



Three countries sharing a productive ecosystem



THE BENGUELA CURRENT COMMISSION **STRATEGIC ACTION PROGRAMME**

2015 – 2019

A COORDINATED REGIONAL APPROACH TO THE LONG-TERM CONSERVATION, PROTECTION, REHABILITATION, ENHANCEMENT AND SUSTAINABLE USE OF THE BENGUELA CURRENT LARGE MARINE ECOSYSTEM TO PROVIDE ECONOMIC, ENVIRONMENTAL AND SOCIAL BENEFITS.

Adopted and signed on 21 August 2014

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1 Preamble

The governments of the Republic of Angola, the Republic of Namibia and the Republic of South Africa:

Commit to the integrated and sustainable management of the Benguela Current Large Marine Ecosystem (BCLME) through their partnership in the Benguela Current Commission (BCC);

Recognise the unique character of the BCLME, the richness and complexity of its biological and physical functioning, its significance for the socio-economic development and for the well-being of the people depending on it and the threats to it;

Convinced that the benefits of collaborating in the management of a shared marine ecosystem greatly outweigh the costs, as was demonstrated in the results obtained in the successful implementation of the first Strategic Action Programme (2000–2014), and willing to create multi-sectoral ocean governance, truly ecosystem-based;

Recall the 1992 United Nations Declaration on Environment and Development and the ensuing Johannesburg Plan of Implementation (JPOI), adopted at the World Summit on Sustainable Development (WSSD) in 2002, that sets out new commitments and priorities for action on sustainable development;

Further recall the 2012 Rio+20 Declaration “The Future We Want”, that focuses on reducing the impact of human activities on the environment and recognises the importance of regional frameworks in converting sustainable development policies into action at the national level;

Welcome national initiatives taken to ratify or accede to international conventions to manage the living resources sustainably and to protect the environment of the BCLME, including: the 1963 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter; the 1973/78 International Convention for the Prevention of Pollution from Ships (MARPOL); the Convention on Facilitation of International Maritime Traffic, 1965, as amended (FAL); the 1982 United Nations (UN) Convention on the Law of the Sea; the 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; the 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC); the 1992 UN Convention on Biological Diversity; the 1994 UN Framework Convention on Climate Change; the 1995 Declaration on the Protection of the Marine Environment from Land-Based Activities; the 1995 UN Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 December 1982 (UNCLOS); the 1997 Southern African Development Community (SADC) Protocol on Mining; the 2004 International Convention for the Control and Management of Ships’ Ballast Water; the 2000 SADC Protocol on Shared Watercourses; the 2001 SADC Protocol on Fisheries; and the 2009 Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing; the 1981 Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and



Southern African Region (the Abidjan Convention); the 1982 Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR); and the 1959 Antarctic Treaty.

Acknowledge the international best practice provided in the 1995 Food and Agriculture Organization Code of Conduct for Responsible Fisheries, in particular, the ecosystem approach to fisheries and the related Technical Guidelines and International Plans of Action;

Recognise the commitments made by the 2010 Conference of African Ministers for Fisheries and Aquaculture (CAMFA) and the regional integration bodies of relevance, including: the South East Atlantic Fisheries Organisation (SEAFO); the Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean (COMHAFAT); and the International Convention on the Conservation of Atlantic Tunas (ICCAT); the 1992 United Nations Declaration on Environment and Development and the ensuing Johannesburg Plan of Implementation (JPOI), adopted at the World Summit on Sustainable Development (WSSD) in 2002 that sets out new commitments and priorities for action on sustainable development;

Appreciate and welcome the partnership and collaboration from others, including resource users, non-governmental organisations, civil society, academic institutions, intergovernmental organisations and international partners, to share responsibility for this globally significant Large Marine Ecosystem, to conserve and manage it for the benefit of present and future generations;

Commit to promote sustainable development and poverty eradication while focusing efforts to develop a Green – as well as a Blue – Economy;

Aware of the significance of this shared ecosystem in terms of the provision of ecosystem goods and services to the societies of the region in particular, and to humanity in general;

Conscious of the extensive national, regional and international progress made to ensure that transboundary cooperation has developed, but aware that significant challenges remain and that concrete actions need to be taken individually and collectively to ensure effective long-term integrated sustainable management and the protection of the BCLME;

HAVE AGREED to implement the Strategic Action Programme outlined in the following pages.

2 Introduction and background

2.1 The Benguela Current Large Marine Ecosystem

The Benguela Current Large Marine Ecosystem (BCLME) spans the Exclusive Economic Zones (EEZs) of Angola, Namibia and South Africa and beyond. It incorporates the ocean, the seabed and the interface between land and sea up to the high water mark¹.

This ecosystem is one of the four major eastern-boundary current systems of the world. As in the Californian, Humboldt and Canary Current systems, the Benguela is dominated by a coastal upwelling system.

Upwelling occurs when surface waters are driven offshore – owing to the interaction between wind and the rotation of the earth – causing deeper, colder, nutrient-rich waters to move upwards to replace them, resulting in high primary productivity that forms the base of a thriving and diverse food chain. The marine organisms produced in this ecosystem, such as fish, marine mammals and seabirds, contribute to a variety of human activities such as fishing and tourism. These abundant natural resources have led to the Benguela Current being called “*the current of plenty*”.

The upwelling system, in its current form, is about two million years old. It is the only upwelling system bound at both northern and southern ends by warm water systems and, as such, is characterised by complex horizontal gradients or fronts. The Benguela Current is of global significance in respect to its role in climate regulation. It is situated at a major crossroads of the “ocean conveyor belt”, a term used to describe the process of thermohaline circulation whereby warm surface waters move around the oceans of the world. The Benguela Current is also influenced by the *El Niño* southern oscillation, a process that emanates from the Pacific Ocean.

Much of the Benguela coastline is desert and, as a result of limited development, is still in a pristine state. These areas, often of outstanding natural beauty and biodiversity, attract a small but discerning number of tourists. Travel and tourism opportunities generated in coastal areas provide substantial income opportunities for the coastal communities.

¹ The BCLME stretches from 5° to 37° South and from the 0° meridian to the high water level of the west coast of Africa, and in its southernmost point it reaches 26° East. The area of application of the Benguela Current Convention comprises all areas within the national sovereignty and jurisdiction of the three BCLME countries in accordance with the 1982 UN Law of the Sea.

In addition to living resources, the BCLME has rich deposits of precious minerals, particularly diamonds, oil and gas that form the basis of economically important extraction industries. The Benguela countries need to promote exploration and drilling, and maximise benefits from these activities without compromising the integrity of the marine ecosystem. Other economic opportunities for the countries of the BCLME are linked to marine transport and manufacturing.

Human activity has, in some cases, had a significant impact on the BCLME; possibly the most drastic has been the decline in the abundance of many of the major living resources, primarily due to fishing pressure that increased dramatically after 1960. This trend has been particularly severe in the northern Benguela, where the small pelagic fish stocks have been virtually removed from the system, resulting in major and possibly irreversible changes in species composition and ecosystem functioning. Other human impacts include pollution from industries, poorly planned and managed coastal developments, coastal and deep-water mining activities and marine transport, particularly of oil products. These impacts have resulted in, and continue to cause, rapid changes and in some cases degradation of some of the more threatened coastal habitats, fisheries and tourism.

Overall the BCLME, including the ocean, its seabed and the coastal interface, provides a wealth of goods and services that support economic, recreational, educational, aesthetic and spiritual activities for the people of the region and beyond. Many of these human activities and the natural resources and natural events that they depend on, or are shaped by, are transboundary in nature and require a coordinated, regional effort in order to manage their utilisation and deal with transboundary issues and challenges.

2.2 The genesis of collaboration

The demise of colonial and apartheid regimes and the cessation of hostilities in the BCLME region by the early 1990's ushered in a new era of collaboration between Angola, Namibia and South Africa in marine resources management and environmental monitoring. Marine scientists from the three countries have been working together since the mid-1990's, when they first began to share knowledge and understanding of the BCLME. In 1995, the BENEFIT (Benguela Environment Fisheries Training Interactions) Programme was conceived as a project. It was formally launched in 1997 and adopted as a SADC project the

following year. For ten years (1997 to 2007) BENEFIT focused on the region-wide assessment of living marine resources, the marine environment and training and capacity development; its success convinced managers and policy-makers to join forces in the research, monitoring and assessment of the BCLME and its abundant living marine resources. Quite rapidly, a wonderful cooperation developed between the three countries which had formerly been in conflict.

Five years after the BENEFIT Programme was launched, the three countries established another regional initiative – the BCLME Programme, which was implemented between 2003 and 2008. This programme was multi-sectoral in design and aimed to provide an environmentally sound basis for the sustainable development of the BCLME. Its focus was on the impacts of human activities, such as fisheries, shipping, marine mining, oil and gas exploration and production, coastal development and pollution, on the marine environment and marine biodiversity. The ultimate objective of the BCLME Programme was to ensure the health of the Large Marine Ecosystem in the interests of future generations.

The BENEFIT and BCLME programmes were the first multinational programmes to focus on marine research and its application to resources management in southern Africa. The collaboration between the three countries attracted the attention of other countries – notably Norway and Germany – and multilateral agencies such as the Global Environmental Facility (GEF) and United Nations Development Programme (UNDP) which acted as catalysts and provided substantial financial and technical assistance to both programmes.

By 2007, the three countries had signed an Interim Agreement that established the Benguela Current Commission (BCC, see 2.3 below) and in 2008, the BCC Secretariat opened in Windhoek, Namibia. The Secretariat relocated to the coastal town of Swakopmund in November 2011.

On 22 July 2010, the BCC was incorporated in Namibia as an “Association not for gain” in terms of Section 21 of the Company’s Act of 1973. This enabled the Secretariat to carry out the comprehensive administrative, financial and human resources functions and responsibilities that were previously carried out by the UNDP. Between March 2011 and March 2012, the countries invested considerable time and resources in

finalising the content of the Benguela Current Convention and this important document was signed on 18 March 2013, in the city of Benguela, Angola. The Convention effectively replaced the Interim Agreement and formally established the BCC as a permanent inter-governmental organisation. By July 2014, the governments of Angola, Namibia and South Africa had each ratified the Benguela Current Convention.

2.3 The Benguela Current Commission

The Benguela Current Commission (BCC) is a regional intergovernmental partnership established in March 2013 by the Republics of Angola, Namibia and South Africa to promote a coordinated approach to the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the BCLME, in order to provide economic, environmental and social benefits. The Benguela Current Convention provides a legal framework for cross-border cooperation between the three countries of the BCLME.

The creation of the BCC followed two decades of research, institutional and human capacity strengthening and cooperation; the BCC is the first multi-lateral Commission in the world to be based on the Large Marine Ecosystem (LME) approach to ocean governance.

The Commission is headed by a Ministerial Conference and supported by a Secretariat based in Swakopmund. The Secretariat works with regional and international partners to coordinate research and capacity building programmes and assist the committees that are responsible for providing scientific, management and financial advice to the Commission. The Commission uses this advice to make management decisions related to the transboundary resources and issues, with the goal of ensuring the long-term sustainability of the BCLME and a balance between social, economic and environmental benefits. The mandate of the Commission is set out in the Benguela Current Convention. Although this mandate spans a number of coordination and administrative functions, the core management function is to agree to specific measures to prevent, abate and minimise pollution; to agree to conservation and management measures concerning transboundary marine resources and the coastal environment; and to devise mechanisms that enhance sustainable utilisation of the marine resources.

2.3.1 Principles

The general principles for the Parties of the Commission, as set out in Article 4 of the Convention, have guided the formulation of the SAP and should be applied to its implementation.

These are:

- a) the cooperation, collaboration and sovereign equality principle;
- b) sustainable use and management of the marine resources;
- c) the precautionary principle;
- d) prevention, avoidance and mitigation of pollution;
- e) the polluter pays principle; and
- f) protection of biodiversity in the marine environment and conservation of the marine ecosystem.

2.3.2 Mission:

To promote, coordinate and implement the sustainable development of the Benguela Current Large Marine Ecosystem.

2.3.3 Vision:

A Benguela Current Large Marine Ecosystem sustaining human and ecosystem well-being for generation after generation.

2.3.4 Values:

Integrity, accountability, transparency, equity and environmental sustainability.

2.4 The Strategic Action Programme

An LME approach to ocean governance is based on the need to take cooperative, multi-country approaches to achieve sustainable, ecosystem-based management of economically important goods and services. The LME approach has been applied in the BCLME region since the mid-1990s with the support of various development partners and donors. Implementing an LME approach draws heavily on risk-based management planning and incorporates the principles

of sustainable development, including the human and social elements of sustainability. The approach recognises that complete knowledge is never available and promotes participatory processes that identify and assess all relevant issues.

One of the first steps in the LME process is to undertake a Transboundary Diagnostic Analysis (TDA), a scientific and technical assessment that identifies and quantifies transboundary marine environmental issues and problems and assesses their environmental and socio-economic impacts. The analysis involves the identification of causes and impacts, and the associated uncertainties at regional levels; the socio-economic, political and institutional context within which they occur; and notes the transboundary importance of these elements. The objective of the TDA is to provide structured information relating to the ecological, social and economic status of an LME, especially focusing on transboundary impacts resulting from human activities.

The TDA provides the technical input for this document – the BCC Strategic Action Programme (SAP). It scales the relative importance of the transboundary problems and proposes practical preventative and remedial actions, in the form of policy actions, to help achieve the sustainable integrated management of the BCLME. The SAP is supplemented by an Implementation Plan, an operational document that details the activities required to implement the policy actions. In 1999, the BCLME community developed a first TDA and SAP and in 2013 it repeated the process to produce updated and improved documents with an accompanying Implementation Plan. This SAP (for the period 2015 to 2019) has been formulated to reflect the objectives, principles and functions set out for the BCC in the newly signed Benguela Current Convention, the policy framework that now guides the BCLME community. It addresses the challenges to the BCLME and outlines implementable policy actions that aim to resolve the transboundary environmental issues, address key threats and their root causes, and enhance sustainable development opportunities within the BCLME.

3 Cooperative action and governance framework

In accordance with the international and regional agreements listed in the preamble of this document, the objective of the BCC is to “promote a coordinated, regional approach to the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the Benguela Current Large Marine Ecosystem to provide economic, environmental and social benefits”. In order to accomplish this objective, transboundary cooperation is paramount. This was outlined in the Rio+20 publication “*The Future We Want*”, which acknowledges the importance of the regional dimension in sustainable development and the effectiveness of key regional instruments in guiding decision-making and the implementation of sustainable development practices.

3.1 Legal framework

The governments of the Republic of Angola, the Republic of Namibia and the Republic of South Africa signed the Benguela Current Convention in March 2013, thereby agreeing to the conditions and articles laid out in the Convention. The BCLME is the first LME in the world to have a signed Convention. In July 2013, Namibia ratified the Convention, followed shortly thereafter by South Africa in November 2013 and then by Angola in June 2014.

3.2 Institutional arrangements

The highest decision-making body of the BCC is the Ministerial Conference, with each country’s participation led by an appointed Minister. The primary function of the Ministerial Conference is to set the policy direction of the BCC – including the evaluation and approval of the SAP – and to take the necessary actions to facilitate its implementation.

The Commission comprises representatives of each country; a Commissioner is appointed to lead each country delegation. The Commission promotes a regional approach to dealing with management issues, including the implementation of the Convention, the SAP and other management plans. It oversees the work of the BCC Secretariat and ensures that the policy decisions of the Ministerial Conference are implemented.

Three permanent committees – the Ecosystem Advisory Committee, the Finance and Administration Committee and the Compliance Committee – bring together national experts in relevant fields and provide advice and recommendations to the Commission. The committees may establish working groups to support their work.

The Secretariat is headed by an Executive Secretary and provides services to the Ministerial Conference and Commission in order to facilitate the execution of BCC functions. It formulates work programmes, budgets and reports, and negotiates with international cooperating partners to support the implementation of the SAP (see Annex 8.2 for an organisational chart).

3.3 Collaboration and cooperation

Over the past two decades, the BCC community has collaborated and cooperated with an extensive group of partners that in themselves form part of the extended BCC community (see Annex 8.3 for a full list of partners).

The on-going growth and strengthening of cooperation mechanisms within this group is vital for this SAP and the associated Implementation Plan. Partners wishing to cooperate within the areas that fall under the mandate of the BCC should work with the Secretariat so that their interventions are aligned with the policy actions of this SAP and the activities of the Implementation Plan. If this approach is adopted universally, it will reduce fragmentation and duplication and ensure that all efforts are consistent with the mandate of the BCC. Governments and partners are called on to support the BCC community in implementing the policy actions outlined in this SAP and thereby contribute to the success of the world’s first permanent regional oceans commission.

4 The state of the BCLME and its challenges

The BCLME incorporates rich mineral deposits, oil and natural gas reserves and is considered to be one of the most productive marine ecosystems in the world; it supports a vast diversity of marine life including phytoplankton, zooplankton, bacteria, crustaceans, fish, seabirds and marine mammals. The countries of the region acknowledge the significant development potential of their shared marine ecosystem and recognise that a multi-sectoral, regional approach to sustainable utilisation will ensure that both opportunities and threats are managed efficiently. Such an approach will optimise investment and take cognisance of the accumulated and aggregated impacts on the ecosystem. The economic potential of marine transport, oil and gas and aquaculture have not been fully developed in some of the BCLME countries. Exploitation of natural resources has already had some detrimental effects on the ecosystem and the environmental sustainability of the BCLME. Some of these effects have been transboundary in nature and include coastal and marine habitat loss; overexploitation of living marine resources; and impacts on ecosystem health, such as the decline of top predator populations. The challenges within the BCLME are summarised below.

4.1 Living marine resources

A history of increasing fishing pressure and in some cases overfishing leading to stock collapses, coupled with limited capacity and resources to fully implement management plans, has resulted in the depletion of many fish stocks. In the past two decades, improvements in research and management have led to some stocks being successfully rebuilt, although many remain at what is considered to be below maximum levels of productivity. The transboundary nature of some of these stocks compounds the challenges of implementing effective fishery management systems. Although cooperation between the BCLME countries in the fields of research and monitoring has started, this has not progressed to a point where there is agreement on the status of transboundary stocks. Therefore, at present, there is no joint management of shared stocks, which may seriously threaten their sustainability. The lack of regional cooperative management will cause a loss in the economic rent derived by all the countries from shared stocks of the BCLME. In addition, the absence of joint management will reduce jobs and export revenues derived from shared stocks and, in extreme scenarios, most of the economic value will disappear if overfishing leads to the depletion of the shared fish stocks. Identifying which stocks require joint management and implementing sharing arrangements are priority concerns for the BCC.

The utilisation of marine resources by traditional/subsistence fishers and communities is also largely unexplored, with very little information regarding the existing economic value of intertidal resources such as kelp, urchins, molluscs and crabs, as well as the long-term valuation of these resources and the benefits derived from them (direct and indirect).

The key problems are:

- a) non-optimal harvesting of transboundary living marine resources owing to (i) inadequate management practices; and (ii) poor fishing practices, including over-fishing, wastage caused by illegal fishing, discarding of bycatch and the catching and discarding of undersize fish;
- b) lost opportunities, including not taking advantage of resources with the potential to offer sustainable development opportunities (e.g. seaweed, certain invertebrates and the potential of bio-prospecting) and including wastage of discarded catch;
- c) under-developed aquaculture sector.

4.2 Non-living marine resources

The extraction of oil, gas and minerals from the seabed of the BCLME involves drilling, dredging and exploration. The impacts of these activities have changed little over the last decade although in recent years more attention has been focused on understanding the secondary and cumulative impacts, which are currently mostly unknown. The direct impacts are in most cases localised and not transboundary. The impacts include sediment plumes in the water column and sedimentation on the seabed; discharge of water-based drilling muds and cuttings and their accumulation on the seabed; the release of heavy metals from the bottom sediments; possible toxic effects of mud additives on marine organisms and communities; and destruction or alteration of the environment in the vicinity of the mining activity. The potential impacts on living marine resources are of particular importance to the BCC because many of these species migrate across national boundaries and thus impacts may occur well beyond the source of the extraction activity. There has been suboptimal exploration of the ocean environment of the BCLME. Exploration has been complicated by the nature of the ocean environment, currents, winds, density and the expense of associated technology. The monitoring of extractive mining activities is a concern.

The key problems are:

- a) impacts of exploration and extraction activities on the ecosystem;
- b) exploration and extraction activities are poorly monitored and need to conform to international best practices.
- c) impacts of development within sensitive ocean and coastal areas;
- d) expensive technology associated with exploration and production;
- e) under-developed aquaculture sector; and
- f) lack of adequate skills.

4.3 Productivity and environmental variability

The BCLME's environmental variability is driven by the Benguela *Niños*, episodic hypoxic/anoxic waters, HABs, Agulhas Current intrusions and changes in wind regimes which can all affect the entire ecosystem and have large-scale effects on living marine resources and anthropogenic activities. Climate change has the potential to severely impact the BCLME through an increased occurrence of extreme weather events such as increased frequency and intensity of storm surges; prolonged hot and dry periods interspersed with short, intense rainfall events; sea level rise which may alter longshore drift patterns and change coastline topography; and changes to river flows and sedimentation affecting near shore habitats. Angola is likely to be most affected by these impacts owing to its large coastal population, numerous coastal developments and because its coastal zone includes the two largest estuaries in the region: the Congo and Kwanza estuaries. The frequency of occurrence, spatial extent and duration of Harmful Algal Blooms and

hypoxic water masses appear to be increasing in the BCLME, resulting in high mortality rates of living marine resources and occasionally humans. Although research has improved in the last two decades, a lack of information about, and understanding of, environmental variability and system-wide impacts hampers sustainable management and results in the non-optimal utilisation of some of the resources of the BCLME.

The key problems are:

- a) the BCLME is a complex and highly variable system which is poorly understood;
- b) climate change and climate variability at the seasonal, inter-annual and longer periods will impact the BCLME in ways that are currently unpredictable; and
- c) Harmful Algal Blooms and hypoxia appear to be increasing in frequency and extent.

4.4 Pollution

Most pollution issues in the BCLME are relatively localised but some may have transboundary consequences that are not fully understood. In some locations, poorly planned coastal developments have created pollution hotspots, with drainage water, sewage and polluted water entering the marine system. Marine litter is becoming an increasing problem owing to its increasing abundance and persistence and may result in transboundary impacts such as ingestion and entanglement by endangered, threatened or protected species. River borne sediments and chemical pollutants, such as agricultural fertilizers, generally have localised effects but in the case of the Orange and Congo rivers these impacts are transboundary and link to upstream river basin management issues. Oil extraction and transport of oil through the BCLME creates a risk of oil spills, which could have catastrophic effects on coastal habitats.



The discharge of effluent into estuaries can have major impacts on the ecology and overall health of these valuable systems which serve as nurseries for a variety of species. There are concerns about the possible impacts of noise pollution from seismic surveys and other sources that may be affecting the behaviour of fish and other organisms, especially at breeding or spawning times and locations. It is also acknowledged that the increase in developments and the movement of ships through the BCLME is likely to be contributing to increased greenhouse gas emissions. Overall, limited pollution monitoring and insufficient management plans, including preventative measures and contingency plans, result in increased risks from pollution.

The key problems are:

- a) a deterioration in coastal water quality;
- b) pollution from river catchment areas;
- c) discharge of effluent into estuaries;
- d) oil spills;
- e) marine litter;
- f) noise pollution is increasingly being associated with changes in fish behaviour and failure of cetaceans to breed, etc.; and
- g) emissions of greenhouse gases.

4.5 Ecosystem health and biodiversity

The Benguela Current is endowed with a number of top predators such as sharks, whales, seabirds and seals. Because of their positioning in the food web the top predators serve as good ecosystem health indicators. However, information on these species is needed to use them efficiently for this purpose. The biodiversity of the Benguela also provides opportunities for biodiscovery, e.g. useful organisms and molecules for pharmaceuticals; agrochemicals; marine anti-fouling coatings, etc. Coupled with biodiscovery is marine biotechnology, which focuses on developing processes to exploit the unique properties of marine organisms and their products, for economic benefit. Marine biota represent a unique and as yet virtually unexplored reservoir of biomolecular diversity, owing to high levels of diversity, particularly in invertebrates (sponges and ascidians), algae and microorganisms. The challenges in

biodiscovery and marine biotechnology are linked to limited marine taxonomic knowledge of these species. A broader economic study to investigate the overall health of these ecosystems is also required in order to understand the impacts on biodiversity and economic opportunities.

Large scale commercial activities, including mining, industrial fishing and industrialisation of coastal areas, is placing habitats and species under ever-increasing pressure. Limited or poor planning, lack of legislation and incoherent policies, or simply a lack of implementation of these plans, laws or policies, is resulting in negative impacts on the seabed, water column and coastal habitats and the species that rely on these habitats. Mariculture has been targeted for expansion along the coastline but inadequate policy and legislation exist to guard against potential risks, such as the introduction of alien species. The cumulative impacts of the many uses of the marine system and changes in the environment may be producing unexpected effects with wider transboundary consequences; however, in most cases there is insufficient national capacity, a lack of data and a lack of identified indicator species to appropriately assess the health of the ecosystem.

The key threats are:

- a) threats to species and habitats as a result of human impacts on the coastal zone;
- b) threats to species and habitats as a result of fishing;
- c) insufficient ability to assess ecosystem health and predict changes;
- d) limited knowledge of the economic impact of poor ecosystem health within the BCLME;
- e) introduction of alien invasive species through ballast water;
- f) the escape of alien species from mariculture operations; and
- g) limited knowledge of top predator species and organisms that could be used in biodiscovery and biotechnology.

4.6 Human dimensions

Human dimensions, including social, economic and political dimensions, are interdependent with ecological systems. However, understanding of this interdependence is weak

and results in limited integration of human dimensions into resource management processes. Available data are often fragmented, collected by various agencies and, as a result, analysis for the specific purposes of the BCC is difficult. Conflicts between stakeholders are known to exist, while poor safety-at-sea practices have been identified as a concern. However, there are limited data on these issues, as with most aspects of human dimensions. For instance, no analysis of the relationship between migrant workers in the fisheries and mining sectors in Namibia on one hand, and rural-urban migration on the other, has been conducted. In Angola and South Africa, access to resources is a key issue for small-scale fishers and yet there are very little data shedding light on this issue. Human dimensions are both country specific and transboundary because there is a flow of capital and a movement of workers across borders, while many operations span these same borders. All the countries are affected by a lack of capacity and expertise to undertake socio-economic research, which has led to an overall failure to systematically include social, economic and political considerations in management decisions.

The key problems are:

- a) socio-economic needs and interdependencies are not adequately considered in regional decision-making within the BCLME;
- b) a lack of adequate disaster and emergency rescue response in remote regions which may result in injury and loss of life;
- c) a lack of safety-at-sea for users of the resources causes injury and loss of life; and
- d) conflicts between stakeholders may undermine the implementation of regional management.

4.7 Enhance the economic development potential

The Benguela Current offers a myriad of economic opportunities for the countries of the BCLME. The marine resources could be leveraged to reach their full potential and optimised to boost both the economic and social development of the countries. The key economic sectors include marine transport and manufacturing; oil and gas development and production; mining; and aquaculture. However, there are challenges that limit the economic benefits that are derived from these sectors.

4.7.1 Marine transport and manufacturing sector

The marine transport and manufacturing sector has great economic potential for the countries of the BCLME. Marine transport includes handling of import and export cargo. On the other hand, marine manufacturing includes building boats and ships; repairing rigs and ships and servicing offshore oil and gas installations. There is significant potential to make use of location and the competitive cost of labour to grow the repair and refurbishment sector. Increased cargo volumes are also projected to drive growth in this sector. The challenges that have been identified include:

- a) infrastructure provision at affordable cost;
- b) regulatory constraints;
- c) lack of adequate skills in the field; and
- d) lack of strategy to grow the market.

4.7.2 Oil and natural gas

The development of offshore petroleum and natural gas resources underpins most national economies, because it generates considerable local employment opportunities and meets the national and transnational needs of the electricity sector, along with industry and domestic consumers. In the Benguela, Angola is by far the major producer of oil while South Africa is the least developed in this field. The countries need to promote exploration and drilling and maximise benefits from them in a sustainable manner. The challenges associated with oil and natural gas development include:

- a) limited infrastructure for advanced technology needed to develop and access the resources, particularly in deep water, and a pipeline network is required to transport the gas to beneficiation and refinery plants;
- b) a shortage of technical skills for developing the resources; and
- c) a lack of adequate regulation, coupled with complex administration in terms of executing the licensing functions and the monitoring of the regulatory processes.

4.7.3 Aquaculture

Globally, research shows that the marine catch is plateauing, while the aquaculture industry has been showing steady growth. The same trend is observed in the Benguela countries. However, aquaculture in the BCLME is miniscule when compared to other nations of similar size and length of coastline. The challenges that have been identified with this sector include:

- a) difficulty in accessing finance;
- b) fragmented research, monitoring and development;
- c) lack of incentives and tax concessions;
- d) limited market footprint and under-representation in the aquaculture sector; and
- e) lack of skills.

4.7.4 Marine mining

Marine mining occurs predominantly in Namibia and South Africa. It contributes significantly to foreign earning and provides employment to thousands of workers. Mining activities include seabed mining for diamonds and other minerals, while marine phosphate mining is being investigated. The challenges include:

- a) a lack of marine geo-scientific knowledge has inhibited full understanding of the potential to extract minerals from the oceans in a responsible and sustainable manner;
- b) competing for shared resource space;
- c) limited knowledge of the effects of offshore resource exploitation.

5 Strategic solutions

The challenges summarised in Chapter 4, require action by the BCC community so that the long-term objective of the BCC may be achieved. The SAP sets out the transboundary policy actions that, if they are achieved, will assist the BCC to fulfil its objective. Eight broad themes have been identified; seven correspond to the challenges detailed in Chapter 4, and the eighth is a cross-cutting theme dealing with the governance of the BCC. For each theme an ecosystem quality objective (EQO) and a number of policy actions required to achieve this objective are provided. EQOs are statements that reflect the state that stakeholders wish to achieve in the long-term, when the key problems have been overcome. The BCC Implementation Plan elucidates the activities necessary to achieve these policy actions.

5.1 Living marine resources

Ecosystem quality objective 1: the impacts of harvesting transboundary living marine resources on the marine ecosystem are minimised and mitigation procedures implemented; harvesting is sustainable and depleted stocks are recovering.

This theme refers to the challenge of managing the harvesting of transboundary living marine resources in a manner that results in minimal impact on the ecosystem, while achieving the objective of providing social and economic benefits. The living marine resources of the BCLME are harvested by industrial and artisanal fishers for commercial profit and subsistence livelihoods, respectively. If the fishery resources are transboundary in nature, the Commission provides science-based advice and recommendations to the countries on how to sustainably manage these resources. This process requires policy actions to ascertain which resources are shared; the formulation of shared management arrangements; and arrangements to ensure that these are complied with. In the past, the exploitation of living marine resources was all too often unsustainable and this resulted in reduced benefits for the countries. The proposed policy actions are designed to curb these unsustainable practices, support rebuilding of stocks and provide sustainable and equitable management of shared living marine resources.

5.1.1 Ascertain the extent to which stocks are transboundary resources

There is a need for scientific study and research into the extent to which the transboundary resources are shared between the BCC countries, and to agree on joint management plans. Scientific evidence suggests that deep-water hake is a shared stock between Namibia and South Africa, however more research is necessary to determine whether shallow-water hake, sardine, anchovy, kingklip, sole, rock lobster or any other species are shared between these two countries. Research also suggests that sardine, horse mackerel, red crab, Benguela hake, dentex, and sardinella are shared between Angola and Namibia, but assessments are required to determine whether any other species are shared. Snoek and seals are recognised as shared stocks, possibly between all three countries.

5.1.2 Manage shared stocks cooperatively

Once the transboundary species have been identified, an assessment of current management practices, the state of knowledge and a risk assessment are required to determine the need for shared management. Harmonised conservation and management measures and arrangements for shared exploitation by each country will need to be negotiated for each stock. Initially, generic protocols will be established to guide this process. Critical to devising protocols on shared stocks will be information on the extent of the transboundary distribution and abundance, spawning areas, historic catches and other information that will allow for the formulation of equitable and sustainable rights to shared stocks. Included in these protocols will be regulations regarding catch limits, fishing gear, fishing locations and seasons, as well as an outline of the monitoring required for the fishery to facilitate joint stock assessments underpinned by standardised research methodologies.

5.1.3 Implement ecosystem-based management

In accordance with the Convention, the management of the BCLME will in future be increasingly based upon an ecosystem approach that promotes the use of risk assessment, marine spatial planning and participatory approaches in the

identification and assessment of all relevant issues. (Ecosystem-based management uses precautionary and adaptive approaches, aiming for the comprehensive management of ecosystems.) To achieve this, research is required to understand the total value of the living marine resources to the coastal communities of the BCLME and the three BCC countries, and to understand and compare the environmental impact of fishing and the socio-economic benefits. This information will feed into management practices that address a history of overexploitation for commercial gain, often at the expense or exclusion of coastal communities from access to resources. Also required is the development of appropriate mechanisms to facilitate the growth of aquaculture and offshore mariculture, whilst ensuring environmental sustainability and the prevention of adverse effects on the ocean and coastal environment.

5.1.4 Ensure compliance with management and conservation measures

A Compliance Committee will be established to oversee compliance with any agreed management or conservation measures for shared stocks. It will require the provision of comparable national monitoring information and will need to be connected to the wider SADC and international community so that it may exchange information and intelligence with respect to illegal, unreported and unregulated (IUU) fishing. Vessel monitoring systems will need to be equipped to share information between countries on a real-time basis and thereby assist in ensuring that the boundary areas are not utilised for illegal fishing. Improvements to fishery observer mechanisms and regional observer cooperation are also required.

5.2 Non-living marine resources

Ecosystem quality objective 2: the impacts of the exploration for, and extraction of, non-living marine resources on the marine ecosystem and other sectors are minimised and mitigation procedures implemented.

This theme refers to the second challenge of exploiting non-living marine resources, while minimising the impacts of exploration and extraction of these resources on the surrounding ecosystem. Oil, gas and precious mineral extraction is increasing throughout the BCLME as on-going exploration results in new discoveries of resources. Non-living resources, especially oil, are by far the most economically important resources in the BCLME and the oil and gas industry dominates

Angola's economy. Most mining activities have fairly localised, but occasionally devastating impacts and, as such, these impacts may have limited transboundary consequences. It is important to properly manage the impacts of offshore extraction because the concession areas for offshore mining and drilling cover almost the entire length of the BCLME coastline. The secondary impacts of mining, principally on living marine resources and other biota, may be of greater concern to the BCC, because many of these species are themselves transboundary in their habitat or over the course of their life cycle. In order to continue utilising non-living resources in a responsible manner, the following actions shall be taken:

5.2.1 Understand the ecosystem impacts of exploration and extraction activities

The primary, secondary and cumulative impacts of the exploration for, and extraction of, non-living marine resources on their surrounding ecosystem will be researched to improve understanding and facilitate the development of regional standards for impact mitigation. This research will address both national and transboundary issues and consider the need for harmonised regulations for current and future mining and drilling activities. Research into the benefits of "no net loss" areas, the possible transboundary consequences of phosphate mining, the impact of increased heavy metals within the water column owing to the scale of seabed mining, and the impacts of reduced fishing in the vicinity of mining, will all be investigated. The research will consider possibilities of spatial planning, in which various activities of development and preservation in the ocean can co-exist. Regular monitoring of the effects of mining activities on the surrounding habitats and marine communities will be initiated, especially in the spawning and juvenile retention areas of transboundary fish stocks.

5.3 Productivity and environmental variability

Ecosystem quality objective 3: a greater understanding of the variability and productivity of the ecosystem so that this knowledge can be incorporated into the decision-making process.

This theme refers to the third challenge of understanding productivity and environmental variability. The BCLME is an open and complex system and a number of external processes have a significant influence on the entire ecosystem. Environmental variability, such as periodic fluctuations in

upwelling rates or intrusions of water masses from outside the system, affect the abundance of fauna and flora, including fish stocks. There is considerable uncertainty with regard to the current status of the ecosystem, including whether decades of overfishing have affected its productivity. This, coupled with the potential for increased variability owing to the effects of climate change, means that the need for improved understanding is key to improving decision-making for the management of the resources impacted by these changes. The location and sensitivity of the BCLME could lead to it playing a significant role in global detection of climate change, which further supports the need for improved monitoring of the system. Addressing these issues requires a concerted effort. If they are implemented, the following policy actions will increase understanding of the interrelated environmental parameters in the BCLME, improve predictability and support sustainable management:

5.3.1 Improve the understanding of the BCLME ecosystem

The overall understanding of the processes that affect the productivity and environmental variability of the BCLME, and the natural and anthropogenic impacts that affect these processes, will have an increased priority in scientific research. This research will primarily target large-scale environmental variability, such as Benguela *Niños* and other extreme events, with a view to gaining insight into how they may impact on the productivity of living marine resources. Steps are required to ensure adequate equipment and technology is available for research and for the continued monitoring of the environmental dynamics of the BCLME. Increased understanding of environmental dynamics will be applied to management decisions pertaining to many activities within the BCLME.

5.3.2 Improve the understanding and predictability of climate change impacts and climate variability

It is important to be able to understand the potential impacts that climate change may have on the BCLME and the way that these may affect human activities. Research aimed at improving understanding of possible climate change impacts and climate variability at the seasonal, inter-annual and longer time scales within the BCLME, and particularly on the productivity of resources, will be undertaken. In respect to coastal ecosystems, including communities' assessments of their vulnerability, research is required to support sound decision-making. Once understanding has improved, adaptation plans will be

developed with participation from relevant stakeholders to improve the BCLME's resilience to climate change impacts. The knowledge gained will also feed into an early warning system for extreme weather events, algal blooms and other environmental variability. National systems will be linked to regional and international monitoring efforts, such as the NansClim project, so that information may be received and impacts predicted.

5.3.3 Improve the understanding of Harmful Algal Blooms and hypoxia

Knowledge on Harmful Algal Blooms and hypoxia has increased considerably in recent years. The next requirement is to develop a regional database that will provide an essential tool in monitoring the occurrence of these events and also feed into the early warning system to be developed for environmental variability. This information will be used to increase understanding of large-scale algal blooms and their effect on the ecosystem and human activities, especially the mariculture industry and the safety of seafood products.

5.4 Pollution

Ecosystem quality objective 4: coastal and marine pollution and water quality are controlled and managed to meet agreed standards for human and ecosystem health.

This theme refers to the fourth challenge of dealing with pollution in the BCLME. Most pollution emanates from coastal urban centres, which are often poorly planned and cause a deterioration of water quality in the immediate vicinity of these centres; so called "hotspots". This is most apparent in the larger coastal urban centres such as Cape Town, Walvis Bay and Luanda. Marine pollution is increasing owing to coastal urbanisation, ship movements and offshore drilling and mining activities. Pollution rarely has direct transboundary impacts, but it occurs in all three countries and may have secondary transboundary effects on threatened species and environmentally sensitive marine habitats. The Commission will agree on measures to prevent, abate and minimise pollution caused by dumping from ships, exploration and exploitation of the continental shelf and the seabed, and from land-based sources. The following actions are intended to prevent or minimise coastal and marine pollution so that it does not have significant transboundary impacts:

5.4.1 Monitor and manage coastal water quality around “hotspot” locations

There is a need to systematically monitor coastal water quality in the vicinity of coastal urban pollution “hotspots” and adjacent coastal waters. This information will be used to guide the development and/or harmonisation of policies to reduce coastal pollution, which can be implemented through national coastal management plans. Priority will be given to monitoring in the vicinity of coastal urban centres until capacity allows for monitoring further afield. It is important to put into place monitoring mechanisms that are able to detect pollutants, including noxious substances, and to develop policies and legislation to control water quality standards. Investigating the root cause of pollution will ensure better management of the water resources.

5.4.2 Improve the understanding of river pollution in the BCLME

Several large rivers, including the Congo, Orange and Kunene, flow into the BCLME and their estuaries support environmentally sensitive habitats. Improved knowledge and monitoring of upstream activities, which may affect the sediment load and its content (including potential contaminants such as harmful or noxious substances) is required. Current and potential impacts of noxious substances on marine ecosystems, including the transboundary impacts, will be addressed by developing and implementing estuary management plans.

5.4.3 Prevent, abate, mitigate and prepare for oil spills

Angola in particular extracts substantial quantities of oil and oil is also transported through the BCLME, resulting in a risk of oil spillages. Even small oil spills have the potential to cause severe damage to the ecosystem if they occur in the vicinity

of sensitive habitats. As a preventative measure, it is important that adequate surveillance is in place for regional tracking of oil tankers and their activities. The development of a regional oil spill contingency plan is already underway and its implementation will be given a high priority. This plan will include information on the availability of infrastructure and technology to tackle an oil spill in any part of the BCLME, and procedures to share this infrastructure and technology. Owing to the overlap of the northern reaches of the BCLME with the Guinea Current Large Marine Ecosystem (GCLME), where a number of countries are engaged in oil production, the oil spill contingency plan will accommodate spills that occur outside the BCLME but which might have an effect on the BCLME. An effort will be made to include oil producing nations such as Republic of Congo and Democratic Republic of Congo, in the development, agreement and implementation of the BCLME contingency plan.

5.4.4 Prevent abate and mitigate marine litter

Although marine litter has limited direct transboundary impacts, the problem is steadily increasing – mainly around coastal urban areas and large vessels – and there are concerns that the secondary effects may well be transboundary and persistent. Monitoring of the amounts and effects of marine litter will be initiated. The impacts of the dispersal of certain macro- and micro-plastics on endangered, threatened or protected species and habitats need to be investigated and, if found to be significant, measures will be implemented to reduce these impacts. Policies will be developed to address incidents of lost or discarded fishing gear and other debris from human activities.

5.4.5 Understand the impacts of noise pollution and mitigate as necessary

Anecdotal information suggests that noise pollution from seismic exploration can have detrimental effects on commercially valuable fish species in the BCLME. Investigations will be



conducted into the effects that seismic activities may have, especially on fish spawning and migration. In keeping with the precautionary principle, noise pollution will be reduced in potentially sensitive areas with immediate effect until its impacts are fully understood.

5.4.6 Reduce emissions of greenhouse gases

Greenhouse gases are considered to be the leading cause of contemporary accelerated climate change. As a result, the United Nations Framework Convention on Climate Change (UNFCCC) in its Cancun 2010 Agreement, encourages the reduction of emissions of greenhouse gases. The potential reduction of emissions within the BCLME will be investigated and where possible applied, in order to minimise the BCLME's contribution to potential future global climate change.

5.5 Ecosystem health and biodiversity

Ecosystem quality objective 5: degraded, threatened and critical marine habitats are restored, conserved and maintained; populations of threatened species are protected and recovering.

This theme refers to the fifth challenge of restoring and maintaining ecosystem health and biodiversity. Many human activities that impact on species and habitats within the BCLME are widely considered to be detrimental owing to overexploitation, waste production and poor ecosystem management that occurred in the past. Although most of these impacts occur within a localised area, they may result in transboundary effects and therefore require priority policy actions. The loss or reduction of key species and sensitive habitats may have direct consequences for industries and livelihoods within the BCLME. The following policy actions are designed to reverse habitat degradation and promote species integrity, in order to preserve the health and biodiversity of the BCLME:

5.5.1 Reduce threats to species and habitats

Although much work has been conducted on this topic in the past, in order to produce up-to-date policies, a full LME-wide assessment is required to identify threatened species and habitats, important areas of marine biodiversity, spawning and nursery areas and any other fragile environments. Such an assessment will produce detailed baseline information that will be appropriately mapped. This information will be used to create and/or update national and regional policies. It will allow for the incorporation of multi-sectoral management approaches

when dealing with the impacts from human activities, so that biodiversity impacts are minimal. Identified fragile areas, such as spawning and nursery areas or threatened habitats, will be afforded adequate protection (possibly through the creation of reserves or MPAs) to allow for their continued functioning and rehabilitation. The ecosystem approach will be incorporated into the management of transboundary fisheries resources. Guidelines, or National Plans of Action, will be developed to ensure measures are in place to mitigate against unwanted bycatch of non-target species or incidental mortalities, especially of endangered, threatened or protected species. To reduce the likelihood of alien invasive species being introduced to the BCLME, the International Maritime Organization's ballast water guidelines will be applied to all vessels entering the BCLME and other management measures will be put in place, including but not limited to, appropriate mariculture planning. Research on species and organisms that could be used in biodiscovery and biotechnology will unlock economic benefits that emanate from these activities.

5.5.2 Strengthen ability to monitor ecosystem health

The size of the BCLME and the range of different habitats, species and human activities, make it difficult to manage and monitor the health of the entire ecosystem. Key indicator species, ranging from predators to plankton, need to be identified and then adequately monitored so that an assessment of ecosystem health may be extrapolated. As such, priority will be given to the identification and monitoring of indicator species and the development of appropriate warning systems that make use of this information. The reduction of habitat loss will be prioritised based on the identification of key and threatened habitats. These monitoring and assessment methods will be harmonised for the region.

5.6 Human dimensions

Ecosystem quality objective 6: the understanding of social-ecological interdependencies is improved so that this knowledge may be integrated into the management process.

This theme refers to the challenge of incorporating human dimensions into the management of transboundary resources, issues and threats in the BCLME. Understanding the social, economic and political contexts and their relationship to the ecological system, is essential if the objective of the BCC – to coordinate a regional approach for the sustainable use of the BCLME and provide economic, environmental and social

benefits – is to be achieved. Since the BCLME community has only assessed human dimensions to a limited extent, there is more basic work to be undertaken than is the case for other themes and associated policy actions. Many of the actions for the next five years are therefore related to data collection, initial analysis and improving the understanding of the relationship between various aspects of human dimensions and management of the resources under BCC’s jurisdiction.

5.6.1 Ensure consistency of human dimension data across countries

Relevant agencies will need to take responsibility for the collection and analysis of data on the human dimensions to allow for an ecosystem approach in the region. Much of this work will be carried out on a country specific basis and at relatively small (local) scales. The BCC’s role will be to ensure consistency of data across countries, so that the results are comparable and compatible. This will be achieved by developing guidelines for collecting information, identifying regional validation processes and ensuring that human dimension data contributes to the wider BCC information system. An important step, and the main action for the next few years, will be to develop a comprehensive research agenda and then to prioritise the required research.

5.6.2 Expand the knowledge base in respect to the human dimensions in the BCLME region

The knowledge base on human dimensions is poor and therefore their interactions with the environment are not well understood. In addition to the monitoring identified above, investigations into particular issues of concern identified in the TDA will be undertaken. Initially these will include an investigation into the complex impact of changes in harvest levels on the various stakeholders in the fishing industry so as to clarify the relationship between harvest levels and employment. As in many other communities in the three countries, there are high levels of poverty in coastal communities, resulting in food insecurity, health problems, increased crime and domestic violence. Whether these conditions can be linked to the marginalisation of some coastal communities, or whether they are generic to each country is difficult to ascertain but will be investigated. The BCC will also endeavour to participate in activities at national and regional levels that relate to poverty eradication, with the aim of ensuring that the interests of coastal communities are taken into account in regional initiatives.

5.6.3 Incorporate human dimensions into resource management decision-making

To enhance and strengthen the incorporation of human dimensions into decision-making, a regional social-ecological working group will be established. It is envisaged that the working group will assist and guide the BCC, *inter alia* with general data collection; the development of social-ecological indicators; the inventory and co-ordination of research projects; the definition of ethics for social-ecological research; and the incorporation of human dimensions into ecosystem management.

5.6.4 Implement regional cooperation for safety-at-sea and increase capacity for emergency rescue and response

In the BCLME, safety-at-sea is an important aspect of human dimensions. The transboundary nature of many activities means that there needs to be cooperative safeguards in place as a precaution to aid in any accidents or avoidable risks to human life. A regional rescue system will be developed to allow for immediate reaction to accidents, such as injuries on board vessels, ship collisions or aeroplane crashes. Regional protocols for safety-at-sea will be developed in accordance with the necessary stakeholders for relevant activities within the BCLME.

5.6.5 Develop constructive participation by stakeholders and reduce conflicts

Multiple industries operate in the BCLME, often in the same area and at the same time. A multi-sectoral approach to management should reduce conflicts between different industry sectors. Marine spatial planning will be employed to contribute to sustainable development. Cooperation will be facilitated through the development of protocols for addressing conflicts between different user groups. These will be developed regionally and applied nationally. The gathering of baseline data in areas of potential conflict – such as fisheries exclusion zones, where fishers are prevented from fishing in the vicinity of oil installations – will be undertaken. A system for recording information and keeping track of conflicts will be established and the BCC will endeavour to collect knowledge about best practices that may be useful within the BCLME.

5.7 Enhance the economic development potential

Ecosystem quality objective 7: a workable balance is struck between economic and social development and sound environmental management.

This theme refers to the challenge of optimising the economic and social benefits derived from the BCLME, while mitigating the environmental problems and issues that threaten the health of the ecosystem.

5.7.1 Adoption and use of Integrated Ocean and Coastal Management

Inappropriate development within the ocean and coastal zone can be prevented by the adoption of Integrated Ocean and Coastal Management, which, if done in a manner that has political support and founded on the concept of sustainable use of resources (living and non-living), will ultimately prevent the degradation of ocean and coastal ecosystems and threats to the integrity of infrastructure, human health and the safety of the public – which will result in an economic benefit in terms of the longevity of infrastructure and ensuring that development within this space is undertaken in a manner that is within national and transboundary interests.

5.7.2 Marine transport and manufacturing

To address the challenges arising from infrastructure and operations in the transport sector, a supportive funding and revenue model needs to be developed. An emphasis will be placed on the maintenance and refurbishing of existing facilities and unlocking investment in new and existing port facilities. To address skills and capacity building, the BCC needs to train professionals and artisans in the field. Market growth will be enhanced by developing a global marketing campaign that showcases the region's services and capabilities.

5.7.3 Offshore oil and gas

To enable successful offshore oil and gas exploration, adequate infrastructure – such as port facilities and pipeline networks – need to be developed. An integrated plan needs to be developed to acquire the necessary skills and to support local skills development.

5.7.4 Aquaculture

To address challenges in financing aquaculture, the region needs to establish a funding platform (an aquaculture development fund). The banks need to be sensitised about the potential of aquaculture and access to local and international markets needs to be created. A lack of skills needs to be addressed by increasing the training of professionals. Further, the governments should consider incentives and tax concessions for aquaculture investors.

5.7.5 Mining

Understanding of the potential to extract minerals in a responsible and sustainable manner will be improved by conducting geo-scientific research. Competition for shared resource space, which has been identified as one of the challenges for the mining sector, will be managed by employing adequate spatial planning. Further, improved knowledge of the effects of offshore resource exploitation, as well as best practices and technologies that minimise the detrimental effects of mining on the environment, will enhance the mining development potential of the BCLME.

To achieve sustainable oceans development in the BCLME by enhancing the key economic sectors, namely marine transport and manufacturing; offshore oil and gas; and fisheries, integrated ocean governance and protection will be introduced. This encompasses integrated framework and governance, ocean protection and marine spatial planning.

Integrated framework and governance entail the development of an overarching governance plan. The plan includes a single overarching policy framework; an institutional framework for ocean governance; tools to decide on trade-offs; and ocean governance capacity building. Ocean protection refers to the protection of the ocean environment from all illegal activities and the promotion of its multiple socio-economic benefits. This will be achieved by reducing illegal and unregulated activities in the ocean space, as well as reducing the human and environmental risks of pollution. Marine spatial planning encompasses the development of a series of marine spatial management plans that enable a sustainable ocean economy. These are key programmes that will ensure the development of the economic potential of the BCLME and are discussed within this SAP.

5.7.6 Integrate and implement international standards for exploration and extraction

Extraction activities – including the minimisation of impacts and the implementation of mitigation measures – will be harmonised to conform to international best practices. When appropriate, external reviewers will be engaged to ensure that monitoring standards are of a high quality. Relevant international conventions will be considered within the BCLME region and the principles and measures included in these will be integrated into regional standards and guidelines – including regional environmental impact assessment standards.

A regional database is required to provide the location of all offshore mining and drilling gear, for use by other sectors, such as fisheries. It is likely that addressing the effects of pollution from extraction activities will be a priority, and therefore these regional standard regulations will also be developed in line with EQO 4. Technologies and methods for exploration and extraction, that have minimal impact on the marine environment, will be investigated and recommended within the BCLME.

5.8 Governance

Ecosystem quality objective 8: the political and legal frameworks and human, institutional and operational resources are in place and adequate mechanisms exist to implement the BCC SAP and achieve the BCC's objective.

This theme refers to the overarching challenge of ensuring the robust governance of the BCLME and thereby ensuring the achievement of the objective of the BCC. In the TDA, governance was not analysed as a distinct theme because challenges relating to governance issues were common to each of the other themes. However, in the SAP and Implementation Plan the importance of governance is acknowledged and consequently it is dealt with as a separate theme with an associated EQO and set of policy actions. The BCC is a new Commission and although it is building on the Interim BCC and the work undertaken by the BENEFIT and BCLME programmes, it now has a strong mandate to implement policies and integrate science into management. This will require the strengthening of old and the establishment of new governance arrangements, both nationally and regionally. The challenges that the BCC faces are large and arguably growing as time progresses. In order to adequately face these challenges, it is necessary to strengthen the existing governance arrangements.

5.8.1 Strengthen national human capacity to participate in the BCC processes

Arguably the most serious challenge facing the BCC is a lack of human resources. The research required on various aspects of the BCLME demands highly qualified and experienced scientists and technicians. In the past, a successful scientific training programme was implemented and this will continue; an assessment of the success of this programme will be conducted, followed by a capacity and training needs assessment for the implementation of this SAP. In 2011, the BCC adopted a Training

and Capacity Building (TCB) Policy that provides a framework for effective response to the TCB needs of the Parties. The policy is consistent with national and BCC objectives.

Skills training to improve human capacity across multiple levels and sectors has been identified as a crucial step to improve the overall assessment and management of the BCLME. Future training and skills development (as guided by the TCB Policy) will take a multi-sectoral approach so as to ensure an understanding of the ecosystem approach to the management of the BCLME and to encourage dynamic and holistic methods, including ensuring that scientific knowledge is translated into management advice. Multi-sectoral training and capacity building is likely to cover personnel ranging from managers to technicians and include both the public and private sectors. The BCC, together with relevant research institutions, will develop an alliance of universities and research and training institutions in the region so as to facilitate the advancement of academic and vocational training and education.

5.8.2 Strengthen national institutional capacity and mechanisms to implement the SAP and IP

The central and local government agencies, civil society groups, industry groups, academic institutions and other institutions are important partners of the BCC. Some of these institutions require strengthening in order to fully participate in the BCC processes and, in many cases, the links and synergies between these agencies also need strengthening. A study will take place in each country to identify relevant institutions and review their capacity, strengths and weaknesses – including operational capacity, level of interagency cooperation and the decision-making mechanisms utilised. Recommendations for strengthening these institutions and mechanisms will be made to the Commission. Management processes and mechanisms will be evaluated across institutions and borders and in areas of importance to the BCC – such as the management of transboundary resources – harmonisation of decision-making processes will take place.

5.8.3 Strengthen and harmonise policy and legislative frameworks to the extent possible

A number of sectors fall within the mandate of the BCC, as can be seen by the number of ministries in each country that are party to the Commission. This provides both strengths and challenges for the governance processes of the BCC.

For example, in some cases policies are not well aligned across the different sectors within countries and this can be further complicated by a lack of policy alignment across borders. The implementation of regional initiatives may therefore not be as effective as desired, simply as a result of a national inability to respond to and take action on the recommendations of BCC. The BCC will assess the relevant policies in each of the three member countries and investigate what changes and harmonisation of policies might help to improve management of resources in the BCLME. In order to find ways to improve the situation, an analysis of current legislation will also be undertaken and an assessment made to identify the changes required to ensure that regional initiatives can function as required. This will be supported by a study into the relevant international and regional instruments that support the objectives of the BCC in order to recommend that these are acceded to or ratified by member states.

5.8.4 Strengthen information, communication and awareness mechanisms

As the BCC is a transboundary body, it is essential that all relevant data is shared between the three BCC nations. Reporting of data will be undertaken in keeping with a developed BCC data sharing policy and relevant national policies. The State of the Ecosystem Information System (SEIS) will continue to be implemented and expanded to include human dimensions. Communication and awareness will be improved by developing a BCC Communications Strategy that will identify actions to be taken to raise awareness about the work and achievements of the BCC. The BCC website will be updated regularly and provide a portal for all interested in the BCLME region. The Annual Science Forum is an important event in the calendar of the BCC that will continue to provide an excellent opportunity for the BCC community to meet together and exchange information and knowledge. Its appeal to non-scientists will also be improved.

5.8.5 Strengthen the governance structures and procedures for the BCC

The BCC's organisational structure, as set out in its Convention, is in line with internationally accepted sound governance for an inter-governmental organisation. The Convention allows for the establishment of a Ministerial Conference, a Commission, a Secretariat, an Ecosystem Advisory Committee, Finance and Administration Committee and Compliance

Committee; these Committees are empowered to establish working groups as they deem necessary. In the Interim BCC most of these structures existed, under other names, and the Compliance Committee is the only new structure. This is because, under the Interim BCC, there was no mandate to agree on management or conservation measures for transboundary resources and therefore there was no need for a committee to assess compliance with measures. The structures that are already established function effectively, but they will require review and a fresh approval of procedures and processes. An effort will be made to ensure that the working groups include non-government stakeholders e.g. representatives of industry and coastal communities. A review of the capacity of the Secretariat to perform its allocated functions will be undertaken as a priority and repeated on a regular basis. The Secretariat performs an essential task in servicing the various structures of the BCC and it will require strengthening and additional resources to handle the expanded mandate as set out in the Convention.

5.8.6 Strengthen regional and international cooperation

The BCC has established an extensive set of national, regional and international partners and the Secretariat is tasked with strengthening these partnerships and establishing relationships with other organisations so as to improve cooperation and resolve present and future challenges facing the BCLME. A high level mechanism will be established to facilitate consultations and dialogue with various marine industries so that advice emanating from the mechanism can be fed into the Commission. The BCC has had a long-standing relationship with the Southern African Development Community and the Secretariat will continue to explore ways of strengthening the role that the BCC plays in regional integration. As one of several African LME programmes the BCLME, through its Secretariat, has been active in cooperating with the other LME's, a relationship that will be strengthened along with cooperation with other regional bodies. The Annual Science Forum provides an excellent opportunity for extending and strengthening cooperation and consideration will be given to how to make this event more interesting and useful to a wider group. The BCC will encourage participation in international and regional programmes to meet the objectives of the Convention. The BCC countries will join and cooperate with international organisations that have an influence in the Benguela region.

5.8.7 Establish sustainable financing mechanisms

The BCC will establish mechanisms for funding its work and sharing costs between the national governments, the resource users and the wider international community. The BCC is currently funded directly by the three member states with support from a range of cooperating partners including the Global Environment Facility, the Norwegian government, the German government and the European Union. Mechanisms will be developed by the Finance and Administration Committee to consider such options as national governments introducing a tax on the companies that use the ocean for commercial activities, possibly as a voluntary taxation for an initial period, while it is being developed. This tax will be used to fund the implementation of the SAP. International cooperating partners will also be called on to support the BCC in the early years of its establishment as a full Commission. As the Implementation Plan requires support and assistance to implement, a donor's conference will be arranged periodically to facilitate cooperation with funders. Annual and five-year budget plans will be established and carefully monitored.

5.8.8 Review and monitor progress in implementing the SAP

Monitoring mechanisms are an important aspect of good governance and the Commission is responsible for monitoring and reviewing the implementation of the SAP and recommending changes as required. Monitoring will take place annually and be conducted by the relevant committees and the Commission; an annual update of the TDA and Implementation Plan should also take place. Every five years the TDA, SAP and Implementation Plan will be reviewed by the wider community, with recommendations for change presented to the Ministerial Conference for its consideration.

6 The BCC's policy actions

The strategic actions in response to the strategic solutions described in section 5 are summarised in Table 1a. The business planning exercise of the BCC has configured the policy actions into the following budget areas, with indicative funding requirements for the five-year period 2015 to 2019, reflected in Table 1b.

The concepts of cross-sectoral marine spatial planning, environmental stress reduction and climate change have

emerged strongly over recent years. These have been re-emphasised and included in the SAP and indicative budget. Other areas such as maritime safety were also identified as action areas but were not necessarily included in the budget because they are the focus of other regional partnerships. The BCC will seek to support these initiatives as appropriate.

Potential projects that may be included within the budget areas reflected in Table 1b can be found in Annex 8.4.

Table 1a. Summary of policy actions.

Theme	Policy action	Budget Area
Living marine resources	<i>Ascertain which stocks are marine transboundary resources.</i>	Ocean Governance
	<i>Manage shared stocks cooperatively by harmonising research and management planning and implementation.</i>	Ocean Governance
	<i>Implement ecosystem-based management.</i>	Ocean Governance
	<i>Ensure compliance with management and conservation measures.</i>	Ocean Governance
Non-living marine resources	<i>Understand the ecosystem impacts of exploration and extraction activities.</i>	Ocean Governance
	<i>Integrate and implement international standards for exploration and extraction.</i>	Ocean Governance
	<i>Adoption and use of Integrated Ocean and Coastal Management</i>	Ocean Governance
Productivity and environmental variability	<i>Improve the understanding of the BCLME ecosystem.</i>	Ocean Governance
	<i>Improve the understanding and predictability of climate change impacts and climate variability at seasonal inter-annual and longer time scales.</i>	Ocean Governance
	<i>Improve the understanding of Harmful Algal Blooms and hypoxia.</i>	Ocean Governance
Pollution	<i>Monitor and manage coastal water quality around pollution "hotspots".</i>	Ocean Governance
	<i>Improve the understanding of river pollution in the BCLME.</i>	Ocean Governance
	<i>Prevent, abate, mitigate and prepare for oil spills.</i>	Ocean Governance
	<i>Prevent, abate and mitigate against marine litter.</i>	Ocean Governance
	<i>Understand the impacts of noise pollution and mitigate as necessary.</i>	Ocean Governance
	<i>Reduce emissions of greenhouse gases.</i>	Ocean Governance
Ecosystem health and biodiversity	<i>Reduce threats to species and habitats.</i>	Ocean Governance
	<i>Strengthen ability to monitor ecosystem health.</i>	Ocean Governance
Human dimensions	<i>Ensure consistency of human dimension data across countries.</i>	Ocean Governance
	<i>Expand the knowledge base in respect to human dimensions in the BCLME region.</i>	Ocean Governance
	<i>Incorporate human dimensions into resource management decision-making.</i>	Ocean Governance
	<i>Implement regional cooperation for safety-at-sea.</i>	Ocean Governance
	<i>Develop constructive participation by stakeholders and reduce conflicts.</i>	Ocean Governance
	<i>Enhance the economic development potential.</i>	Ocean Governance

Theme	Policy action	Budget Area
Enhance the economic development potential	Adoption and use of Integrated Ocean and Coastal Management.	Ocean Governance
	Develop a supportive funding and revenue model for infrastructure and operations in marine transport.	Ocean Governance
	Develop adequate infrastructure such as port facilities, pipeline networks to enable successful offshore oil and gas exploration.	Ocean Governance
	Develop an integrated plan for skills development for offshore oil and gas sector.	Capacity Building
	Establish a funding mechanism to address challenges in financing aquaculture and improve market accessibility.	Ocean Governance
	Conduct research to better understand methods for extracting minerals in a responsible and sustainable manner.	Ocean Governance
	Manage competition for shared resources/space by employing adequate spatial planning.	Ocean Governance
	Enhance key economic sectors, e.g. marine transport and manufacturing; offshore oil and gas; fisheries; integrated ocean governance and protection to achieve sustainable ocean development through integrated ocean governance and marine spatial planning.	Ocean Governance
	Harmonise mitigation measures related to extraction activities to minimise environmental impacts and ensure that monitoring standards are of international quality.	Ocean Governance
Governance	<i>Strengthen national human capacity to participate in BCC processes.</i>	Capacity Building
	<i>Strengthen national institutional capacity and mechanisms to implement the SAP and IP.</i>	Capacity Building
	<i>Strengthen and harmonise policy and legislative frameworks.</i>	Ocean Governance
	<i>Strengthen information, communication and awareness mechanisms.</i>	Marketing and Resource Mobilisation
	<i>Strengthen the governance structures and procedures for the BCC.</i>	Corporate Governance
	<i>Strengthen regional and international cooperation.</i>	Stakeholder Partnering and Relationships
	<i>Establish sustainable financing mechanisms.</i>	Corporate Governance
	<i>Review and monitor progress in implementing the SAP.</i>	Corporate Governance

Table 1b. Budget projection 2015–2019 (USD '000).

Budget Areas	Total	Available	Shortfall
Corporate Governance	5952	4243*	1709
Capacity Building	6655	-	6655
Marketing & Resource Mobilisation	2082		2082
Ocean Governance	55157	29043	26115
Stakeholder Partnering and Relationships	3783		3783
Grand total	73629	33285	40344

* Projected contributions by contracting parties based on 2014/15 contributions

7 Funding

7.1 Members' contribution

The contribution from the three countries for the period 2015 to 2019 amounts to USD 4.2 million. These funds are used to sustain the Secretariat and include personnel and operational costs. Members also provide substantial co-financing and in-kind contributions including staff time, ship time, offices, meeting facilities and venues.

7.2 Available funds

The total budget to finance the Implementation Plan amounts to USD73 million. Of this, USD29 million is available from the following projects:

- a) The GEF-funded projects: (i) "Realizing the inclusiveness and sustainable development of the BCLME region through the improved ocean governance and the integrated management of ocean use and marine resources"; and (ii) "Enhancing climate change in the Benguela Current fisheries system".
- b) The German-funded project "Conservation and sustainable use of the Benguela Current Large Marine Ecosystem through marine spatial planning and ecologically or biologically sensitive areas".
- c) The European Union-funded project on sustainable management of the shared fisheries resources.

7.3 The funding shortfall

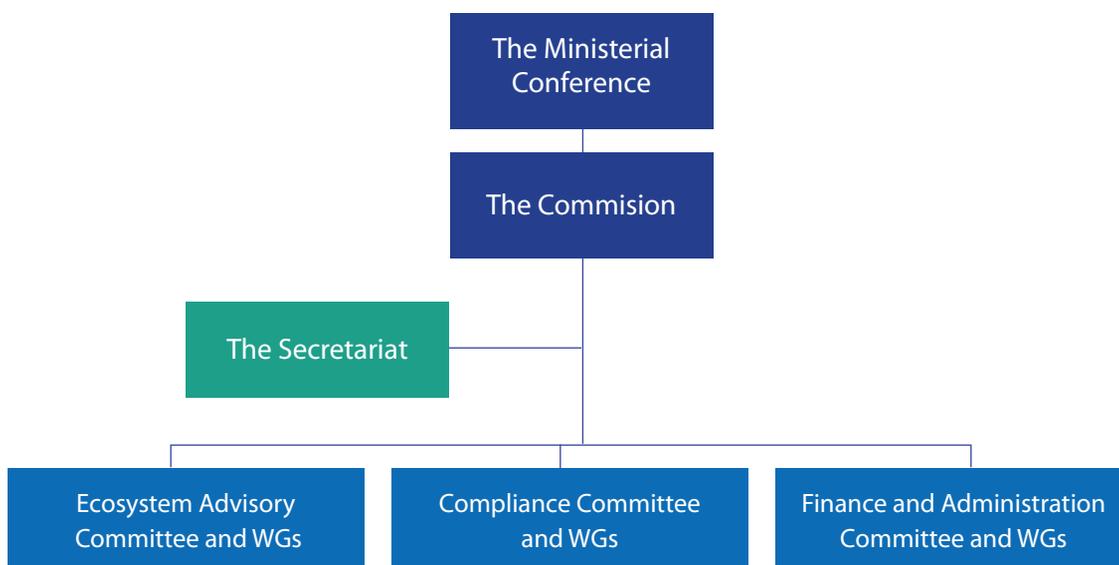
Therefore, to fully implement this SAP, the BCC would require USD40 million over the next five years. The BCC financing strategy will not be limited solely to the contributions by the member states and traditional partners, but will also entail approaching other development and technical partners including the private sector, for funding and co-funding, taking into account their developmental/cooperation priorities and objectives.

8 Annexes

8.1 Acronyms

BCC	Benguela Current Commission
BCLME	Benguela Current Large Marine Ecosystem
CDCF	Centre for Development Cooperation in Fisheries
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COMHAFAT	Ministerial Conference on Fisheries Cooperation among African States Bordering the Atlantic Ocean
EAF	Ecosystem approach to fisheries
EEZ	Exclusive Economic Zone
EQO	Ecosystem quality objective
FAO	Food and Agriculture Organization of the United Nations
GCLME	Guinea Current Large Marine Ecosystem
GEF	Global Environment Facility
GENUS	Geochemistry in nutrient rich upwelling system
HAB	Harmful Algal Bloom
ICCAT	International Convention on the Conservation of Atlantic Tunas
IMO	International Maritime Organization
IP	Implementation Plan
IUU	Illegal Unreported and Unregulated (fishing)
LME	Large Marine Ecosystem
MARPOL	International Convention for the Prevention of Pollution from Ships
MCS	Monitoring, control and surveillance
MPA	Marine Protected Area
NANSCLIM	Climate Effects on Biodiversity, Abundance and Distribution of Marine Organisms
NOAA	National Oceanic and Atmospheric Administration (of the United States)
ODIN Africa	Ocean Data and Information Network for Africa
SADC	Southern African Development Community
SADCO	Southern African Data Centre for Oceanography
SAP	Strategic Action Programme
SEAFO	South East Atlantic Fisheries Organisation
SEIS	State of the Ecosystem Information System
TDA	Transboundary Diagnostic Analysis
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars
WWF	World Wide Fund for Nature

8.2 The structure of the BCC



8.2.1 The Ministerial Conference

This is the highest level of management in the BCC. Article Six of the Convention defines its role, which is primarily to set policy direction for the BCC, to take necessary and appropriate action to facilitate the effective implementation of the SAP, and to approve work plans, procedures and amendments to the Convention.

The Conference is convened at least every two years.

8.2.2 The Commission

Each party appoints a Commissioner and the Commission meets at least annually. The functions of the Commission are set out in Article Eight of the Convention. There are 15 functions; 10 are concerned with coordination, administration and support and five with management. Of the five management functions, three require the Commission to agree on specific measures, namely (i) measures to prevent, abate and minimise pollution; (ii) conservation and management measures concerning transboundary marine resources and the environment; and

(iii) participatory rights concerning transboundary fishery resources.

8.2.3 The permanent committees of the Commission

There are three permanent committees to the Commission: the Ecosystem Advisory Committee, the Finance and Administration Committee and the Compliance Committee. Their purpose is to advise the Commission on matters within their respective areas of competence. The committees work mainly through working groups, which form the bridge for cooperation between players in the different countries of the BCC.

8.2.4 The Secretariat

The role of the Secretariat is comprehensively set out in Article Thirteen of the Convention. Of importance is its role of providing services to the Ministerial Conference, Commission and committees and sourcing resources additional to those provided by the countries.

8.3 BCC collaborations and partnerships

8.3.1 Technical and financial partners

The BCC collaborates with governments, intergovernmental and non-governmental organisations. Driven by the political will of the member states, the BCC has attracted significant financial support and implemented several programmes with its sponsors and partners.

8.3.2 Sponsors

- a) The Government of Norway supports the Science Programme for integrated and sustainable development of the BCLME region (2007–2014);
- b) The Government of Iceland supports a training and capacity building programme to strengthen the marine research institutions and improve ocean governance (2008–2013);
- c) The Government of Germany supports a project on “Conservation and sustainable use of the Benguela Current Large Marine Ecosystem through marine spatial planning and ecologically or biologically sensitive areas” (2014–2019), jointly implemented by the BCC and GIZ;
- d) The European Union supports sustainable management of the shared fisheries resources through the Ecofish project (2009–2015), implemented and executed by the BCC;
- e) The Global Environmental Facility (GEF) supported (a) the BCLME Programme 2002–2008; (b) the BCLME SAP Implementation project 2009–2013; and is currently supporting (c) the project “Enhancing climate change in the Benguela Current fisheries system” (2014–2019); and (d) the project “Realizing the inclusiveness and sustainable development of the BCLME region through the improved ocean governance and the integrated management of ocean use and marine resources” (2014–2019);
- f) The FAO EAF-Nansen Project provides support for the implementation of an ecosystem approach to fisheries (EAF) management (2009–2016);

- g) The centre for Development Cooperation in Fisheries (CDCF, IMR-Bergen) – the BCC cooperates on NANSCLIM and on institutional strengthening of the BCC (2008–2014).
- h) The Institute for Research Development (IRD), France (1997–2007);
- i) The Government of the United Kingdom through its Department for International Development, DFID (2003–2005).

8.3.3 Partners

- a) The United Nations Development Programme (UNDP) acted as implementing agency for the BCC from 2002 to 2013 (the duration of the BCLME Programme and the SAP Implementation project) and provided administrative, human resources management and financial management support for the BCC until 2011. UNDP is also acting as implementing agency for the GEF-funded project “Realizing the inclusiveness and sustainable development of the BCLME region through the improved ocean governance and the integrated management of ocean use and marine resources”;
- b) The Food and Agriculture Organization of the United Nations (FAO) acts as implementing agency for the GEF-funded project “Enhancing climate change in the Benguela Current fisheries system”;
- c) The GENUS Programme is implemented in partnership with the GENUS consortium which comprises the University of Hamburg (leading institution), the Institute for Baltic Research Warnemuende, IOW, and the Center for Tropical Marine Ecology Bremen, ZMT; Marine Zoology, University of Bremen and Alfred Wegener Institute Bremerhaven, AWI;
- d) The International Maritime Organization (IMO) has supported the GloBallast Programme and continues to support the development of regional oil spill contingency plans;
- e) The World Wide Fund for Nature (WWF-SA) is supporting responsible fishing initiatives and the EAF management projects;

- f) NOAA provides advice on the LME concept;
- g) OdinAfrica/GOOS Africa provides training and skills development in ocean data management;
- h) The Southern African Development Community (SADC) has supported the implementation of the regional projects (BENEFIT, BCLME Programme and the BCC);
- i) The African Union (Abidjan Convention, NEPAD) – political support;
- j) The African Large Marine Ecosystem Caucus (LME projects implemented in the Canary, Gulf of Guinea, Agulhas and Somali Currents regions);
- k) The World Ocean Council provides advice on mainstreaming the private sector;
- l) The Danish Technical University, as a partner in the EU-funded Ecofish project, focuses on stock assessment and EAF;
- m) The Southern African Data Centre for Oceanography (SADCO) – BCC is a member;
- n) FAO-FIRMS – BCC is a member of FIRMS;
- o) The Scottish Association for Marine Sciences – a MoU on ecosystem modelling;
- p) The University of Bergen – BCC and the University of Bergen work to promote and facilitate exchanges, conducting collaborative research, training and capacity building;
- q) The University of Western Cape – BCC cooperates on hosting “marine management mis-matches” training courses to ensure the long-term sustainability of this course in the region.



8.4 Potential major projects identified within the Budget Areas (2015–2019)

1. OCEAN GOVERNANCE
Marine resources
Shared stocks assessments and research on commercially important fisheries
Research on seabed mining and fisheries
Socio-economic research including cost benefit analysis and societal implications
Strategic Environmental Assessment of BCLME
Joint Monitoring, Control and Surveillance activities
Hazardous materials policies/norms/standards/thresholds
Guidelines to environmental monitoring, including indicators
Guidelines on norms and standards for marine resource exploitation
Environmental management ecosystem approach
Reduction in marine pollution
Ballast water management
Economic valuation of BCLME
Ecosystem approach to marine management
State of marine environment report
Transboundary Marine Protected Areas
Regional risk and vulnerability atlas
Coastal monitoring network and Environmental Early Warning System (EEWS)
Marine environmental health monitoring system, including land-breeding top predators
Marine Spatial Planning and ecologically and biologically significant areas
Understand productivity and environmental variability
Productivity of the system
Environmental variability of the system including climate change variability
Improved governance of the BCLME region
Human capacity for marine environment management
Harmonised compliance and conservation measures
Data and information to create shared knowledge base
2. STAKEHOLDER PARTNERING AND RELATIONSHIPS
Inter-sector stakeholder group
Functioning inter-sector stakeholder group
Relationships with key stakeholders
Functioning inter-sector stakeholder group
Reciprocal relationships with comparable institution
MoU partnering with related bodies
Symposia to address BCC issues
Symposia/conference/meetings

3. MARKETING AND RESOURCES MOBILISATION
Increase brand awareness to engage societies
Marketing material
Media coverage
Participation in workshops, trade fairs
Career fairs
Television production on BCC
Mobilise funding for Commission and Secretariat
Donor conference
Interactive and informative BCC website
Academic partnerships
Education events
4. CAPACITY BUILDING (BCC)
Re-design BCC organisational structure /functioning
Optimise Secretariat's resources and structure
Competency needs assessment and development
Needs assessments, analysis, recommendations
Structured competency development programme
Alternative regional capacity building solutions
Mentorship programme
Secondment of staff from member states
Bursaries
Vacation jobs for students
Formal internships
5. BCC CORPORATE GOVERNANCE
Review, update, implement BCC Strategy
Business plan
Annual budget and three-year forecast
Performance management system
BCC policies and procedures
Optimal business process and procedure manuals
Efficient Secretariat structure (deliver on strategy)
Financial liquidity, balance spend vs budget
Compliance (law, policies, standards, rules, regulations)
Risk framework covering critical resources
Risk management framework
Develop and implement ICT Systems
Functional, secure, compliant ICT systems
Liaise with borders of BCC area, neighbouring LME
Establish, maintain contact with relevant international bodies
Liaison (ministries responsible for coastal zone management)
Collaboration initiatives with SADC Countries



Three countries sharing a productive ecosystem