

The National Environmental Management of the Oceans Policy



environmental affairs

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The Government of the Republic of South Africa
National Environmental Management of the Ocean
White Paper

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Executive Summary

South Africa is a maritime nation with jurisdiction over one of the largest exclusive economic zones in the world. Our ocean space is a resource rich and relatively pristine environment. The ocean represents a significant asset for current and future generations of South Africans. The use of various marine resources in our ocean space has increased over time and there remains significant potential for the unlocking of further economic development opportunities. As such South Africa needs to continuously balance the economic opportunities which our ocean space affords us while maintaining its environmental integrity. The challenge for South Africa is how best to encourage research, investment and use of our ocean resources in order to contribute to job creation and economic upliftment while at the same time protecting the ocean asset for present and future generations. This responsibility is made difficult because we only have a partial picture and understanding of the marine space and resources under our jurisdiction. There are significant gaps in our ocean knowledge which hampers effective planning. This is a challenge faced in varying degrees by all maritime nations and there is increasing global cooperation to better understand the ocean in order to promote sustainable use.

South Africa has passed a number of environmental statutes which give effect to the environmental rights in our Constitution. The general statutory framework provided by the National Environmental Management Act and associated supporting legislation envisages a high degree of cooperative governance between organs of state pursuing economic development and those tasked with environmental responsibilities. For some years now the general approach has been to follow sectoral management strategies with clear environmental guidelines. There is a growing recognition that this sectoral approach does not allow for maximising economic opportunities, ensuring environmental protection or increasing our understanding of the ocean space. This recognition has led many maritime states to adapt their ocean management approaches to better coordinate, monitor and regulate human use in their maritime zones. It has been clearly demonstrated that the adoption of a coordinated sectoral management approach to the ocean space can support and stimulate both economic and environmental sectors. South Africa is fortunate in that the existing environmental regulatory framework has already identified the need for coordinated sectoral management. This White Paper sets out an approach whereby South Africa can, in the short term, increasingly accommodate coordinated sectoral management within the existing statutory framework. The White Paper envisages the simultaneous preparation of an **"Ocean Act"** aimed at improving the regulation and coordination of the environmental management and development of South Africa's ocean.

Six ocean governance objectives have been identified namely:

1. Coordinating and supporting the implementation of the relevant existing statutory and institutional frameworks;
2. Establishing mechanisms for sectoral data collection and sharing;
3. Creating and maintaining a shared national knowledge base on the human activities, status and functioning of the ocean;
4. Establishing integrated ocean sustainable development and conservation ocean plans by the undertaking of strategic environmental impact assessments and the use of spatial planning tools;
5. Enhancing national human and technical capacity to better understand and utilise ocean resources and opportunities; and
6. Pursuing regional and international cooperation and governance mechanisms.

South Africa's ocean environmental management policy is comprised of four sequential and interdependent themes. Nine identified strategic priorities under each of the themes will be pursued concurrently. The themes form a coherent reinforcing sequence and the implementation of the identified strategic priorities will underpin the shift towards coordinated sectoral management. These themes and associated strategic priorities are:

Ocean environmental information

Strategic Priority 1.1: Facilitate improved adherence with the ocean environmental reporting requirements contained in the National Environmental Management Act and associated domestic legislation.

Strategic Priority 1.2: Enhance research, monitoring and conservation of ocean ecosystems while supporting sustainable development opportunities.

Ocean environmental knowledge

Strategic Priority 2.1: Produce information tools to facilitate knowledge and understanding of economic potential, the natural functioning of ecosystems, human impact on the ocean environment and the promotion of sustainable development opportunities.

Strategic Priority 2.2: Establish agreed ocean ecosystem thresholds using the best available information.

Strategic Priority 2.3: Provide knowledge to promote sustainable development while maintaining the integrity of the ocean.

Ocean environmental management

Strategic Priority 3.1: Provide timeous information on trends and extremes in ecosystem and earth system functioning to improve responses to extreme weather events and inform adaptation measures.

Strategic Priority 3.2: Promote the conservation, protection and rehabilitation of ocean ecosystems including habitat and species.

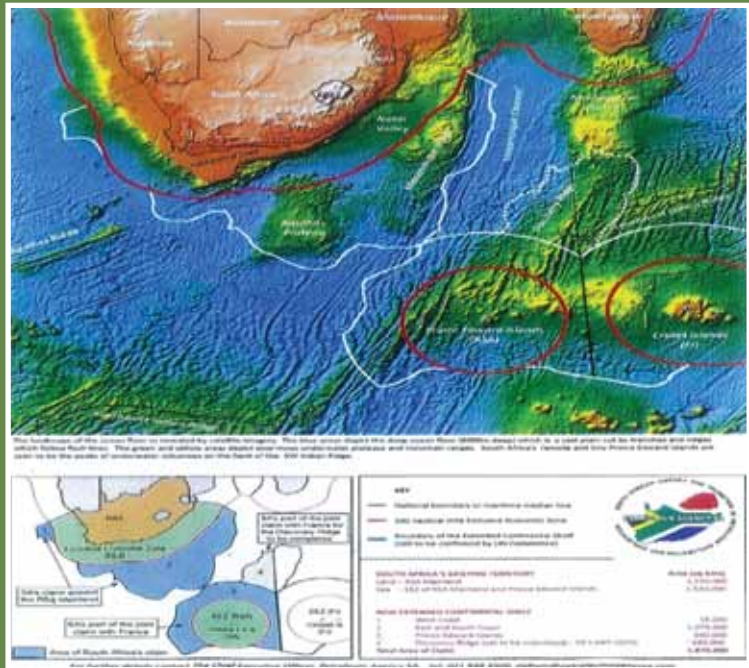
Strategic Priority 3.3: Establish biodiversity management plans for ecosystems and species.

Ocean environmental integrity.

Strategic Priority 4.1: Cooperate at a national, bi-lateral, regional and international level to advance sustainable ecosystem-based management of the EEZ, Continental Shelf, High Seas and Antarctica.

The successful implementation of the Ocean Governance Objectives and Priorities will allow South Africa, in the next five years, to complete the move from sectoral environmental ocean management towards coordinated sectoral environmental ocean management. This shift is made possible by building better understanding amongst role-players of the benefits of improved environmental information and knowledge to inform environmental planning. Environmental spatial-planning relies on improved knowledge of the South African ocean environment and is underpinned by a comprehensive spatial-atlas of the South African marine environment. It allows for more informed strategic planning processes to be undertaken, which seek to encourage, advance and expand sustainable development, conservation and protection of the ocean through an ecosystem-based management approach. Such a coordinated cross-sectoral approach will promote and expand sustainable development in the ocean. It will achieve this through coordinating and optimising investment in understanding and managing the large open space and resources accessible to South Africa.

South Africa's Exclusive Economic Zone and Continental Shelf Application



1. Introduction

Historically the prevalent human uses of South Africa's ocean have been the harvesting of marine living resources and marine transport. The Southern Cape coast contains archaeological remains such as shell middens, rock art and fish traps, which demonstrate clearly that marine resources have been exploited for a long time. Shell middens have provided evidence that shell fish formed part of the diet of our early ancestors and some scholars believe that shells were used as early forms of ornamentation. Many fish traps or vywers are still to be found along the Southern Cape inter-tidal zone while the traditional use of fish traps is still practiced on the northern Kwazulu-Natal coast. Important archaeological sites such as Klasies Cave and Pinnacle Point on the Southern and Eastern Cape coast have achieved international renown.

The importance of the ocean as a marine transport route has been demonstrated from as early as the fifteenth century by the Portuguese voyages of exploration. There is also some evidence of Arab and Chinese seafaring traders to the region that pre-dates this. Until the opening of the Suez Canal in 1869 the most viable sea route between Europe and the markets of the East was the ocean of Southern Africa. The significance of this route is demonstrated by the more than 2 700 identified historical ship wrecks off the coast. These wrecks include vessels from 37 different nations.

The 20th century saw growth in both the intensity and range of exploitation of the marine environment. While the consumption of marine living resources and marine transport remain significant modern uses of the ocean environment, other new uses have emerged. These include the extraction of minerals, oil and gas, eco-tourism, increased deep water fishing and innovative methods of energy production. Coastal states like South Africa increasingly have economies which are almost completely dependent on accessing import and export sea trade routes.

South Africa's Constitution requires the protection, conservation and sustainable use of the marine environment. The ocean space under South Africa's jurisdiction is an area larger than the size of its land territory. Countries with large Exclusive Economic Zones ("EEZs") are increasingly realising the immense global competitive advantage that the living

and non-living marine resources offer them. The ocean current systems around South Africa's coast are highly productive and display rich biodiversity. The available living and non-living ocean resources represent a significant economic and development opportunity for present and future generations of South Africans. This economic opportunity comprises both traditional sectors, like fishing, mining and shipping, and significant new and emergent technologically advanced sectors relating to medicine, energy and food production.

Recent studies have described the direct economic contribution of existing ocean activities to South Africa's Gross Domestic Product ("GDP") in 2010 as approximating 4.5%. Given the relative size of South Africa's ocean space potential exists to increase the ocean contribution to the GDP. The implementation of a coherent and sustainable ocean environmental management policy holds out the possibility of encouraging greater economic development opportunities in the ocean space. Research is currently being undertaken to consider how government can best support ocean economic opportunities to improve the livelihoods of coastal communities, in particular and South Africa generally.

Under apartheid the management of South Africa's ocean was characterised by the exclusion of the majority of South Africans from access to, and exploitation of, the ocean and coastal resources. Access to beaches, coastal areas and rights to exploit marine resources was concentrated in the hands of one racial group. Government is required to ensure increased equitable access to the ocean and its resources in its planning processes.

The environmental management of South Africa's ocean space is a complex and challenging undertaking. It has been identified that the current environmental ocean management efforts are not optimal. In order to better fulfil these responsibilities and to ensure the integrity of South Africa's marine environment and ecosystem services, this White Paper on the South African National Environmental Management of the Ocean has been prepared. The White Paper was preceded by the gazetting of the Green Paper on the National Environmental Management of the Ocean in October 2012. Detailed comments were received on the gazetted Green Paper by some 22 organisations. The Portfolio Committee on Environmental Affairs convened a public hearing on the Green Paper during which further comments were received. These comments have been assimilated and where appropriate incorporated into the White Paper.

South Africa's National Environmental Management of the Ocean, will in the short term, make use of the statutory framework established by the National Environmental Management Act 107 of 1998 and associated environmental legislation. In the medium term it is contemplated that an Ocean Act will set out a modern approach to ocean environmental management. This approach will allow South Africa to more effectively address the growing challenges posed by the accumulation and aggregation of human impacts on the ocean environment while at the same time maximising the economic development potential that the ocean presents. Individual economic sectors contribute to the aggregated and accumulated human impacts on the ocean environment. Aggregation may be viewed as a simultaneous combined impact from the various sectors while accumulation refers to the resulting effects of impacts over time. An example of aggregation could include oil discharges from storm water run-off, fishing, shipping, mining and refinery operations. Over time these oil discharges will accumulate and interact in the environment in complex ways. Going forward, South Africa needs to pay more attention to managing the aggregation and accumulation of impacts on the ocean.

The White Paper contends that over the next five years South Africa will transition from the current sector based ocean management approach to a coordinated cross-sectoral planning scheme. The movement towards a coordinated cross-sectoral planning approach is required by the existing statutory framework established in terms of the National Environmental Management Act 107 of 1998 and will be further supported by the Ocean Act.

The White Paper further represents a substantive response to the National Development Plan request for organs of state to reappraise the maritime sector in terms of both maximising economic potential and responding to growing ocean environmental challenges. It further responds to the New Growth Path and takes cognisance of the Industrial Policy Action Plan.

2. The South African Ocean Environment

South Africa is bordered by the ocean on three sides – to the west, south and east. The South African Navy calculates South Africa's coastline as being approximately 3 924km. This calculation includes South Africa's sovereign possessions of the relatively small Prince Edward and Marion Islands ("Prince Edward Islands") in the sub-Antarctic Indian Ocean. Generally most documents reference South Africa's mainland coastline as being approximately 3 000 km. This coastline stretches from the Namibian border on the West Coast to the Mozambique border on the East Coast with few bays or indentations naturally suitable for harbours. There are eight major ports namely: Richard's Bay; Durban; East London; Ngqura; Port Elizabeth; Mossel Bay; Cape Town and Saldanha Bay.

South Africa exercises jurisdiction over:

- its internal waters which include all harbours;
- its territorial waters which include the sea within a distance of twelve nautical miles from the baselines established in terms of the Maritime Zones Act 15 of 1994. (A nautical mile approximates to 1.85 kilometers);
- its contiguous zone, including its marine cultural zone, which includes the sea beyond the territorial waters but within a distance of 24 nautical miles from the baselines;
- its EEZ which includes the sea beyond the territorial waters but within a distance of 200 nautical miles from the baselines; and
- its continental shelf as defined in Article 76 of the United Nations Convention on the Law of the Sea.

Within the EEZ states have the right to exploit, develop, manage and conserve all resources to be found in the water, on the ocean floor and in the subsoil, including fish, minerals, oil and gas. The current extent of South Africa's EEZ is approximately 1 553 000 km² and South Africa has lodged further claims under international law to extend its sea bottom rights to certain parts of the continental shelf. It is anticipated that once these claims have been processed they will add an additional 1 137 000 km² of sea bottom rights to South Africa's mainland EEZ and 1 108 000 km² to the EEZ surrounding the Prince Edward Islands. Comparatively South Africa comprises 1 200 000km² of terrestrial jurisdiction.

The ocean environment around Southern Africa is one of the most varied in the world. The strong oceanographic variability and in particular the contrasts in temperature, productivity and dissolved oxygen content of the ocean are reflected in the general division of South African marine biodiversity into three broad biogeographic regions (excluding the Prince Edward Islands) namely, the cool temperate West Coast, the warm temperate South Coast and the subtropical East Coast.

The complex interactions between the ocean and the atmosphere on a regional and global scale, combined with the effects of latitude and topography, affect the rainfall patterns in South Africa. Southern Africa forms a wedge of land influenced by the vast marine region of the South Atlantic, the South Indian and the Southern Ocean. While this ocean environment plays a definitive role in our own regional climate, it also has significance far beyond South Africa's shores. Increasingly international research is being undertaken to obtain accurate data from the ocean adjacent to South Africa due to scientific recognition of the global significance of these ocean processes.

South Africa displays high levels of both terrestrial and marine biodiversity within a relatively small area. For example, some 10 000 species of marine plants and animals have been recorded in South Africa, that is almost 15% of the known global marine species diversity. In broad terms, plants and animals are distributed according to the distinctive physical characteristics of the different regions. The marine environment along the West Coast is characterised by

cold upwelled waters and has low species diversity and large populations of some species. The high productivity of the West Coast allows for large volume offshore commercial fisheries and inshore subsistence and recreational fishing. The South Coast is a transition region between the cool West Coast and the warm East Coast, and shows characteristics of both areas. The marine environment here has a high biological diversity and moderate productivity. The East Coast becomes increasingly warm, humid and tropical northwards. The marine biodiversity on the East Coast is characterised by increasing species diversity and smaller species populations. This area allows for subsistence and recreational fishing but is not suitable for large offshore commercial fishing except for prawns.

South Africa has sharply contrasting currents on the West and East Coasts. On the West Coast, in the Benguela Current System ocean and wind interactions bring nutrients from deep waters to the surface where sunlight stimulates photosynthesis and the production of phytoplankton, thereby increasing the overall volume of animal and plant productivity. These areas of upwelling are found where the wind is strongest and where the continental shelf is narrowest and deepest. This forms the basis of a complex food web dominated by a suite of planktivorous fish, including sardines and anchovies. Significant predators on the smaller species include mackerel and hake. Other predators on the small fish include squid, tuna, snoek, seabirds, the Cape fur seal, dolphins and whales. Seabirds in the Benguela Current system include the African penguin, Cape gannet and three endemic cormorants. Sea surface temperatures in the Benguela ecosystem are typically between 13 °C and 15 °C which is cooler than the East Coast.

On the East Coast, the Agulhas Current System becomes established between southern Mozambique and Durban. This warm western boundary current flows strongly southward along the East Coast, bringing nutrient-poor tropical water from the equatorial region of the Western Indian Ocean. The waters are typically blue and clear, with low nutrient levels but very diverse biota from the rich Indo-Pacific region. Coral reefs, mangroves and high river input from sources along the East Coast characterise the shelf waters. Two species of turtle breed in Northern KwaZulu-Natal and adjoining coastal regions in Mozambique and are dispersed widely into the South West Indian Ocean. The Agulhas Current contains several species of coral, tropical fish, game fish, sharks, seabirds, dolphins and whales. Along the narrow shelf on the East Coast, the Agulhas Current runs close to the shelf break (edge of continental shelf), except off the Thukela (Tugela) Bank where the shelf is a little wider. The coastline and adjoining interior has a higher rainfall than the West Coast as heat and moisture are transferred from the ocean to the atmosphere.

The Agulhas Bank, off southern South Africa, is found in the intermediate environment between the cold Benguela Current in the west and the warm Agulhas Current in the east. The Agulhas Bank is shallower than 150 m in the east and slopes gently towards the south. Sea surface temperatures over most of the Agulhas Bank are generally 16–17 °C in winter and 20–21 °C in summer. Concentrations of nutrients over the Agulhas Bank are not as high as on South Africa's west coast but are sufficient to support a productive marine community. On the Agulhas Bank the conditions are generally less turbulent than off South Africa's west coast, providing a more stable and attractive environment for fish that spawn in the water column. As a result, many fish migrate to this region including anchovy, sardine (pilchard), horse mackerel, hakes and linefish. Eggs and larvae of small pelagic fish are swept westwards and northwards onto the West Coast shelf, which young fish utilise as a productive nursery area before returning to spawn on the Agulhas Bank. Seabirds breeding in this area include some of those that breed on the West Coast as well as more tropical species. The region is an important nursery and transit area for whales, such as the southern right and humpback whales, which migrate to South Africa from the Southern Ocean.

The Prince Edward Islands are the most western of the islands that form the Kerguelen Province, which also includes Îles Crozet, Îles Kerguelen (France) and Heard and McDonald Islands (Australia). Both Marion Island and Prince Edward Island are shield volcanoes that rise from depths of some 5000 m. They are linked by a saddle, where the water depth is about 200 m. Sea surface temperatures around the islands range from 4–7 °C. South Africa has jurisdiction over a considerable EEZ surrounding this area, comprising some 473 380 km².

The Prince Edward Islands area serves as a haven for large numbers of breeding seabirds and seals, some of which are considered globally threatened. There are four species of penguin, including the macaroni and the king penguin which are the most abundant. Five species of albatross, including 44% of the world's population of wandering albatrosses, and a suite of burrowing petrels are present in this area. There are three species of seals: the southern elephant seal, sub-Antarctic and Antarctic fur seals. Fish include the Patagonian toothfish and various members of the family of notothenids or "antifreeze" fish. Crustaceans, especially krill, contribute substantially to the diets of some of the seabirds and some whales.

The current systems adjacent to South Africa contain a biodiversity complement and range that is distinctive and requires management and conservation prioritisation. The physical environment also presents South Africa with several economic opportunities such as mining, fishing, shipping and tourism. The national and global significance of the Southern African ocean further serves as a focus for national and international scientific research programmes which provides an opportunity for South Africa to increase national competencies in a range of specialised ocean and coastal research and management applications.

3. Ocean Ecosystem Services and Sustainable Development

South Africa's ocean environmental management policy aims to encourage and support sustainable development of the South African marine environment by focussing effort on methods which contribute to: Habitat and Biodiversity Conservation, Marine Ecosystem Management and Maintaining Earth System Integrity.

Most international conventions concerned with sustainable development and environmental management recognise the global land-ocean connectedness. More recently this concept is being incorporated into the development of ocean policies. Research into the global land-ocean connectedness has indicated the following:

- The earth system, in many respects, functions as a self-regulating system with complex interactions and feedbacks;
- Human activities are significantly impacting earth's environment. The impact of anthropogenic activity on the earth's land surface, ocean, coasts, atmosphere, biological diversity, water cycle and biogeochemical cycles are undeniable. Many of these impacts are increasing and further harm is likely;
- Human driven changes cause effects that cascade through the earth system in complex ways. The effects of human activity on the environment can be difficult to understand or predict;
- Human activities can trigger environmental changes with severe consequences for the earth's environment and inhabitants;
- Key environmental parameters indicate that the earth system has moved outside the range of natural variability exhibited over the last 500 000 years. The scale of change is unprecedented and poses significant risk to the environment. This challenge has been expressed in recent United Nations Framework Convention on Climate Change documentation.

Two widely used indicators which highlight the physical and chemical effects of climate change on the marine environment are ocean warming and ocean acidification.

The ocean surface generally is in a state of equilibrium with the atmosphere with respect to carbon dioxide and heat. Changes in this equilibrium have consequences. Ocean warming leads to ice sheet melting and sea level rises. It also increases the frequency of extreme weather events such as coastal storms. This contributes to the possibility that ocean currents may be impacted, causing changes in regional climate systems. South Africa's ocean has not escaped this warming. With increasing sea surface temperatures, marine species are expected to shift their distribution patterns in response to the changing temperature regimes.

Ocean acidification refers to increasing levels of dissolved carbon dioxide in the ocean. This holds out the possibility of significant impacts on both marine biodiversity and ecosystems. It diminishes the ocean's capacity to act as the earth's biggest carbon sink. This reduced ability of the ocean to absorb atmospheric carbon will contribute to increased risk to atmosphere and land ecosystems by increasing the rate of climate change. An early indication of increased ocean acidification is that some species of shelled marine organisms cannot effectively produce their shells.

Ecosystem functions include those ecosystem level processes that contribute to the wellbeing of humans and the planet. Beneficial ecosystem functions (such as the formation of soil; the provision of food, fresh water, wood, fibre and fuel; the regulation of climate, floods and the spread of disease; protection from storm surges and floods; and a range of cultural, spiritual, educational and recreational services) are called ecosystem services. It is estimated that the ocean accounts for about two-thirds of the value of ecosystem services on a global basis. Ecosystems are important for coastal and ocean management. Ocean environmental management provides a balance between maintaining productivity and biodiversity in an ecosystem and optimising the yield of marine resources. This is a key objective for sustainable development.

There are a number of human pressures which have an existing or potential impact on habitat and biodiversity conservation in South Africa's marine environment. The 2011 National Biodiversity Assessment discusses these human resource use pressures in detail. Each of the pressures represents a specific set of ocean environmental management challenges. The pressures include:

- Land-based activities
- Shipping and Port Operations
- Mining
- Fishing
- Sea water abstraction
- Aquaculture
- Energy production
- Bioprospecting
- Communication cables
- Recreation and tourism
- Emerging technological use

Various user groups, who did not previously infringe on one another, now find themselves using similar areas of the marine environment. This has placed a responsibility on states to manage their marine resources in a more effective manner. States are increasingly seeking to formulate management approaches, which maximises marine resource usage in balance with the need to conserve and maintain ocean environmental integrity. Such an approach implicitly recognises that optimising ocean economic potential requires decision making with respect to trade-offs. These trade-offs are not simply a balancing between environmental protection and economic use. They also require a consideration of potential economic benefits and investment return between economic sectors themselves.

The unlocking of the economic potential presented by the living and non-living resources of South Africa's ocean space are a national imperative. South Africa's current ability to undertake ocean management is heavily reliant on the efforts of various organs of state. The sectoral management of ocean use in South Africa has attempted to regulate and advance particular economic sectors in isolation from one another. This sectoral management approach has been shown to be inefficient and ineffective and represents an obstacle to both conservation efforts and development initiatives.

4. The South African Ocean Governance Mandate

Historically activities that are undertaken in the ocean and coastal environments have been regulated by individual departments and other organs of state. However, this is done with regard to their respective economic mandates and does not always adequately consider the mandate of conservation and protection or a holistic approach to the management of pressures. A coordinated approach will facilitate efficiencies and cost saving in sectors cooperating to support each other's efforts to expand existing sectors and explore new sectors. It is increasingly emerging that conservation, protection and the sustainability of ocean environmental integrity requires an appropriate management framework. This is a distinct function and management regime that is separate from the traditional economic sector approach to conservation management.

Sectoral management of marine resource use results in pressures arising from and opportunities for human usage being addressed in a silo fashion or separately from one another. The addressing of pressures and opportunities in such a manner may result in unintended consequences with respect to other sectoral uses and to the marine environment itself. This recognition has led to maritime nations increasingly adopting either coordinated sectoral ocean planning and management approaches or integrated ocean planning and management approaches.

There are commonalities between the objectives which various marine nations have identified in their ocean management policies. All seek to:

- Maintain and improve marine ecosystems resilience, conserve biodiversity and restore degraded habitat;
 - Improve the competitiveness and effectiveness of activities existing within their marine jurisdiction while at the same time researching and developing innovative and responsible future uses; and
 - Participate and strengthen their involvement in regional and global ocean fora.
- Similarly there are commonalities in the priorities which the various nations have set themselves in order to achieve policy objectives. All have undertaken initiatives which aim to:

- Support and conduct marine scientific research;
- Extract optimum economic advantage from marine resources;
- Protect the marine environment; and
- Implement marine spatial-planning and the ecosystem management approach.

More and more international instruments have embraced the language of sustainable development. The four recurring elements of sustainable development have been described as:

1. The principle of intra-generational and inter-generational equity which holds that natural resources must be preserved for the benefit of current and future generations;
2. The principle of sustainable use which holds that natural resources should only be exploited (utilised) in a sustainable, prudent or rational manner;
3. The principle of equitable use which holds that the exploitation of natural resources must be undertaken in an equitable manner so that exploiting states take into consideration the needs of other states; and
4. The integration principle which holds that environmental considerations should be integrated into economic and social development plans, programmes and projects as well as that development needs should be taken into consideration when environmental objectives are applied.

For the purposes of the development of South Africa's ocean management policy, Government has been mindful of its constitutional, international law objectives and domestic responsibilities. South Africa has embraced sustainable development and integrated planning when pursuing ocean environmental integrity.

South Africa's ocean policy therefore takes cognisance of the following responsibilities in the marine area under its national jurisdiction:

- Implementation of measures to address the sustainable use of resources;
- Implementation of measures to address the maintenance of biological diversity;
- Implementation of measures to undertake research and monitoring;
- Integration of management of its ocean environment by pursuing coordinated sectoral development while adopting a precautionary approach;
- Implementation of measures to respect international marine usage rules and to encourage research and monitoring of the High Seas. This is particularly so where ecosystem components straddle areas of national jurisdiction and the High Seas ;
- Implementation of measures to address pollution of the ocean environment from both land and sea-based sources;
- Implementation of measures to ensure international and regional cooperation in respect of marine management;
- Co-ordination and harmonisation of policies, legislation and actions relating to the environment at an intergovernmental level; and
- Realisation that global and international responsibilities relating to the marine environment must be discharged in the national interest.

Ecosystem degradation, climate change and the identification of economic development opportunities have triggered a fundamental shift in international ocean management strategies in recent years. Sovereign states are increasingly moving towards coordinated or integrated management approaches premised on the regulation of all sectoral activities within their marine environment. This approach is based on the relationship between the totality or combined impact of human resource usage and its associated cumulative impacts on the marine environment. The implementation of an ecosystem-based ocean management approach will enhance South Africa's ability to manage and effectively respond to existing ecosystem degradation and improve and encourage the sustainable use of national and transboundary shared resources.

5. The South African Ocean Governance Approach

South Africa's Ocean Policy seeks to balance sustainable development and protection of the ocean environment for societal benefit. The policy recognises that a robust and sustainable society and economy depends on services that marine ecosystems provide. The sustainable use of ocean resources requires an understanding of the marine development opportunities, the protection of biodiversity, maintenance of ocean ecosystem integrity and the avoidance of significant long term harmful impacts on the ocean environment. The policy also takes into account the National Planning Commission's request for an appraisal of the maritime sector in light of its geopolitical positioning, a consideration of the contribution our ocean could make to employment and regional trade and the necessity for a holistic response to climate change adaptation as required by the South African National Climate Change Response White Paper.

a. Ocean Governance Guiding Principles

South Africa's policy for the National Environmental Management of the Ocean is informed by the Constitution, International Law and Domestic Legislation including the National Environmental Management Act and associated supporting legislation. The following principles will provide the foundation for the Ocean Act:

1. The sustainable use and management of ocean resources and ecosystem services in order to benefit present and future generations;
2. The protection of biodiversity in the ocean environment and the conservation of marine ecosystems;
3. The application of the precautionary approach to sustainable use and conservation;
4. The prevention, avoidance and mitigation of pollution and adherence to the polluter pays principle;
5. The strengthening of human capacity to deal with a changing environment, including the impacts of climate change such as increases in sea-surface temperature, sea-level rise and ocean acidification;
6. The identification of economic opportunities which contribute to the development needs of the poor and vulnerable within the population ensuring human dignity;
7. The promotion of collaboration and cooperative governance; and
8. The promotion of an ecosystem and earth system approach to ocean management.

b. Ocean Governance Strategic Objectives

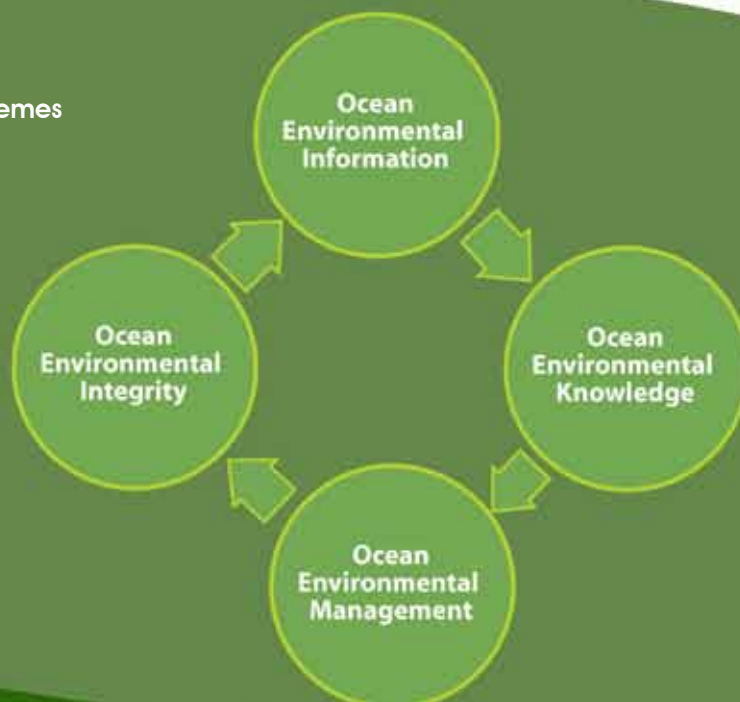
In giving effect to the South African Ocean Governance Approach and to the Ocean Governance Principles the National Department of Environmental Affairs and relevant organs of state and institutions are tasked with achieving the following strategic objectives:

1. Coordinating and supporting the implementation of the relevant existing statutory and institutional frameworks;
2. Establishing mechanisms for intersectoral data collection and sharing;
3. Creating and maintaining a shared national knowledge base on the human use, status and functioning of the ocean;
4. Establishing integrated ocean sustainable development and conservation ocean plans by the undertaking of strategic environmental impact assessments and the use of spatial planning tools;
5. Enhancing national human and technical capacity to better understand and utilise ocean resources and opportunities; and
6. Pursuing regional and international cooperation and governance mechanisms.

6. The South African Ocean Governance Strategy

South Africa's ocean environmental management policy is comprised of four sequential and interdependent strategic themes. Identified strategic priorities under each of the strategic themes will be pursued concurrently. The four ocean policy strategic themes form a reinforcing sequence initiated by the collection of environmental information to the generation of environmental knowledge informing improved environmental management approaches aimed at the protection and preservation of ocean environmental integrity. Ocean environmental integrity is critical to ensure the continued availability of ecosystem functions and services for current and future generations.

The Four Strategic Themes



a. Strategic Theme 1: Ocean Environmental Information

The available information describing both the bio-physical functioning and resource use of the ocean is at present inadequate to accurately determine the status and value of the marine environment. Most of South Africa's large ocean EEZ remains inadequately described. This is true for physical and ecological processes, biodiversity, impact, human livelihood and economic potential. Existing reporting requirements articulated in the National Environmental Management Act and frameworks stipulate the method of sectoral reporting on environmental management. These frameworks were established in order that sectoral environmental information would be collated. These requirements have not resulted in a consolidated reporting of ocean sector information and need to be enhanced. To this end Government will develop and facilitate national monitoring, research and reporting competence both within government and non-government institutions to generate and distribute meaningful ocean information.

Strategic Priority 1.1: Facilitate improved adherence with the ocean environmental reporting requirements contained in the National Environmental Management Act and associated domestic legislation.

Priority Statement 1.1.1: A select number of organs of state and institutions are involved in pursuing or regulating economic usages of the ocean space under South Africa's jurisdiction. Effort will be directed at communicating, assisting and facilitating improved adherence with the existing environmental legislation requiring the gathering and dissemination of environmental management information.

Priority Statement 1.1.2: Government will facilitate the obtaining and sharing of appropriate and meaningful marine environmental information. Effort will be placed on engagement with relevant organs of state in the identification of an appropriate reporting structure and templates.

Priority Statement 1.1.3: Government will facilitate the establishment of high-level indicators which will be capable of producing a summary description of the status of the ocean environment. Government will perform the necessary functions to compile ocean environmental status reports. These reports will allow individual departments and other organs of state to obtain an integrated view of marine resource use and the status of the marine environment generally when exercising their decision making responsibilities.

Strategic Priority 1.2: Enhance research, monitoring and conservation of ocean ecosystems while supporting sustainable development opportunities.

Priority Statement 1.2.1: Government will refine a research, monitoring and mapping agenda to improve knowledge and understanding of ecosystems, pollution impact and living and non-living marine resource potential. The research area includes the mainland continental shelf and EEZ, the Prince Edward Islands, the Southern Ocean and Antarctica. Research in the marine environment is undertaken by many organs of state and entities. This priority is aimed at facilitating convergence of state funded ocean research effort towards commonly agreed goals. Data and information accumulated from research and monitoring efforts will be maintained and archived.

Priority Statement 1.2.2: The unique complexity and global importance of ocean ecosystems adjacent to South Africa attracts national and international research interest. South Africa has permanent research bases at Marion Island and Antarctica and has a track record of research excellence in specialised areas. These nodes of excellence will be supported by investment in further capacity and infrastructure. Towards enhancing this capacity, South Africa has in 2012 taken delivery of a technologically advanced polar research and supply vessel. Government seeks to increase the number of South African science and engineering graduates in ocean-related studies and provide opportunities for them to contribute to ocean knowledge, management and beneficial use. Particular attention will be paid to promoting more science and engineering graduates who reflect broadly the racial and gender composition of South Africa.

Priority Statement 1.2.3: South Africa's ocean area and the territory under the Extended Continental Shelf Claim remain largely unexplored and the ability to monitor the ocean environment is resource constrained. Government will consider and implement innovative methods of monitoring South Africa's extensive marine area including the use of ship-based systems, satellite observation, monitoring buoys, remote and robotic systems and other emerging technologies. In addition to gathering information on ocean systems, innovative use of such technologies can also enhance compliance efforts within the EEZ.

b. Strategic Theme 2: Ocean Environmental Knowledge for Sustainable Development

Sustainable development decision making is hindered by the present limited knowledge of the ocean environment. This frustrates efforts both to develop and conserve marine resources. The Ocean Policy encourages the collation, analysis and interpretation of the increasing amount of marine environmental information obtained under Strategic Theme 1. In consolidating environmental information Government positions itself to promote rehabilitation, conservation and sustainable development by organs of state and role-playing entities. The provision of improved and more complete knowledge will support decision making by sectoral role-players exercising their planning and regulatory responsibilities. It does this by ensuring that sectoral role-players share a common understanding of ocean natural functioning and human use. Improving intergovernmental communication and cooperation in this manner is a necessary requirement for the active pursuit of a common set of marine conservation and development goals.

Strategic Priority 2.1: Produce knowledge products and information tools to facilitate knowledge and understanding of economic potential, the natural functioning of ecosystems, human impact on the ocean environment and the promotion of sustainable development opportunities.

Priority Statement 2.1.1: Government has identified the need to undertake the development of a South African Ocean Atlas. This ocean atlas will serve as a comprehensive repository of ocean environmental information. The ocean atlas will be compiled by the collation and undertaking of research into and surveying of identified ocean ecosystems in defined marine areas. This approach will be underpinned by the development and refinement of a spatial map of South Africa's ocean space inclusive of best available information. Some work has already been undertaken by organs of state in this regard. The spatial mapping process will commence by using existing data to define marine regions or bioregions for marine management planning purposes.

The South African Ocean Atlas will be underpinned by the production of a South African Ocean and Coastal Information System. This system will require a significant investment in the exploration and mapping of South Africa's ocean space. Spatial mapping will include the describing of living and non-living marine resources, the existing biodiversity and the extent to which ecosystems are impacted or the levels of pollution in the ocean. This information system will also seek to describe utilization patterns from the various sectors that operate in the ocean and coastal space. The South African Ocean and Coastal Information System will enhance South Africa's ability to archive information, summarise data, generate scenarios and support informed sectoral decision making. Identified gaps in marine knowledge and data will be fed back into the ongoing marine research agenda pursued under Strategic Theme 1.

Priority Statement 2.1.2: Monitoring and scientific effort used while developing spatial-maps and analysing existing ocean environmental data will be supplemented to produce knowledge such as trends, scenarios and predictions. Role-playing departments will be provided with ongoing summaries and analyses of the aggregated environmental information. This information will be of great value in improving sustainable sectoral and cross-sectoral planning initiatives and environmental reporting both domestically and internationally.

Strategic Priority 2.2: Establish agreed ocean ecosystem thresholds using the best available information.

Priority Statement 2.2.1: The knowledge products generated through spatial-mapping, improved environmental data analysis and other research and monitoring will provide the basis for dialogue with sectoral role-players in establishing and refining an agreed set of marine ecosystem impact thresholds for the reporting indicators described in Strategic Theme 1. Impact thresholds may be defined per region, bioregion or spatial zone. These agreed impact threshold indicators will provide the foundation for proactive and adaptive environmental planning.

Strategic Priority 2.3: Provide knowledge to promote sustainable development while maintaining the integrity of the ocean.

Priority Statement 2.3.1: The lack of publicly accessible information and knowledge regarding most of the ocean space and resources under South African jurisdiction prevents the identification of existing, potential or new economic opportunities. Spatial-maps, inventories and knowledge tools could represent a considerable Government investment in unlocking the economic development potential of South Africa's extensive EEZ. Increased knowledge and understanding of South Africa's EEZ will directly contribute to sustainable economic development and job creation.

Priority Statement 2.3.2: The establishment of commonly agreed spatial zone indicators and threshold limits will simplify and focus conservation priorities and impact assessments. Agreed indicators and limits will have the benefit of providing direction and reducing the cost and time of impact assessments, directly facilitating sustainable economic investment in the ocean space.

Priority Statement 2.3.3: Technological innovation is required to efficiently research, monitor, explore and develop the large ocean surface, water column and sea-floor. Government will encourage all relevant organs of state and specialist tertiary educational institutes to research and promote innovation in technology that supports ocean-based science and industry and investigates sustainable economic ocean opportunities.

c. Strategic Theme 3: Ocean Environmental Management

This theme seeks to identify South Africa's management response to the information and knowledge produced under Strategic Themes 1 and 2. Increased knowledge of South Africa's ocean environment is likely to highlight existing and emerging challenges faced by ocean ecosystems and the earth system itself. Organs of state will be engaged to determine appropriate sectoral management responses to these environmental challenges and trends. It is well documented that extreme weather events disproportionately affect poor and vulnerable coastal communities. Improved management responses will help to alleviate and mitigate impacts on South Africa's coastal communities. South Africa has at its disposal various existing environmental management tools including the establishment of protected areas and environments. This theme explains how South Africa will pursue its environmental objectives and seek to build consensus and support role-players in their ocean environmental management planning.

Strategic Priority 3.1: Provide timeous information on trends and extremes in ecosystem and earth system functioning to improve responses to extreme weather events and inform adaptation measures.

Priority Statement 3.1.1: The ocean monitoring and mapping efforts together with the other knowledge products developed in Strategic Theme 2 will allow Government to establish capacity for the undertaking of trend analysis, forecasting and prediction within the marine environment as required by South Africa's Climate Change Policy.

Priority Statement 3.1.2: Long-term monitoring programmes will be enhanced to generate time series data that can be used to identify and track shifts in ecosystems functioning that contribute to or result from climate change or natural variability. Climate change will likely alter the availability and delivery of ecosystem services including rainfall distribution and its seasonal patterns. Changes in rainfall and its seasonal patterns will challenge the sustainability of existing agricultural crop selection and geographic locations. The areas of operation of fisheries may also be influenced. Without the necessary adaptation strategies being set in place South Africa's food security may be challenged. Climate change may also result in exaggerated weather phenomena along South Africa's coastline such as coastal storms and storm surges and associated impacts on livelihoods, commercial activity and biodiversity.

Priority Statement 3.1.3: Better trend and scenario planning services and reports will be provided to aid climate change mitigation and adaptation decision making by role-players. This will inform national planning on how ocean ecosystem services will vary or change in the short, medium and long term at local, national, regional and global scales. Such services and reports will include variability of the ocean as a rainfall source; the magnitude of sea level rise and implications for coastal communities and improved predictability of exaggerated weather phenomena such as coastal storms and storm surges. The early prediction and planning responses to such weather phenomenon will be highly beneficial to South Africans, especially the most vulnerable. Understanding trends in ocean temperature and ocean atmosphere interactions will allow the provision of timeous reporting to role-players and contribute to early warning. Similarly, through understanding current and ocean-wind interactions, patterns of pollution distribution can also be predicted. This will assist in the efficient deployment of resources to mitigate the impact of pollution such as oil spills or the accumulation of harmful chemicals on the sea-bottom.

Strategic Priority 3.2: Promote the conservation, protection and rehabilitation of ocean ecosystems including habitat and species.

Priority Statement 3.2.1: Government will facilitate the implementation of conservation measures and increase the availability of ocean environmental information. This will be done by ensuring that the sector management authorities of ocean use include targeted conservation and data collection responsibilities into the relevant permitting and licencing frameworks. Examples of these permitting requirements include the deployment of ocean monitoring equipment for off-shore operations to ensure compliance with specified thresholds and the use of bird scaring devices in fishing operations.

Priority Statement 3.2.2: The Department of Environmental Affairs will define the regulatory framework for all unregulated and proposed new human activity in the ocean environment. International trends suggest that proposed new activities are likely to include carbon sequestration and storage, ocean fertilisation, geo-engineering and deep sea exploration.

Priority Statement 3.2.3: Government will continue to identify and establish a representative network of marine protected areas under South Africa's jurisdiction to promote conservation, encourage tourism and other livelihood activities and thereby contribute to the long-term sustainable use of living resources. Government will support the extension of marine protected areas in terms of South Africa's National Protected Areas Expansion Strategy. Government recognises the significant contribution of islands to ocean ecosystem functioning. Islands will receive prioritised conservation status. There is also currently an international movement towards the establishment of a representative network of marine conservation areas beyond state jurisdiction. Government will support this initiative.

Priority Statement 3.2.4: Government will undertake and support actions aimed at the rehabilitation of degraded habitats, where necessary, and the protection of threatened species as contemplated in existing legislation.

Priority Statement 3.2.5: Government will adopt internationally agreed conservation targets and practices, where appropriate, as the minimum necessary requirements for conservation.

Priority Statement 3.2.6: Government will support international efforts aimed at the protection and conservation of ecosystems, habitats and species in the High Seas, sub-Antarctic territories and in Antarctica.

Strategic Priority 3.3: Establish biodiversity management plans for ecosystems and species

Priority Statement 3.3.1: Government will develop and pursue uniformity of high-level ocean environmental norms and standards to inform sectoral economic planning efforts. These norms and standards are aimed at guiding environmental best practice in ocean sectoral use.

Priority Statement 3.3.2: Government will, using best available knowledge, develop cross-sectoral spatial ecosystem and biodiversity management plans across bioregions. These spatial management plans will facilitate the identification of existing, potential or new economic opportunities while offering maximum protection to threatened species and ecosystems, such as unique benthic fauna and flora and threatened coastal, estuarine and marine ecosystems as contemplated in existing legislation. The plans will provide guidance with respect to the setting of common objectives for the conservation, management and sustainable development of the ocean environment in collaboration with sectoral role-players. Marine spatial planning seeks to integrate information across economic sectors. An integrated approach is best suited to displaying and understanding impact per sector and also the accumulated and aggregated impact across sectors over time. This approach will also facilitate the optimising of resources in ocean planning, research, surveying and monitoring programmes across sector departments. An example of this will be sharing survey and research ship facilities so that as much data as possible is collected to support the various sectors during scheduled cruises and research activities. Marine spatial planning offers a framework to describe and discuss advantages and disadvantages or trade-offs of various management and sustainable development options. Spatial planning processes are an essential tool to inform trade-off decision making between economic sectoral role-players.

Priority Statement 3.3.3: Government recognises the importance of ocean heritage relating to culture, geographic areas and species. In addition to existing statutory obligations effort will be placed on the protection and conservation

of South African ocean heritage resources, such as vywers, ecological and biological significant areas and species such as coelacanth.

Priority Statement 3.3.4: Government will establish best practice guidelines governing the transport of harmful and noxious substances in the marine environment. Government will seek to influence planning aimed at minimising the risk of environmental exposure to harmful and noxious substances including hydrocarbons, persistent organic pollutants and industrial waste.

Priority Statement 3.3.5: The introduction of untreated sewage and industrial waste into the ocean environment will remain regulated and effort will be placed on encouraging coastal role-players to pursue efficient approaches to waste treatment and monitoring such as monitoring waste water outflows to the inshore ocean environment.

Priority Statement 3.3.6: Government will establish and enforce regulations controlling the introduction and beneficial use of alien marine species and minimise the threat of invasive species as contemplated in existing legislation.

d. Strategic Theme 4: Ocean Environmental Integrity

Promoting ocean environmental integrity is reliant on rational approaches to the conservation, protection and sustainable use of South Africa's rich marine resources. It underpins South Africa's contribution to regional and global ocean management responsibilities. Ocean environmental integrity is necessary for the conservation and management of ocean environmental goods and services for current and future generations of South Africans. This can only be achieved through effective partnerships and efficient cooperation. The State is the custodian of this large ocean space on behalf of the people of South Africa. The management of such a vast space is a complex undertaking involving various role-players at a national, regional and international level. The realisation of this custodianship responsibility demands cooperation in effort and investment by organs of state. The improvement of environmental information, knowledge and the management of South Africa's ocean environment provide the necessary platform to encourage sustainable economic development and enhance the contribution of the marine sectors to national development priorities.

Strategic Priority 4.1: Cooperate at a national, bi-lateral, regional and international level to advance sustainable ecosystem-based management of the EEZ, Continental Shelf, High Seas and Antarctica.

Priority Statement 4.1.1: At a national level Government will drive the long term movement from a sectoral to an ecosystem-based bioregional ocean management planning approach. The ecosystem-based approach implies increasingly coordinated sectoral planning that pursues common ocean economic and environmental objectives. It further underpins the eventual migration to integrated ocean management.

Priority Statement 4.1.2: Government will use the existing cluster cooperative governance mechanism to facilitate the improved coordination of ocean environmental management. The ocean governance structure will reside in the Economic Cabinet Cluster. It is at this level that sectoral economic planning will be aligned by role-players. Improved ocean knowledge will facilitate cooperative economic and investment trade-off decision making. The ocean governance agenda items will be coordinated by the Minister of Water and Environmental Affairs. The Minister will be supported by a number of cross-sectoral expert advisory bodies. These bodies will periodically generate integrated management plans for marine regions or management areas, identify knowledge gaps and develop status reports. These may include alternate or competing options for sustainable development. The advisory work will commence with the collation of best available ocean and coastal information into integrated marine spatial plans which will be submitted for consideration and processing through Cabinet by the Cluster. The marine spatial planning efforts will be divided into four marine management areas namely, the East Coast, the South East Coast, the West Coast and

the Prince Edward Islands. The Department of Environmental Affairs will facilitate and support the work of the expert advisory groups which may be assisted by various sectoral and inter-sectoral technical groups. The Department of Environmental Affairs will also undertake the statutory requirement to compile annual state of the marine environment reports as stipulated in the National Environmental Management Act which will support oversight.

Priority Statement 4.1.3: At a bi-lateral and regional level Government will seek to participate in programmes based in the large marine ecosystem "LME" management framework. Initially attention will be paid to the five African and the Antarctic LMEs. Government will promote cooperation, strengthen information exchange and harmonise management principles across these LMEs. The implementation of national ocean management objectives will be strengthened by aligning them with the regional LME structures, in particular the adjacent Benguela and Agulhas Current LMEs. This allows for the development of integrated regional ocean governance at the Southern African Development Community level, as well as active participation in and support for the Nairobi, Abidjan Convention structures, the United Nations International Oceanographic Commission and the Sub-Commission for Africa.

Priority Statement 4.1.4: Government will continue to play a leadership role with respect to regional ocean governance underpinned by South Africa's ocean research and management capacity. Government will facilitate the alignment between existing national environmental management objectives and regional and international programmes.

Priority Statement 4.1.5: At an international level, attention will be given to improving channels of communication between South Africa's various central authorities established by international agreements. Currently central authorities, who bear international reporting responsibilities, are located within a variety of organs of state and their ability to interact and communicate with one another is not optimum. Improved communication will allow South Africa to undertake its international responsibilities and reporting in a more harmonised manner.

Priority Statement 4.1.6: Government will support continuing engagement by organs of state at international ocean governance fora to promote equitable access to and benefit sharing of resources in the High Seas and Antarctica.

Priority Statement 4.1.7: Government will promote global ocean environmental protection in South Africa's national interests. South Africa is an original signatory of the Antarctic Treaty and exercises sovereignty over two sub-Antarctic islands. As such South Africa is well positioned to influence planning and management strategies in the Southern Ocean. Government already exercises South Africa's international ocean responsibilities and intends to strengthen its interactions on global environmental management initiatives in an attempt to appropriately influence global strategies. This will be undertaken at three levels: South-South and South-North; Antarctic and sub-Antarctic; and regional and continental.

Government will assist in furthering South Africa's ability to actively partner with developing nations and Southern Hemisphere nations. Such partnerships are aimed at enhancing the economic and scientific resources available for the undertaking of large-scale research projects with the objective to increase knowledge and capacity for improved ocean understanding and management. This knowledge will enable regional ocean environmental management planning and improved national adaptation decision making. Government will also support ongoing cooperation and collaboration with developed countries in the pursuit of enhancing global ocean environmental integrity.

7. Conclusion

The successful implementation of the Ocean Governance Objectives and Priorities listed above will allow South Africa, in the next five years, to complete the move from sectoral ocean planning and management towards coordinated sectoral environmental management. This shift is made possible by building better understanding amongst role-players of the benefits of improved environmental information and knowledge to inform environmental and economic planning. Environmental spatial-planning relies on improved knowledge of the South African ocean environment and is underpinned by a comprehensive spatial-map of the South African marine environment. It allows for more informed economic strategic planning processes to be undertaken, which seek to encourage, advance and expand sustainable development, conservation and protection of the ocean through an ecosystem-based management approach.

International experience has shown that the undertaking of integrated ocean management planning is a complex exercise which cannot rely purely on principles of cooperative governance. It will be desirable for South Africa to undertake the move from coordinated sectoral environmental management to integrated environmental ocean management. Such an approach will facilitate economic opportunities, integrated development planning and environmental conservation. The White Paper describes that South Africa will pursue a more fully integrated environmental ocean management approach by the establishment of a suitable statutory and regulatory scheme as contained in an Ocean Act. In the short term, the improvement of coordinated sectoral environmental management will strengthen South Africa's ability to give increasing effect to the ocean management responsibilities articulated in s24 of the Constitution, the National Environmental Management Act and all other applicable domestic environmental legislation. It will further directly contribute to fulfilling South Africa's commitment to international ocean responsibilities including, Chapter 17 of Agenda 21 (the Rio Declaration), the Johannesburg Declaration on Sustainable Development and the Rio +20: The Future We Want outcome.

Such a coordinated cross-sectoral approach will promote and expand sustainable development in the ocean. It will achieve this through coordinating and optimising investment in understanding and managing the large ocean space accessible to South Africa.



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