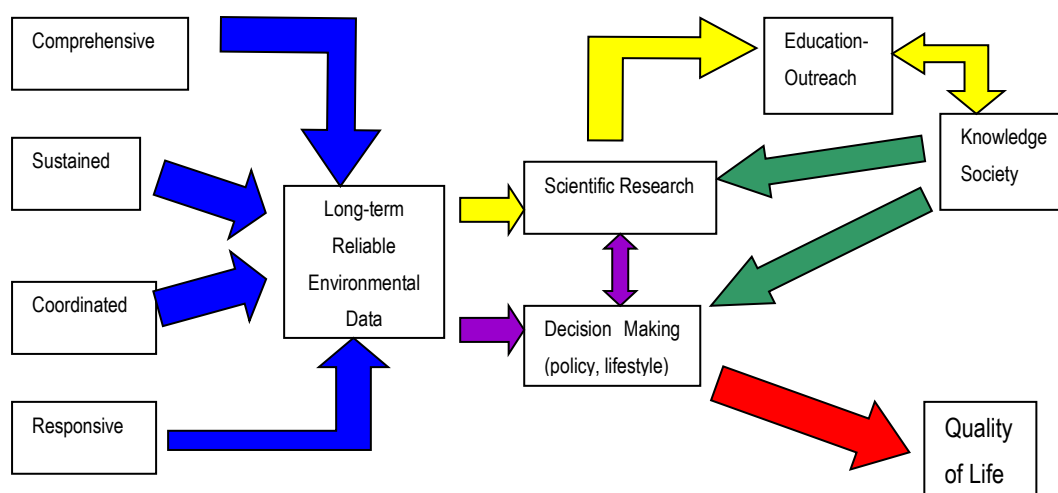


Figure 1: Value delivery by the South African Environmental Observation Network.

SAEON is also in the position to enhance its Primary Public Value by using it for Scientific Research. Scientific Research is valuable in two ways namely for use in Decision Making (policy by government, management and lifestyle decisions) or as input into formal and public education; both channels contribute to a Knowledge Society. In turn, a Knowledge Society either asks informed questions for Scientific Research and/or contributes to Decision Making at all levels (individual to societal). By making it publicly accessible, SAEON's data should also contribute directly to Decision Making. Overall, evidence-based Decision Making leads to improved Quality of the Environment and by implication, of Life. The three generic Public Values (accountability, efficiency and equity) pervades the SAEON value chain.

SAEON provides comprehensive and reliable data and information about environmental change in the long-term. Faced by an ever-changing and uncertain world, society is ever in need of this type of data and evidence-based information to help improve the current situation and to plan for future prosperity.

SAEON observation systems are custom-designed based on current scientific understanding. Improved knowledge and understanding derived from SAEON's own as well as external work provide feedback for the continuous transformation of these systems, thereby increasing their value delivery.

1.1.3 SAEON's contribution globally

SAEON fulfils the Long-term Ecological Research (LTER) niche within the National System of Innovation (NSI). LTER is a global initiative that seeks to provide greater understanding of the trends in global environmental change and its impacts, and promote the development of strategies for adapting to the change. LTER recognises that predicting the specific times at which change is likely to reach undesirable thresholds is possible only if a sufficiently long, detailed and consistent record is kept. LTER sites have been established in key ecosystems around the world and they have demonstrated their worth as platforms for gaining and consolidating the understanding of human-environment interactions. SAEON management and scientists participate in activities of ILTER and serve on various committees of the ILTER body.

SAEON also participates in International Council for Science (ICSU) data and information management programmes, as well as in the Nairobi Convention data clearing house mechanism. It also played a role in the development of the World Data Centre for Biodiversity and human Health (WDCBHH). The leadership of SAEON has also been part of the Future Earth and International Platform for Biodiversity and Environmental services (IPBES) discussions in Africa. Equally worth mentioning is the fact that SAEON was a founder member of the now inactive Environmental Long-Term Observatories in Southern Africa (ELTOSA) network, and it is also part of the initiatives led by the Department of Science and Technology (DST) and the National Research Foundation (NRF) to resuscitate ELTOSA.

1.1.4 SAEON structure

SAEON consists of six geographically dispersed nodes each of which runs environmental observatories (field stations and research sites) within the particular ecoregion. Taken together, the environmental observatories represent the diverse landscapes, coastal areas, and the offshore marine environments in South Africa. Since SAEON is a network organisation, the nodes are hosted by stakeholder organisations. Many stakeholder organisations had expressed interest in hosting the nodes, and a transparent adjudication process involving independent consultants had to be followed to select the best suited hosts. Table 1 below lists the six SAEON nodes, their respective ecological regions and host organisations.

Table 1: List of the SAEON Nodes

Name of Node	Ecological region	Location of Node Offices	Host organisation
Arid Lands	Arid and semi-arid	Kimberley	South African National Parks
Egagasini	Marine off-shore	Cape Town	Marine & Coastal Management
Elwandle	Coastal and marine on-shore	Grahamstown	South African Institute of Aquatic Biodiversity (SAIAB)
Fynbos	Cape flora	Cape Town	South African National Biodiversity Institute (SANBI)
Grassland	Grassland, forests & wetlands	Pietermaritzburg	Ezemvelo KwaZulu-Natal Wildlife
Ndlovu	Savanna	Phalaborwa	South African National Parks

The administrative hub of SAEON is its National Office in Pretoria. Using a shared services model, support services as finance, procurement and supply chain, human resource, payroll, communication and stakeholder relations services are provided to the nodes from the central location at the National Office.

The organogram presented as Figure 2 below shows the internal structure and portfolios within SAEON.

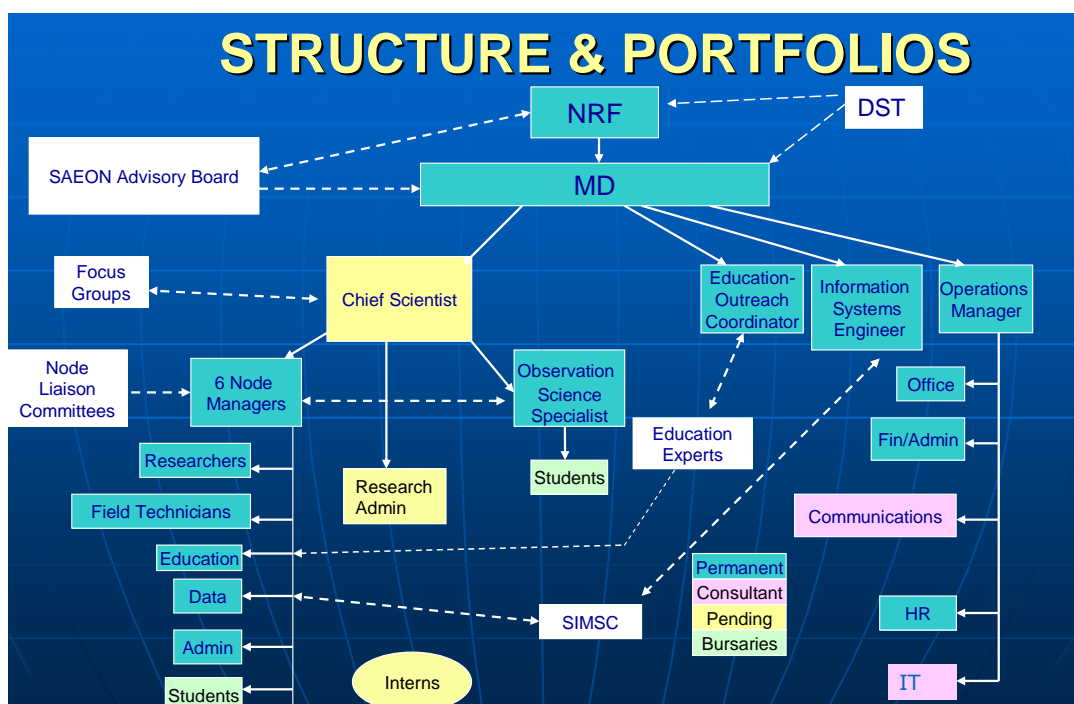


Figure 2: SAEON Structure and Portfolios

1.2. Primary activities

SAEON's primary activities are environmental observation, data management platforms and environmental science education-outreach.

The Global Change Grand Challenge recognises that human activity, especially in a globalised world, leads to consumption of natural resources and disruption of the natural systems that support human life. In order to attain national economic growth we need to secure ecosystem goods and services by becoming leaders in sustainable management of our natural environment. With the inherent variability of natural systems in mind, the primary activity of SAEON is to generate long-term information relevant to the sustainable management of natural resources and systems over a range of eco-regions and land uses. The consistent observation of ecosystems over decades and longer is the only way to obtain scientific evidence of real change taking place when temporal variability is the order of the day. The outcome of a long-term environmental observation system is the understanding and reliable information upon which adaptation strategies can be developed.

SAEON's second primary activity is the development and running of data management platforms. A number of these platforms have already been developed and include the SAEON data portal, the South African Earth Observation System (SAEOS), the South African Risk and Vulnerability Atlas and the Nairobi Clearinghouse Mechanism data portal. SAEON is internationally recognised as a leading player in this field and therefore participates in the World Data System of ICSU and the Global Earth Observation System of Systems (GEOSS) of GEO. SAEON employs a systems engineer and several data managers.

The third primary activity is that of environmental science education-outreach to high schools. The education-outreach programmes benefits learners and teachers alike. SAEON employs an education-outreach coordinator and several education-outreach officers.

1.3. Sources of Funding

The financial resources of SAEON are in the main medium-term expenditure framework (MTEF) government funding from Department of Science and Technology and National Research Foundation. The core/MTEF grant increased from R1.3 million in 2002/3 to R23.5 million in 2014/15 financial year (Figure 3).

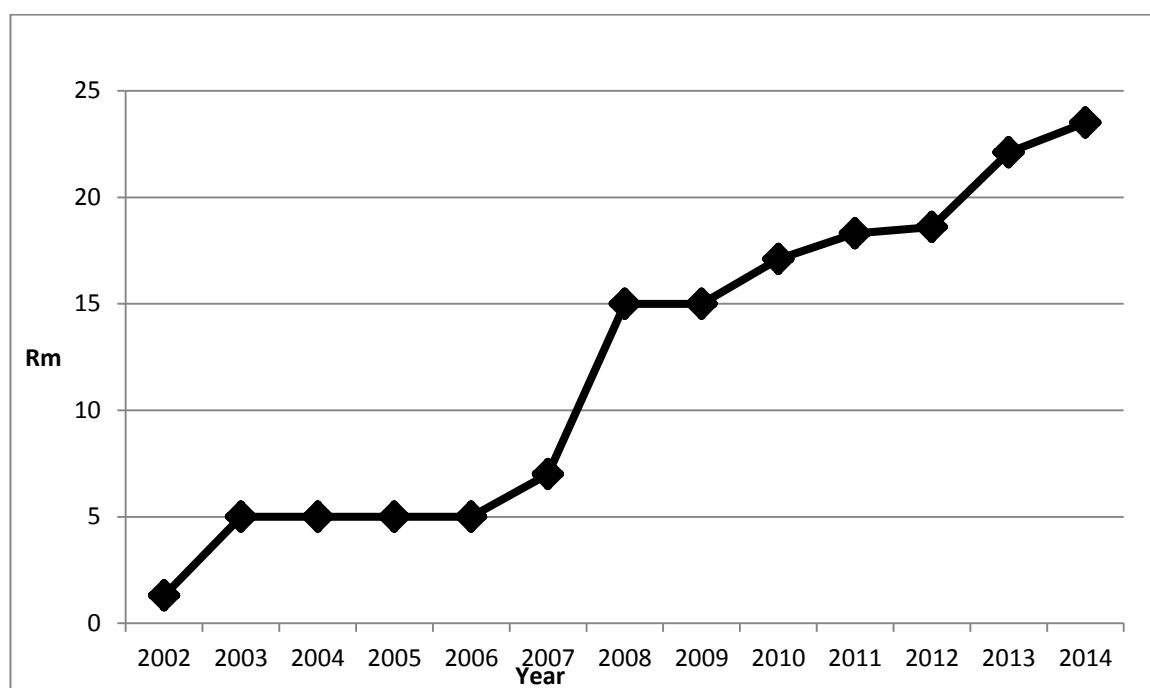


Figure 3: Growth in SAEON's annual core funding

In addition to the core grant, SAEON also raises an average of R4 million per annum in contract funding, collaborations and successful grant applications. As an organisation for public good, however, it will remain largely dependent on the core grant from the Government and internal grants from the National Research Foundation. This is so because chasing contract funding at all cost could unintentionally result in the organisation deviating from its mandate. Furthermore, obligations attached to contract funding are sometimes difficult to fulfil and necessitate deployment of much more human and other resources than could be anticipated at the contracting stage. Annexure A lists the current contracts.

2. ALIGNMENT TO OBJECTIVES

2.1. Human Capacity Development

Human capacity development is an activity that cuts across all programmes of SAEON. Postgraduate students are trained and interns are mentored as part of the activities of SAEON's science and data and information management programmes. Post-doctoral fellows are also supervised under the professional development programme (PDP) of the DST and NRF. In addition, SAEON's education outreach programme is focused on human capacity development. The programme focuses on exposing school learners to the actual science of environmental observation, data collection, analysis, reporting and disseminating findings of hand on projects. School learners are engaged in hands-on, enquiry-based teaching and learning to demonstrate the value of long-term and large-scale environmental observation and monitoring. Furthermore, there are training and human resource development initiatives aimed at enhancing and improving job-related competencies for SAEON staff. Some of these are organised and facilitated by the Corporate Human Resource Development Unit, while others are sourced at programme level and paid for by SAEON. There is also the education support scheme whereby staff members pursuing studies for higher formal qualifications are provided with financial support.

All the above capacity development activities will continue into the 2015/16 to 2017/18 plan period. So far these initiatives take an average of 5% of total investment, and the plan is to increase this to 8% by the end of 2017/18. The outputs of the human capacity development projects include graduating students, higher qualifications for staff, interns mentored, learners and teachers reached and supported under the education outreach programme, and more competent staff as a result of training interventions.

2.2. Research Infrastructure

SAEON is largely still in the building phase. As per its mission, it has to develop and maintain infrastructure at the environmental observatories. In the formative years a portion of the core MTEF grant could be deployed towards infrastructure and equipment acquisition and recapitalisation, but in recent years the MTEF core grant is only able to cover salaries and some running costs, and thus SAEON has to look elsewhere for the funding for capital and infrastructure development. So far, there has been funding from the NRF's Strategic Research Infrastructure Grant (SRIG) programme that has been deployed towards the acquisition of equipment. The SRIG funding obtained has grown from R500 000 in 2009/10 to R10 million 2013/14. SAEON has R5 million in SRIG funding to spend in 2015/16.

Besides SRIG, the acquisition of some other pieces of capital equipment has been funded by contract funding and donations. The contract with the French Centre for International Research for Agricultural Development (CIRAD) for instance had a budget for camera and other field equipment. The contract with Petroleum, Oil and Gas Corporation of South Africa (PetroSA) also had an equipment budget, and so too the contract with DEA for the Stream Flow Project. It is expected that contracts will fund up to R700 000 for equipment and infrastructure development during the 2015/16 to 2017/18 planning period.

Currently the research facilities available at the nodes include automated weather stations, field-based apparatuses for assessing and monitoring flora, fauna, soil, water and the atmosphere. There are also reasonably equipped laboratories for conducting bio-physical and chemical tests on environmental phenomena, and for analysing properties of plant and

animal specimens. Other facilities include off-road vehicles, a near-shore boat, as well as relevant hardware and software for processing and archiving data, generating data products, and making data accessible to end users. The coastal and marine nodes join the research sea cruises of international programmes, but they have also acquired various own oceanographic research instruments including current meters, ARGO floats and diving gear.

Table 1: Investment in Research Infrastructure ('000)

	2013/14			2014/15			Budget		
Expenditure Type	Budget	Actual Expenditure	NET	Budget	Actual Expenditure	NET	2015/16	2016/17	2017/18
Capital	1 755	1 314	441	8 204	1 271	6 933	4 231	2 060	1 850
Repairs and Maintenance	173	251	(78)	287	115	172	100	120	100
TOTAL	1 928	1 565	363	8 491	1 386	7 105	4 331	2 180	1 950

2.3. Knowledge Generation

There are two programmes that seek to advance the knowledge generation objective and that will continue to run over the 2015/16 to 2017/18 plan period. One is known as *Ridovhona*, a Tshivenda word meaning 'we shall see' and the programme adopted this name because it is about keeping an eye on environmental change. The activities of *Ridovhona* are, in the main, the observation and monitoring of environmental change to provide for incremental advances in the understanding of ecosystems, and increase our ability to detect, predict and react to environmental change. The programme encompasses intensive fieldwork by scientists and technologists. Repeated observations at fixed locations or research sites are undertaken. The main stay of the project is *in situ* observation. Remote sensing, modelling and other techniques are used in a supportive role.

The second knowledge generation programme focuses on stream flow monitoring which is about monitoring the flow of water in streams and rivers within the major catchment in the country. The programme will establish a South Africa-wide platform for interdisciplinary research on the ecohydrology of water catchments to understand the impact of land-use, land management and climate change on the supply of fresh water.

Key outputs of the two knowledge generation programme include long term data sets, peer-reviewed journal articles; books and/or chapters in books; research reports; conference presentations; scientific workshops; quadrennial SAEON Science Summit; and formal science networks.

Up to 67% of total MTEF and contract funding is invested in knowledge generation, making the two programmes the flagships of SAEON. It is expected that knowledge generation will continue to take up the same proportion of MTEF and contract funding investment over the 2014/15 to 2017/18 planning period.

2.4. Internationalisation and Mobility

The internationalisation and mobility programme of SAEON is still a small but fast growing one. SAEON has been a member of ILTER for more than a decade and the Managing Director serves on the ILTER executive committee and the Fynbos Node Manager serves on the ILTER science committee. The SAEON Chief Data and Information Officer serves on various committees of ICSU's data programme, while the SAEON Chief Research Scientists is an honorary member of

the National Science Foundation in the United States of America. Over the years there has been project level collaboration with a number of overseas universities notably from the United States of America, Germany, France, Poland and Mexico. Within Africa there has been collaboration and science networking particularly in the coastal and marine science as part of the Western Indian Ocean Marine Science Association (WIOMSA). SAEON is steadily increasing its profile and contribution within the South African National Systems of Innovation (NSI) with up to 75% of its active projects being those that it undertakes in collaboration with researchers from local science councils, universities, Government Departments and other research institutions.

Over the plan period of 2015/16 to 2017/18 SAEON will seek to expand its internationalisation and mobility programme whose main activities include collaborative research projects, exchange visits, hosting of international research groups, and joint publications. The average level of investment in the programme over the years has been 1%, the envisaged expansion could bring this to 2% over the 2015/16 to 2017/18 period.

2.5. Major developments over the three year MTEF period

- SAEON will develop research infrastructure at the Tieberg Karroo Research Centre in Prince Albert. The almost 100 hectare property was donated to SAEON for use as a research centre.
- SAEON will become the only non-library institution accredited to manage digital object identification (DOI) system. Through this SAEON will provide citation-linking services for the scientific publishing sector.
- Capacity in the data and information management programme will be further enhanced by the appointment of two senior data managers.
- SAEON will undertake to position the data portal and associate platforms such as the SAEOS, Bionergy Atlas and Risk and Vulnerability Atlas as important components of the National Integrated Cyberinfrastructure (NICIS), in which NRF and SKA are expected to play a significant role.
- The education outreach programme that for a long time has been running in only three of the six SAEON nodes will be rolled out to all nodes because posts for education officers at the three remaining nodes will be established and filled.
- SAEON will play a greater role in international programmes such as the International Platform for Biodiversity and Ecosystem Services (IPBES), Group on Earth Observation- Biodiversity Observation Network (GEOBON), Future Earth and Africa's Chapter of the Global Earth Observation System of Systems (GEOSS).
- SAEON will increase its participation in policy matters following the appointment of a Science-Policy Interface Coordinator.

3. IMPLEMENTATION PLANS

3.1. The Science Plan

The following are main points in the science plan of SAEON over the plan period of 2015/16 to 2017/18:

- Integration of monitoring activities with models of possible futures. For example, models of future climate, models of future vegetation, ocean models of expected futures. SAEON will ensure that its data collection covers expected futures so as to test their validity.

- Integration with remote sensing programmes so that SAEON's largely ground-based studies can be used to calibrate and ground-truth remotely sensed data and assist in developing ways of generalising from our node studies to larger areas.
- Analysis of existing long-term data sets to detect historical trends that have produced our present environmental conditions and are likely to determine our future. Such analyses would promote SAEON as an important source of environmental data, would help guide our data collection by showing, for example, the necessary frequency of monitoring, crucial variables that are needed, and where experimental studies are necessary for untangling possible drivers. Examples of such data sets might include: (a) land-cover change: produce a brief report for the public on environmental change over the last 50+ years; (b) collate information from agricultural research stations to explore trends; (c) hydrological changes. Compare current run-off records with matched years in the 20th century records to detect changes in hydrological responses, if any; (d) fisheries: contrast current with past data on catches; (e) estuarine changes in biodiversity: document, especially, influence of marine, estuarine, conservation strategies and their efficacy for conserving our fisheries.
- Developing collaborations with resource economists and social scientists on societal implications of environmental trends. What matters and what resources need to be diverted to cope with a perceived problem?
- Developing collaborations with land managers (fisheries/coastal/estuarine implementing agencies) for strategies for responding effectively to environmental changes. For land cover change, this includes 'Working on' programmes, such as the Working on Fire, Working for Water.
- Monitoring and researching 'disasters', 'tipping points', 'thresholds': (a) extreme fire events and their causes; (b) coastal storms; and (c) droughts/floods.
- Taking a lead in earth system science and thereby ensuring that SAEON is well placed to provide the data for the developing area of earth system science in South Africa. We need to collaborate, and not compete, with ACCESS in what will become a critical science for planetary futures. SAEON is already seen as a critical part of a successful earth system science programme for its ability to provide long term ground-based and sea-level data.
- Initiating and facilitating experimental studies to understand causes and consequences of environmental change and also key interventions to direct trajectories to preferred states. E.g. global change experiments manipulating forcing factors such as precipitation, CO₂, temperature, disturbance agents. Typically such experiments are of longer duration than the academic cycle (2-4 years) of postgraduate studies.
- Developing, sustaining and encouraging critical node-specific research, e.g. in new arid-land node.
- Developing inter-node research programmes for a national perspective on critical topics. Examples might include (a) integrated hydrological studies in different climate zones; and (b) integrated climate-change studies across altitudinal gradients in different climate zones.

3.2. The Operations Plan

The operations of SAEON are guided by the principle of 'world-class service' which is one of the values of the NRF. World-class service organisations achieve best performance results by adopting best-practices in service management, including superior process management, people management, financial and non-financial resource management and management of networks, technology and information. World-class service organisations have a clear vision and model for providing internal and external services; they continuously strive to develop and improve on their processes; they deliver outstanding service routinely and consistently; they are always ready to respond to reasonable request for services at all times; and their service staff routinely pay attention to detail.

SAEON adopted a shared service model of operation in 2009 and it intends to consolidate this mode of operation during the 2015/16 to 2017/18 plan period. This model is popular as a framework for reducing administrative support costs and adding value to the core activities of an organisation. SAEON's National Office is the shared service hub, based on a location that is neutral to each of the nodes, and which hosts reasonable levels of capacity and competence in vital support functions such as human resource management, finance, registry, procurement, research administration, communication and stakeholder relations, compliance enforcement and monitoring, events coordination and management, contract management, and corporate reporting, amongst others. Modern communication technologies including video-conferencing facilities, electronic mail system, scanning systems, telephone, fax machines and courier post have made it possible for the services to be rendered to all six (6) SAEON nodes, in a relatively efficient manner. These will be developed further during the 2015/16 to 2017/18 plan period.

Information and communication technology (ICT) are key to the effective and efficient running of SAEON's operations. Prior to 2011 the National Office and the nodes were on different ICT systems. In 2011 an ICT Consultant was hired to integrate the ICT systems across SAEON, and the process is still in progress. The following ICT infrastructure components were acquired to support the integration process:

- IBM Blade Centre S that serves as the central hosting server at the National Office;
- File Servers for node offices
- Network hardware switches and other accessories
- Server software licences for the National Office and the node offices.

To date, a cloud hosting solution has been implemented at the National Office which is scalable to enable better communication with the node offices around the country, and has capabilities of hosting central applications that all nodes can make use of. Cisco Network equipment with the capability for voice over IP for future implementations has also been installed at the National Office. Similarly the hardware and software have been standardised across SAEON. An active directory capable of doing centralised authentication for all nodes is also in place, and the implementation of the first phase of disaster recovery and off-site data storage mechanisms is underway. Further up-grading to the hardware and software systems will be undertaken during the 2015/16 to 2017/18 plan period

The ICT system is now linked to the South African National Research Network (SANREN) for more robust connectivity to Internet broad band. The nodes are connected to the SANREN via the Tertiary Education and Research Network of South Africa (TENET) ADSL. The International Science Council Regional Office for Africa (ICSU-ROA) is also utilising SAEON's ICT network.

Other operational developments planned to be undertaken during the 2015/16 to 2017/18 period include the following:

- The SAEON National Office in Pretoria and the Fynbos Node in Cape Town will move to new own premises. Processes are already underway to purchase properties in Pretoria and Cape Town that will be renovated to customise them to office needs.
- The SAEON Elwandle Node will move from SAIAB premises in Grahamstown to Nelson Mandela Metropolitan University (NMMU) in Port Elizabeth. The latter is a more convenient location in terms of access to Algoa Bay, airport and other facilities.
- SAEON will develop and host the offices of the southern African chapter of the Sustainable Development Solution Network (SDSN) which is a global initiative of the United Nations.
- Large scale procurement of research equipment will be undertaken using the SRIG funding.
- The newsletter project will continue to be SAEON's communication and stakeholder relations flagship.

- A follow up to the *SAEON Story 2007-2011* will be compiled and produced to cover the period 2012-2016. This will showcase the main activities undertaken and achievements realised during the 2012-2016 period.

3.3. Internationalisation

A large proportion of SAEON's international activities have been in the area of data and information management. These activities are to continue into the 2015/16 to 2017/18 period and include the following:

- Participation in Group on Earth Observation (GEO) symposia and workshops activities as part of support for the South African chapter of GEO (SAGEO) and South African Earth Observation Strategy (SAEOS) and in European group on Earth Observation System of Systems (GEOSS) programmes.
- Participation in the programmes of ICSU's Committee on Data for Science and Technology (CoDATA) and World Data System Scientific Committee.
- Participation in the programmes of Global Network of Networks' Eye on Earth Working Group.
- Development of prototype systems and business planning for World Data Centre on Biodiversity and Human Health (WDBHH) and Network Data Centre for Socio-Economic Data in Africa

The programme on collaboration in research projects with universities in Europe, United States of America, Australia and Africa will also continue and expand by developing more joint projects and involving more numbers of researchers and students, as well as more exchange visits. The international scientific liaison programme including the participation in ILTER meetings and workshops will also continue, and expand to include scientific liaison within the African continent. SAEON will also work under the auspices of the DST and the NRF to resuscitate the inactive environmental long-term observatories network of southern Africa (ELTOSA).

4. RESOURCING, SUPPORT

4.1. Human Resources

The staff complement of SAEON has grown steadily from one (1) individual in 2002 to fifty-seven (57) in 2014. The plan in the next three years is to increase the staff complement to a total of 68. Of the 57 current staff members, 32.58% are in the professional categories, mainly scientists, and 52.6% are in the skilled technical category, mainly field technicians. With the planned total staff complement of 68 by 2018, 40% will be in professional categories and 47% will be in the skilled technical category. These percentages reflect that SAEON places and will continue to place priority on having more staff members who work directly on its core business, and these are the scientists and technical staff. The professional and skilled technical categories are further augmented by interns, and in 2014 there were eleven (11) interns hosted at the different SAEON offices. Administrative and other service support staff members constitute just 23% of the staff across SAEON, and this proportion will drop to 20% by 2018. The current and planned staff complement is summarised in Table below, with more details in Annexure B.

Table 3: Current and planned staff numbers by category				
Staff category	Number of staff members			
	Current	2015/16	2016/17	2017/18
Top Management	-	-	-	-
Senior Management	1	1	1	1
Professionals	18	22	26	27
Skilled Technical	30	32	32	32
Semi-skilled	8	8	8	8
Unskilled	-	-	-	-
Total	57	63	67	68

Remuneration of staff is the single largest cost factor within SAEON and it stood at 60% of total investment 2013/14 and is estimated to account for 63% of total investment in 2014/15, 64% in 2015/16 and 65% thereafter.

Staff training is a key priority in the human resource management agenda of SAEON. Over the 2015/16 to 2017/18 plan period, SAEON will continue to rely heavily on training courses and workshops organised by Corporate Human Resource Development. A training needs analysis was undertaken leading to the identification of training needs for each staff member as outlined in Annexure B. The challenge, however, is that most of the training courses and workshops organised and/or facilitated by the Corporate Human Resources Development are in the fields of administration, management and finance, and therefore do not cater for the needs of the core staff of SAEON who happen to be in the technical and scientific fields. SAEON is therefore forced to use part of its budget to source relevant technical-related training courses and workshops for its staff. The proportion of the budget of SAEON that is invested in such training has hovered around 1% over the years, but the plan is to increase this to 3% over the next three years.

4.2. Supply Chain Management

The major Supply Chain Management (SCM) project for the year 2015/16 will be the continuation of the procurement of research equipment and ICT infrastructure under the SRIG programme. SAEON will have about R5 million in SRIG funding to be spent on the acquisition of new, and the upgrading of existing research equipment and ICT infrastructure. Another major SCM project during 2015/16 will be the finalisation of the acquisition and renovation of office buildings for the National Office and the Fynbos Node in Pretoria and Cape Town respectively. It is also envisaged that the appointment of consultants or service providers for ICT projects will also continue to be a significant SCM project in 2015/16. About R8.4 million will be expended on these major SCM projects in 2015/16. The amounts will drop thereafter to R5.4 million in 2016/17 and R2.8 million in 2017/18, the drop being caused by the fact that the SRIG funding programme will not continue beyond 2015/16.

SCM processes to be followed in all procurement work are those stipulated in NRF SCM policy, which in turn is based on the Public Finance Management Act (PFMA) and the National Treasury regulations on SCM. The Corporate SCM Office and the NRF's bid adjudication committee (BAC) will be involved in procurement of goods and services of values of R500 000 and above. A demand management plan is attached as Annexure C.

4.3. Financial Overview

Table 4: Financial Summary for the MTEF Period ('000)

SUMMARY FINANCIALS	Budget 2014/15	Projection 2014/15	Budget 2015/16	Budget 2016/17	Budget 2017/18
Parliamentary Grant	23 512	23 512	24 805	26 169	27 478
Internal Grants	10 053	8 158	9 158	6 012	4 600
Contracts	2 405	3 533	1 387	1 264	1 991
Other Income	200	25	0	30	
Total Income	36 170	35 228	35 350	33 475	34 069
Net Running Expenses (excl. Depreciation and grants)	6 942	8 304	7 726	8 649	9 467
Grants & Scholarships expenditure	305	515	380	35	50
Salaries	20 491	21 326	22 994	22 727	22 679
Capital Expenditure	8 652	5 083	4 250	2 064	1 873
Total Expenses	36 290	35 228	35 350	33 475	34 069
Net Funding (Year)	(120)	0	0	0	0
Net Funding (Cum)					

4.4. Objectives and indicators

Table 5: Sub Programme Objectives for 2015/16 to 2017/18

2014/15 OBJECTIVES	DESCRIPTION	BUDGET (R million)			
		2014/15	2015/16	2016/17	2017/18
8. Human Capacity Development	Development of human capital in order to: • Drive research strategy; and • Meet the transformation objective of the NSI.	1 335	3 379	2 405	1 795
9. Research Infrastructure	Providing cutting edge research platforms and technology	9 004	5 906	4 371	4 654
10. Knowledge Generation	Support of knowledge generation through: • The investment in new fields of knowledge; and • The investment in advance existing fields of knowledge.	17 968	18 555	18 854	19 297
11. Internationalisation and Mobility	Facilitating national and international research partnership networks.		70		34
12. Retail opportunities	Retail operations within the Facility (kiosks, ect)				
13. Support and Administration	Providing efficient operational, management and business system support	5 699	5 169	5 428	5 616
14. Science Engagement	Promoting science awareness	2 284	2 271	2 417	2 673
Total		36 291	35 350	33 475	34 069

Table 6: Sub Programme Performance Indicators for 2015/16 to 2017/18

KEY PERFORMANCE INDICATOR		Actual	Estimated	Target		
		2013/14	2014/15	2015/16	2016/17	2017/18
Number of ISI publications emanating from the Facilities		26	23	27	31	35
1. Platform provisioning (R`000)	New infrastructure (CAPEX) and repairs	1564	12000	5000	5000	1000
2. Number of students supervised by the Facility staff	Total	32	40	40	40	40
	Black	20%	25%	25%	28%	32%
	Women	60%	38%	50%	50%	50%
	Honours	23	20	20	20	20
3. Number of students using the Facilities for their degree purposes	Masters	25	31	30	30	30
	Doctoral	18	26	20	20	20
4. Proportion of South African from designated groups in management and senior supervisory levels	Total	12	16	12	12	13
	Black	16%	20%	20%	20%	25%
	Women	32%	40%	35%	35%	40%
5. Number of joint international agreements		21	20	20	20	20
6. Targeted science engagement interactions	Number of learners	44	70	55	60	70
	Number of educators	44	70	45	50	55
	Public	27	39	30	30	30

4.5. Plans to meet Objectives (2015/16-2017/18)

Table 7: Human Capacity Development Operational Plan for 2015/16 to 2017/18

Operational objective	Activities	Outputs and outcomes/ impacts
Promote further studies for formal qualifications	<ul style="list-style-type: none"> - Adopt interventionist approach to get staff to register for further studies - Provide financial support through NRF Educational Support Scheme - Make arrangements for staff to use part of the normal working hours to do their assignments for their studies - Allow staff to include their studies in performance agreement - Monitor progress in the studies as part of formal performance management system 	<p>Outputs</p> <ul style="list-style-type: none"> - Increased number of higher qualifications - Excellent staff profile in terms of qualifications <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Entrenchment of life-long learning culture - Knowledgeable, competent, innovative, committed and productive workforce
Improve job-related knowledge and skills through training and development	<ul style="list-style-type: none"> - Nominate and send more managers and project leaders to attend the management development programme and new management development programme - Participate in training and development courses and workshops organised by the Corporate Human Resource Development Unit - Source and fund training courses and workshops for specialised technical and health and safety fields - Encourage staff to also take some relevant online training courses such as those offered at www.coursera.org 	<p>Outputs</p> <ul style="list-style-type: none"> - Increased number of staff that receive training <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Competent, effective and efficient staff
Institute a formal programme of mentoring and coaching	<ul style="list-style-type: none"> - Identify and train mentors and coaches - Assign new and junior staff members to mentors and coaches - Monitor progress in mentoring and coaching as part of performance management 	<p>Outputs</p> <ul style="list-style-type: none"> - Increased number of staff with mentors and/or coaches

	<ul style="list-style-type: none"> - Increase number of DST/NRF interns hosted and mentored 	Outcomes/impacts <ul style="list-style-type: none"> - Excellent professional development of staff
Increase opportunities for staff to lecture and supervise students in institutions of higher education	<ul style="list-style-type: none"> - Encourage scientists to offer part-time, guest or invited lectures to students in universities - Encourage experienced scientists to supervise postgraduate students depending on demand and supply - Increase number of professional development programme (PDP) fellows hosted and supervised 	Outputs <ul style="list-style-type: none"> - Increased number of staff offering lectures - Increased number of students supervised - Theses and dissertations - Publications Outcomes/impacts <ul style="list-style-type: none"> - Improved skills in ecological and environmental science - Enhanced profile of SAEON staff - Growth in institutional recognition and reputation
Support the SAEON-affiliated Graduate Student Network (GSN)	<ul style="list-style-type: none"> - Fund the annual activities and events of the GSN - Source external funds to supplement MTEF funding for GSN activities - Market and promote the GSN to increase its membership 	Outputs <ul style="list-style-type: none"> - Increased membership of GSN - External funds Outcomes/impacts <ul style="list-style-type: none"> - Increase human capacity in environmental science - Growth in institutional profile and reputation - Global change made popular field for postgraduate students

Table 8: Provisioning of Research Infrastructure Operational Plan for 2015/16 to 2017/18

Operational objective	Activities	Outputs and outcomes/ impacts
Integrate and up-scale the national network of environmental observation sites	<ul style="list-style-type: none"> - Focus efforts on monitoring and predicting the impacts of global change on the hydrological cycles and related ecosystem services - Consolidate newly established Greater Maputaland-St Lucia sentinel site - Expand the estuarine monitoring sites to include Kromme, Gamtoos, Swartkops, Kariega, Knysna, Mzimvubu and Mbashe estuaries in the Eastern Cape - Establish new coastal sentinel sites at Mossel Bay and False Bay - Establish a marine off-shore sentinel site off Algoa Bay - Install hydro-meteorological equipment in the main mountain areas of the country starting with Jonkershoek in Western Cape, Cathedral Peak in KwaZulu-Natal, Kompasberg in Eastern Cape and Soutpansberg in Limpopo 	<p>Outputs</p> <ul style="list-style-type: none"> - Increase in the observation footprint - Properly resourced and well-maintained environmental observation sites - Greater data collection capability - More and diverse data sets - Increase in number of themes observed and measured <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - More local and international recognition of SAEON as provider of research infrastructure - Greater brand recognition
Maintain, renovate, up-grade and enhance existing instrumentation to ensure continued effective and efficient functioning	<ul style="list-style-type: none"> - Use SRIG funding effectively and efficiently to build and up-grade array of instrumentation - Employ suitably qualified and experience technicians to oversee and maintain the array of instrumentation 	<p>Outputs</p> <ul style="list-style-type: none"> - Expanded array of instrumentation - Well-maintained and up-graded array of instrumentation - Local technical expertise <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Long-term data sets
Promote the sharing of resources and data between sites, and between	<ul style="list-style-type: none"> - Populate the SAEON data portal - Market and promote the SAEON data portal to stakeholders 	<p>Outputs</p> <ul style="list-style-type: none"> - Data sharing agreements

SAEON and the external research community	<ul style="list-style-type: none"> - Improve on interoperability and data exchange capability between SAEON and external data repository systems - Upgrade the SAEON Metacat system so as to have the capability of replicating all data with the SANParks Metacat installation and <i>vice versa</i>. - Extend the SAEON data portal to provide platform for the National Bioenergy Atlas for South Africa. 	<ul style="list-style-type: none"> - Joint data publications - Increased volumes of data archived in data portal - Data networks <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Improved access to diversity of data sets
Get more local and international researchers and students, government departments and the private sector to use the SAEON platforms	<ul style="list-style-type: none"> - Promote the use of SAEON research infrastructure amongst local and international scientists and students - Enter into collaboration agreements with local and international universities and science councils/institutions - Facilitate researchers' access to data sets held by SAEON - Participate in local and international scientific forums and professional bodies - Provide accommodation and other attractions at or close to the research platforms 	<p>Outputs</p> <ul style="list-style-type: none"> - Increased number of users of SAEON platforms - Increased number of collaboration agreements - Theses and dissertations - Joint publications <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Enhanced profile and reputation of SAEON as a research platform
Secure permanent office premises for the National Office, Fynbos Node, Elwandle Node and Egagasini nodes	<ul style="list-style-type: none"> - Run all supply chain management (SCM) processes leading to the acquisition of a building for the National Office in Pretoria - Carry out necessary renovation and up-grading of the property to bring it to the standard of a modern office park - Search for alternative office accommodation for the Fynbos, Elwandle and Egagasini Nodes - Source the necessary funds to enable the acquisition of the alternative office accommodation for the three nodes 	<p>Outputs</p> <ul style="list-style-type: none"> - Permanent office premises for the National Office and the three nodes <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Brand promotions - Savings of office rent funds

Table 9: Knowledge Generation and Applications Operational Plan for 2015/16 to 2017/18

Operational objective	Activities	Outputs and outcomes/ impacts
Promote the integration and quality of knowledge generation activities	<ul style="list-style-type: none"> - Appoint a hydrologist to oversee the integration of research on water yield from mountain catchment areas across SAEON - Develop and implement research ethics and quality standards - Promote research career paths amongst scientists - Increase non-MTEF research funding 	<p>Outputs</p> <ul style="list-style-type: none"> • Long term data sets • Peer-reviewed journal articles • Books and/or chapters in books • Research reports • Conference presentations • Scientific workshops • Formal science networks <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Provide the public with reliable data on long term trends of key environmental indicators - Enhanced profile and reputation of SAEON
Hold the quadriennial SAEON science summit	<ul style="list-style-type: none"> - Organise and host the summit - Showcase SAEON research work to local and international peers and decision makers - Negotiate with the Academy of Science of South Africa (ASSAf) to have the papers presented at the Summit published in a special edition of the <i>South African Journal of Science</i> 	<p>Outputs</p> <ul style="list-style-type: none"> - Summit and symposia - Published conference proceedings <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Provide succinct, authoritative reviews of environmental change in our region - Enhanced profile and reputation of SAEON
Undertake directed research and development to enhance decision-making in natural resource management	<ul style="list-style-type: none"> - Work as the implementing agency of Working for Water Programme of the Natural Resource Management Branch of the Department of Environmental Affairs - Investigate the impacts of global change on ecosystem services and biodiversity 	<p>Outputs</p> <ul style="list-style-type: none"> - Long-term data sets - Resource management strategies - Postgraduate students - Technical reports

	<ul style="list-style-type: none"> - Develop strategies for mitigating the identified impacts; and also appropriate institutional frameworks of natural resource governance 	<ul style="list-style-type: none"> - Publications - Policy briefs <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Contribution to policy - Contribution to environmental sustainability
Conduct time series research on Agulhas Current	<ul style="list-style-type: none"> - Analyse time series data on temperature and transport as obtained from moorings. - Evaluate and refine surface drifters, assess Mercator and Hycom global models - Assess the impact of the Agulhas current on the coastal region. 	<p>Outputs</p> <ul style="list-style-type: none"> - Long-term data sets - Resource management strategies - Postgraduate students - Technical reports - Publications <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Contribution to environmental sustainability - Regional and international recognition
Grow the Arid Lands Node	<ul style="list-style-type: none"> - Develop research sites and science plan for this new node - Develop research infrastructure and science plan for the newly acquired Tierberg research site near Prins Albert and its 20+ years of long-term data 	<p>Outputs</p> <ul style="list-style-type: none"> - Fully functional node with research infrastructure <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Complete SAEON structure
Provide information , communication and technology (ICT) development services	<ul style="list-style-type: none"> - Develop the Bio-energy National atlas for South Africa - Develop the national spatial information framework - Develop the very large database for the Centre for High Performance Computing 	<p>Outputs</p> <ul style="list-style-type: none"> - ICT products - Income generation <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Financial sustainability of SAEON - Contribution to national ICT needs

Provide specialised scientific products and services	<ul style="list-style-type: none"> - Develop protocols, models, analytical tools and other products - Undertake contract environmental monitoring for clients - Establish the environmental monitoring services as the consultancy wing of SAEON - Provide scientific editorial service - Provide project management and coordination services 	<p>Outputs</p> <ul style="list-style-type: none"> - Scientific services and products <p>Outcomes /impacts</p> <ul style="list-style-type: none"> - Financial sustainability of SAEON - Contribution to addressing national needs and priorities - Strong linkages with government departments and industry
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Table 10: Internationalisation Plan for 2015/16 to 2017/18

Operational objective	Activities	Outputs and outcomes/ impacts
Retain membership of international professional bodies and networks	<ul style="list-style-type: none"> - Retain its membership of ILTER, which is the international organisation focused on advancing long-term environmental research - Managing Director of SAEON to retain his position on the Executive Committee of ILTER as well as the chairmanship of ILTER Public and Policy Committee. - Seek representation on the scientific and data management committees of ILTER. - Continue participating in ICSU's Codata and World Data System programmes. - Retain Membership of the Group on Earth Observation Biodiversity Observation Network (GEOBON) 	<p>Outputs</p> <ul style="list-style-type: none"> - International networks - Funding opportunities <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Enhanced international profile and recognition of SAEON
Take lead in developing and promoting southern African chapters of international environmental programmes	<ul style="list-style-type: none"> - Develop a chapter of the United Nations International Sustainable Development Solutions Network (UNISDSN) for southern Africa and host its secretariat - Take lead in developing IPBES projects for southern Africa - Collaborate with ICSU-ROA in developing and implementing Future Earth programmes for southern Africa - Work towards reviving Environmental Long-term Observatories of southern Africa (ELTOSA) network 	<p>Outputs</p> <ul style="list-style-type: none"> - International networks - Funding opportunities <p>Outcomes/impacts</p> <p>Enhanced international profile and recognition of SAEON</p>
Organise international conferences and/or workshops	<ul style="list-style-type: none"> - Take part in organising a follow-up international workshop on Quantitative Methods in Landscape Ecology with a Focus on Sustainable Ecosystems (QLEES) - Increase the participation of international delegates in the SAEON summit through a combination of conference marketing strategies including choice a theme that has an international appeal, advertising 	<p>Outputs</p> <ul style="list-style-type: none"> - International conferences/workshops <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - Enhanced profile and reputation of SAEON

	the conference through professional networks, and issuing the first notice about the Summit at least 12 months before the starting date	
Pursue active research collaboration with international research institutions	<ul style="list-style-type: none"> - Develop collaboration with the University of Western Australia around the Stereo-Baited Remote Underwater Video project - Develop collaboration with Office of Naval Research of the USA on the Agulhas Current - Adopt and strengthen the international collaborations that new appointees, Prof William Bond and Dr Joh Henschel , are going to bring along to SAEON 	<p>Outputs</p> <ul style="list-style-type: none"> - Long-term data sets - Technical reports - Publications - Policy briefs <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - International recognition - Funding opportunities
Promote international exchange visits involving staff and students	<ul style="list-style-type: none"> - Increase the numbers and frequency of visits by overseas researchers and students, mostly from the Europe (for example Montpellier 2 University) and the US including State University of Arizona, University of California at Berkeley and Davis, and University of Connecticut. - Allow new appointees, Prof William Bond and Dr Joh Henschel, to continue with their frequent scientific liaison visits abroad - Explore the possibility of hosting overseas researchers on sabbatical - Explore possibility of giving SAEON scientist sabbatical leave to visits overseas institutions for research and teaching 	<p>Outputs</p> <ul style="list-style-type: none"> - Long-term data sets - Collaborative projects - Exchange visits - Funding opportunities - Exchange of ideas and comparison of notes - Benchmarking <p>Outcomes/impacts</p> <ul style="list-style-type: none"> - International recognition - Enhanced international profile of SAEON

4.6. Governance

4.6.1 General governance

SAEON is a network organisation that is integrated both vertically as well as horizontally. Vertically SAEON articulates with the NRF and the DST, while horizontally it articulates with stakeholder organisations such as organisations that host the nodes, science councils and universities.

The Department of Science and Technology (DST), which previously operated as the Department of Arts, Culture, Science and Technology (DACST), in 2001 undertook to provide the core funding for SAEON and it continues to fund SAEON through its MTEF allocation. The DST entrusted the management of SAEON to the National Research Foundation (NRF), and in turn the NRF manages SAEON within its portfolios of National Facilities although SAEON does not yet have the official National Facility status. The affiliation to the NRF has been beneficial to SAEON in many ways including the use of established financial, HR and supply management systems and policies.

The offices of the nodes are situated on the premises of the node hosting organisations with whom SAEON collaborate on numerous projects. The core observation sites are also on land owned or managed by the node hosting organisation. Thus these organisations play an important role in the affairs of SAEON.

SAEON is advised at the national scientific, policy and strategic levels by its Advisory Council, which consists of representatives of relevant government departments, science councils, universities, industry and the NRF. The Advisory Council has been a very useful and instructive structure in terms of giving high-level direction.

4.6.1 Governance in terms of national legislation, policies and strategies

SAEON is primarily mandated to implement in South Africa one of the key resolutions of the 2002 World Summit on Sustainable Development (WSSD) that was held in Johannesburg. The said resolution recognises that sustainable development requires a long-term perspective in all aspects including in policy formulation, decision-making and implementation; and that such long-term perspective should be based on the collection of data sets that are accurate, consistent and reliable. The resolution further calls for the establishment of improved land, ocean and atmosphere monitoring sites and systems. It also urges nations to give priority to capacity building and knowledge/information sharing with respect to environmental monitoring.

SAEON came into being at almost the same time that the national research and development priorities were being re-defined with the publication of the *National Research and Development Strategy*. The mandate of SAEON was therefore defined in the context of the *National Research and Development Strategy*. In addition to the aforementioned national strategy, the *South African Earth Observation Strategy*, the *National Climate Change Research and Development Strategy*, the *Johannesburg Plan of Implementation* (following from the World Summit on Sustainable Development), the *National Science and Technology Strategy*, the *Framework Convention on Climate Change* and the *Convention on Biological Diversity* all give special meaning to SAEON. SAEON also serves the “sustainable environment” aspect of the NRF Vision 2015 in particular. Similarly SAEON is well positioned to champion or facilitate the development of a network of long-term sites for monitoring land degradation as envisaged in the *National Action Plan for Combating Land Degradation to Alleviate Poverty*; carrying out climate change systematic observation and monitoring research as required by the *National Climate Change Response Strategy*; observing and monitoring impacts of climate change on water, agriculture, forestry, health, biodiversity, social systems and social welfare as stipulated in the *Climate Change*

Research and Development Strategy; and monitoring the quantity and quality of surface and ground water systems as required by the *National Water Resources Strategy*, to mention but a few.

SAEON is a major role player in the implementation of the Global Change Grand Challenge science plan which is championed by the Department of Science and Technology (DST). SAEON is also involved in the implementation of the Space and Technology Grand Challenge science plan through membership of the Management Committee of the Space Secretariat and the SA-GEO. Mandates of the newly established South African National Space Agency (SANSa) and the Applied Centre for Climate and Earth System Sciences (ACCESS) had the potential to conflict parts of the mandate of SAEON, but this potential conflict has since been ironed out through consultative processes.

The work of SAEON contributes to the realisation of two of the twelve intended outcomes of the Government of the Republic of South Africa. These are Outcome 6: the development of a skilled and capable workforce to support an inclusive growth; and Outcome 10: the protection and enhancement of environmental assets and natural resources. Similarly, the work of SAEON talks directly to two focus areas of the National Development Plan: Vision 2030. These are focus areas on improvement in education, training and innovation; and increasing environmental sustainability and resilience.

4.7. Risk Management

SAEON has a risk register compiled in 2011/12. A number of the risks in the register have either been terminated or mitigated. Five risks from the register that are considered as major for the plan period of 2015/16 to 2017/18 are discussed below.

4.7.1 Loss of equipment

Arrays of pieces of environmental observation and monitoring equipment are placed in the field, on mountain tops, along the rivers and under sea. These are at risk of being vandalised or stolen as they are not guarded. Similarly they are at risk of being destroyed by forces of nature including fire and storms. The likelihood of occurrence of this risk is high, and its impact includes loss of data over a time period. This risk is mitigated by taking insurance on all pieces of equipment acquired.

4.7.2 Hacking and crashing of IT system

SAEON's IT system holds important business and research data. The system is at risk of being hacked or of crashing on its own. Hackers are out there looking for targets and thus the likelihood of the system being hacked is high if security features are not in place. The system may also crash from other reasons. The impact of this risk is the loss of information and data sets that are critical for the running of the business. To mitigate this risk, the IT server hardware is insured, and security measures to protect data and information are maintained and include investment in a back-up and in anti-virus systems.

4.7.3 Dependence on third parties for ship's time

SAEON does not possess ships for its off-shore surveys and research. It therefore has to depend on government departments and other third parties that own ships for its work. The risk, however, is that the third parties can cancel or postpone cruises without consulting SAEON, resulting in SAEON being unable to undertake its planned work. The likelihood of occurrence of this risk is high, and its impact is substantial. One way of mitigating this risk is to source funds to hire/lease or buy ships. The NRF Corporate may also conduct high level negotiations with the owners of ships,

particularly government departments, to ensure that SAEON is included in the planning of cruises.

4.7.4 Possible restructuring of NRF programmes and National Facilities

Although SAEON is managed as a National Facility, it does not have an official national facility status as it has not yet been declared as such by the Minister of Science and Technology. This situation creates uncertainty and the risk of being disbanded in the wake of restructuring of NRF programmes and National Facilities remains a real possibility. Operating with such a risk hanging over SAEON's head affects planning for the long-term size and shape of the organisation. This is one risk that SAEON does not have full control over, and is therefore one that it has to simply tolerate in the short to medium term. However, NRF Corporate may lobby for the declaration of SAEON as a National Facility.

4.7.5 Difficulty of finding students and staff from designated groups

There is a small pool of suitably qualified individuals from designated groups that are eligible to apply for studentship and staff positions at SAEON. This poses the risk of SAEON not being able to meet its transformation targets in terms of number of students and staff members from the designated groups. This is an on-going concern, and its impact is the discernible slow pace of transforming the student and staff populations in SAEON. Measures to mitigate this risk include developing targeted collaborations with historically black universities, hosting DST/NRF interns and continued funding and promotion of the Graduate Student Network (GSN).

5. SCIENCE ENGAGEMENT

5.1. Science Engagement

In SAEON, science engagement is implemented through the education outreach programme. The programme is different from the generic science advancement and environmental education programmes in that it focuses on exposing school learners to the actual science of environmental observation, data collection, analysis, reporting and disseminating findings of hand on projects. School learners are engaged in hands-on, enquiry-based teaching and learning to demonstrate the value of long-term and large-scale environmental observation and monitoring.

The programme has five focus areas or sub-programmes: (a) school-based monitoring, (b) educator support, (c) learner support, (d) awareness platforms, and (e) integration of scientists which cut across the other four focus areas. The school-based monitoring projects provide opportunity for hands-on enquiry-based learning and teaching. Learners learn how science is done by actively participating in the projects. They ask questions, formulate hypotheses, design activities, collect and analyse data and share their reports. The projects are implemented in schools within previously disadvantage communities thereby not only giving learners from poor background the rare opportunity to take part in science, but also the schools to acquire pieces of equipment that they would otherwise not afford.

The educator support thrust of the programme seeks to improve the scientific knowledge of teachers. SAEON organises and facilitates teachers' workshops, symposia and fieldtrips which give them opportunity to interact with scientists on a variety of science topics. The teacher support thrust is strongly aligned with the school curriculum and teachers can relate their discourses and experience to the material in the curriculum. In a sense, it gives them more understanding and examples to use in their teaching.

The learner support thrust of the programme provides fora for continuous interaction between SAEON education personnel with school learners. The aim is for the former to motivate and influence the latter to elect careers in science. One approach is to hold science camps with learners during school holidays during which learners interact with scientists and learn how scientists work.

Awareness platforms, which normally take the form of science expos, exhibitions and promotions, provide opportunity for SAEON education outreach personnel to interact with large numbers of audiences of learners, teachers and the general public.

The integration of scientists thrust is all about bringing active scientists to become part of the activities of the programme. This provides the rare opportunity for learners and teachers to interact with and learn from active scientists. This in its own serves as a good motivation, particularly for the learners.

Table 11: SAEON Science Engagement Objectives and Activities						
NRF Science Engagement Priority Areas	Aligned SAEON Science Engagement Objectives	Associated Activities	Activity Schedule	Cost (‘000)		
				2014/15	2015/16	2016/17
Science Education	To capacitate science teachers	Teacher support workshops	Quarterly	79	83	87
	To engage learners in hands-on school-based environmental monitoring projects	School-visits	On-going	53	56	59
		Drifter Programme	On-going	5	5	5
		Argo Programme	On-going	5	5	5
		Weather and Climate	On-going	26	27	28
		Vegetation Monitoring	On-going	5	5	5
	To enhance the acquisition of scientific skills and competencies by learners	Science Camps	Quarterly	456	479	503
		ESKOM Expo	August-September	51	54	57
Science Awareness	To participate in and exhibit at science awareness platforms and other events and forums	National Science week	July	51	54	57
		Science Festival (SciFest)	March-April	5	5	5
		National Marine Week	July	2	2	2
		Other events and forums	As they occur	27	28	29
Science Communication	To write articles for newsletter	Newsletter Articles	On-going	-	-	-
	To participate in conferences, symposia and training courses	Marine and Coastal Educators Network Annual Conference	January	11	12	13
		SA Association of Research in Maths, Science and Technology Education Annual Conference	January	32	34	36
Cross-cutting		Network Symposium	September	84	88	92
		Integration of scientists	On-going	-	-	-
		Coordination and node support	On-going	199	209	220
TOTAL				1 091	1 141	1 198

6. CONCLUSION

SAEON plans to both grow and consolidate during the plan period of 2015/16 to 2017/18. The growth in staff numbers will be in the professional and technical categories: new scientists under the Professional Development Programme (PDP) and Research Career Development Fellowship Programme (RCDFP); education officers for the nodes that currently do not have such; senior data and ICT appointments; science-policy interface coordinator. The growth in staff complement is expected to spur concomitant growth in numbers of projects and outputs such as publications and data products as reflected in the KPI table (Table 6). It is also expected to result in the expansion of the internationalisation and mobility programme.

The total budget of 2015/16 is expected to be 3% less than that of the previous year and a further drop of 5% in 2016/17 before improving by 2% in 2017/18. The main reason for this general downward trend is that the SRIG funding is coming to an end in 2015/16, and also that not many new contract funding is expected whilst most of the existing contracts are coming to an end in the next two years.

SAEON programmes and activities during the plan period of 2015/16 to 2017/18 will continue to advance the goals of human capacity development, provisioning of research infrastructure, knowledge generation, internationalisation and mobility, support and administration, and science engagement.

The main risks that SAEON will have to anticipate and take necessary action to mitigate or avert are those of possible loss of field equipment through theft and/or natural forces such as fire and storms; possible hacking and crashing of the ICT system; dependence on third parties for ship's time; possible negative effects of restructuring of NRF programmes; and difficulties of finding staff and students from the designated groups. The APP has outlined measures to be undertaken to mitigate or avert these risks.

7. APPROVAL

SUBMITTED BY:

Johan Pauw

DESIGNATION: SAEON MD

DATE: 4 September 2014

APPROVED BY:

DESIGNATION:

DATE:

8. LIST OF ACRONYMS

ACCESS	Applied Centre for Climate and Earth System Science
ASCLME	Agulhas-Somali Current Large Marine Ecosystem
ASSAf	Academy of Science of South Africa
BAC	Bid Adjudication Committee
CAPEX	Capital Expenditure
CIRAD	Centre for International Research on Agricultural Development
CoDATA	Committee on Data for Science and Technology
CoGIS	Collaborative Geographic Information System
CSIR	Council for Scientific and Industrial Research
DACST	Department of Arts, Culture, Science and Technology
DEA	Department of Environmental Affairs
DBSA	Development Bank of Southern Africa
DST	Department of Science and Technology
ELTOSA	Environmental Long-Term Observatories Network of Southern Africa
GEO	Group on Earth Observation
GEO-BON	Group on Earth Observation – Biodiversity Observation Network
GEOSS	Global Observation System of Systems
GSN	Graduate Student Network
HR	Human Resources
HRD	Human Resource Development
ICT	Information Communication and Technology
ICSU	Internal Council of Science
ICSU-ROA	International Council of Science – Regional Office for Africa
ILTER	International Long-term Ecological Research
IPBES	Intergovernmental Platform for Biodiversity and Ecosystem Services
IT	Information Technology
KPA	Key Performance Area
KPI	Key Performance Indicator
LTER	Long-term Ecological Research
MA	Millennium Ecosystem Assessment
MDP	Management Development Programme
MTEF	Medium Term Expenditure Framework
NEMS	National Environmental Monitoring Services
NMDP	New Management Research Programme
NMMU	Nelson Mandela Metropolitan University
NICIS	National Integrated Cyberinfrastructure
NRF	National Research Foundation
NRM	National Resource Management
NSI	National System of Innovation
OTN	Ocean Tracking Network
PDP	Professional Development Programme
PFMA	Public Finance Management Act
PetroSA	Petroleum, Oil and Gas Corporation of South Africa

PMC	Phalaborwa Mining company
SCM	Supply Chain Management
QLEES	Quantitative Methods in Landscape Ecology with a Focus on Sustainable Ecosystems
RCDFP	Research Careers Development Fellowship Programme
R&D	Research and Development
RDI	Research, Development and Innovation
RIRP	Research and Innovations Reward Programme
ROV	Remotely-Operated Vehicle
SADCO	South African Data Centre for Oceanography
SAEON	South African Environmental Observation Network
SA-GEO	South African Chapter of the Group on Earth Observation
SAEOS	South African Earth Observation Strategy
SADC	Southern African Development Community
SCM	Supply Chain Management
SDSN	Sustainable Development Solution Network
SAIAB	South African Institute for aquatic Biodiversity
SANBI	South African National Biodiversity Institute
SANREN	South African Research Network
SciFest	Science Festival
SGA	Millennium Ecosystem Assessment's Sub-global Assessment Programme
SET	Science, Engineering and Technology
SKA	Square Kilometre Array of Telescopes
SRIG	Strategic Research Infrastructure Grant
TENET	Tertiary Education and Research Network of South Africa
UNEP	United Nations Environment Programme
WDCBHH	World Data Centre for Biodiversity and Human Health
WIOMSA	Western Indian Ocean Marine Science Association
WSSD	World Summit on Sustainable Development
WRC	Water Research Commission

9. ANNEXURE A

9.1. List of Contracts

CONTRACT NAME		BRIEF CONTRACT SUMMARY	DURATION OF CONTRACT	VALUE ('0000)
A	Council for Scientific and Industrial Research (CSIR)	Support of the Collaborative Geospatial Information System Portal	1 Year	30
B	South African National Parks (SANParks)	Hosting and managing environmental monitors under the Extended Public Works Programme	3 Years	1 000
C	Department of Environmental Affairs (DEA)	Monitoring impacts of land management and climate change on watershed services	3 Years	1 850
D	Palabora Copper (Pty) Ltd	Biodiversity monitoring for Palabora Copper	3 Years	2 225
E	Water Research Commission (WRC)	Quantification of transmission losses along Letaba River for improved delivery of water requirements	3 Years	882
F	Applied Centre for Climate and Earth Systems Science (ACCESS)	Understanding effects of global change on water resources through long-term catchment monitoring	3 Years	400
G	Petroleum South Africa (PetroSA)	Long-term environmental monitoring of inshore subtidal habitats in the vicinity of PetroSA outfall pipeline in Vleesbaai, Mossel Bay	3 Years	1 500
H				
I				
J				

10. ANNEXURE B

10.1. Staff Plan

10.1.1 Analysis of strengths, weakness, opportunities and threats in relation to HR

Strengths

- Adequate skilled successors within four (4) nodes to stand in for Node Managers.
- Strong administrative support system within the National Office and 5 of the Nodes.
- SAEON is on an upwards growth trajectory, with positions that are the outcome of various external funding being made available.
- Steady increase in the number of skilled scientific staff complement as a result of the Professional Development Programme (Doctoral & Post-Doctoral Fellows) that builds capacity within the various nodes.
- Lower level opportunities created and capacitated through the NRF/DST Internship programme.
- Growth in staff numbers is focused in employment categories that seek to directly advance SAEON's core business activities of science/research, data and information management, and education outreach.

Weaknesses

- A number of critical positions within SAEON do not have identified successors and/or trained emergency stand-ins.
- Critical support fields such as HR, SCM and Finance are not adequately resourced to provide efficient levels of support in relation to the growth in scientific, technical, data management and education outreach staff complement.
- Growth mostly financed by external contract funding, with no guarantee of its continued availability
- A number of critical positions that cannot be funded externally might have to remain inactive vacancies for the foreseeable future due to the fact that MTEF funding is already over-stretched.

Opportunities

- Research career award fellowship commenced in 2014 and one node has already benefitted from the fellowship, thereby opening opportunities for the other nodes to also apply to participate in the fellowship
- Mentorship and coaching programmes to be built into critical portfolios to ensure knowledge and skill transfer to take place.
- A broader range of internships to be pursued not only in science and technology but also in areas such as finance, education, research administration/management, and human resources.

Threats

- Some staff members currently employed within critical positions are close to or fast approaching retirement.
- There are no adequate successors, mentorship or coaching in place to ensure effective hand-overs.

10.1.2 Organisational structure, positions and vacancies

Current Structure

DEPARTMENT	Manager		Employee			VACANCY MANAGEMENT		STATUS
	Post Number	Position Title	Post Number	Grade	Position Title	Filled	Vacant	
Arid Land Node	SAE001	Managing Director SAEON	SAE033	6	Node Manager: Arid Land	1		
Arid Land Node	SAE033	Node Manager: Arid Land	SAE059	9	Education Officer		1	Recruitment in process
Arid Land Node	SAE033	Node Manager: Arid Land	SAE034	8	Field Technician: Arid Land	1		
Arid Land Node	SAE033	Node Manager: Arid Land	SAE035	8	Field Technician: Arid Land	1		
Arid Land Node	SAE033	Node Manager: Arid Land	SAE060	7	Researcher	1		
Egagasini Node	SAE001	Managing Director SAEON	SAE015	6	Manager: Egagasini Node	1		
Egagasini Node	SAE015	Manager: Egagasini Node	SAE018	9	Education Officer	1		
Egagasini Node	SAE015	Manager: Egagasini Node	SAE019	12	Office Coordinator	1		
Egagasini Node	SAE015	Manager: Egagasini Node	PDP500	8	Post-Doctoral Fellow	1		
Egagasini Node	SAE015	Manager: Egagasini Node	SAE016	7	Scientist	1		
Egagasini Node	SAE015	Manager: Egagasini Node	SAE017	7	Scientist	1		
Egagasini Node	SAE017	Scientist	PDP502	10	Doctoral Fellow	1		
Elwandle Node	SAE001	Managing Director SAEON	SAE021	6	Manager: Elwandle Node	1		
Elwandle Node	SAE021	Manager: Elwandle Node	SAE026	11	Administration Officer	1		
Elwandle Node	SAE021	Manager: Elwandle Node	SAE022	8	Core Site Data and Research Co-ordinator	1		
Elwandle Node	SAE021	Manager: Elwandle Node	SAE023	9	Education Officer	1		
Elwandle Node	SAE021	Manager: Elwandle Node	SAE030	7	Scientist	1		

Elwandle Node	SAE021	Manager: Elwandle Node	SAE024	8	Senior Scientific Technician	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE063	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE064	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE065	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE066	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE067	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE068	15	Environmental Monitor	1		
Environmental Monitors Project	SAE052	Manager: Ndlovu Node	SAE069	15	Environmental Monitor		1	Recruitment in Progress
Fynbos Node	SAE001	Managing Director SAEON	SAE042	6	Manager: Fynbos Node	1		
Fynbos Node	SAE042	Manager: Fynbos Node	SAE044	10	Administration Officer	1		
Fynbos Node	SAE042	Manager: Fynbos Node	SAE043	7	Data Manager		1	Job profile changed, Recruitment in process
Fynbos Node	SAE042	Manager: Fynbos Node	SAE045	8	Field Technician: Fynbos	1		
Fynbos Node	SAE042	Manager: Fynbos Node	PDP501	8	Post-Doctoral Fellow		1	Project incomplete
Fynbos Node	SAE042	Manager: Fynbos Node	SAE047	7	Scientist	1		
Grasslands	SAE001	Managing Director SAEON	SAE032	7	Node Coordinator: Grasslands	1		
Grasslands	SAE032	Node Coordinator: Grasslands	NEW2	11	Office Assistant	1		Starting 1/09/14
Grasslands	SAE032	Node Coordinator: Grasslands	SAE036	8	Field Technician: Grasslands		1	Recruitment to start
Grasslands	SAE032	Node Coordinator: Grasslands	SAE037	8	Field Technician: Grasslands	1		

National Office	SAE001	Managing Director SAEON	SAE002	4	Chief Researcher	1		
National Office	SAE001	Managing Director SAEON	SAE006	7	Education Outreach Coordinator	1		
National Office	SAE001	Managing Director SAEON	SAE004	5	Operations Manager	1		
National Office	SAE001	Managing Director SAEON	SAE012	5	Chief Information Officer	1		
National Office	SAE012	Chief Information Officer	NEW8	10	Program Analyst		1	NEW
National Office	SAE004	Operations Manager	SAE008	8	Accountant	1		
National Office	SAE004	Operations Manager	SAE010	10	Admin. Officer: Finance & Procurement	1		
National Office	SAE004	Operations Manager	SAE005	7	Budgets & Procurement Controller	1		
National Office	SAE004	Operations Manager	SAE014	8	Human Resource Practitioner	1		
National Office	SAE004	Operations Manager	SAE009	10	Office Coordinator	1		
National Office	SAE004	Operations Manager	SAE041	11	Operations Support Officer		1	Recruitment in Progress
National Office	SAE004	Operations Manager	SAE040	7	Research Administrator	1		
National Office	SAE012	Chief Information Officer	SAE048	10	ICT Support Officer	1		
National Office	SAE012	Chief Information Officer	SAE050	10	Junior System Engineer	1		
Ndlovu Node	SAE001	Managing Director SAEON	SAE052	6	Manager: Ndlovu Node	1		
Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE056	12	Administrative Assistant	1		
Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE054	9	Education Officer	1		
Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE057	15	Field Assistant	1		
Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE058	15	Field Assistant	1		
Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE053	7	Field Scientist	1		

Ndlovu Node	SAE052	Manager: Ndlovu Node	SAE055	10	Rivers Technician	1		
Observation Science	SAE001	Managing Director SAEON	SAE003	5	Observation Science Specialist	1		

New Positions

DEPARTMENT	Funding			
	Position Title	Status		
Fynbos Node	Hydrometreology Scientist	Recruiting	SRIG	
Ndlovu Node	Junior Field Assistant	Recruiting		PMC
Ndlovu Node	Technician	Recruiting		PMC
Egagasini Node	Coordinator	Recruiting		ASCA
Fynbos Node	Post Doc Fellow	Identified candidate		PDNB
Observation Science	Post Doc Fellow	Identified candidate		PDOP
Elwandle Node	Doctoral Fellow	Recruiting		PDSB
Fynbos Node	Post Doc Fellow	Recruiting		PDAP
Egagasini Node	Doctoral Fellow	Identified candidate		PDWD
Egagasini Node	Doctoral Fellow	Identified candidate		PDHD

Employment Equity

LEVEL	FEMALES BY OCCUPATIONAL LEVEL											
	African		Coloured		Indian		White		Foreign Nationals		Total Females	
	Current	Target	Current	Target	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	-	-	-	-	-	-	-	-	-	-	-	-
Senior Management	-	-	-	-	-	-	-	-	-	-	-	-
Professionals	-	1	-	-	-	-	4	4	-	-	4	5
Skilled Technical	6	7	3	4	-	-	8	8	-	-	17	19
Semi-Skilled	2	4	-	-	-	-	-	-	-	-	2	4
Unskilled	-	-	-	-	-	-	-	-	-	-	0	0
GRAND TOTAL	8	12	3	4	0	0	12	12	-	-	23	28

EMPLOYMENT TYPE	FEMALES BY EMPLOYMENT TYPE											
	African		Coloured		Indian		White		Foreign Nationals		Total Females	
	Current	%	Current	%	Current	%	Current	%	Current	%	Current	%
Permanent	6	10.5%	3	5.3%	0	0%	7	12.2%	-	0%	16	28%
Non-Permanent	2	3.5%	0	0%	0	0%	5	8.7%	-	0%	7	12.2%
GRAND TOTAL	8	14%	3	5.3%	0	0%	12	21%	-	0%	23	40.3%

LEVEL	MALES BY OCCUPATIONAL LEVEL											
	African		Coloured		Indian		White		Foreign Nationals		Total Males	
	Current	Target	Current	Target	Current	Target	Current	Target	Current	Target	Current	Target
Top Management	-	-	-	-	-	-	-	-	-	-	-	-
Senior Management	-	-	-	-	-	-	1	1	-	-	1	1
Professionals	1	1	0	0	0	0	13	13	-	-	14	14
Skilled Technical	6	8	0	0	0	0	7	8	-	-	13	16
Semi-Skilled	6	7	0	0	0	0	0	0	-	-	6	7
Unskilled	-	-	-	-	-	-	-	-	-	-	-	-
GRAND TOTAL	13	16	0	0	0	0	21	22	-	-	34	38

EMPLOYMENT TYPE	MALES BY EMPLOYMENT TYPE											
	African		Coloured		Indian		White		Foreign Nationals		Total Males	
	Current	%	Current	%	Current	%	Current	%	Current	%	Current	%
Permanent	6	10.5%	-	0%	-	0%	14	24.6%	-	0%	20	35%
Non-Permanent	6	10.5%	-	0%	-	0%	8	14%	-	0%	14	24.6%
GRAND TOTAL	12	21%	-	0%	-	0%	22	38.6%	-	0%	34	60%

10.2. Training and Development Plan

Training interventions will be identified to create opportunities to improve the way in which business is conducted within the various portfolios and offices. It is expected that training and skills transfer will enhance or improve the competence and productivity levels of staff and thereby having positive impact on the general performance of the organisation, as well as on staff morale and staff retention.

Whilst Corporate Human Resource Development has a good training programme that caters for all business units of the National Research Foundation, the remoteness of some of the SAEON nodes makes it difficult for staff to access the Corporate's training interventions in a cost-effective manner. Corporate's training interventions' dates are not always available timeously and are rarely in synch with the filed work programme of the nodes. Alternative service providers have to be sourced and due to the smaller staff complement at the SAEON Node offices, training is either very costly or not possible due to the small number of staff.

One area of opportunity that is worth exploring is that of liaising with other NRF Facilities (for example, iThemba Labs, SAIAB and SAAO) to accommodate SAEON staff from near-by offices when those Facilities hold relevant training interventions. Another opportunity to explore is that of using internal SAEON staff to train others in the areas where they have expertise, for example Joh Henschel to train others in statistics, Leazill Peenze to train others in performance management, Jasper Slingsby to train other in R, just to mention a few.

The following training needs were identified for respective staff members and the plan is to get the staff members to undergo training in the specified areas

Employee Name	Post Title	Training Interventions
Henschel, Johannes	Node Coordinator: Arid Land	<ul style="list-style-type: none">- NRF Values- Labour Relations- Supply Chain Management- Diversity Management
Pauw, Marco	Field Technician: Arid Land	<ul style="list-style-type: none">- Technical Report Writing- NRF Values
Ramaswiela, Tshililo	Field Technician: Arid Land	<ul style="list-style-type: none">- Technical Report Writing- NRF Values
Atkinson, Lara	Scientist	<ul style="list-style-type: none">- Financial Management- Diversity Management- New Managers Development Program (NMDP)
Currie, Jock	Doctoral Fellow	<ul style="list-style-type: none">- NRF Values
Goschen, Wayne	Scientist	<ul style="list-style-type: none">- Financial Management- Diversity Management
Hermes, Juliet	Manager: Egagasini Node	<ul style="list-style-type: none">- Supply Chain Management;- Management Development Program (MDP)- Diversity Management
Mtontsi, Thomas	Education Officer	<ul style="list-style-type: none">- Project Management

Von Der Meden, Charles	Post-Doctoral Fellow	<ul style="list-style-type: none"> - NRF Values - Mentoring & Coaching - Financial Management
Bailey, Sean	Senior Scientific Technician	<ul style="list-style-type: none"> - Technical Report Writing
Bornman, Thomas	Manager: Elwandle Node	<ul style="list-style-type: none"> - Labour Relations - Supply Chain Management - Diversity Management
Cobb, Arlene	Administration Officer	<ul style="list-style-type: none"> - Office Administration - Business Writing - Project Management - Supply Chain Management
Deyzel, Herklaas	Core Site Data and Research Co-ordinator	<ul style="list-style-type: none"> - Financial Management - New Managers Development Program (NMDP) - Diversity Management
Hambaze, Nozipiwo	Education Officer	<ul style="list-style-type: none"> - Business Writing - Project Management
Kgohloane, Mothoana	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Nkwinika, Mthobisi	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Rakoma, Miranda	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Segodi, Ronnie	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values; - Financial Fitness
Seoke, Lengowi	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Thibela, Difference	Environmental Monitor	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Allsopp, Nicholette	Manager: Fynbos Node	<ul style="list-style-type: none"> - Labour Relations - Supply Chain Management - Skills Development - Diversity Management
Coetzee, Elvirena	Administration Officer	<ul style="list-style-type: none"> - Office Administration - Financial Management - Business Writing - Project Management - Supply Chain Management
De Buys, Abraham	Field Technician: Fynbos	<ul style="list-style-type: none"> - Trainer Development
Slingsby, Jasper	Scientist	<ul style="list-style-type: none"> - Financial Management - Diversity Management
Gordijn, Paul	Field Technician: Grasslands	<ul style="list-style-type: none"> - Technical Report Writing - NRF Values
Janse Van Rensburg, Susan	Node Coordinator: Grasslands	<ul style="list-style-type: none"> - Trainer Development - Labour Relations - Mentoring & Coaching - Diversity Management

Chitambala, Punyetzwa	Accountant	<ul style="list-style-type: none"> - Trainer Development - Advanced Business Writing
Hlanze, Cindy	Budgets & Procurement Controller	<ul style="list-style-type: none"> - Diversity Management
Holscher, Beate	Research Administrator	<ul style="list-style-type: none"> - Technical Report Writing - Project Management - Diversity Management - New Managers Development Program (NMDP)
Hugo, Willem	Systems Engineer	<ul style="list-style-type: none"> - Labour Relations - Diversity Management
Mokoena, Sibongile	Education Outreach Coordinator	<ul style="list-style-type: none"> - Mentoring & Coaching - Diversity Management
Mudau, Shonisani	Office Coordinator	<ul style="list-style-type: none"> - Advanced Business Writing - Office Administration - Diversity Management - Employment Equity
Peenze, Elizabeth	Human Resource Practitioner	<ul style="list-style-type: none"> - Skills Development - Management Development Program - Project Management - Diversity Management
Phalane, Amantle	Admin. Officer: Finance & Procurement	<ul style="list-style-type: none"> - Office Administration - Supply Chain Management - Business Writing
Saidi, Amani	Operations Manager	<ul style="list-style-type: none"> - Skills Development - Mentoring & Coaching - Labour Relations - Diversity Management
Woolls, Catharina	Data Administrator	<ul style="list-style-type: none"> - Trainer Development - NRF Values - Supply Chain Management - Business Writing - Project Management - Diversity Management
Mashele, Mightyman	Field Assistant	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Mohlala, Thabo	Rivers Technician	<ul style="list-style-type: none"> - Trainer Development - Technical Report Writing - NRF Values
Ndhlovu, Patrick	Field Assistant	<ul style="list-style-type: none"> - NRF Values - Financial Fitness
Sibiya, Joe	Education Officer	<ul style="list-style-type: none"> - NRF Values - Financial Management

Swemmer, Anthony	Manager: Ndlovu Node	<ul style="list-style-type: none"> - Labour Relations - Supply Chain Management - Management Development Program (MDP) - Diversity Management
Thompson, David	Field Scientist	<ul style="list-style-type: none"> - NRF Values - Financial Management - New Managers Development Program (NMDP) - Diversity Management
O'Connor, Timothy	Observation Science Specialist	<ul style="list-style-type: none"> - Mentoring & Coaching; - Diversity Management

11. ANNEXURE C

11.1. Demand Management Plan

Demand management is the first element of the Supply Chain Management (SCM) function that ensures that goods, works or services are delivered to the right place, in the right quantity, with the right quality, at the right cost and at the right time. The objective of demand management plan is to ensure that the resources required to fulfil the needs identified in the strategic plan of an institution are delivered at the right time, price and place and that the quantity and quality will satisfy those needs of the user. Below is the Demand Management Plan for SAEON, focusing on major procurement of research equipment and professional services.

Description	Budgeted amounts ('000)		
	2015/16	2016/17	2017/18
RESEARCH EQUIPMENT			
- 1M Railway Line Anchors	60	-	-
- ADCP and Releases	800	450	-
- Vehicles	1 100	700	-
- Acoustic Releases	60	-	-
- Basic Meteorological Station Equipment	110	-	-
- Boreholes and Weirs	450	-	-
- CTD Loggers	-	200	-
- Eddy Covariance maintenance and refurbishment	450	-	-
- Fluorometers	110	110	-
- IR Camera	-	50	-
- Micro-environmental Array	550	-	-
- Microscope-Dissecting and Camera Combo	70	70	-
- Mooring Consumables	200	-	-
- Nutrient Auto Analyser	-	500	-
- OTT Ecolog Water Level Recorder	85	-	-
- Scintilometer	455	-	-
- Ship's Time	500	-	-
- Software Licencing and Warranties	70	70	-
- Star Oddi UTRs	500	400	-
- UAV Unmanned Helicopter	-	500	-
- Water Volume/Depth Meters	574	-	-
- Weather Stations for Schools	100	-	-
- Weir Logger Stations	-	350	-
TECHNICAL AND PROFESSIONAL SERVICES (Consultants)	2 186	2 097	2 795
Total	8 430	5 497	2 795

The goods and services will be sourced through competitive bidding process in with the NRF Supply Chain Management (SCM) policy and National Treasury regulations.