



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

Antarctica and Southern Ocean Strategy (ASOS)

20 February 2020

Contents

Abbreviations.....	2
Figure legends	3
1 INTRODUCTION.....	9
1.1 Overview.....	4
1.2 The Antarctic context	6
1.3 Historic context	6
1.4 The Antarctic Treaty system.....	8
2 SOUTH AFRICA'S NATIONAL ANTARCTICA PROGRAMME (SANAP)	9
3. SOUTH AFRICA'S INVESTMENT AND FOOTPRINT IN ANTARCTICA, SUB-ANTARCTICA AND SOUTHERN OCEAN	12
4. RATIONALE, VISION, GOAL AND STRATEGIC OBJECTIVES FOR CONTINUED PARTICIPATION IN ANTARCTICA.....	16
4.1 South Africa's National Interests.....	16
4.2 Vision	17
4.3 Goal.....	17
4.4 Values.....	18
4.5 Pillars of the Antarctic Strategy	18
4.6 Strategic objectives	20
5 GOVERNANCE AND INSTITUTIONAL ARRANGEMENTS	22
5.1 Introduction	22
5.2 The Antarctica and Southern Ocean Forum (ASOF).....	23
5.3 The Antarctic and Southern Ocean Technical Committee (ASOTC)	23
5.4 The South African Antarctic Unit	24
5.5 Long-term institutional considerations	245
6 IMPLEMENTATION PLAN.....	266
7 CONCLUSION	29

Abbreviations

ACAP	Agreement of Conservation Albatrosses and Petrels
ARC	Agricultural Research Council
ARCC	Aeronautical Rescue Coordination Centre
ASOF	Antarctica and Southern Ocean Forum
ASOS	Antarctica and Southern Ocean Strategy
ASOTC	Antarctic and Southern Ocean Technical Committee
ATA	Antarctica Treaties Act
ATS	Antarctic Treaty System
BRICS	Brazil, Russia, India, China and South Africa
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CCAS	Convention for the Conservation of Antarctic Seals
CGS	Council for Geoscience
COMNAP	Council of Managers of National Antarctic Programs
CSIR	Council for Scientific and Industrial Research
DEFF	Department of Environment, Forestry and Fisheries
DIRCO	Department of International Relations and Cooperation
DDMV	Department of Defence and Military Veterans
DOT	Department of Transport
DPWI	Department of Public Works and Infrastructure
DHEST	Department of Higher Education, Science and Technology
DROMLAN	Dronning Maud Land Air Network Project
HSRC	Human Sciences Research Council
MARS	Marine and Antarctica Research Strategy
MRC	Medical Research Council
MRCC	Maritime Rescue Coordination Centre
PEI	Prince Edward Island
SADC	Southern African Development Community
SANAP	South Africa's National Antarctica Programme
SAMSA	South African Maritime Safety Authority
SANAE	South African National Antarctic Expedition
SANSA	South African National Space Agency
SAWS	South African Weather Service
SCAR	Scientific Committee on Antarctica Research
SOLAS	Safety of Life at Sea

Figure legends

Figure 1: Map depicting SA's geographic and historical contiguity with the Antarctic Continent..... 7

Figure 2: Map depicting the geographic location of Antarctica 9

Figure 3: Relative percentage representation at the ATS by continent. 9

Figure 4: Marine meteorological weather prediction and warnings for METAREA VII that SAWS is responsible for as per SOLAS Convention, and the geographic continuity..... 11

Figure 5: South African base on Marion Island, Southern Ocean 12

Figure 6: SA base SANAE IV in Dronning Maud Land 12

Figure 7: SA base on Gough Island, Southern Ocean 13

Figure 8: SA Research Vessel Agulhas II..... 14

Figure 9: South Africa, African Union, the Antarctic Alliance and the Sub-Antarctic Alliance. 22

Figure 10: The Antarctica and Southern Ocean Forum (ASOF) 23

Figure 11: The Antarctic and Southern Ocean Technical Committee (ASOTC). . 23

Figure 11: Organisational Structure of the South African Antarctic Unit. 24

1 INTRODUCTION

1.1 Overview

As South Africa has progressed through her historic path of distinct socio-political phases, her involvement in Antarctica has been framed by the geo-political aspirations of the respective dominant powers. With the advent of the democratic New South Africa in 1994, the country's policy and strategic thrust in all matters was reviewed. In relation to Antarctica, sub-Antarctica and the Southern Ocean, this has commenced with the formulation of the country's first formal Antarctica and Southern Ocean Strategy (ASOS), henceforth referred to as the Strategy.

The strategy starts by illustrating key aspects of South Africa's context in relation to the Antarctic complex. The historical context takes us from our earliest engagement to the present time, in a democratic South Africa which requires a deliberate policy aimed at directing the country's priorities. It then deals with the extent of South Africa's investment in the South African National Antarctic Programme (SANAP), including that made in the democratic era. To this day South Africa is the only African country active in Antarctica.

The Strategy outlines South Africa's strategic national interests, articulates a national vision for our engagement in Antarctica and the Southern Oceans, and describes specific national strategic objectives. An overarching goal statement links the vision, the objectives of the Antarctic Treaties Act (1996) and the objectives of this strategy. The objectives support the realisation of the vision and goal by providing the basis for conceiving and generating an implementable action plan.

The strategy is responsive to and aligned with the sustainable development goals (SDGs), and the National Development Plan (NDP). The Sustainable Development Goals with strong linkages to the strategy include:

- SDG13: Climate Action,
- SDG14: Conserve and sustainably use the oceans, seas and marine resources, and
- SDG17: Revitalize the global partnership for sustainable development.

The Strategy contributes to climate action under SDG13 by recognising that the Antarctica and Southern Oceans are critically important parts of the global climate system, and thus support actions to conserve Antarctica and Southern Ocean.

The Strategy contributes to SDG14 (conservation and sustainable use of the oceans, seas and marine resources) by advancing the importance of ecological integrity in Antarctica and the Southern Oceans, and promoting the establishment of specially protected and managed areas.

In respect of revitalising the global partnership for sustainable development (SDG 17), the Strategy seeks to position South Africa to constructively influence the global negotiations under the Antarctic Treaty system and pursue collaborative work with other parties.

The Strategy also contributes to the Vision 2030 of the National Development Plan, for South Africa's transition to an environmentally sustainable, climate-change resilient economy and society. It prioritises research on the role that Antarctica and the Southern Oceans play in the global climate system, and emphasises the importance of ongoing research to strengthen our predictive weather and climate capabilities, which is critical in the context of a rapidly changing climate.

1.2 The Antarctic context

Antarctica is Earth's southernmost continent. It contains the geographic South Pole and is surrounded by the Southern Ocean. It is the 5th largest continent and about 98% of it is covered by ice that averages 1.9 km in thickness.

Antarctica is the coldest, driest, and windiest continent, and has an average altitude of 2 000 metres (average for other continents is 700 metres). The average temperature is -49°C at the South Pole; the average annual precipitation ranges from 2 mm inland to 200 mm along the coast (South Africa's average is 464 mm); and average wind speed is 100 km to 200 km per hour. It is an extreme environment.

Antarctica and the Southern Ocean play a significant role in the global climate system. The Southern Ocean is the world's most biologically productive ocean and a significant sink for both heat and carbon dioxide, making it critical to the evolution of past, present, and future climate change. The Southern Ocean is the site for the production of the coldest, densest water that participates in global ocean circulation and so is of critical importance to climate change. The strong westerly winds that blow over the Southern Ocean drive the world's largest and strongest current system, the Antarctic Circumpolar Current (ACC), and are recognized to be the dominant driving force for the global overturning circulation.

Antarctica is governed by parties to the Antarctica Treaty (AT) that have consultative (voting rights) status. Twelve countries including South Africa were the original signatories (1959), and another forty one have since signed. The Treaty prohibits military activities and mineral mining, prohibits nuclear explosions and nuclear waste disposal, supports scientific research, and protects the continent's environment.

1.3 Historic context

In the period from the establishment of the Union of South Africa in 1910 up to the end of World War II, South Africa's involvement in Antarctic matters was lethargic. The former British colonies had come together with the Boer republics to form the Union. Their respective attitudes towards British imperialism were not reconciled.

The Union, *per se*, was thus a reluctant British subject that was inclined to think its Antarctic involvement would advance British imperial exploration, discovery and annexation plans.

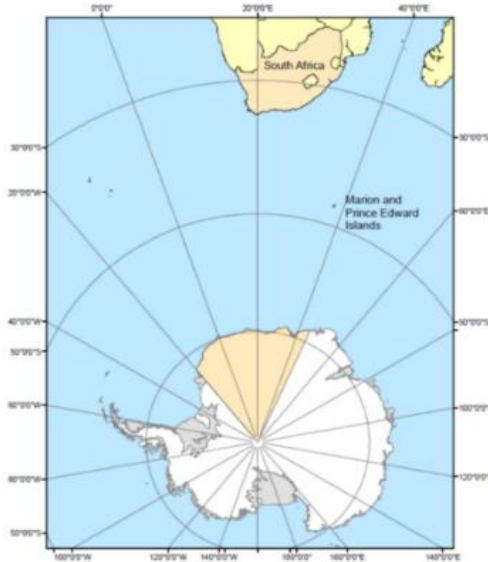


Figure 1: Map depicting SA's geographic and historical continuity with the

At the time the area between 20° west and 45° east was considered as the “South African Sector” due to its geographic contiguity (Fig. 1). It is the area that corresponds with a polar projection towards the eastern and western coasts of South Africa (Figure 1). This area was annexed by Norway in 1939.

In the period following the constitutional underpinning of Apartheid in 1948, South Africa's development choices and actions would have been burdened by the country's struggle to thwart her growing international isolation. The Antarctic Treaty system (ATS) was one of very few, if not the only multilateral formation in which South Africa was still a welcome participant. Only in 1959 did South Africa launch her first Antarctic Expedition.

A further distinctive era spans the period from declaration of the Republic of South Africa in 1961 to the birth of the democratic South Africa in 1994. The year 1994 presented a milestone that accorded an opportunity to reflect on past experiences and be better able to formulate a policy approach that would be appropriate for the South African context. This era is characterised by the Reconstruction and Development Programme (RDP) and a raft of policy formulation processes under the new democratic dispensation on the one hand and the global re-alignments that have given rise to new multilateral alliances on the other. South Africa has therefore inherited a legacy of interest and participation in Antarctica matters from the British as well as an enthusiasm for participation by Apartheid South Africa, arising largely from international isolation.

1.4 The Antarctic Treaty system

The Antarctic Treaty, herein after referred to as the Treaty, was signed in 1959 by the twelve countries, including South Africa, whose scientists had been active in and around Antarctica during the International Geophysical Year of 1957-1958. It entered into force in 1961 and has since been acceded to by many other nations. The Antarctic Treaty system (ATS) is the whole complex of arrangements made for the purpose of coordinating relations among states with respect to Antarctica and Southern Ocean. Included are the Antarctica Treaty itself, the Protocol on Environmental Protection to the Antarctic Treaty, the Convention for the Conservation of Antarctic Seals (CCAS), Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), Agreement on the Conservation of Albatrosses and Petrels (ACAP), and Scientific Committee on Antarctica Research (SCAR).

The primary purpose of the Antarctic Treaty is to ensure, "in the interests of all mankind that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord". To this end it prohibits "any measures of a military nature" but does "not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose". The Treaty provides for "freedom of scientific investigation in Antarctica, promote[s] international cooperation in scientific investigation in Antarctica", encourages "the establishment of cooperative working relations with those Specialized Agencies of the United Nations and other international organizations having a scientific or technical interest in Antarctica", prohibits "any nuclear explosions in Antarctica and the disposal there of radioactive waste material" and provides for detailed exchanges of information.

South Africa is fully committed to the Antarctic Treaty and supports also the prohibition by Article IV of asserting existing or new claims to territorial sovereignty. In addition, South Africa believes that Antarctica should belong to human kind and should never be apportioned to parties that happened to have been able to reach the continent before others. Further, South Africa supports the ban on mining as elaborated in the Protocol on Environmental Protection to the Antarctic Treaty.

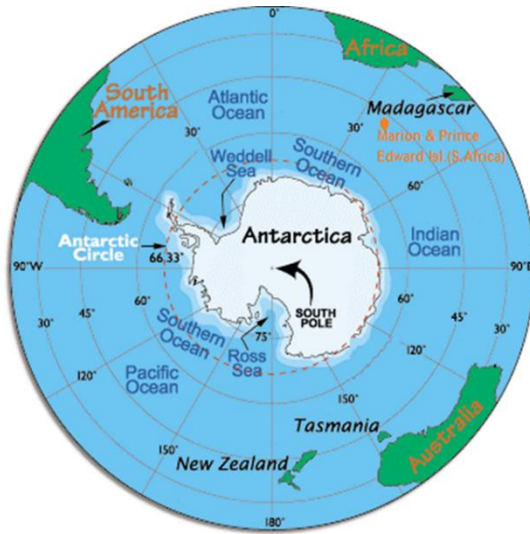


Figure 2: Map depicting the geographic location of Antarctica and the Prince Edward Islands

The Antarctic Treaty is applicable to the land and marine area south of 60°S Latitude (Figure 2). The Prince Edward Islands (PEIs), consisting of Marion and Prince Edward island, is a South African territory, and in this document will only be discussed in line with South Africa's interest in sub-Antarctica and Southern Ocean.

Antarctic Treaty has membership of 53 countries representing the majority of the continents, dominated by Europe, Asia and South America; and South Africa is the only member Party from the African continent (Figure 3). This provides an opportunity for South Africa to also represent the African and developing world interests. In addition, there has been an increase in number of parties acceding to the Treaty, and many of the Parties have since defined or redefined their strategic interest within the Antarctic Treaty System and expanded their footprint through establishment of additional research bases throughout strategic areas within the continent.

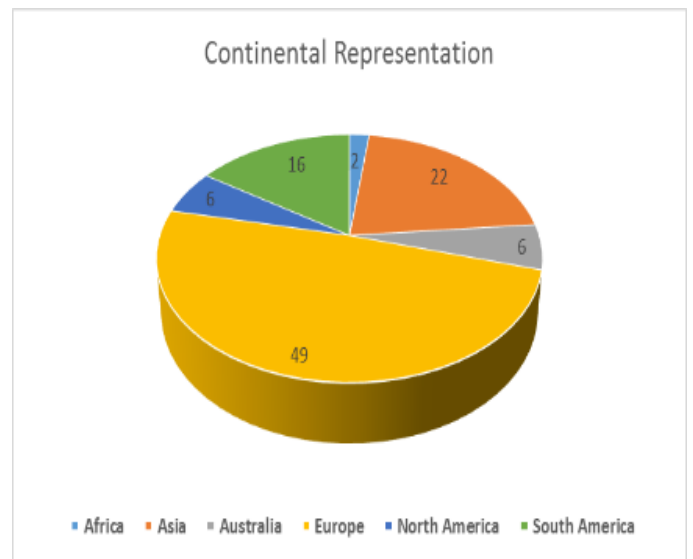


Figure 3: Relative percentage representation at the ATS by continent.

2 SOUTH AFRICA'S NATIONAL ANTARCTICA PROGRAMME (SANAP)

The Department of the Environment, Forestry and Fisheries (DEFF) has been entrusted with the responsibility to lead South Africa's involvement in Antarctica and Southern Oceans matters through the Antarctica Treaties Act (ATA, 1996). In executing that task, DEFF works closely with the Department of Science and

Innovation (DSI), the Department of International Relations and Cooperation (DIRCO), the Department of Public Works and Infrastructure (DPWI), the Department of Transport (DOT) and the Department of Defence and Military Veterans (DODMV).

SANAP comprises of three main elements, viz: (1) research, and long-term monitoring led by DHEST and DEFF respectively; (2) logistical support and provision of infrastructure for research, e.g. SA Agulhas II, led by DEFF, and (3) maintenance of infrastructure, including research bases and equipment, led by DPWI. The Department of Transport (DoT, South African Maritime Safety Authority, SAMSA) and DODMV provide Search and Rescue services. In addition, DODMV provides medical, food, and driver services. Other key government agencies that are involved in SANAP include the South African National Space Agency (SANSA), Council for Scientific and Industrial Research (CSIR), South African Weather Service (SAWS), and the South African Maritime Safety Authority (SAMSA).

South African National Space Agency (SANSA)

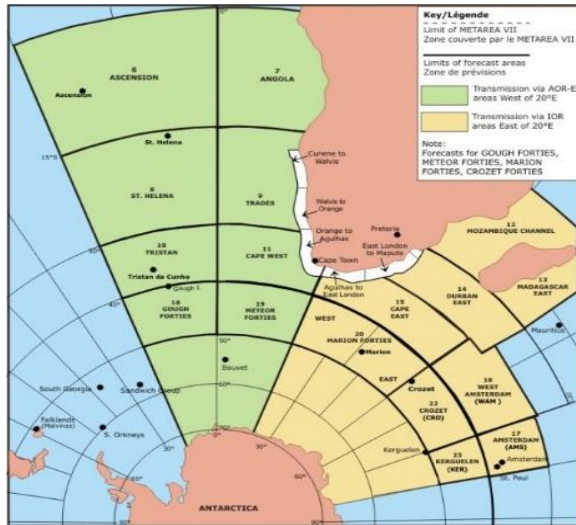
SANSA is an Agency of DSI and its presence in Antarctica and the Southern Ocean aims to improve the understanding of space physics, with emphasis on space weather. The South Pole (Antarctica) conditions and position on the earth allows for an excellent location for space physics observations. SANSA is host to the only Space Weather Regional Warning Centre in Africa. The Space Weather Centre provides an important service to the nation by monitoring the sun and its activity to provide information, early warnings and forecasts on space weather conditions. The space weather products and services are required primarily for communication and navigation systems, in the defence, aeronautics (airplanes), navigation and communication sectors.

Council for Scientific and Industrial Research (CSIR)

The Council for Scientific and Industrial Research is South Africa's national research organisation established in terms of the Scientific Research Council Act of the Parliament of the Union of South Africa. CSIR is pioneering the Southern Ocean Carbon Climate Observatory (SOCCO) programme, implemented in collaboration with international agencies, focuses on the hypothesis that fine

scale ocean dynamics are key to understanding the role of the Southern Ocean in global century-scale trends of atmospheric CO₂ and regional climate change.

South African Weather Service (SAWS)



SAWS is mandated to provide weather and climate related data. It has a weather station at SANAE IV that contributes to global numerical weather prediction and climate change models. In addition, SAWS is mandated to provide marine meteorological weather prediction to all vessels in the ocean adjacent to South Africa up to the Antarctic shelf (Metarea VII) (Figure 4).

Figure 4: Marine meteorological weather prediction and warnings for METAREA VII that SAWS is responsible for as per SOLAS Convention, and the geographic continuity.

South African Maritime Safety Authority (SAMSA) and Maritime Rescue Coordination Centre (MRCC)

SAMSA is an Agency of DoT, which is responsible for ensuring safety of life and property at sea and the protection of the marine environment. SAMSA is therefore responsible for MRCC operations and its responsibility is maritime Search and Rescue in the area of southern ocean and Antarctica adjacent to South African mainland.

Aeronautical Rescue Coordination Centre (ARCC)

The ARCC is an Agency of DoT. It has a mandate of aeronautical Search and Rescue over South Africa, Namibia, Lesotho and Swaziland.

3. SOUTH AFRICA'S INVESTMENT AND FOOTPRINT IN ANTARCTICA, SUB-ANTARCTICA AND SOUTHERN OCEAN

South Africa's first formal and official venture into the Southern Ocean and sub-Antarctic was in January 1949 to annex the Prince Edward Islands. The first scientific expedition to the PEIs was in 1965 and the infrastructure on the Island was expanded to accommodate bigger overwintering teams. The weather station was replaced by a modern consolidated structure commissioned at a cost of about R280m in 2011 (Figure 5). This allowed for an increase in the number of researchers/scientists that could overwinter there and drew increasing international interest. Annual supply and relief voyages to the Islands were carried out and are still continuing uninterrupted today.



Figure 5: South African base on Marion Island, Southern Ocean

The first South Africa Antarctic expedition left Cape Town in January 1960 on a Norwegian vessel, Polarbjorn. It overwintered in a Norwegian base that was later donated to South Africa for her own use. The first South African built Antarctic base, a wooden structure, SANAE I, was a Meteorological research station constructed in 1961/62. This base was replaced in 1971 by SANAE II consisting of a number of interconnected timber buildings. The third Antarctic base SANAE III, was built on the ice shelf in 1979, and consisted of corrugated steel buildings with connecting corridors. The accumulation of snow at the coast and

voyages to the Islands were carried out and are still continuing uninterrupted today.



Figure 6: SA base SANAE IV in Dronning Maud Land

The first South Africa Antarctic expedition left Cape Town in January 1960 on a Norwegian vessel, Polarbjorn. It overwintered in a Norwegian base that was later donated to South Africa for her own use. The first South African built Antarctic base, a wooden structure, SANAE I, was a Meteorological research station constructed in 1961/62. This base was replaced in 1971 by SANAE II consisting of a number of interconnected timber buildings. The third Antarctic base SANAE III, was built on the ice shelf in 1979, and consisted of corrugated steel buildings with connecting corridors. The accumulation of snow at the coast and

consisting of a number of interconnected timber buildings. The third Antarctic base SANAE III, was built on the ice shelf in 1979, and consisted of corrugated steel buildings with connecting corridors. The accumulation of snow at the coast and

ice shelf resulted in the bases being buried under the snow within two years. The adverse climatic conditions necessitated the construction of a new base every 5-10 years. This prompted a decision to move inland and build SANAE IV about 200 km from the coast on exposed rock. The base was commissioned in 1997 at a cost of R85m. The base (Figure 6) is currently being refurbished at a cost of about R300m. South Africa not only maintained an uninterrupted presence in the Antarctic since 1960 but played an active role in the conservation and sustainable use of the vast continent and contributed to the pool of scientific knowledge.

Gough Island, a British territory to the southwest of South Africa in the Atlantic Ocean, is very strategic for South Africa's weather observations and forecasting. A lease agreement for the island was concluded with Britain in 1956, following which South Africa established a weather station (Figure 7). Weather stations which provide a long history of weather observations, are particularly valuable as they facilitate historical reference and provide insight into change. Having operated the Gough Island weather station since 1956, the South African Weather Service is the custodian of a long-term dataset, which contains high quality weather observations in the ocean region to the southwest of South Africa. These datasets provide invaluable data improve the accuracy of our global and regional weather forecast models.



Figure 7: SA base on Gough Island, Southern Ocean

The supply and relief voyages to the three bases were initially carried out by an ice-strengthened supply ship (RSA). This was replaced in 1980 by the ship SA Agulhas which was a significant

investment in the Antarctic and Southern Ocean activities. The vessel had atmospheric, meteorological and oceanographic research capabilities. For 34 years she serviced the bases and carried out research in the Southern Ocean, serving as a platform for multi-national research expeditions on several occasions. The SA Agulhas was replaced in 2012 by the SA Agulhas II (Figure 8). This R1.7 billion vessel combined its supply and research roles with ice breaking capabilities in a unique way. In addition, the SANAP Funding Instrument makes available a total

amount of approximately R100 million per annum to conduct research in the ASO region. The instrument is a region-specific, theme-driven funding instrument which supports research in the Southern Ocean, including the Prince Edward Islands, and in Antarctica. As a competitive funding instrument, the chief eligibility criteria are:

- Research in the geographic region of the Southern Ocean, including the Prince Edward Islands, and / or in Antarctica
- Alignment with the research themes as detailed in the South African Antarctic and Southern Ocean Research Plan (2014-2024)
- Scientific merit and quality of the research proposal
- Evidence of associated human capacity development.



Figure 8: SA Research Vessel Agulhas II

As a way of assessing South Africa's footprint, its input as in number of bases, vessels, aircraft deployed, overwintering personnel, scientists carrying out research during the summer, were considered and assessed against the output, in the form of knowledge production (research papers) and influence on Antarctica matters. Although direct comparisons of programmes

are very difficult because of the differences in configurations of National Antarctic Programmes, it is obvious that the foot print of SANAP is modest compared to that of other original signatories as well as that of more recent signatories. As outlined in the Marine and Antarctic Research Strategy (2016) led by the then Department of Science and Technology, it is South Africa's ambition to maximise the benefit of our strategic geographic advantage for the production of world class oceans, Antarctic and climate change research. Key outputs of South Africa's National Antarctic Programme are summarised below.

The SA Agulhas II Polar Research vessel (Figure 8) sails to all the research bases (Figures 6-8) transporting scientists from DEFF, various tertiary Institutions and

research agencies that have approved scientific projects as part of the three main relief voyages. The relief voyages are as follows:

1. Marion Island relief voyage departs in April and returns in May, sailing for approximately four (4) days. The Marion Island Relief Voyage includes a full list of ship-based scientific activities including biological, chemical and physical oceanography as well as benthic biodiversity. While on-board, research includes use of high definition cameras and videos to monitor benthic biodiversity communities and seabed habitats. In addition, sophisticated equipment is used to determine the salt and heat content of seawater as deep as 5000 metres around the Marion Island marine protected area (MPA).
2. Gough Island relief voyage departs in September and returns in October, sailing for approximately four (4) days. The weather station operated by the South Africa Weather Service (SAWS) since 1956 at Gough Island is serviced. The SAWS is the custodian of a long-term dataset, which contains high quality weather observations in the ocean region to the southwest of South Africa. These datasets are key to improving the accuracy of our global and regional weather forecast models.
3. Antarctic SANAE IV summer voyage departs in December and returns in February of the following year, sailing for approximately 10 days. SANAE's research is divided into four programmes, namely: (1) Physical sciences, (2) Earth sciences, (3) Life sciences, and (4) Oceanographic sciences. Only the physical sciences programme is conducted year-round at SANAE IV. The other programmes are conducted during the short summer period when the temperatures and weather permits field work and the extent of the sea ice is at its minimum.

In recent years, the *SA Agulhas II* Polar Research vessel schedule has increased to include additional voyages dedicated to research, namely:

1. Southern Ocean (SEAmester2019) Experiment for 11 days July. Approximately 40 students from various universities across South Africa set sail from Cape Town, on-board the S.A. Agulhas II. The voyage travels up the coast to Port Elizabeth where the vessel turns into the deeper oceans in order to travel along the Agulhas System Climate Array (ASCA) line. The line plots its course at certain intervals, where conductivity, temperature and depth (CTD) tests are done, in order to get a better understanding of the Agulhas Current.
2. Southern Ocean seasonal Experiment (SCALE) Winter Voyage for 3 weeks in July. The SCALE winter voyage is an interdisciplinary experiment that

spans seasonal to decadal time scales in the south east Atlantic sector of the Southern Ocean. It is aimed at advancing understanding of climate sensitivity of the Southern Ocean.

3. SCALE Spring Voyage: October to December (6 weeks). The project is multi-institution and national consisting of 16 project teams focussing on, among others physics, sea-ice, waves, robotics, chemistry, plastics, and birds. The project seeks to develop a better understanding of the important ecosystems of the Southern Ocean.

4. RATIONALE, VISION, GOAL AND STRATEGIC OBJECTIVES FOR CONTINUED PARTICIPATION IN ANTARCTICA

4.1 South Africa's National Interests

South Africa's national interest for continued investment and participation in Antarctica and the Southern Ocean is informed by the following:

- 4.1.1 South Africa is one of the original 12 signatories to the Antarctic Treaty (1949), and therefore has a responsibility to uphold and influence the evolution of the legal and institutional frameworks of the Antarctic Treaty System. Additionally, South Africa has custodial responsibilities arising out of her stewardship of the Antarctic environment as well as her presence in the contiguous Queen Maud Land and the Southern Ocean.
- 4.1.2 South Africa's geographic positioning and proximity to Antarctica calls for a vibrant Antarctic sector that serves economic interests, scientific endeavour and environmental management. Antarctica and the Southern Ocean are endowed with unique marine and terrestrial resources that can be sustainably utilised to address food security, health, energy and biotechnology needs. South Africa's proximity to Antarctica also presents an opportunity to serve as a gateway to the continent. At present there are ten other Antarctic National Programmes (Figure 9) that launch their Antarctica and island expeditions from South Africa.
- 4.1.3 Antarctica and the Southern Ocean play a definitive role in the weather and climate patterns world-wide. South Africa is therefore well positioned to play a leading role in Southern Ocean and Antarctic science and opportunities exist for research into a number of pressing questions in the physical, biological, oceanographic and geological sciences. South Africa is well placed to contribute to the global research effort on the impact of

climate change on Antarctica and the Southern Oceans. In addition, in mitigating the potential risks of a changing climate to fisheries, agriculture, food security as well as potential threats to the built environment and safety of life, South Africa has a direct interest in strengthening our predictive weather and climate capabilities, in particular to anticipate extreme weather events such as drought, floods and storm surges.

- 4.1.4 In relation to scientific endeavour and environmental management, Antarctica and Southern Ocean environments are special outdoor laboratories that are used to study and understand natural processes, e.g. a barometer against which the rate and effects of climate change and global warming can be measured. This presents an opportunity to conduct research of disparate phenomena in various disciplines, including space science, health, meteorology, oceanography, marine resources management, glaciology, geology, agriculture and research of various engineering disciplines. Such research should be conducted leveraging South Africa's collaborative platforms, especially with the nations of the 10 country Antarctic programmes already mentioned.

The study of space science and electromagnetic activity provides an important service to the nation by monitoring the sun and electromagnetic activity to provide information regarding early warnings and forecasts on space weather conditions that may have detrimental impact on information, communication and technology infrastructure required primarily for communication and navigation systems in the defence, aeronautics (airplanes), navigation and communication sectors.

4.2 Vision

Antarctica and the Southern Ocean are understood, valued, and protected in the interest of South Africa, Africa and the world

4.3 Goal

To provide for the effective coordination and implementation of the Antarctic Treaty system provisions in South Africa relating to research, conservation, sustainable resource use and environmental management; and in support of the African agenda

4.4 Values

Who we are:

- a) We recognise that we are embedded in the context of, and are an essential component of the African continent;

Our attitude towards what we do:

- a) We cherish cross-sectoral collaboration and governance;
- b) We are aspirational, brave and ambitious;
- c) We value collaborative ventures with other nations;
- d) We treasure capacity development

How we do it:

- a) We serve with integrity;
- b) We pursue continuous improvement;
- c) We care.

4.5 Pillars of the Antarctic Strategy

There are 5 pillars or strategic thrusts that create the structure of the Antarctic Strategy. These are:

4.5.1 *International engagements and cooperation*

Optimise international engagements and cooperation within the Antarctic Treaty system. Assemble world class and multi-disciplinary teams to take on complex research and management issues in order to share the costs of science and logistics.

4.5.2 *Research*

Improve understanding of the past and current state of Antarctica, its natural and physical resources, its significance and implications of the role of Antarctica in global change, changing climate systems and weather patterns, including drought dynamics in southern Africa, and potential role of genetic resources in developing future biomaterials.

4.5.3 Conservation and sustainable use

Promote conservation and sustainable use of marine and terrestrial biodiversity in Antarctica and Southern Oceans. South Africa will advocate for the evidence-based conservation management approach.

4.5.4 Capacity development and training

Facilitate the up-skilling of researchers and expose them to new and different approaches.

4.5.5 People

Enhance public awareness and interest in Antarctica and Southern Ocean matters to mobilise public interest and support for continued SAs involvement in Antarctica matters.

4.6 Strategic objectives

South Africa's strategic objectives in Antarctica and Southern Ocean are underpinned by our pillars and strategic interests. In response to the overarching goal to provide for the coordination and implementation of Antarctic Treaty system provisions in South Africa relating to research, conservation, sustainable resource use and environmental management. The overall strategic objective for the ASOS is to set out SAs strategic interest in the Antarctic Treaty area and provide an outline to attain the interest within the existing confines and galvanising essential institutional arrangement in the future to maximise efficiency. Herewith below are the objectives and sub-objectives.

4.6.1 To strengthen South Africa's positioning, role and influence in the Antarctic Treaty through

- 4.6.1.1 Maximise visibility and assertiveness, and advancing the African agenda in negotiation processes of the Antarctic Treaty system
- 4.6.1.2 Establish and maintain effective geopolitical alliances, including through pursuing regional cooperation on Antarctic activities within the African continent (through the African Union, Figure 9); and leverage relationships and opportunities within the BRICS community
- 4.6.1.3 Evaluate and implement institutional reforms to enhance efficiency
- 4.6.1.4 Advocate for equitable access to and benefit sharing of marine resources of Antarctica and Southern Ocean

4.6.1.5 Utilise the advantage of being an Antarctic and Southern Ocean gateway by: leveraging partnership and collaboration with DROMLAN countries (Figure 10); strengthen partnership and collaboration with neighbours in the sub-Antarctic (France, Norway, United Kingdom and Australia); and use these alliances to advance the South African national agenda, and to generate interest in Africa and other developing nations.

4.6.2 To optimise use of South Africa's strategic positioning to advance world class scientific research that is responsive to relevant national strategic imperatives; and has both regional and global reach, in line with the Marine and Antarctic Strategy (2016)

- 4.6.2.1 Strengthen forward-looking scientific marine and terrestrial research that is directed at national and regional priorities, adopts multi-disciplinary and integrated approaches; and is aimed at generating projections and predictions
- 4.6.2.2 Undertake fundamental research to understand Antarctic ecosystem processes
- 4.6.2.3 Conduct research on living marine resource use, to optimise sustainable utilisation and fisheries management
- 4.6.2.4 Expand Antarctic and Southern Ocean research scope beyond traditional sectors to include applied and emerging sectors
- 4.6.2.5 Optimise science support and logistics gateway services for countries active in Antarctica; and
- 4.6.2.6 Co-operate with relevant departments and institutions in advancing co-ordinated governance for Antarctic and Southern Ocean research activities.

4.6.3 To promote and maintain the special nature and ecological integrity of Antarctica and the Southern Ocean through

- 4.6.3.1 Develop and implement relevant policy to advance special nature and ecological integrity of Antarctica and the Southern Ocean
- 4.6.3.2 Prioritise and undertake long-term research to study and monitor trends and changes in species and ecosystems to inform management
- 4.6.3.3 Support the establishment of specially managed and protected areas
- 4.6.3.4 Undertake research to understand the impact of human activities in Antarctica to inform management interventions
- 4.6.3.5 Co-operate with relevant parties in advancing co-ordinated governance for Antarctic and Southern Ocean management

4.6.4 To enhance public awareness and interest in Antarctica and Southern Ocean matters

Antarctica and the Southern Ocean need to be recognised and appreciated by South Africa's scientists, policy makers and the general public, owing to their uniqueness and geographic proximity. Our public awareness programmes and initiatives will include:

- 4.6.4.1 Establish the Antarctic Centre and Precinct
- 4.6.4.2 Establish the Antarctic community and Logistics Network for all Antarctica gateway related enquiries
- 4.6.4.3 Strengthen the Antarctic outreach program
- 4.6.4.4 Enhance the SANAP brand and profile
- 4.6.4.5 Facilitate the mainstreaming of Antarctic Education and Research Programmes in higher education institutions

4.6.5 To plan, provide and maintain infrastructure for operations in Antarctica and Southern Ocean

The primary focus for the provision and utilisation of South Africa's Antarctic and Southern Ocean infrastructure is to ensure that it is fit for purpose, supports our geopolitical, custodianship and research responsibilities, and it meets the necessary safety standards. This objective will be attained through the following sub-objectives:

- 4.6.5.1 Improve infrastructure functioning to optimise operations
- 4.6.5.2 Strengthen partnerships to support the provision of infrastructure that will cater for the expansion of South Africa's National Antarctic Programme, thus emphasizing South Africa's commitment to sustainable polar research and cooperation
- 4.6.5.3 Promote infrastructural development that will enhance participation of the African continent in Antarctic activities, in line with the objectives of the Africa Integrated Maritime Strategy (2050)

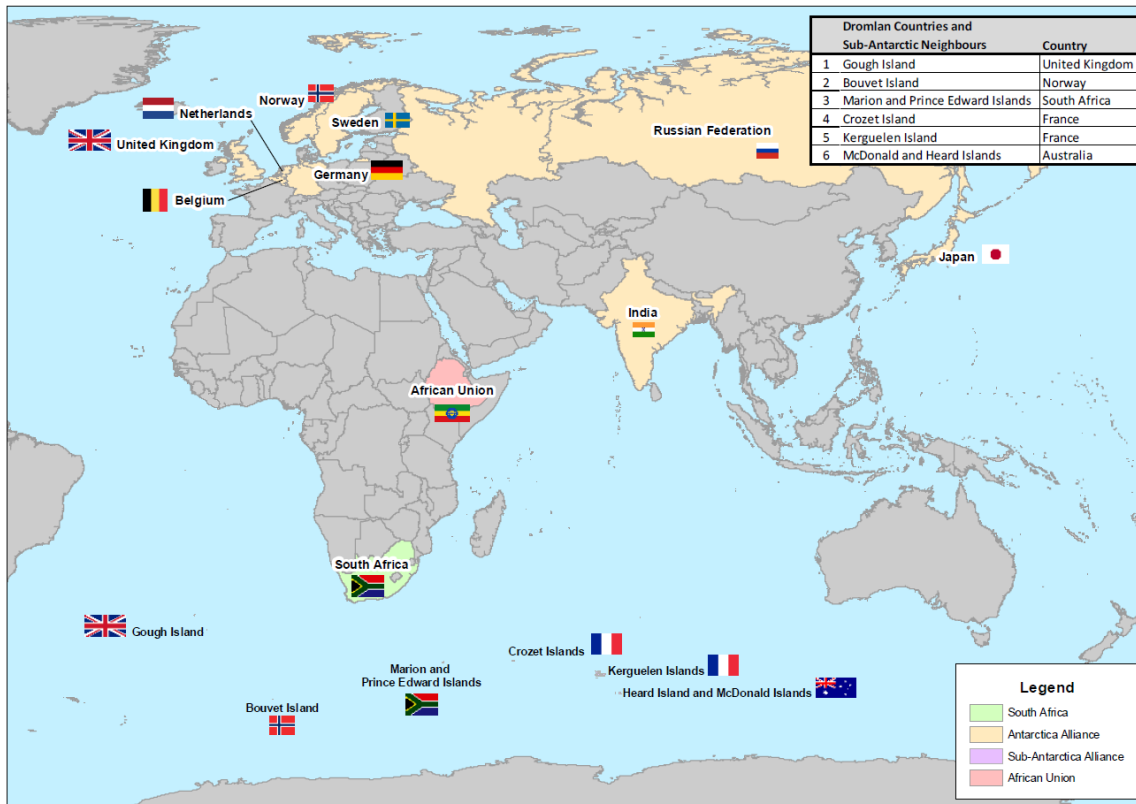


Figure 9: South Africa, African Union, the Antarctic Alliance and the Sub-Antarctic Alliance.

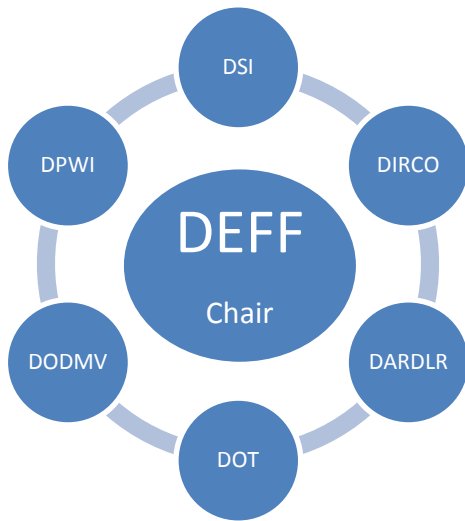
5 GOVERNANCE AND INSTITUTIONAL ARRANGEMENTS

5.1 Introduction

The activities in Antarctica are difficult, and are undertaken in a highly variable, unpredictable and dangerous environment. Institutional structures that support the Antarctica and Southern Oceans program must therefore be both decisive and flexible and must have full understanding of the dependencies among sectors that are operating in that environment. Effective coordination and cooperation among the responsible South African government departments and with key stakeholders is key. The following institutional arrangements are proposed for optimal and effective co-operation and co-ordination:

- The Antarctic and Southern Ocean Forum
- The Antarctic and Southern Ocean Technical Committee.

5.2 The Antarctica and Southern Ocean Forum (ASOF)



As the focal point for the implementation of the Antarctica Treaties Act, it is proposed that the DEA Director General chairs the Antarctica and Southern Ocean Forum (ASOF) (Figure 10). The Forum would provide policy guidance to SANAP, and evaluate the performance of SANAP. The Forum would meet twice a year.

Figure 10: The Antarctica and Southern Ocean Forum (ASOF)

5.3 The Antarctic and Southern Ocean Technical Committee (ASOTC)

Science is a major activity in Antarctic work. It is proposed that an Antarctica and Southern Ocean Technical Committee (ASOTC), drawn from participating Agencies as well as those that have the potential to participate meaningfully in future, be created (Figure 11).

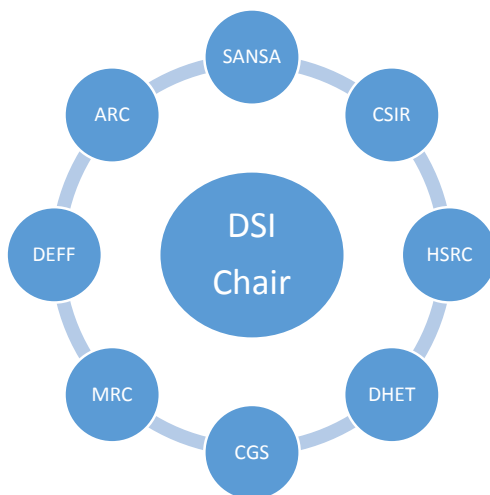


Figure 11: The Antarctic and Southern Ocean Technical Committee (ASOTC).

The major purpose of the Committee is to interpret policy guidance from the Antarctic and Southern Ocean Forum and determine research priorities. It is proposed that this committee, would be chaired by the Department of Higher Education, Science and Technology, and consist of Heads of Science

Agencies and a representative of higher education Institutions. Agencies would include the South African National Space Agency (SANSA), South African Weather Service (SAWS), Council for Scientific and Industrial Research (CSIR), Human Sciences Research Council (HSRC), Medical Research Council (MRC), Agricultural Research Council (ARC), Council for Geoscience (CGS), and DEA.

5.4 The South African Antarctic Unit

Effective leadership and co-ordination of South Africa's National Antarctic Program requires dedicated capacity. Most Antarctic nations have a *unified structure* that is able to coordinate and cooperate with other Antarctica and Southern Ocean Stakeholders. It is proposed that a South African Antarctic Unit (Figure 12) be created in DEFF by re-arranging of functions of staff in the existing directorate currently consisting of 23 staff. The mandate of the Unit would be to advance South Africa's strategic, scientific, and environmental interests in Antarctica and the Southern Ocean. It would also be charged with maintaining our presence in Antarctica and the sub-Antarctic islands. The functions are largely already carried out at DEA, albeit with a relatively low profile and impact.

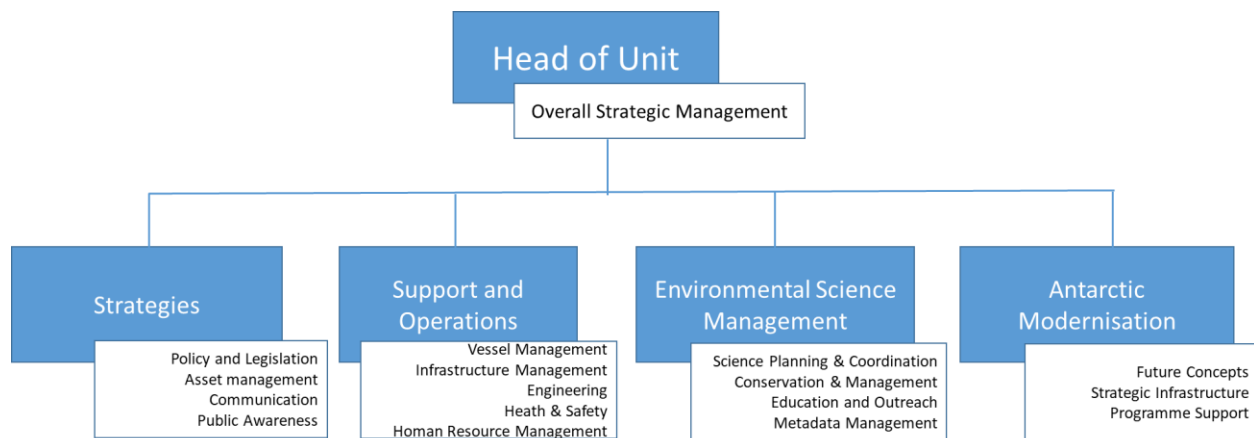


Figure 12: Organisational Structure of the South African Antarctic Unit.

5.5 Long-term institutional considerations

The 2007 Expert Review Panel Report of SANAP commissioned by the then DST (now DHEST) noted the concern regarding the fragmentation in SANAP, and highlighted the need to establish a coherent and transparent governance structure in the future. The consolidated, coherent and transparent governance structure institutional arrangements would help to maximise efficiencies, realise new opportunities, and enhance South Africa's global profile and return on investment in Antarctica and Southern Oceans.

6 IMPLEMENTATION PLAN

Objective	Sub-objective	Year					By whom	Budget
		1	2	3	4	5		
To strengthen South Africa's positioning, role and influence in the Antarctic Treaty	Maximise visibility and assertiveness, and advancing the African agenda in negotiation processes of the Antarctic Treaty system	Prepare and present position statements in line with issues discussed at the Antarctic Treaty Consultative Meeting (ATCM)	Prepare and present position statements in line with issues discussed at the ATCM	Prepare and present position statements in line with issues discussed at the ATCM	Prepare and present position statements in line with issues discussed at the ATCM	Prepare and present position statements in line with issues discussed at the ATCM	DEFF / DIRCO / DSI	R 1, 000, 000
	Evaluate and implement institutional reforms to enhance efficiency	Establishment of the Antarctica and Southern Ocean Forum (ASOF)	Establishment of the Antarctic and Southern Ocean Technical Committee (ASOTC)	Biennial ASOF and ASOTC Management Meetings	Biennial ASOF and ASOTC Management Meetings	Biennial ASOF and ASOTC Management Meetings	DEFF / DSI	
		Commission institutional review study for the SANAP	Institute reforms to improve SANAP Logistic efficiency	Institutional review study Report	Stakeholder engagements	Initiate implementation of the Institutional review study Report		
	Utilise the advantage of being an Antarctic and Southern Ocean gateway	Stakeholder engagements to improve servicing of nations	Develop and sign memoranda of understanding with members of the Dronning	Develop and implement outreach portfolio to increase the number of	Stakeholder engagements to increase the number of nations		DEFF	

		departing from Cape Town	Maud Land and Sub-Antarctic neighbours	nations departing from Cape Town	departing from Cape Town			
To optimise use of South Africa’s strategic positioning to advance world class scientific research that is responsive to relevant national strategic imperatives; and has both regional and global reach, in line with the Marine and Antarctic Strategy (2016)	Publication of peer reviewed publications by South African and African scientists on Antarctic and Southern Ocean science, in high-impact journals	Increase number of peer reviewed publications by South African and African scientists	Number of publications increased	Number of publications increased	Number of publications increased	Number of publications increased	DSI	
	Long-term research program (top predators)	Albatross long-term monitoring established	Antarctic penguin long-term monitoring established	Whale long-term monitoring established			DEFF / DSI	
	Expand Antarctic and Southern Ocean research scope beyond traditional sectors to include applied and emerging sectors	Stakeholder engagement to facilitate establishment of research programs in the new identified fields	Stakeholder engagement to facilitate establishment of research programs in the new identified fields	Extremophiles and Genomics Programs initiated	Health and Social Research Programs initiated	Glaciology (Drought dynamics) research program initiated	ASOTC / DEFF	
To promote and maintain the special nature and	Develop and implement relevant policy to advance special nature and ecological integrity	Initiate development of Antarctic Treaties Act Regulations		Finalise development of Antarctic Treaties Act Regulations		Implement Antarctic Treaties Act Regulations	DEFF	

ecological integrity of Antarctica and the Southern Ocean	of Antarctica and the Southern Ocean		Initiate development Antarctic Treaties Act amendments			Finalise development Antarctic Treaties Act amendments	DEFF	
To enhance public awareness and interest in Antarctica and Southern Ocean matters	Establish the Antarctic Centre and Precinct	Scoping study to establish Antarctic Centre and Precinct	Establish Public-Private Partnerships to secure funding	Secure site and develop site plan	Construction	Launch of the Antarctic Centre and Precinct established	DEFF	
	Strengthen the Antarctic outreach program	Review and update Antarctic outreach program plan	Review and update Antarctic outreach program material	Implement revised Antarctic outreach program plan	Roll out revised Antarctic outreach program material	Implement revised Antarctic outreach program plan	DEFF	
To plan, provide and maintain infrastructure for operations in Antarctica and Southern Ocean	Improve infrastructure functioning to optimise operations	Conduct annual infrastructure audit report to inform future demands and the replacement program	Implementation of annual infrastructure audit report	Three-year infrastructure audit and replacement report	Implementation of the three-year infrastructure audit and replacement report	Implementation of the three-year infrastructure audit and replacement report	DEFF	

7 CONCLUSION

South Africa appreciates the strategic relevance of the Antarctic Treaty system, and the country's geographic strategic advantage to play a leading role in the Antarctic Treaty system, as well as in Southern Ocean and Antarctic science and conservation. Consequently, this Strategy expresses the national intent for the country to position itself to maximise scientific capacity and impact, to maintain its leadership role in international climate change and marine conservation and sustainable use through a well-directed and coordinated approach. There are limited resources that are available and as such coordination of implementing this strategy will ensure that these resources are optimally utilized.

The strategy will also be periodically reviewed to ensure that new developments are adapted for the benefit of the country. The role that will be played by the proposed institutional arrangements, will be central to the implementation of this strategy.