Integrated Coastal Zone Management in SADC

STUDY REPORT

THE DEVELOPMENT THE INTEGRATED COASTAL ZONE (ICZM) IN THE SADC REGION

CONSULTANCY CONTRACT TO DEVELOP THE MARINE SPATIAL PLANNING (MSP), INTEGRATED COASTAL ZONE MANAGEMENT AND MARINE DOMAIN AWARENESS (MDA) STUDIES IN THE SADC REGION

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Southern African Development Community (SADC) Secretariat

By

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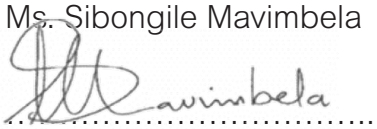

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Acronyms

2050 AIMS	2050 Africa's Integrated Maritime Strategy
AIS	Automatic Identification System
AU	African Union
BCC	Benguela Current Convention
DCoC	Djibouti Code of Conduct
DCoC(J)	Djibouti Code of Conduct, Jeddah Amendment
DRC	Democratic Republic of Congo
EBM	Ecosystem Based Management
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation
GDP	Gross Domestic Product
IMO	International Maritime Organization
ISS	Institute for Security Studies
ICZM	Integrated Coastal Zone Management
ICZMPs	Integrated Coastal Zone Management Plans
LMMA	Locally Managed Marine Areas
MDA	Maritime Domain Awareness
MDAC	Maritime Domain Awareness Centre
MSP	Marine Spatial Planning
MPA	Marine Protected Areas
OCIMS	Oceans and Coastal Information Management System
OECD	Organisation for Economic Co-operation and Development
PAP	Priority Action Programme
REC	Regional Economic Community
SADC	Southern African Development Community
SAMSA	South African Maritime Safety Authority
SMC	Standing Maritime Committee
UNCED	United Nations Conference on Environment and Development
UNEP	United Nations Environment Programme
USA	United States of America

Executive Summary

The Southern African Development Community (SADC) is a Regional Economic Community comprising 16 Member States, namely, Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security. The study was focused in 6 Coastal and 4 Island States within the SADC Region. The study aims to give an overview of Integrated Coastal Zone Management (ICZM) in the SADC Coastal and Island States, about its development, approval, and implementation.

Integrated Coastal Zone Management (ICZM) is a sustainable approach to managing coastal areas that balances economic, social, and environmental objectives. It aims to ensure that the resources and values of coastal ecosystems are protected and used in a way that benefits current and future generations. ICZM in SADC region involves the integration of different sectors, such as fisheries, tourism, urban development, and conservation, to create a coordinated and coherent management framework. It also requires the involvement and participation of all stakeholders, including governments, communities, businesses, and NGOs, to ensure that decisions are made with the best available information and that the impacts of these decisions are understood and managed.

The key elements of ICZM in SADC Coastal and Island States include: a) Coastal zone characterization and mapping to understand the ecological, social, and economic systems of a particular area; b) Development of management plans that integrate information from different sectors and stakeholders and are based on scientific data and analysis; c) Implementation of management plans through a combination of regulations, incentives, and voluntary measures; d) Monitoring and evaluation of the effectiveness of management plans and making adjustments as needed.

About 80% of the SADC Coastal and Island states have developed and implemented ICZM programs, which is a step in the right direction. ICZM becomes a tool for the implementation of sustainable blue economy in SADC region. ICZM in SADC region can help to address a range of coastal management challenges, including sea level rise, coastal erosion, pollution, overfishing, and conflicts among users.

It also promotes sustainable economic development and helps to safeguard the cultural and natural heritage of coastal communities. However, ICZM can be complex and challenging to implement, requiring sustained political commitment, institutional capacity building, and stakeholder engagement. Despite these challenges, ICZM has been successfully implemented in many countries and is recognized as a critical approach to managing coastal areas in a sustainable and integrated manner.

CHAPTER 1: Introduction

Background to the Study

The Southern African Development Community (SADC) is a Regional Economic Community comprising 16 Member States, namely, Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. Established in 1992, SADC is committed to Regional Integration and poverty eradication within Southern Africa through economic development and ensuring peace and security. Of these 16 member states, 6 are landlocked which means that 10 have a border with a major ocean.

The vision of and ultimate impact desired by the Southern African Development Community (SADC) is one of a common future, a future in a regional community that will, among other objectives, ensure social-economic wellbeing and improve the standards of living and quality of life, freedom and social justice and peace and security for the peoples of Southern Africa. By 2050, we envision a peaceful, inclusive, middle to high income industrialised region, where all citizens enjoy sustainable economic well-being, justice and freedom. To attain this vision, SADC's expected specific results include the promotion of sustainable and equitable economic growth and socio-economic development that will ensure poverty alleviation with the ultimate objective of its eradication through regional integration.

With a population of 345.2 million people (2018), and growing at a rate of 2.5% per annum, the SADC region is increasingly developing into a huge market for the African region and beyond. The largest share of the population in the SADC lives in the Democratic Republic of Congo (DRC) with 26.6%, followed by South Africa with 16.7%, and the United Republic of Tanzania with15.7%. The Gross Domestic Production (GDP) for the SADC region stood at $721.3 billion in 2018 and growing at 1.8% per annum (SADC Statistical Report of 2018). However, inflation remains high and stood at around 18.6% increase between 2018 and 2019.There are cross country variations in inflation rates, with some SADC Member States recording double-digit rates – Zimbabwe (607.1%), Angola (16.6%), Malawi (11.5%), and Zambia (10.3%) over the 2018-2019 period. The lowest inflation rate was recorded in Mauritius and Seychelles at 1.6%. The importance of agriculture to social and economic growth, poverty reduction, food security, and nutrition remains central to the region's overall developmental agenda.

1.1 Current Situation

Ocean and inland waters (seas, lakes, rivers and reservoirs) provide significant benefits to humanity, and these include: i) food and nutrition security from fisheries and aquaculture, ii) economic and social development from fisheries and aquaculture, marine and coastal tourism, shipping, mining, energy and iii) ecosystem services such as carbon sequestration, water filtration, atmospheric and temperature regulation, protection from erosion and extreme weather events. The oceans and inland water drive the blue economy agenda in most of the SADC countries, with the blue economy being defined as the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, while preserving the health of the ocean

ecosystem. Though it focuses principally on the ocean, the blue economy concepts also include inland water bodies such as lakes and rivers. However, the asset base of oceans and inland waters has been eroding rapidly because of overfishing, pollution from land-based sources, mangrove deforestation, infra-structure development, urbanization, climate change and ocean acidification. Hence, realizing the full potential of the oceans and inland waters requires a paradigm shift to embrace a new, responsible and sustainable approach that is more environmentally, socially and economically effective. This comes at a crucial time when the need for food, medical drugs and resources from the ocean and inland waters is increasing rapidly to meet the needs of the growing population, which has driven the concept of the blue economy.

Implementing the Blue Economy requires a "toolbox" with several existing, new and often better strategies (African Union, 2012; Commission of the European Communities, 2007; UNECA, 2016). These include integrated maritime strategies and policies, integrated coastal management, marine protected areas etc. One of the highly rated and promoted tools is known as ecosystem-based marine spatial planning (Douvere and Ehler 2006; Domínguez-Tejo et al., 2016). It has been argued that the Blue Economy makes its strongest gains when leveraging existing institutional relationships to address strategic gaps that affect multiple sectors and players, and which catalyze visible benefits for them in the long term (UNEP, 2015). Ecosystem-based management, marine spatial planning (MSP), integrated coastal management (ICM) and the establishment of marine protected areas (MPAs) are established elements in support of the Blue Economy. This report deals with the Integrated Coastal Zone Management in SADC Coastal and Island States, in terms of their development stage, approval, and implementation of ICZM.

1.2 Nature of the Issues in Marine Spatial Planning

1.3 The Study Area

The study was conducted in six (6) SADC Coastal and four (4) Island States as shown in Figure 1.

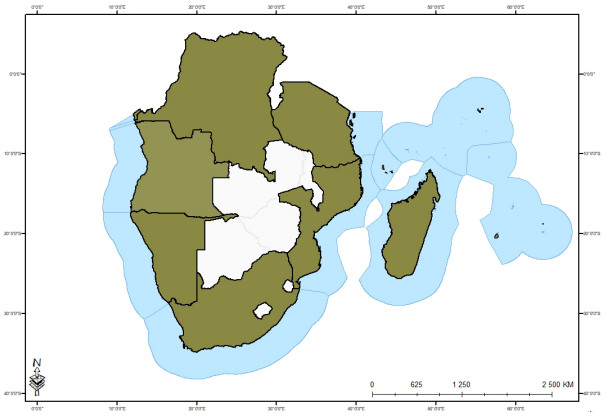


Figure 1. Depicts the study area/ countries in olive shaded colour (Democratic Republic of Congo; Angola, Namibia, South Africa, Mozambique, Tanzania, Madagascar, Mauritius, Comoros, and Seychelles).
Source: Map drawn by S.K. Mafwila, 2022.

1.4 Aims and Objectives

1.4.1 Aims

The study aims to give an overview of Integrated Coastal Zone Management (ICZM) in the SADC Coastal and Island States, about its development, approval, and implementation.

1.4.2 Objectives

The overall objective was to conduct studies on Integrated Coastal Zone Management in the SADC Region which will serve as a tool for the sustainable implementation of the Blue Economy. Furthermore, propose an institutional framework, and a mechanism for funding the program.

1.5 Limitations

The study was conducted over a short period of time, and it is dependent on already existing information (desktop study), thus relies heavily on the willingness of member states to share the required information. There is limited time for the study.

1.6 Assumptions

There is commitment from Member States and other relevant stakeholders to provide necessary information and data, and that there is readily available technical information and data from national, regional and international research institutions, universities, the Blue Economy sector and the media.

1.7 Risks

Delays in appointment of consultants; appointment of a consultant with limited understanding of the Blue Economy sector especially on areas of Marine Spatial Planning, Integrated Coastal Management and Marine Domain Awareness in the SADC region.

1.8 Compilation of the SADC ICZM report

The Study Report on SADC ICZM was compiled using the existing publications, and information from the coastal and island states. Thus, making the report a desktop study to access the status of ICZM in SADC. The maps and figures were drawn by the author, unless stated otherwise in the caption. The report was reviewed and validated by the SADC Member states representatives serving as focal point persons on the SADC Blue Economy. Views and comments from the expert groups were dealt with and incorporated in the report as per the recommendation of the validation workshop.

CHAPTER 2: Literature Review

2.1 Literature Review

Integrated coastal zone management (ICZM) can be defined as a continuous and dynamic process by which decisions are made for the sustainable use, development, and protection of coastal and marine areas and resources. (Cicin-Sain & Knecht, 1998). Integrated coastal management is also a process that recognizes the distinctive character of the coastal area, itself a valuable resource and the importance of conserving if for current and future generations. ICZM brings together all those involved in the development, management and use of the coast in a framework that facilitates integration of their interests and responsibilities (Kaiser, et al., 2005). The goals of integrated coastal zone management are to achieve sustainable development of coastal and marine areas, to reduce vulnerability of coastal areas and their inhabitants to natural hazards, and to maintain essential ecological processes, life support systems, and biological diversity in coastal and marine areas. This process is multipurpose oriented: it analyses implications of development, conflicting uses, and interrelationships among physical processes and human activities, and it promotes linkages and harmonization between sectoral coastal and ocean activities. (Cicin-Sain & Knecht, 1998).

The term "Coastal Management" was first conceptualized in the United States and came into common use with the implementation of the United States Coastal Zone Management Act of 1972. This was an Act of Congress which was passed in 1972 to encourage all coastal states to develop and implement coastal zone management plans (CZMPs). The Act was therefore established as a United States National Policy to preserve, protect, develop and where possible, restore or enhance the resources of the Nation's coastal zone for present and future generations. Relevant programmes were then designed to set up a basis for protecting, restoring and establishing a sense of responsibility in preserving and developing the nation's coastal communities and resources, more especially those that are under pressure of being depleted. The vision of the ICZMP was to ensure that America's coast and oceans, including the Great Lakes and island territories, are healthy and thriving for present and future generations, whilst the vision was to ensure that the conservation and responsible use of the coastal and ocean resources is maintained (Cicin-Sain & Knecht, 1998).

To date, the concept of integrated coastal zone management (ICZM) extends back at least 50 years ago. In its first decade, the concept became a practice confined mostly to the United States, Australia, and the UN Regional Seas Program. There was enthusiasm and optimism among those who chose to follow that rising star. Integrated coastal management is now practiced all over the globe and it is part of the rhetoric for sustainable development. For many who have been following the ICZM star for decades, the optimism is now guarded because they have found out that ICZM is a long swim against the current. Since May 24 to 28 1996, a workshop, Integrated Coastal Management in Tropical Developing Countries: Lessons Learned from Successes and Failures, was convened at Xiamen, China. One of the major objectives of the Xiamen workshop was for practitioners to reach a general consensus on the basic concepts of ICZM, the definition of key terms, the important factors which

influence the success of a program, and an agenda for improving the state of the practice (Sorensen, 1997).

To date, after more than 50 years of ICZM experience in over 60 nations, practitioners should be well beyond the rhetoric that still pervades their meetings and literature. They have learned only a portion of what they could learn from their rich experience and long history. They need to build and test hypotheses from practical experience.

The coastal zone is essentially a natural resource system, which provides space, living and non-living resources for human activities (van der Weide, 1993). Throughout the world coastal zones have historically been among the most heavily exploited areas because of their rich resources (World Bank, 1993). While the coastal zone represents approximately 10% of the earth's surface, its coastal lowlands are inhabited by between 50% and 70% of the world's population (Chua, 1993; Burbridge, 1993) and migration from upland areas to the coast is increasing (World Bank, 1993; van der Weide, 1993; Olsen, 1993). However, variations do occur among nations in the estimated numbers of people living and working in coastal areas (Burbridge, 1993). Migration to the coastal areas has resulted in the coast now being a focal point in many national economies, as many social and economic activities are concentrated in this area (Chua, 1993; van der Weide, 1993; Burbridge, 1993).

Rapid urbanisation and economic development in many countries of the world cause a host of complex resource-use conflicts and environmental degradation problems in the coastal zone (Burbridge, 1993; Olsen, 1993; Chua, 1993). In many coastal developing countries characterised by hunger, unemployment, poverty and rapid population growth the issues of environmental degradation and resource-use conflict have reached critical stages. This situation has created an urgent need for long term planning and the development of management strategies to regulate activities in the coastal zone.

Conflicts in the coastal zone have grown in scope and size with increasing population density and related increase in the use of the resources (Burbridge, 1993; Olsen, 1993. While management intervention is a response to coastal pressures and problems, it is also in recognition of the economic value of the coastal zone that governments have responded to by initiating coastal zone management efforts and policy processes. Conventional sectoral management is not effective in addressing the complex management issues of the coastal zone which are often cross-sectoral in nature. The need for an alternative but effective management system is obvious, thus this tool used in combination with other tools such Marine Spatial Planning (MSP) and Maritime Domain Awareness (MDA) can yield the desired results in support of the Blue Economy. Among calls for integrated coastal zone management at the beginning of this decade, were those from several international organisations such as the United Nations Environmental Program (UNEP), United Nations Conference on Environment and Development (UNCED), the Food and Agricultural Organisation (FAO), member governments of the Organisation for Economic Co-operation and Development (OECD). These integrated coastal management processes would be established for the protection of valuable coastal ecosystems and to achieve sustainable use of coastal resources in the coastal nations around the world (World Coast 2000). Subsequently several international organisations, national governments, and non-governmental organisations have initiated efforts to operationalise integrated coastal zone management.

2.2 Situation Analysis

The situation analysis is basically the process of critically evaluating the internal and external conditions that affect an organization (in this case SADC), which is done prior to a new initiative or project. It provides the knowledge to identify the current opportunities and challenges to your organization, service or product. This in turn helps with devising a strategy to move forward from your current situation to your desired situation. We have applied this method here to understand the current situation in terms of MSP in SADC countries and what the future may hold for the member states.

The situation analysis looks at the current situation in terms of Integrated Coastal Zone Management in SADC Coastal and Island States. The progression of the development of ICZM (before, current, and future). Integrated Coastal Zone Management is identified as an enabler or tool in the sustainable implementation of the Blue Economy strategy. For countries that have developed their Blue Economy strategy, would need to have ICZM in place, which will ease the allocation of ocean space to multiple and often conflicting users of the ocean. Thus, situation analysis of each costal and island state in SADC is imperative. We will take a closer look at the following Coastal states: Democratic Republic of Congo (DRC); Angola, Namibia, South Africa (SA); Mozambique, Tanzania. Then the Island states: Comoros, Madagascar, Mauritius, and Seychelles (Table 1).

Country	Type	ICZM	MSP	MDA	MPAs	LMMAs
Angola	Coastal	Yes	Underway	Yes	Yes	Yes
Comoros	Island	Yes	Underway	Yes	Yes	Yes
DRC	Coastal	X	Underway	Yes	Yes	Yes
Madagascar	Island	Yes	Yes	Yes	Yes	Yes
Mauritius	Island	Yes	Yes	Yes	Yes	Yes
Mozambique	Coastal	Yes	Underway	Yes	Yes	Yes
Namibia	Coastal	Underway	Underway	Yes	Yes	Yes
Seychelles	Island	Yes	Yes	Yes	Yes	Yes
South Africa	Coastal	Yes	Yes	Yes	Yes	Yes
Tanzania	Coastal	Yes	Yes	Yes	Yes	Yes

Table 1. The status of ICZM and related activities in SADC Coastal and Island States. ICZM: Integrated Coastal Zone Management; MSP: Marine Spatial Planning; MDA: Maritime Domain Awareness; MPA: Marine Protected Areas; LMMA: Locally Managed Marine Areas. Yes = ICZM is fully developed and implemented; Underway = ICZM is under development, drafted, neither endorsed by National Government nor implemented; X = no information available/ have not started the process.

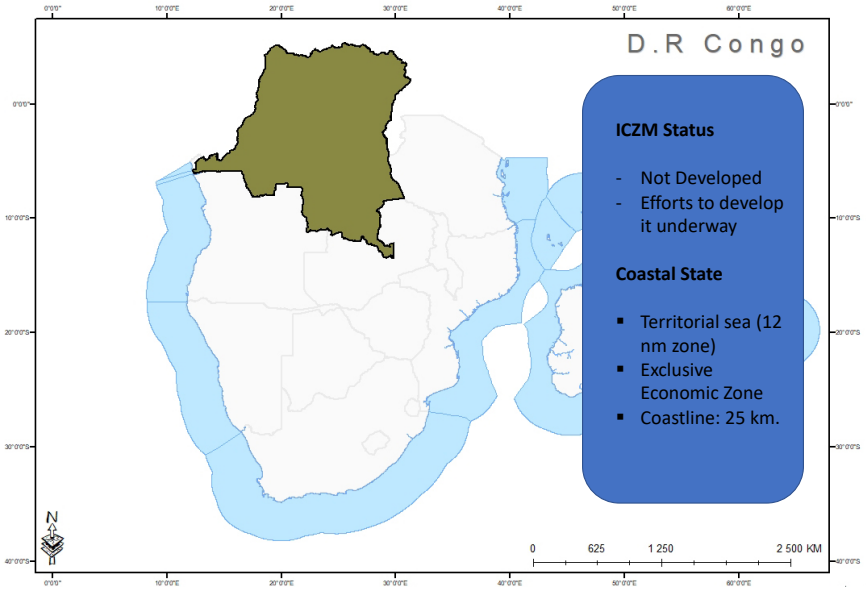


Figure 2. **The Status of Integrated Coastal Zone Management (ICZM) in the Democratic Republic of Congo (DRC).**

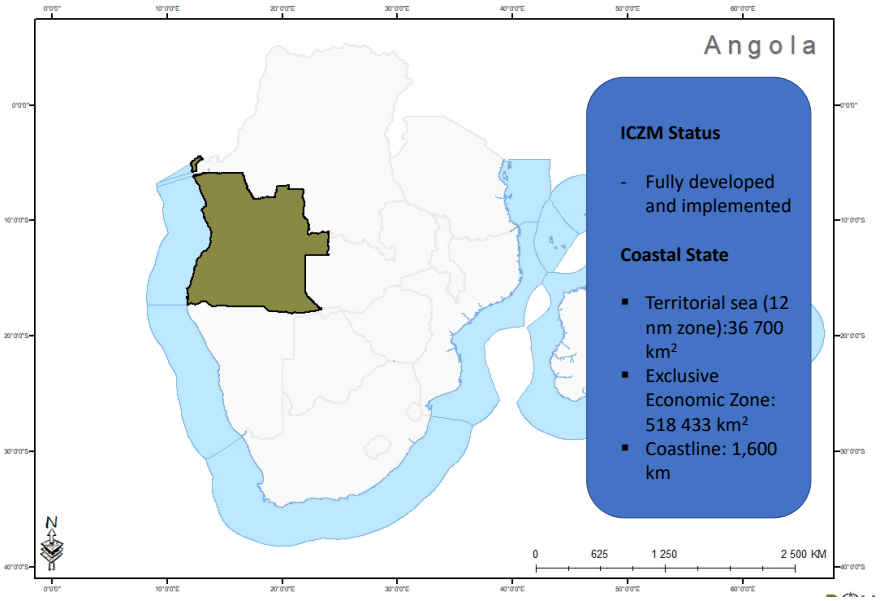


Figure 3. **The Status of Integrated Coastal Zone Management in Angola.**

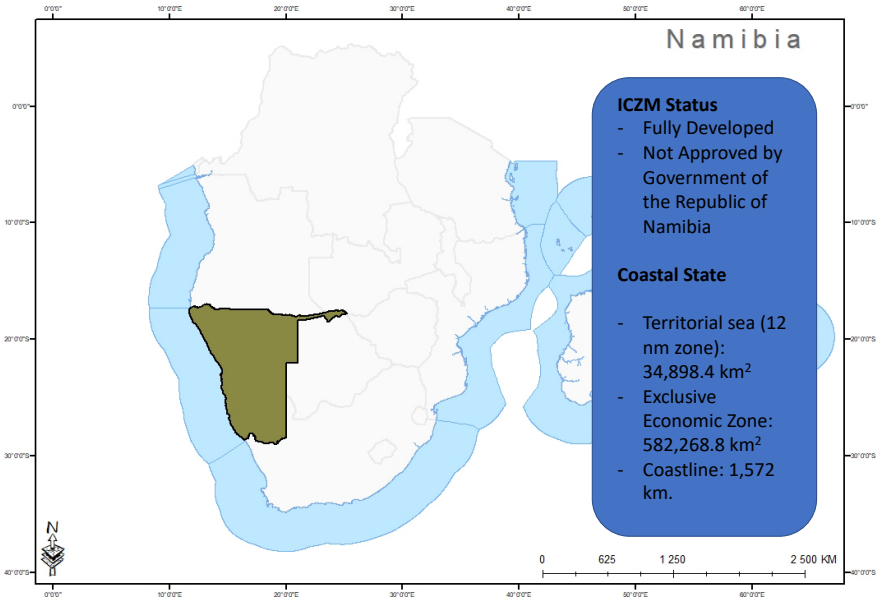


Figure 4. **The Status of ICZM in Namibia.**

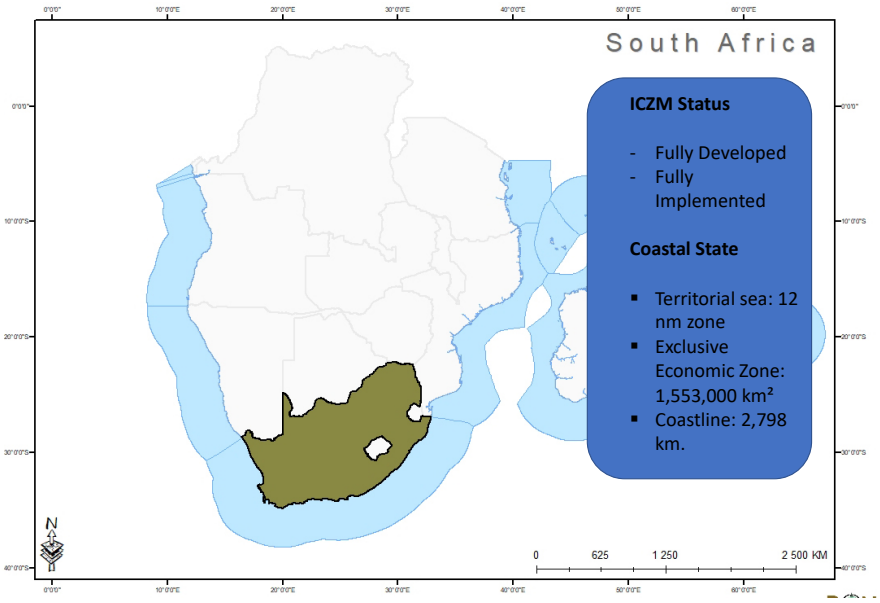


Figure 5. **Status of ICZM in South Africa.**

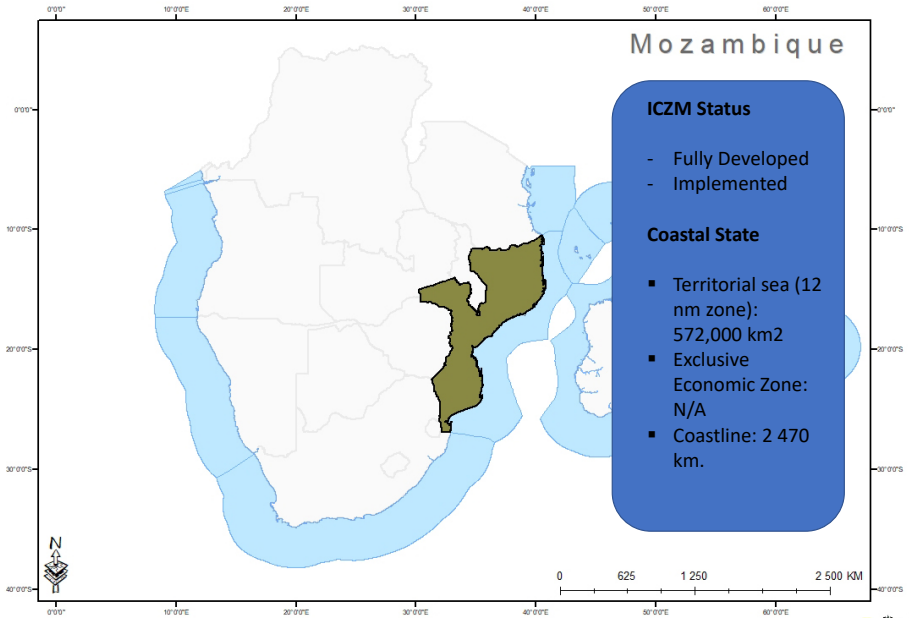


Figure 6. The Status of ICZM in Mozambique.

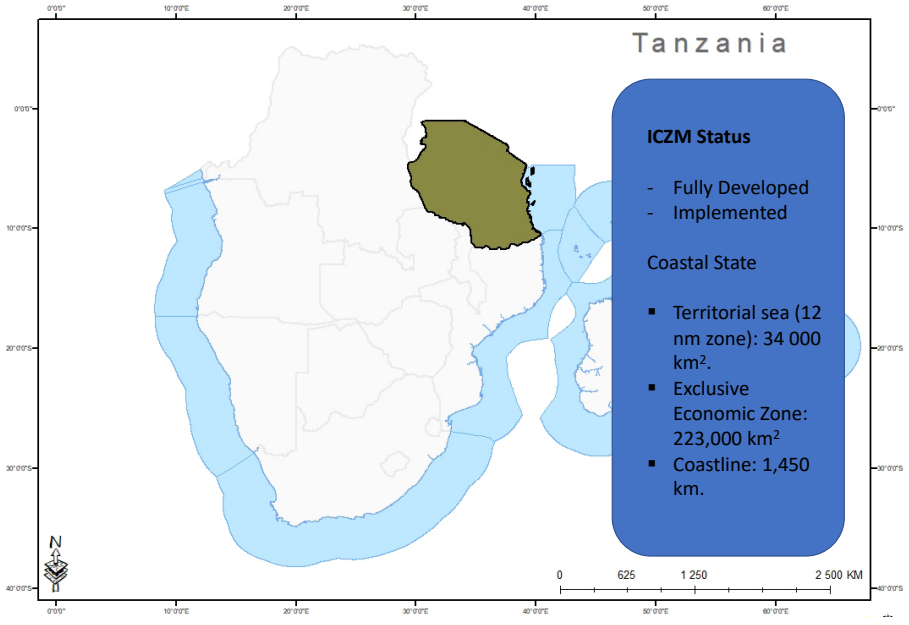


Figure 7. The Status of ICZM in Tanzania.

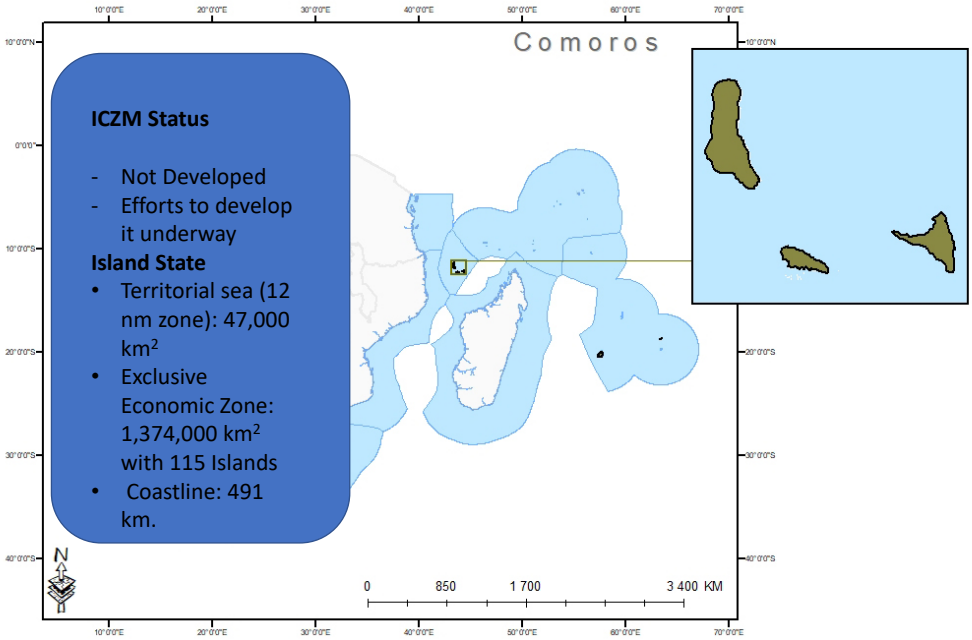


Figure 8. **The Status of ICZM in Comoros.**

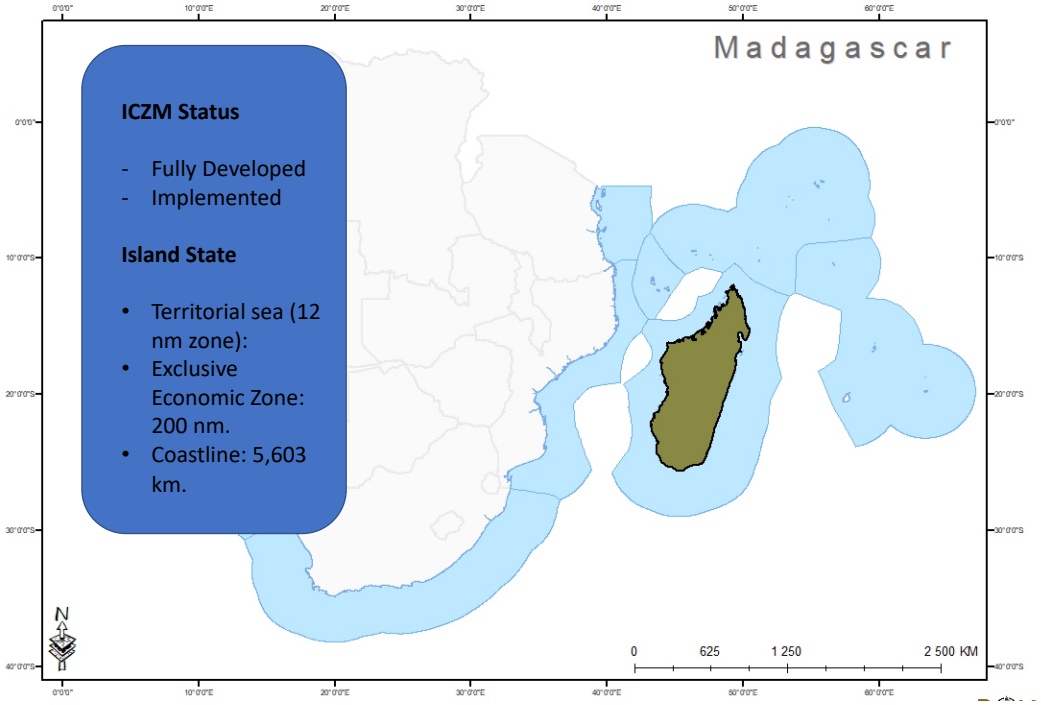
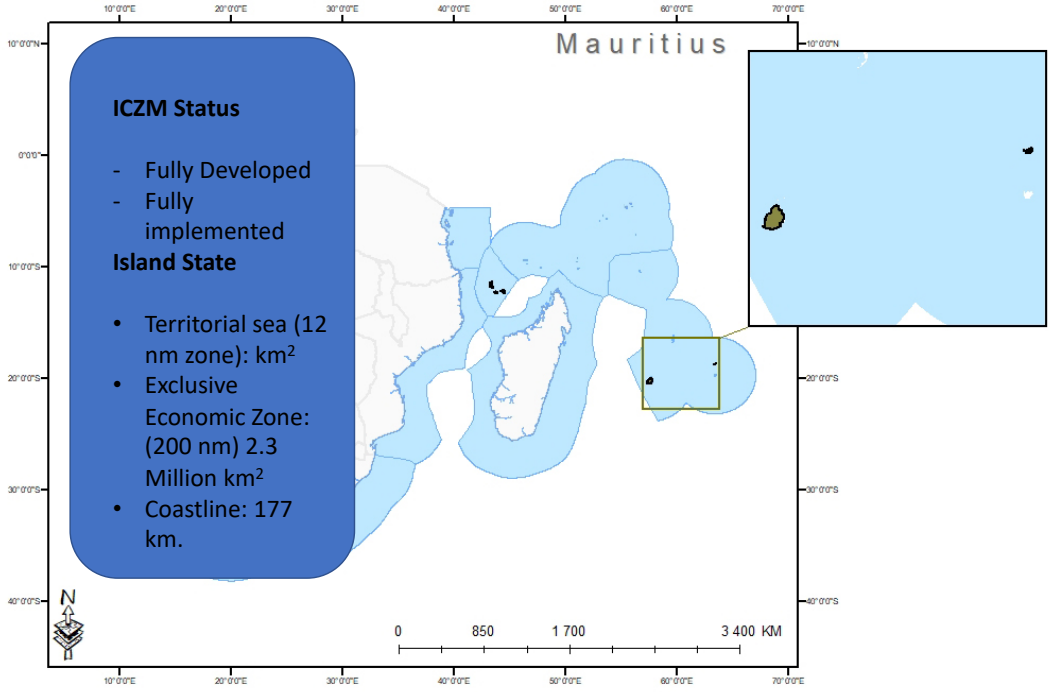


Figure 9. **The Status of ICZM in Madagascar.**



igure 10. The Status of ICZM in Mauritius.

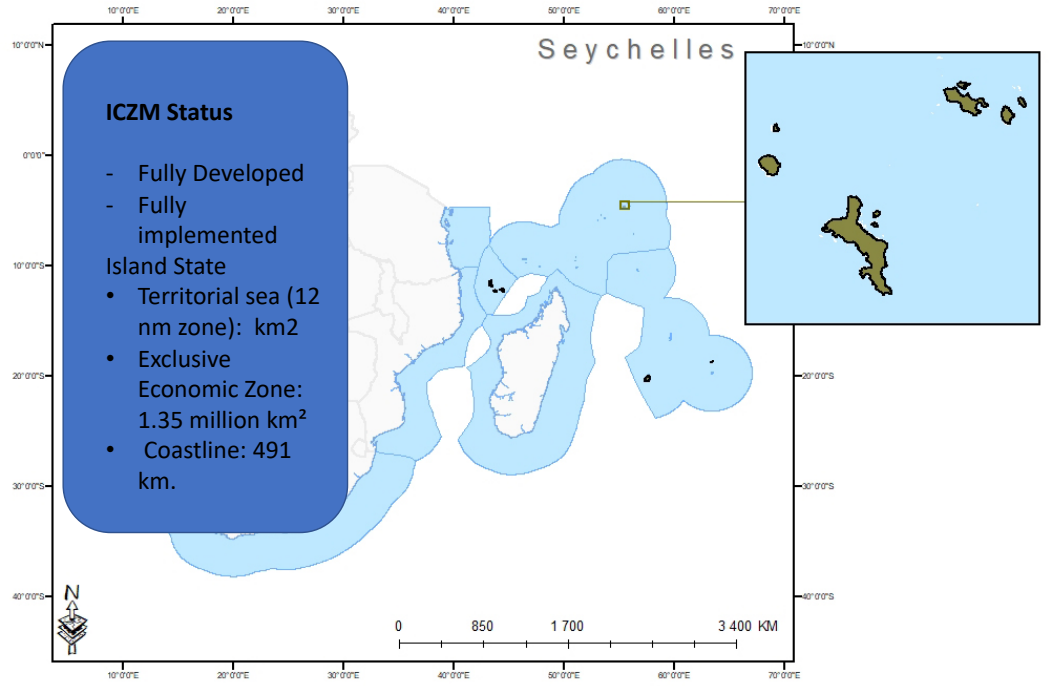


Figure 11. Showing the status of ICZM in Seychelles.

CHAPTER 3: A Conceptual Framework for Integrated Coastal Zone Management

3.1 Introduction

The issues of coastal zone management date back to the 1960s in the United States of America and Australia, and as far as 1972 the USA was already implementing laws driving coastal management, such as the United States Coastal Zone Management Act of 1972 (Manyefane 2014). Though this is an estimation of when issues of coastal zone management started, its not easy to set an actual starting time for when coastal zone management became formalized. However, many years before man started to focus on sustainable coastal zone management, prior to this, coastal management was mainly focusing on the capability and ability of man to conquer nature, particularly the oceans, seas, and rivers As awareness increased on the potential negative impacts of simply conquering the natural environment, the USA's coastal zone management act then prescribed the various policies to preserve, protect, develop, and where possible, to restore or enhance the resources of the coastal zone of the United State; to encourage the preparation of "special area management plans" to protect nationally significant natural resources, to ensure "reasonable coastal-dependent economic growth" and to provide "improved protection of life and property in hazardous areas and improved predictability in governmental decision-making"; among others Alhlhorn (2018).

For African countries, though information availability is scanty as other countries are still working on their ICZM legislation, its reported that in 1993, the environment and natural resource ministers from the region met in Arusha, Tanzania, where they considered and endorsed a resolution – The Arusha Resolution on Integrated Coastal Zone Management in Eastern Africa including the Island States - which addressed the coastal zone and recognized ICZM as an appropriate tool for the management of their coastal zones (Mohammed and Francis 2005). Various meetings which include the Earth Summit of 1992 in Rio de Janeiro have laid the foundation for the development of ICZM plans for some African countries and this is synthesized below.

3.2 Defining the Coastal Zone

Defining the coastal zone has been a centre of elevated debate on an international arena. How do we define Coastal Zone? In general terms, a coastal zone includes the area of land under marine influence and the area of the ocean or sea under land influence. A clear description is given by Alhlhorn (2018) as outlined below.

The coastal zone is the band of dry land and adjacent ocean space (water and submerged land) in which land ecology and use directly affect ocean space ecology, and vice versa. The coastal zone is a band of variable width which borders the continents, the inland seas, and the Great Lakes. Functionally, it is the broad interface between land and water where production, consumption, and exchange processes occur at high rates of intensity. Ecologically, it is an area of dynamic biogeochemical activity but with limited capacity for supporting various forms of human use. Geographically, the landward boundary of the coastal zone is

necessarily vague. The oceans may affect climate far inland from the sea. Ocean salt penetrates estuaries to various extents, depending largely upon geometry of the estuary and river flow, and the ocean tides may extend even farther upstream than the salt penetration. Pollutants added even to the freshwater part of a river ultimately reach the sea after passing through the estuary. The seaward boundary is easier to define scientifically, but it has been the cause of extensive political argument and disagreement. Coastal waters differ chemically from those of the open sea, even in areas where man's impact is minimal. Generally, the coastal water can be identified at least to the edge of the Continental Shelf (depth of about 200 m), but the influence or major rivers may extend many miles beyond this boundary.

The limits of the coastal zone are often arbitrarily defined, differing widely among nations, and are often based on jurisdictional ease. It has often been argued that the coastal zone should include the land area from the watershed to the sea, which theoretically would make sense as this is the zone where biophysical interactions are strongest. For planning purposes this definition is often quite impractical, however, as huge areas containing whole countries would fall under this definition.

A definition is hard to determine but the question is: Is it necessary to find or develop a commonly accepted definition for the term coastal zone to cover all characteristics and situations? In the Model Law on Sustainable Management of Coastal Zones (CEC, 2000) the definition of the term coastal zone is in Article 1 as follows:

> *"For the purpose of this law, coastal zone shall be taken to mean a geographical area covering both the maritime part and the terrestrial part of the shore, including salt-water ponds and wetlands in contact with the sea. The coastal zone shall be precisely delimited at national level. It may extend, according to specific local economic or ecological requirements."*

3.3 Coastal Zone Management

The three principal objectives of coastal management (Figure 12) are to: (1) Avoid development in areas that are vulnerable to inundation; (2) Ensure that critical natural systems continue to function; and (3) Protect human lives, essential properties, and economic activities against the ravages of the seas. Accordingly, such programs should consider ecological, cultural, historic, and aesthetic values, and to the needs for human safety and economic development.

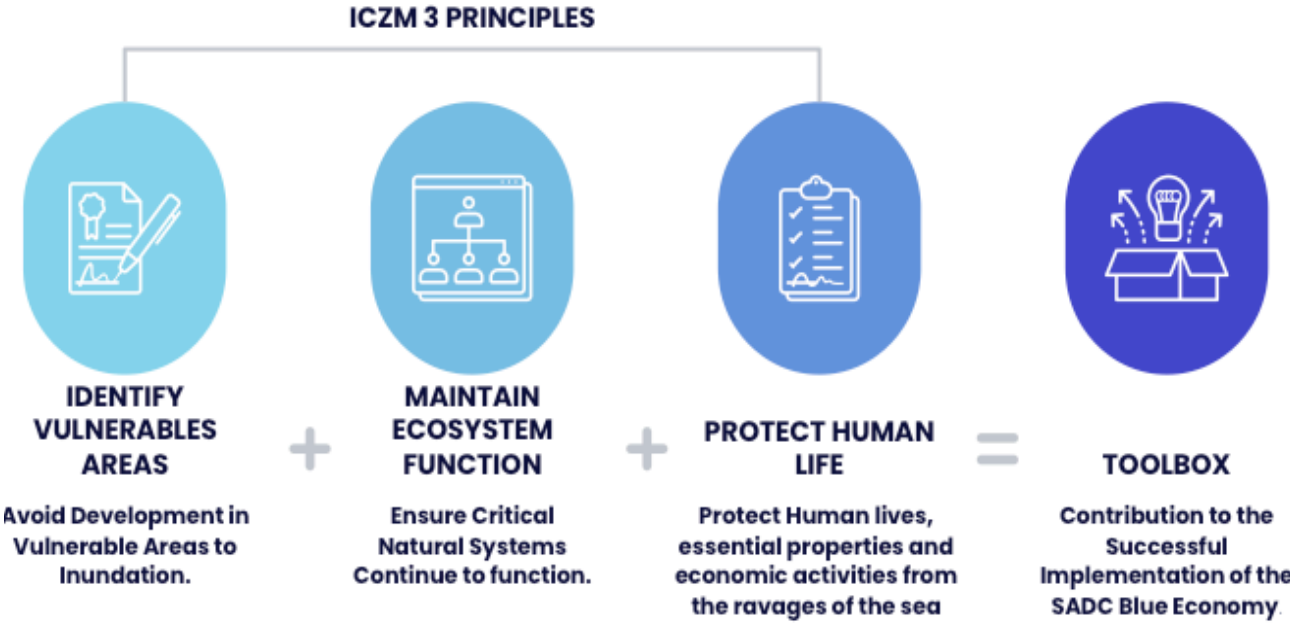


Figure 12. The three principles of Integrated Coastal Zone Management.

Coastal management programs usually include governmental controls and private-sector incentives. Vulnerable areas are managed to minimize loss of life and property through such means as setback lines, limits on population densities, minimum building elevations, and coastal hazard insurance requirements. Resilient natural protective features, such as beaches, sand dunes, mangroves, wetlands, and coral reefs, are conserved and enhanced, which also maintains biological diversity, aesthetic values, and recreation. Successful coastal management programs require public education to gain broad-based support, and public participation to ensure equal representation of interests.

3.4 Defining Integrated Coastal Zone Management

A review of the literature indicates that various definitions for ICZM have been proposed by various authors. For the purposes of this section, some of those that are in current use will be reviewed since there are similarities amongst them. CAMPNET (1991) reports that at an international workshop held in Charleston, USA in 1989 which involved 28 participants from 13 nations, the delegates unanimously agreed to define ICZM as:

> ***"a dynamic process in which a coordinated strategy is developed and implemented for the allocation of environmental, socio-cultural and institutional resources to achieve the conservation and sustainable use of the coastal zone."***

Another definition, which parallels the views expressed in the one above, has been given by the Priority Action Programme (PAP) of the Mediterranean Action Plan (Knecht & Archer, 1993) as:

> ***"a dynamic process of achieving goals and objectives for environmentally sustainable development, within the limits of physical, social and economic conditions and within the constraints of legal, social, financial and administrative systems and institutions."***

Being process oriented, ICZM does not have as its objective the preparation of an ultimate product-plan as an ideal state which is hoped to be achieved by a certain time in future. Rather it is an adaptive process of resource management, capable of responding to expected or unforeseen changes and events. This process includes analysis and forecasting, plan-making and evaluation, monitoring and feedback, all of which should be oriented towards achieving clearly defined goals and objectives through practical and effective means of implementation."

The PAP report (Knecht and Archer, 1993) further states that integrated planning is not a substitute for existing sectoral planning systems, but rather proposes linkages between sectoral planning activities to achieve more comprehensive goals.

The integrated planning process should be designed to achieve better co-ordination and compatibility between planning activities and to encourage public participation. Knecht et. al. (1992) describes integrated coastal management (ICM) as:

> ***"a dynamic process by which decisions are taken for the use, development and protection of coastal areas and resources to achieve goals established in cooperation with user groups and national, regional and local authorities. ICZM recognises the distinctive character of the coastal zone, itself a valuable resource for current and future generations. ICZM is multiple purpose oriented, it analyses implications of development, conflicting uses, and interrelationships between physical processes and human activities, and it promotes linkages and harmonisation between sectoral coastal and ocean activities."***

While different authors emphasise somewhat different aspects of ICZM, partly as a result of diverse disciplinary backgrounds and partly as a reflection of the authors' varying experiences, there appears to be a clear consensus amongst the above definitions that ICZM represents a continuous and dynamic decision-making process by which decisions are taken for the long-term sustainable use, development and protection of coastal areas and resources.

The Organisation for Economic Co-operation and Development (OECD) report (1993) described ICZM at a broader scale. ICZM is management of the coastal zone as a whole in relation to local, regional, national and international goals; it implies a particular focus on the interactions between the various activities and resource demands that occur within the coastal zone and between coastal

zone activities and activities in other regions. The report further states that in practical terms this might mean the integration of environmental protection goals into economic and technical decision-making processes, the management of impacts of various activities in the coastal zone, the coordination of different policies within different parts of a particular coastal zone, or all of these and more simultaneously (OECD, 1993). The OECD concept broadens the scope of ICZM in that it involves integration of a number of scales, values, interests and goals.

The concept of Integrated Coastal Zone Management was constructed at the Earth Summit of 1992 in Rio de Janeiro and the core elements where set out in the proceedings of the summit Chapter 17 of Agenda 21. Chapter 17 specifically deals with the Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources (Doody, 2001). In Agenda 21 signatories to the Convention on Biological Diversity committed their governments to action for the sustainable development of coastal areas and the marine environment. The growth in coastal populations, including the fact that many of the World's poorest people are concentrated on or near the coast and the recognition that its resources and environment are being 'rapidly degraded', were identified as the basis for action. There have been efforts from an international level to improve coastal zone management and guidelines for further advancement have been developed by the Organisation for Economic Co-operation and Development, the World Bank, the World Conservation Union and the United Nations Environment Programme. (FAO, 1998). The African continent has also joined forces with the rest of the world and focused its efforts in co-operation towards a co-ordinated effort to manage the coastal zones of the coastal states by participating through two United Nations Environmental Programme conventions, which are the Abidjan Convention for the Co-operation in the Protection and Development of the Marine and Coastal Environment in the West and Central African Region and the Nairobi Convention on the Protection, Management and Development of the Marine and Coastal Environment in the East Africa Region.

3.5 Evolution of Integrated Coastal Zone Management: From concept to practice

The Abidjan Convention

The Convention encourages its member states to exercise full measure in preventing, combating, reducing and controlling pollution as a means of ensuring sound coastal zone management of natural resources in the Convention area. All member states are then called upon to work together with relevant international, regional and sub-regional organizations with the purpose of collaborating towards establishing and adopting recommended practices, measures and procedures set up to combat pollution. The pollution spoken hereof is from normal or accidental discharge from ships; discharge from rivers, estuaries, coastal establishments; dumping from ships and aircrafts; pollution from activities relating to the exploration and exploitation of the sea-bed and from coastal erosion caused by human intervention as in land reclamation and coastal engineering. The member states (Angola, Benin, Cameroon, Cape Verde, Congo (Democratic Republic of), Congo (Republic of), Côte d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mauritania, Namibia, Nigeria, Sao Tome e Principe, Senegal, Sierra Leone, South Africa and Togo) to the Convention have a further responsibility of ensuring that their respective Marine Protected

Areas are taken care of in terms of their fragile and sensitive ecosystems and endangered species found therein.

According to the Convention there should be constant collaboration on matters pertaining to scientific research and assessment of pollution in the Convention area. South Africa, together with Angola and Namibia, forms part of the Benguela Large Marine Ecosystem which is in agreement in the establishment of an integrated, multi-sectoral approach in the management of its Large Marine Ecosystem (LME). All member states have incorporated their respective national environmental policies and legislation in strengthening the Convention. There has been an inclusion and incorporating of the relevant provisions of the United Nations Convention on the Law of the Sea, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and other relevant international conventions.

The Nairobi Convention

The Nairobi Convention was established in 1985 as an answer to the protection of the uniqueness and the necessity for action to the threatened East Africa Region. The main objective of the Convention is to provide a regional legal framework that seeks to coordinate the efforts of its member states towards planning and development of relevant programmes that strengthen their capacity to manage, develop and protect the marine and coastal environment in a sustainable manner. The Convention was also formulated for the purpose of inter-governmental deliberations that are based on firm and better approaches in solving regional environmental problems and strategies needed to address them. The Republic of South Africa, once more, together with Mauritius, the Seychelles, Kenya and Tanzania are core member states to the Convention.

The Convention therefore becomes a cornerstone in discussions relating to tourism as an important industry to all member states and currently threat to the marine environment because of an interest in the exploration and exploitation of oil and gas reserves in the Region which has a potential devastating effect on critical and sensitive habitats such as coral reefs, mangroves, beaches and sea grass meadows. There are coastal urban hotspots in these countries, and they too are faced with challenging ecological problems of poor planning and unregulated land use projects made worse by poor regulatory frameworks of the respective member states. Integrated coastal zone management (ICZM) promotes the use of defensible scientific information in conjunction with principles of cooperative governance in order to achieve sustainable coastal development. ICZM is seldom achievable in the presence of 'command-and-control' or 'top-down' prescriptive government. Successful ICZM is often characterised by extensive public consultation and democratic decision- making, a concept that is also entrenched in the Constitution of some of the SADC coastal and Island States (e.g. South Africa and a theme which also runs throughout the ICM Act (Celliers, Moore, & Malan, A User- friendly Guide to the Integrated Coastal Management Act of South Africa, 2009).

Taking South Africa as an example, Coastal management in South Africa has experienced a number of paradigms shifts or different phases since the 1970s, each with different policy approaches and management practices. This "evolution" of ICZM has culminated in a legal tool or Act of Parliament that recognises the ecological, social and economic interactions within the ocean and land interface. Moreover, coastal management efforts in South Africa

have undergone a dramatic transformation in recent decades: from a bureaucratic and biophysical focus towards an approach rooted in participation, empowerment and the promotion of sustainable coastal livelihoods. (Glavovic & Boonzaier, 2007).

Ocean Decade Africa Roadmap

The mother continent, Africa, has shown it commitment to the UN Decade of the Ocean (UNESCO-IOC (2022) by developing Africa's agenda towards the attainment of the Sustainable Development Goals (SDGs), Agenda 2030. All the African Coastal and Island States are racing towards achieving the SDGs. In so far as, the people of Africa would want to maximise the benefits emanating from the sustainable use of the ocean and ocean resources. The African Blue Economy Strategy stands tall, with the promise to enhance social and economic benefits from oceans, while at the same time, strive to maintain the healthy oceans. "The Ocean Decade Africa Roadmap provides a vision and plan for diverse stakeholders to convene around a common set of priorities for the implementation of the Ocean Decade in Africa. It provides a coordinated framework for ocean science planning and uptake and is a foundation to monitor the achievement of priorities and outcomes. In the long term, the Roadmap will be used to establish and clarify institutions' ocean science strategies and to help in the prioritization of investments in scientific infrastructure, such as observations, monitoring, and data management. A set of nine priority future Decade Actions lie at the heart of the Ocean Decade Africa Roadmap. With the support and engagement of diverse actors from the region, it is envisaged that these are developed into Decade programmes and projects through a process of co-design and co-delivery in coming years" (UNESCO-IOC, 2022).

ICZM in SADC Coastal and Island States

Most of the SADC Coastal and Island states have at initiated the process of ICZM and implementation stage (Figure 13) is where most countries are at the level of implementation of ICZM. However, there is no reliable registry of the full operational ICZM programs in the SADC member states. There is a high need to survey the SADC coastal and Island States and gauge the level of commitment to rolling out ICZM. In the advent of the Blue Economy initiatives by SADC Coastal and Island States, it is imperative to have ICZM operational already and will serve as a good tool towards the successful implementation of the SADC Blue Economy Strategy.

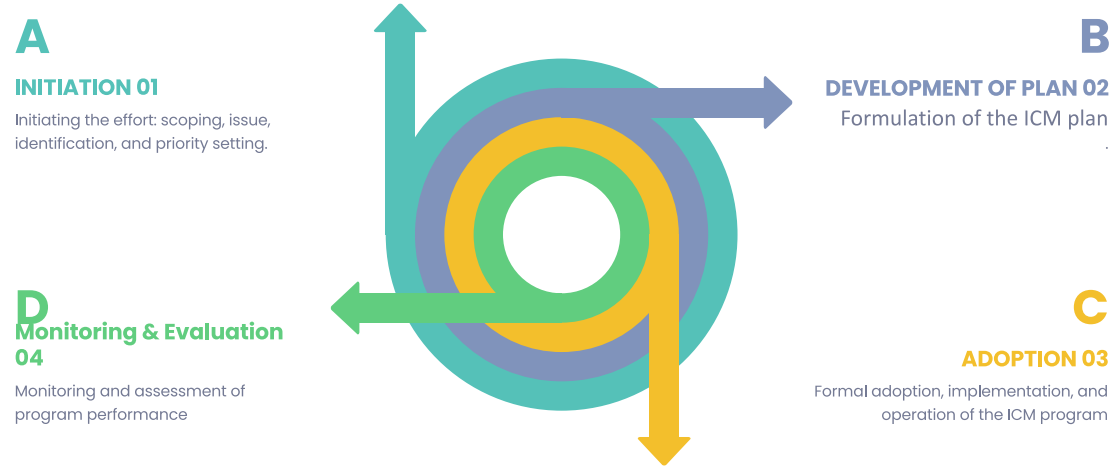


Figure 13. The Broad Scale ICZM Process from Initiation to monitoring and evaluation (drawn by the Author).

Some countries have existing policies while others are formulating the policies on ICZM. In addition to ICZM, the Marine Spatial Planning and Maritime Domain Awareness (MDA) are reliable tools to aid in the implementation and operation of the Blue Economy.

3.6 Objectives and Goals of ICZM

Integrated coastal zone management (ICZM) is uniquely effective at solving environmental conservation problems involving land-water interaction and at resolving a wide variety of resource use conflicts, as shown in the example components. In summary, the ICZM has the following objectives (Figure 14).

Figure 14. **A list of ICZM objectives**

3.6.1 Resource depletion

Coastal areas are known to provide renewable resources, although the resources uses could be limited. The demand and supply curve for a given resource can be negatively skewed towards the demand. Sustainable use management, achieved by conservation practices, ensures that renewable resources are not jeopardized but remain available to present and future generations. ICZM provides a format for sustainability.

3.6.2 Pollution

Coastal areas are prone to pollution from land-based and anthropogenic sources. This has a potential for degrading the quality of the ocean environment which can lead to fish and shellfish mortality, decline in carrying capacity, affects tourism. With the advent of the Blue Economy in SADC Member states, it is imperative to prevent and monitor pollution.

3.6.3 Biodiversity

The life under water, is very important thus, ICZM should aim to protect biodiversity and their habitats. One of the unfortunate consequences of population growth and economic development has been the extermination of species that have medical, educational, historical, recreational, and scientific value. Species protection is needed for reasons of both ethics and economic self-interest. Effective programs will include regulatory as well as custodial ('protected areas') components. Threats to biodiversity and to the unique resource systems of the coastal zone arise from economic development activities and their side effects, including reef and beach mining, shoreline filling, and marine construction, lagoon pollution, sedimentation, and construction activities. Because much of species' loss is due to habitat loss, it is important to conserve habitats which support known endangered species.

3.6.4 Natural hazards

ICZM integrates hazards protection into development standards and planning guidelines, emphasizing the preservation of landforms that take the brunt of storms and protect lives and property. Coastal communities become more susceptible to such natural hazards as floods, cyclones, land subsidence, and tsunamis when projects are located in dangerously low-lying areas. Or when land-clearing and construction remove protective landforms by demolishing coral reefs, bulldozing sand dunes, or destroying mangrove swamps and thereby diminishing the degree of natural storm protection coastal features afford.

3.6.5 Sea level rise

Along much of the world's shoreline, sea level is rising at a significant rate under the influence of global warming e.g., more than 30 centimetres vertical rise in the past 100 years in some coastal areas caused by release of carbon dioxide (and other gasses) into the atmosphere and then melting of glaciers, heating (and expansion) of the ocean water mass, and meltdown and disintegration of the Antarctic ice cap. Sea level rise is associated with serious shoreline recession and flooding along thousands of kilometres of shoreline. Low lying communities have to choose whether to retreat (e.g., move structures back) or entrench (e.g., build dikes).

3.6.6 Eroding shorelines

ICZM advocates non-structural approaches such as designated setback lines (for structures). Eroding shorelines are a problem to people who build and live at the water's edge or very close to the edge. Erosion can be countered best by keeping structures back a safe distance from the shoreline. Thus erosion management first off becomes a land use matter. Corrective measures consider the present rising level of the sea which is forcing the sea into the land and makes erosion events more serious.

3.6.7 Land use

Land can strongly affect the sea. Impacts on coastal ecosystems include industrial and agricultural pollution; filling to provide sites for industry, housing, recreation, airports, and farmland; dredging to create, deepen, and expand harbours; the excessive harvesting of mangroves, etc. The impacts reduce biological diversity, natural resources abundance (food and fiber), quality of life, community security (from sea storms), and tourism revenues. ICZM anticipates such effects and offers solutions, particularly to careless development and the unnecessary sources of damage that result.

3.6.8 Hinterlands

An important role of ICZM is to create strategies for reducing negative land use impacts to coastal resources that occur when the hinterlands (shorelands or inland terrain) are cleared of vegetation or altered to accelerate drainage; when surface water bodies and watercourses are filled, detoured, or channelized; or when the natural flow pattern is significantly disrupted so that freshwater flow to the coast occurs in unnatural pulses. An institutional method to coordinate land and water management exists within an ICZM program)

3.6.9 Landscape

ICZM helps to preserve especially productive or scenic natural resources, e.g. as national scenic areas or national parks. The coastal landscape is special and may need special attention to protect its scenic quality and to guarantee people's access to waters, beaches, hillsides, and forest resources. Preservation of landscape values can be addressed efficiently by an ICZM program through land use management in the 'dryside' of the coast.

3.6.10 Resource conflicts

Because the water's edge is a place where competition and conflict among resource users is great, governments are often reluctant to take action. Here ICZM can help because it is designed to address conflicts. A major benefit of the ICZM (integrated, multiple use) approach over the traditional sectoral (single use) approach is that it provides a framework for resolution of arguments over who gets to exploit the coastal resources and how and when. ICZM provlat form for formal conflict resolution methodologies.

3.7 Policy in Integrated Coastal Zone Management

Various countries have made different progress on developing policies on coastal zone management and these are summarized in the Table 2 below.

Country	Policy linked to ICZM	Comments	Reference
Namibia	The National Policy on Coastal Management for Namibia of 2012	Though a policy was developed on coastal zone management this only reached the final stages on drafting the ICZM bill. Some of the delays include: Slow process of enabling legislation, at the beginning for essential institutional and process focus of the project, Short term interests from local authorities, Short political cycles that caused changes in ministers	Van Wyk (2021); MET (2012)
South Africa	Integrated Coastal Management Act (Act 24 of 2008)	After the adoption of the Constitution of the Republic of South Africa, (No. 108 of 1996; south Africa has had several Acts linked to the culmination of the Integrated Coastal Management Act 24 of 2008; which includes among others, the Biodiversity Act (Act no. 10 of 2004) and the Marine Living Resources Act (Act No. 18 of 1998).	Goble et al (2014)
Seychelles	Environmental Protection Act, No 18 of 2016 (EPA).	The main instrument for environmental protection in Seychelles; it addresses protection of the coastal zone, with only passing reference to its vulnerability to the impact of climate change. The Environmental Protection Act covers the following Agriculture and Animal Husbandry • Coastal Zone Management • Construction • Fisheries and Aquaculture • Forestry and Public Gardens • Industry and Power • Information and Education • Oil Resources Management • Quarries • Solid and Liquid Waste Management • Tourism • Transport.	World Bank and Ministry of Environment, Energy and Climate Change of Seychelles. (2019)
Mozam-bique	Mozambique has specific legislation that addresses the use of resources in the coastal and marine waters. These includes the Law of the Sea of Mozambique (Law No. 4 / 96, 4 January), and the Environmental Law (Law No. 20/97 of 7 October 1997)	This Environmental Law Act establishes protective requirements to be satisfied in order to exploit the environmental sector and impact assessment conditions in order to avoid environmental disasters in Mozambique. The act discusses the general principles of environmental management, which should be based on rational use and management, enhancement of local knowledge, awareness, integrated vision of the environment, participation and access, accountability and international cooperation.	ASCLME (2012)

Country	Policy linked to ICZM	Comments	Reference
Tanzania	Environmental Management Act (2004); Environmental Management for Sustainable Development Act (1996); National Integrated Coastal Environment Management Strategy (2003)	Under the Constitution of the United Republic of Tanzania (1977) the management of issues related to the environment, natural resources (including fisheries) and tourism are considered non-union and are dealt with separately by the two regional governments. Therefore, the Environmental Management Act (2004); Environmental Management for Sustainable Development Act (1996) are for mainland Tanzania whilst the National Integrated Coastal Environment Management Strategy (2003) is for Zanzibar.	
Comoros	Environmental Policy Framework of the Union of the Comoros	The National Environmental Policy of the Union of the Comoros was prepared and adopted in 1993 by Decree No. 93-214/PR. The country's 2001 Constitution, in its Preamble, proclaims "the right to a healthy environment and the duty of all to safeguard that environment". Adopted in 1994, its Environmental Code declares that environmental protection is in "the public interest" and recalls the right to a healthy environment and the obligation to safeguard it. Article 18 of the Environmental Code also stipulates that the State must ensure the protection of the soil and subsoil, water resources and the marine environment, the atmosphere and biological diversity.	https://www.Nairobiconvention.org/comoros-country-profile/comoros-marine-and-coastal-resources-governance/

Table 2. List of ICZM Policies for some SADC States.

3.8 Lessons from the SADC Region through Case Studies

Some SADC Member States have made considerable strides towards the development, and implementation of their ICZM Plans. Here we take a brief glance at South Africa and Seychelles.

3.8.1 Case studies

Coastal State (South Africa)

The implementation of ICZM in South Africa began in the early 1990s, following the country's transition to democracy. The Department of Environmental Affairs and Tourism (DEAT) was established in 1994 to oversee environmental policy and management, including coastal management. The DEAT developed a national coastal policy in 2000, which aimed to ensure the sustainable use and management of South Africa's coastal resources.

The policy was based on the principles of ICZM, which involves the integration of environmental, economic, social, and institutional considerations in decision-making. It also emphasized the importance of stakeholder engagement and collaboration, recognizing that effective coastal management requires the involvement of a range of stakeholders, including government agencies, communities, and businesses. One of the key components of the policy was the establishment of Coastal Management Programs (CMPs) at the provincial level. These programs were responsible for the development and implementation of integrated coastal management plans, which aimed to address the specific needs and challenges of each province's coastline.

The CMPs were also responsible for coordinating the activities of various government agencies involved in coastal management, including those responsible for environmental protection, fisheries management, and tourism. This coordination was crucial in ensuring that management activities were integrated and aligned with the principles of ICZM.

The implementation of ICZM in South Africa has had a number of positive impacts on coastal management. One of the most significant has been the development of a comprehensive system of Marine Protected Areas (MPAs), which protect important coastal ecosystems and support sustainable fisheries. South Africa has also developed a strong coastal tourism industry, which contributes significantly to the country's economy.

However, there have also been some challenges in implementing ICZM in South Africa. One of the main challenges has been the lack of funding and resources for coastal management activities, which has limited the effectiveness of some CMPs. There has also been resistance from some stakeholders, particularly those involved in the extractive industries, who view coastal management as a threat to their economic interests.

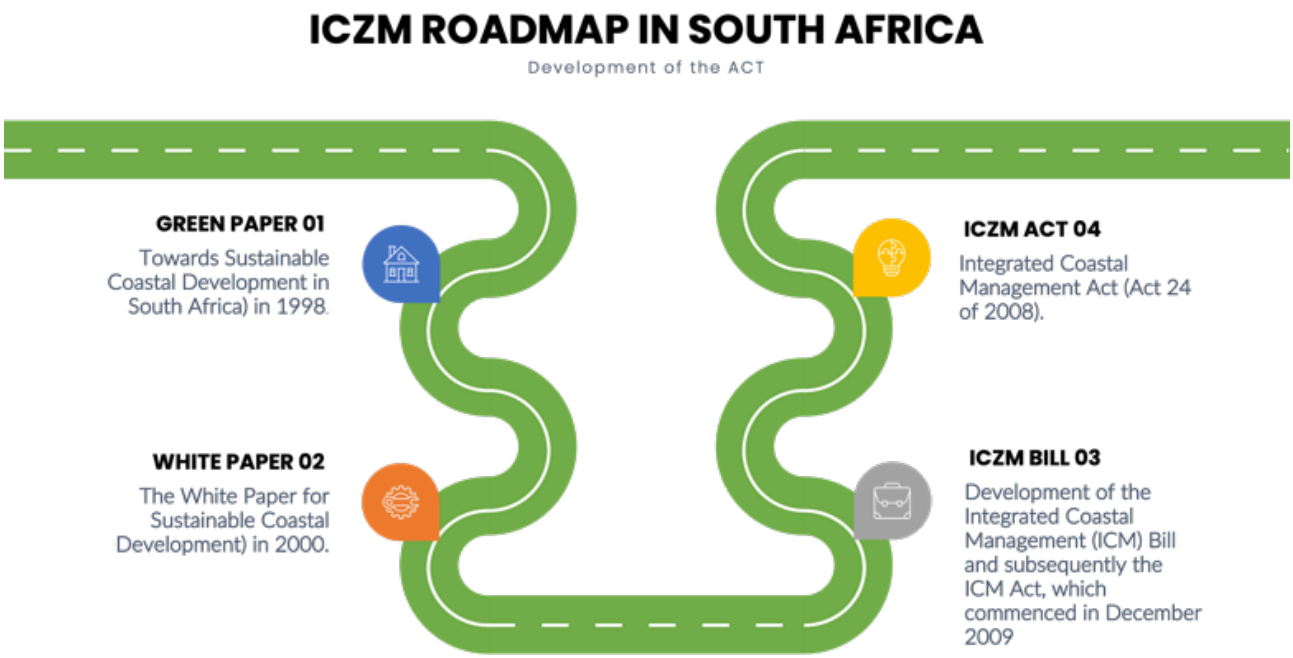


Figure 15. The roadmap for the development of South Africa's ICM Act.

The development of the ICM Act went through a number of phases, starting with a Green Paper (Towards Sustainable Coastal Development in South Africa) in 1998 (Figure 15), which identified the need for a coastal policy and laid the foundation for the development of a White Paper (The White Paper for Sustainable Coastal Development) in 2000. The White Paper saw a paradigm shift in how the coastal zone was defined and managed, moving from a 'conservation discourse' to a 'sustainable development' discourse (Glavovic, 2006), with the coastal zone being defined as a zone extending as far seaward and landward as necessary for effective management.

The White Paper recognized that the coast needed to be managed as a system and not by the sectors of users who benefit from the opportunities it provides (DEAT, 1999). Following on from the White Paper was the development of the Integrated Coastal Management (ICM) Bill and subsequently the ICM Act, which commenced in December 2009. The ICM Act promotes a more holistic or ecosystem based approach whereby the coast is managed as a unit, encompassing all elements that have historically been fragmented and addressed by the various statues (Table 2). This principal of the Act aligns with international Ecosystem-Based Management (EBM), with management considering ecological systems and promoting inter-sectorial coordination without focussing on single issues, species, or ecosystem functions in isolation (UNEP, 2011).

Despite the challenges, the implementation of ICZM in South Africa has been largely successful, and the country's coastal management policies and practices are seen as a model for other countries to follow. The approach has been instrumental in ensuring the sustainable use and management of South Africa's coastal resources, and has helped to balance economic development with environmental protection and social equity.

Island State (Seychelles)

Seychelles is an archipelago of 115 islands in the western Indian Ocean, covering a land area of approximately 455 square kilometers. It is home to a diverse range of marine and terrestrial ecosystems, including coral reefs, mangroves, seagrass beds, and various species of plants and animals. In order to manage the complex and interconnected coastal and marine resources of Seychelles, the government has implemented an Integrated Coastal Zone Management (ICZM) framework. ICZM is a process that involves the coordinated management of land, water, and living resources in coastal areas. It aims to balance the economic, social, and environmental objectives of coastal development and management.

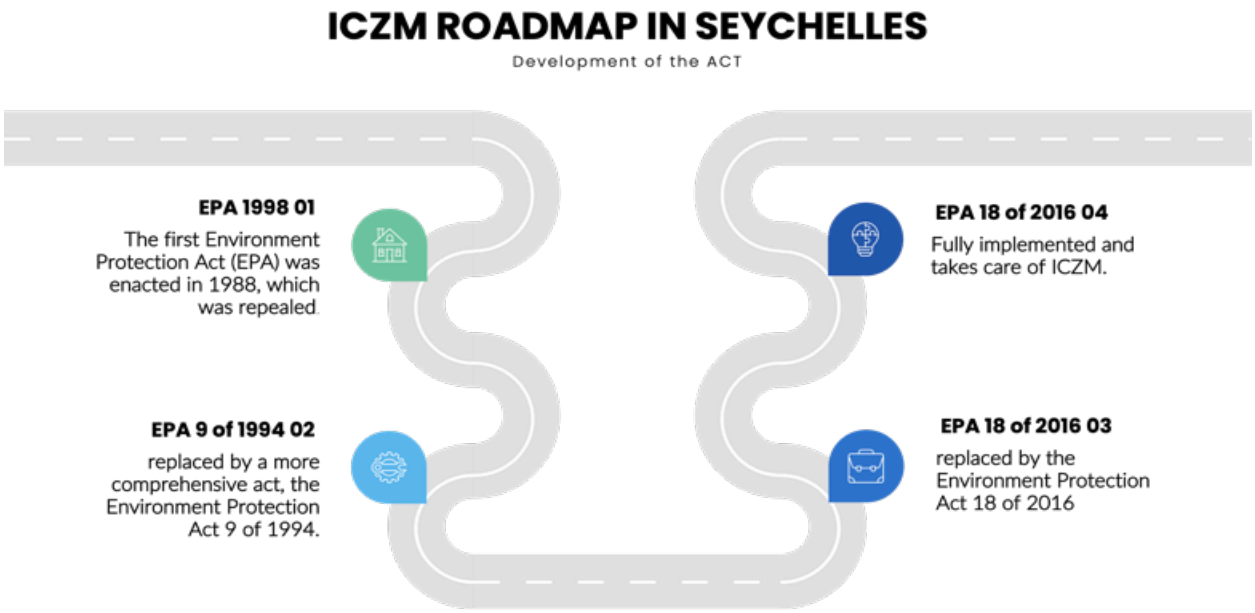


Figure 16. The ICZM roadmap in Seychelles.

Seychelles' ICZM framework was first developed in 1998 and has been updated periodically. The current version was approved in 2018 and is called the Seychelles Integrated Coastal Management Policy and Strategy. The policy outlines the guiding principles, goals, and objectives of the ICZM framework, while the strategy provides detailed guidance on its implementation. The first Environment Protection Act (EPA) was enacted in 1988 (Figure 16), however this was repealed and replaced by a more comprehensive act, the Environment Protection Act 9 of 1994, which has since been repealed and replaced by the Environment Protection Act 18 of 2016. The aim of the EPA is stated as being:

> ***"to provide for the protection, improvement and preservation of the environment, to set objectives and guiding principles aimed at protecting the environment and human health for the promotion of environmental principles so as to facilitate the implementation of international commitments including the prevention, control and abatement of environmental pollution in the Seychelles."***

The ICZM framework in Seychelles involves a collaborative approach among government agencies, non-governmental organizations, the private sector, and local communities. It emphasizes the participation and engagement of stakeholders in decision-making processes to ensure that their needs and interests are represented.

Key Lessons:

One of the key components of Seychelles' ICZM framework is the establishment of Marine Protected Areas (MPAs) and other protected areas. These areas are designated to conserve biodiversity and ecosystem services, while also providing economic and social benefits to local communities.

Another important component is the development of coastal and marine spatial plans. These plans aim to balance the competing demands for coastal and marine resources and guide development activities in a sustainable and coordinated manner. The plans are developed through a participatory process that involves stakeholders at all levels.

The Seychelles' ICZM framework has been successful in promoting sustainable development and conservation of coastal and marine resources. It has also helped to strengthen the resilience of coastal communities to the impacts of climate change and other environmental stressors. However, challenges remain, including the need to improve coordination among stakeholders and to address governance and institutional issues.

Name	Year adopted	Main contents
Environment Protection Act	1992, rev. 2016	The main instrument for environmental protection in Seychelles; it addresses protection of the coastal zone, with only passing reference to its vulnerability to the impact of climate change
Town and Country Planning Act	1972, updated June 2012	Under revision the 25-m setback from the high tide water mark currently being applied by the MEECC will be incorporated into the new version
Removal of Sand and Gravel Act	1991	Provides abstraction licenses for permission to abstract sand and gravel
	2017	Blue Economy Roadmap An integrated approach to ocean-based sustainable development that brings together economy, environment, and society, consistent with the Sustainable Development Agenda 2030, Aichi Target 11 of the CBD, and the Paris Agreement on Climate Change
Sustainable Development Strategy 2012–20	2011	An approved national instrument that incorporates national priorities for sustainable development and lays out a roadmap for the implementation of those priorities
Wetland Policy	2005, rev. 2017	Protect and conserve wetlands in order to benefit from their functions and values, it is under review and has yet to be specifically integrated into any laws or regulations

Table 3. Overview of Legislation, Policies, and Strategic Documents that Affect Coastal Management Practices in- Seychelles.

Furthermore, Integrated Coastal Zone Management (ICZM) is an approach that aims to balance economic development, social well-being, and environmental protection in coastal areas. Below are some of the case studies that illustrate different aspects of ICZM in different locations around the globe:

a. Wadden Sea National Park, Germany: The Wadden Sea National Park is a UNESCO World Heritage site located on the coast of Germany, Denmark, and the Netherlands. The park covers an area of 11,000 square kilometers and is home to a variety of habitats and species. The management of the park is based on the principles of ICZM, which aim to balance the conservation of natural resources with the needs of local communities and industries. The park has a comprehensive management plan that includes measures to protect the natural environment, promote sustainable tourism, and support local communities.

b. Great Barrier Reef Marine Park, Australia: The Great Barrier Reef is one of the world's largest and most biodiverse coral reef systems, located off the coast of Australia. The Great Barrier Reef Marine Park was established in 1975 to protect the reef and its surrounding ecosystems. The management of the park is based on the principles of ICZM, which aim to balance the conservation of natural resources with the needs of local communities and industries. The park has a comprehensive management plan that includes measures to protect the natural environment, promote sustainable tourism, and support local communities.

c. Coastal Zone Management Authority and Institute, Belize: The Coastal Zone Management Authority and Institute (CZMAI) is a government agency in Belize that is responsible for the management of the country's coastal resources. The agency was established in 1998 and is based on the principles of ICZM. The CZMAI's main objectives are to protect the natural environment, promote sustainable development, and support local communities. The agency has a comprehensive management plan that includes measures to protect coral reefs, mangrove forests, and other important habitats, as well as to promote sustainable tourism and fisheries.

d. Sylt Island, Germany: Sylt is a small island located off the coast of Germany in the North Sea. The island is a popular tourist destination and is home to a variety of habitats and species. The management of the island is based on the principles of ICZM, which aim to balance the conservation of natural resources with the needs of local communities and industries. The island has a comprehensive management plan that includes measures to protect the natural environment, promote sustainable tourism, and support local communities. The management plan has been successful in balancing the needs of different stakeholders and ensuring the long-term sustainability of the island.

These case studies illustrate the different approaches to ICZM and the importance of balancing economic development, social well-being, and environmental protection in coastal areas. Effective ICZM requires collaboration between different stakeholders, including government agencies, local communities, and industries.

CHAPTER 4: Organisational Framework for Implementing ICZM as a tool in the SADC Blue Economy

4.1 Introduction

The fundamental purpose of all integrated coastal zone management (ICZM) initiatives is to maintain, restore or improve specified qualities of coastal ecosystems and their associated human societies. A defining feature of ICZM is that it addresses needs for both development and conservation in geographically specific places be they a single community, an estuary or the coast of an entire nation. The times required to achieve these fundamental goals at significant spatial scales far exceed those of the usual 4–6-year project, the dominant ICZM modality in developing nations.

4.2 A framework for assessing the status of coastal zone management in SADC.

The framework for integrated coastal management represents the overarching components or elements to be addressed within an integrated coastal management programme - the integrated, coordinated and uniform approach to coastal management (Figure 15). It provides for a holistic and structure manner in which to conduct a situation analysis, and to identify issues and future needs.

Management objectives and priorities within a coastal management programme are then typically directed at specific components or elements in the framework that is either lacking or needing improvement – working towards a comprehensive integrated coastal management programme. The framework is presented in a cyclic context as environmental management – including ICM – has an iterative, adaptive approach where the system in incrementally improved as new information and knowledge becomes available. The framework for ICM proposed here are informed by requirements stipulated in the ICM Act of South Africa, (referring to Section 45), as well as international best practice. While it is widely recognized that ICM is contextual and place based, commonalities have been distilled from the implementation of ICM worldwide (e.g., Stojanovic et al., 2004; Taljaard et al., 2011).

In ecosystem-based management not only the ecological, but also the economic, social, and cultural aspects of the resource become important (UNEP/GPA, 2006). All these aspects should be reflected in the vision for the coast. Thus, the vision should not only reflect ecosystem protection (i.e., ecological aspects) but also the key opportunities for sustainable coastal development (i.e., social, cultural and economic aspects). Objectives direct the focus of coastal management effort in order to achieve the vision. Elucidation of jurisdictional space (i.e., the applicable space within which the jurisdiction of coastal management and coastal management programmes must be applied) for management comprises another key component – specifically the delineation of coastal management units.

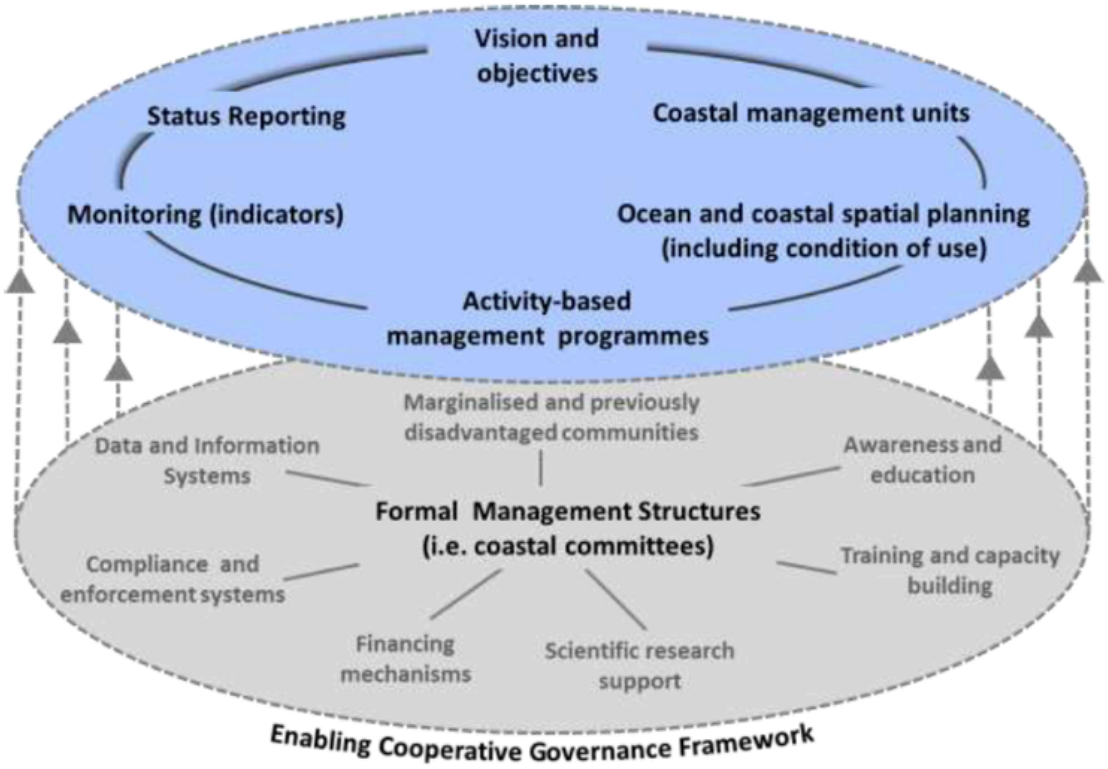


Figure 17. A framework for integrated coastal management in South Africa.

Implementation of coastal management requires and enabling cooperative governance framework. While formal coastal management institutions (e.g. coastal management committees) remain central to a cooperative governance framework, a governance framework extends wider requiring additional partnerships with government, business, civil society, and the scientific and professional communities. Seven such "support elements" for effective cooperative governance are considered relevant to the South Africa situation as illustrated in Figure 17. Cicin-Sain and Knecht (1998) argue that integrated coastal management cannot survive over the long-term without the support of the public (i.e. society outside government) Further human capital development and empowerment are critical to enhance the capacity of institutions and individuals to undertake effective coastal management programmes.

4.3 Review of coastal zone management in SADC coastal states

Whilst each model of ICZM strives to overcome the existing fragmented approach and embrace a wide range of interests in the management process, models of truly integrated management do not exist at the national level. No model incorporates all the elements underlying the ICZM concept nor successfully integrates political, functional, and ecosystem factors. No model has achieved the level of integration and harmonization of decision-making required to achieve ICZM. There is no unique recipe for ICZM. The process can be triggered by concern over sectoral issues, as in the case of Thailand, Barbados, and Malaysia, or by regional issues as in the Netherlands, and can be implemented through a number of different institutional schemes and

management instruments (OECD, 1993). The very definition and delimitation of the coastal zone varies considerably among coastal States, as does the extent to which integration is desired; the scope of issues, environments, and stakeholders involved in the management process; and the approaches and methods employed to achieve management objectives. Diverse factors such as the political and cultural nature of a country or region, the resources available for management, and the existing institutional structure, influence the approach adopted or adapted. As a result, the models do not easily lend themselves to comparison. Nevertheless, there are common features characterizing the national approaches which can provide insight into the trends and current practice of ICZM internationally.

4.3.1 Policy for coastal zone management

Environmental policy instruments include official restrictions and positive incentives designed to control activities that may be harmful to the environment or promote the opposite. We can divide between 'hard' and 'soft' policy instrument.

In environmental policy soft instruments will implement typical voluntary, non-binding recommendations and guidelines. Soft policy is relatively new in environmental policy and opens for less authoritative than traditional hard policy instruments (Hertin et al., 2004). Hard policy instruments will on the opposite of this be hierarchical regulations, forcing legislations and taxes. These policies can be seen as the 'command and control' approach. Environmental policy went through radical changes in the 1980s, when there was a shift away from dealing with narrower problem areas towards broader and more integrated assessments of environmental issues. Environmental policies have subsequently included more preventive measures and controls imposed on potentially harmful activities, rather than corrective measures to repair existing damage. At the same time we have seen a shift to more soft policies and more decentralised approaches. New environmental policy also includes market-based instruments, such as eco-labels, eco-taxes and tradable permits.

In the framework of system approach we have classified policy instruments in coastal zone management into social and informative measures, legislative controls, economic instruments, and technology based initiatives. This kind of classification derives from the idea that policy can influence the system response to improve sustainability in the coastal zones. This is an approach that can be effective to diagnose a problem and set in relevant tool to deal with these problems, weather they are of a natural or a societal kind. It can also be helpful to foresee how different kind of tools can meet different kinds of challenges.

4.3.2 Strategies to achieve coastal zone management

The ICZM Protocol specifies that National ICZM strategy, based on the analysis of existing situation, "...shall set objectives, identify relevant actors and processes, enumerate the measures to be taken and their cost as well as the institutional instruments and legal and financial means available, and set an implementation schedule ".

a) Specific area protection

The coastal management area is usually designated through a political process explicitly or implicitly to be managed as a single unit. The management boundaries of the area usually do not coincide with the boundaries of a single ecosystem, because

typically a number of ecosystems of varying sizes exist within, and may extend beyond, the designated management area. The management boundaries may or may not coincide with the boundaries of governments of general jurisdiction, i.e., governments that have powers of implementation. The boundaries will coincide with only some of the areas from which demands are imposed on the resources of the coastal area. Finally, the boundaries are not likely to delimit the influences of coastal processes on the designated area, such as sediment transport and atmospheric deposition of contaminants. Thus, the boundaries for planning and analysis for integrated coastal management (ICZM) often will not (and do not have to) coincide with the boundaries for management. (Bower et al, 1994).

Although ICZM programmes are created primarily to manage physical development, they have to be based upon detailed knowledge of resource vulnerabilities and a candid examination of conservation issues. The coastal zone is essential to marine life and supports a large part of the world's living marine resources, certainly more than the open sea. Its wetlands, lagoons, seagrass beds, coral reefs and shallow bays are nursery or feeding areas for most coastal and many oceanic species. This zone has the highest biological diversity of any part of the sea. While the whole ecosystem is the focus of management, each of its structural parts and essential processes must be conserved - with the emphasis placed on critical areas. For example, the mangrove forests, tideflats, beaches, seagrass or kelp beds, and coral reefs need special attention.

Mangrove, wetlands and other intertidal systems

The term mangrove refers to any of dozens of species of trees capable of living in saltwater and salty soil regimes. Ecologically, mangrove communities have a variety of recognized roles in the areas where they occur. A prominent role is the production of leaf litter and detrital matter which is exported to lagoons and the nearshore coastal environment. The organic matter exported from the mangrove habitat is utilized in one form or another by the inhabitants of estuaries/lagoons, near-coast waters, seagrass meadows, and coral reefs which may occur in the area. Most tropical commercial shrimps and many fish species are supported by this food source. Mangrove ecosystems also provide a valuable physical habitat for a variety of important coastal species. Waterfowl and shorebirds are well known and highly valued inhabitants of wetlands, as are alligators and muskrats.

Seagrass systems

Submerged seagrasses are often abundant in the shallow waters temperate and tropical coastal environments of the world. Seagrass beds, or meadows, are highly productive and valuable resources which enrich the sea and provide shelter and food for some of the most important and valued species of fish and shellfish.

Coral reef systems

Coral reefs occur along shallow, tropical coastlines where the marine waters are clean, clear, and warm. They are one of the most productive ecosystems in the world. The basis for the high productivity of the coral reef ecosystem is a combination of the production of the reef with support from its surrounding environment. Coral reefs have important economic outputs. For example, they contribute to fisheries of three types: fishing directly on the reef; fishing in shallow coastal waters where coral reefs support food

webs, life cycles, and productivity; and fishing in offshore waters where the reef's great productivity may contribute to support of "high seas" fishes. Approximately one third of the world's fish species are said to live on coral reefs.

Sandy beach systems

Beaches are being lost at a rapid rate through much of the world. No tropical region seems free of risks of erosion. Serious socio-economic situations may arise with erosion and loss of beaches (e.g., risk to property, loss of international tourism revenue). The problem will increase as long as sea level continues to rise - presently from 0.5 to 1 m per century (vertical) in many parts of the world.

Beach management is an important element of the ICZM-type programme, and one that should be addressed by experienced professionals. Beaches are not stable forms; they are dynamic landforms, constantly subject to erosion and/or accretion. The condition of the beach reflects the local balance, or imbalance, between deposition (gain) and erosion (loss). On a worldwide basis, erosion (natural and man- induced) dominates over deposition, partly because of the global rise in sea level. Consequently, there is serious loss of beach and beachfront in many parts of the world.

Lagoon and estuary systems

Estuaries (those supplied by fresh water from rivers) exist, in some form, throughout the tropics except in arid/semi-arid regions (where major rivers are few and discharge is sporadic) and on small islands. Lagoons (limited fresh water supply, high salinity) also exist widely - occupying 10 to 15 percent of the world's coastline. Both estuaries and lagoons maintain exceptionally high levels of biological productivity and play important ecological roles including: 1) "exporting" nutrients and organic materials to outside waters through tidal circulation; 2) providing habitat for a number of commercially or recreationally valuable fish species; and 3) serving the needs of migratory nearshore and oceanic species which require shallow, protected habitats for breeding and/or sanctuary for their young (nursery areas). Estuary and lagoon ecosystems play a major role in the life cycles of economically important finfish and shellfish species by providing feeding, breeding, and nursery habitat.

b) Coastal land-use planning

The Coastal Land Use Plan (CLUP) lays out the general patterns of development throughout the coastal areas of the County. Its purpose is to protect coastal resources while accommodating land use development within the coastal zone. The other elements are applicable within the coastal zone; however, when there is a conflict, the CLUP takes precedence.

- Planning is the process for determining what is to be achieved in the future and clarifying the steps required to achieve it.
- Land-use planning today aids in determining sustainable goals for development of human communities and presents ways to achieve them. Coastal land-use planning is land-use planning applied to the coastal zone.
- Contemporary coastal land-use planning is made up of elements from urban/town planning and regional development, protected area (conservation) planning, strategic environmental planning, resource planning and marine planning.
- All levels of government are important stakeholders in coastal planning. They

have a primary role in policy and legislation, consultation and liaison and regulation and enforcement.

- Land-use planning can contribute to maintaining sound ecological systems and the natural beauty of a given area. Healthy ecological systems contribute to and support healthy economic and social systems, thus being an important element in sustainable development.

c) Resource conservation

Biologically productive coastal and marine resources are coming under increasing threat throughout the coastal countries. These resources generally supply major economic benefits and contribute significantly to the national economy of all the coastal countries. The major uses of coastal resources are: fisheries, tourism and recreation, urban development, shipping and transportation, industrial and manufacturing and shoreline protection. Competing interests are placing enormous demands on the limited resources of the coastal zone. Coastal areas and their resources generally suffer from problems arising out of open access with resource allocation issues being a fundamental source of conflict. A lack of understanding of the coastal zone often results in a sectoral approach to management with overlook the dynamic character and multiuse values of the coastal area.

Fisheries and Mariculture

Fish harvesting practices in the coastal countries range from fish traps, gill nets, drag nets, trawlers as well as spear fishing, and the use of dynamite and chemicals. Overfishing and the removal of juveniles have resulted in the decline of fishable stocks. The issues and challenges facing the fisheries sector include rapid population growth, growing demand for fish and fish products, overfishing, pollution and degradation of coastal and marine habitat, unregulated and illegal fishing by local fleets, natural disasters, and resultant damage to infrastructure, global warming and accompanying sea level rise. Additional issues include the lack of personnel and equipment for the Fisheries departments in some countries and the lack of the necessary enforcement support by the relevant agencies.

Urban Development

In 1994, World Bank experts estimated that two-thirds of the population of developing nations would be living along coasts by the end of the twentieth century. The presence of large and growing populations in the coastal areas exercises increasing pressure on these areas; pressure that threatens to diminish or even obliterate the values of the coasts. With rapidly increasing populations comes the proliferation of infrastructure for the manufacturing, transportation, energy processing and consumption that these populations require, as well as the corresponding amount of the waste products.

Sand Mining

Beaches and dunes as well as river mouths are the primary sources of sand for building. Indiscriminate sand mining from rivers, dunes and beaches is a major problem affecting the stability of the coastal resources. This activity is illegal in many countries but despite the existence of the relevant law's enforcement is ineffective. The main issues related to the illegal removal of sand are changes in river courses, diminished coastal protection, destabilization of riverbeds, beach erosion, increased turbidity and flooding.

Ports, Industrial Development and Shipping

Ports have traditionally served as a magnet for manufacturing and processing activities, often contribution to the urbanization and increased industrial character of the coastal areas. Ports concentrate maritime traffic where they can conflict with the marine areas such as fisheries and tourism. Port operations including maintenance dredging and the disposal of dredge material and ship borne wastes, have significant effects on the coastal environmental quality. Increasing traffic increase the likelihood of accidental spills placing the coastal environment at high risk. Urban waterfronts support infrastructure such as processing and power plants, wastewater treatment facilities, refineries and other industrial facilities that use coastal area as receiving waters for treated and untreated effluent. Dependent on the prevailing currents as well as the volume and composition of the effluent, there can be an impact on other activities dependent on marine water quality.

d) Pollution control

In most countries, a pollution control authority has been established and is operating. Such an authority will retain continuing responsibility for pollution, and ICZM should coordinate with that authority regarding conformance of development projects with national pollution standards. In this role, projects with unacceptable potentials for pollution would be discouraged or modified to acceptability and conformance with standards.

ICZM programmes should focus on special coastal pollution sources not presently addressed, perhaps those caused by watershed disturbance and runoff and, especially, those that affect critical habitats. Of particular concern is sediment runoff from construction sites, farmlands, forest-cutting and land-clearing operations. Also, pollutants flushed by storm runoff into coastal waters can create toxicity (biocides, oil wastes, etc.) and bring excessive nutrients (fertilizer, animal wastes).

It should not be surprising that pollution is at its worst in the harbours of large coastal cities and industrial ports. Whether the pollution is from oxygen-depleting organic waste (e.g., sewage) or from toxic industrial wastes, it is damaging to coastal environments and resources as well as a risk to human health. Therefore, harbour projects should be intensively studied in the project review element and a maximum of conservation safeguards employed.

Control of land-based pollution is very complex. It requires major changes in agricultural and industrial practices, as well as the development of waste treatment technology, according to the IUCN draft world conservation strategy. The main changes needed are stated to include: comprehensive control of sewage discharges; reducing runoff of fertilizers and livestock wastes from agricultural land through the adoption of high standards of land husbandry; and limiting industrial effluents through more efficient use of resources. Special attention should be paid to controlling industrial wastes and improving sewage treatment to reduce risks to public health from consuming seafood and bathing in contaminated water.

Another pollution source of particular relevance to ICZM is oil pollution that originates during exploration, production and transportation phases of the oil industry. In recent years, oil pollution of the marine environment has been an issue of considerable national and international concern. The deleterious effects on the marine environment and the living resources as a result of growing frequency of oil spills have caused public awareness and widespread political attention.

It is interesting to note that of the total budget of petroleum hydrocarbons introduced into the oceans, 34.9% arise from marine transportation, 26.2% from river runoff, 9.8% each from natural seeps and atmosphere rain, 4.9% each from urban runoff, industrial and municipal waste, while oil refineries and production account for only 3.3% and 1.3% respectively. The total contribution from offshore oil production in terms of blowout of oil-wells or leakage from producing sites is reported to be relatively insignificant.

Coastal waters are particularly susceptible to pollution where they receive the outflow of streams and rivers in lagoons or estuaries. It should be noted from the above that 66% of oil entering the sea is from marine transportation or local runoff, two sources of particular relevance to ICZM programmes.

e) Coastal environmental education and awareness

Staff training is essential in a field like ICZM where so many different types of activities and technologies are involved. Training would range from short courses and on-the-job training to formal university degree courses. International assistance is available to most developing countries to meet a variety of training needs. Priorities for staff training in ICZM as:

1. assessment of sociological impacts
2. assessment of economic impacts
3. cost benefit analysis
4. simulation analysis
5. resource management

Public education is a prerequisite for successful implementation and management of marine and coastal resources. The most important goal of education in this setting is to convince people of the value of protecting resources for the long-term, sustainable benefits that protection can provide. Environmental education aims to provide the community with both information and an ethic so that its members can make informed decisions about the use of their resources.

Political and financial support is also dependent on the level of awareness of decision-makers. In educating politicians and economic planners, it is important to use language and concepts with which they are familiar. Carrying capacity studies that utilize cost-benefit analysis can produce figures such as estimates of revenue, sustainable yields, and other quantifiable data that can be used to convince decision-makers of the economic and social benefits of protecting ecosystems.

The first step in designing an education programme is to identify the various target audiences. Artisanal fishermen, dive operators, and tourists are examples of target groups found in marine and coastal settings. Next, specific educational objectives must be established in terms of knowledge, attitudes and behaviour to be changed or influenced within each target group. For example, the knowledge that a protected area can increase fish stocks and catches in nearby fished areas can lead to positive attitudes towards the protected area, and compliance with its rules.

CHAPTER 5: Towards an Integrated Coastal Zone Management Policy for the SADC region

5.1. Introduction

The coastal zone has been a major focus for the development of human society. Use of the sea for transport and trade and availability of abundant food from highly productive coastal waters encouraged settlement. The coastal zones continue to be areas of rich potential for our modern society. The productivity of coastal lagoons, tidal inlets, salt marshes and estuaries have an important role to play in food production - through maintenance of fisheries and aquaculture - and in safeguarding nature and biodiversity. However, the role of the coastal zones is much broader and more diverse than this; coastal zones also serve functions related to job creation, economic growth and quality of life. Coastal areas and their natural resources (marine and terrestrial) have a strategic role to play in meeting the needs and aspirations of current and future of all countries. The major problems in the coastal zones include unplanned development causing wasted investments, lost opportunities for durable employment, environmental and social degradation. Uncontrolled development - whether from tourism or other sectors - can rapidly overburden the natural carrying capacity of coastal zones, polluting and degrading natural resources, destroying landscapes and reducing the quality of life for residents. This kind of development also destroys the resource base that supports economic activity, including the attributes of the coastal zone that attract tourists and the environment that supports fish nurseries.

Also, coastal erosion is another major challenge in coastal zones that damages natural habitats and human settlements, destroys economic activities and threatens human life. Sea level rise resulting from climate change is poised to aggravate erosion. In many places, “solutions” that attempt to fight the forces of nature compound the problem while wasting scarce financial resources. Not surprisingly, there is also a rising conflict between the need for immediate consumption or use of coastal resources and the need to ensure the long-term supply of those resources. The enjoyment of the coastal zone by a wide variety of users and the view of the coast as a national asset and legacy for future generations is of the utmost importance for the promotion of its current and future sustainable use.

5.2. The Need for an Overarching Integrated Coastal Zone Management Policy

Integrated coastal zone management (ICZM) is a widely accepted approach to managing resources that has been adopted in response to the well-documented failures in sectoral management of marine fisheries, coastal hazards, mining and land. Today, almost all plans and programs for the coast call for the use of ICZM. In the US, ICZM has been implemented for some time through the US Coastal Zone Management Act, promulgated in 1972. The Act bestows upon individual states responsibilities for the incorporation of federal coastal zone management (CZM) principles in state and local plans for the coast. The European Union (EU) adopted a recommendation for the implementation of ICZM (2002/413/EC) for its member countries in May 2002 (European Parliament, 2002). The recommendation formalizes eight principles of ICZM that should be implemented in member countries.

Many countries have been implementing CZM plans using integrated approaches for over three decades. ICZM efforts in different governance, spatial and temporal contexts have met with varying success dependent to some extent on what terms of reference are used to assess their success.

The objectives of integrated coastal zone management are to:

1. Promote integrated planning and coordinated development of the coastal zone including insular belts and river basins.
2. Maintain the integrity of insular belts, coastlines and river basins for the benefit of present and future generations.
3. Ensure sustainable use of natural resources and ecosystems services including freshwater ecosystems.
4. Promote and maintain ecosystem resilience, including appropriate protection of sensitive areas, in the face of human activities, natural hazards and climate change.
5. Prevent and reduce pollution from air, land and sea-based sources.

The general principles for implementing of the ICZM protocol are guided by the following principles of integrated coastal zone management:

1. The principle of complementarity and the interdependence between the marine area, coastline, estuaries, floodplains, riverbeds and watersheds.
2. The principle of integrated planning for sustainable coastal development, including socioeconomic activities.
3. The principle of coordination across sectors and levels of governance.
4. The principle of respecting the finite carrying capacity of ecosystems in the coastal zone.
5. The principles of (a) assessing and mitigating risk; (b) preventing damage to the environment and (c) appropriate restoration.
6. The principle of participation and transparency in the decision-making process.
7. The principle of priority to public access and public services to the sea.

The Southern African Development Community (SADC) has recognized the importance of Integrated Coastal Zone Management (ICZM) in promoting sustainable development and addressing the challenges faced by coastal communities in the region. The SADC Protocol on Shared Watercourses, which was adopted in 2000, highlights the need for member states to implement ICZM as a means of promoting the sustainable use of water resources and protecting coastal ecosystems. Furthermore, the SADC Maritime Security Strategy, which was adopted in 2012, also emphasizes the importance of ICZM in addressing maritime security threats and promoting sustainable development. The strategy recognizes the need for member states to develop and implement ICZM plans in a coordinated and integrated manner, taking into account the social, economic, and environmental factors that affect coastal communities. In addition, the SADC has developed a number of regional policies and frameworks that support the implementation of ICZM in the region. These include the SADC Regional Indicative Strategic Development Plan (RISDP) 2015-2020, which recognizes the importance of sustainable management of coastal and marine resources, and the SADC Regional Disaster Risk Reduction (DRR) Strategy and Framework 2016-2030,

which emphasizes the need for disaster risk reduction measures in coastal areas.

5.3. The Policy Preparation Process

Integrated Coastal Zone Management (ICZM) is a process that helps in the sustainable management and development of coastal areas. The process of policy setting for integrated environmental management is cyclic, evolves in time and can be described in a number of phases. Each cycle addresses problem identification, planning, implementation, and evaluation. ICZM policy preparation process typically involves the following steps:

Problem identification

Monitoring: collection of data and information on land-based activities and their impact on the coastal and marine environment. As the iterative ICZM cycle goes back to problem identification, monitoring results in data/ information that can be used either for major adjustments or for fine-tuning of country programs.

Assessment: the process of compiling, integrating and analyzing information including economic, social and institutional information, emanating from monitoring and inventory activities.

Planning

Regulatory Framework: Planning is an integral part of the ICZM process. The purpose of planning is to produce a framework (or plan) to guide decision makers in the immediate and future allocation of scarce resources (e.g., space, land, capital investments, fish, water) among competing interests (stakeholders). There are regional legal frameworks that provide guidance in controlling land-based activities affecting coastal and marine resources. Additionally, there are also existing ICZM guidelines prepared by various international institutions that can guide the development of national regulatory frameworks.

Identification of needs for support to programme implementation by institutions and agencies, both inside and outside the region. Various kinds of capacity at national, regional, and local levels are needed to successfully carry out national/regional programs using an integrated coastal management approach. Instruction of the main institutions and agencies in the coastal management process in order for them to be equipped in carrying out and harmonizing national and regional activities and programs. Furthermore, training and education components of country programs are essential for the sustainability of implementation.

Identification of opportunities: new and existing socio-economic developments that offer opportunities to forward the implementation of the national programmes (such as tourism, mariculture, harbours, integrated coastal/ freshwater management approaches, public/ private partnerships, etc). Opportunities that can be used to implement the ICZM need not always be in the form of problems or issues. Management of existing and new developments to prevent future adverse impacts on the coastal and marine resources follows the precautionary principle advocated in the Rio Declaration, one of the guiding principles of ICZM.

Implementation

Implementation, including operation and maintenance (mainly on national level) Management instruments: Regulation/ legislation: national and local laws, standards,

permits Economic/financial instruments: taxes, subsidies, domestic funding, public/private partnerships. Case Study and description and analysis of models based on initial country implementation of the national programmes provide lessons learned and facilitate the adaptation of effective management instruments and practices.

Structural/operational measures: Infrastructural projects: sewage treatment plants, land-use plans, upgrading of industrial machinery Cleaner production/best practices: Best Available Technology, best management practices for environmental enhancement of industries (waste water reduction, energy efficiency).

Institutional arrangements: the structure of governmental and non-governmental organizations, which provide the institutional mechanisms responsible for and capable of developing and implementing management programmes and plans Capacity building including training workshops, environmental education, conferences, awareness and public participation, information dissemination, consultation with the public, involvement of NGO's.

Evaluation:

- The extent to which programme implementation has accomplished its aims and objectives, the lessons learned, and the identification of changes required to initiate a new programme. Evaluating accomplishments and shortcomings should be seen as vital feedback for any new monitoring and assessment.

Review and revision:

- This step involves periodic review and revision of the policy framework to ensure it remains relevant and effective in addressing the challenges facing the coastal zone. Overall, the ICZM policy preparation process involves a collaborative and participatory approach that engages stakeholders and incorporates scientific evidence to achieve sustainable management and development of the coastal zone.

CHAPTER 6: Proposed Organisational Framework for Implementing ICZM in SADC Coastal Regions

6.1 Introduction

Though the process of integrated coastal management has been introduced long back, it has mainly been implemented at country level within the various SADC coastal regions. Implementing Integrated Coastal Zone Management (ICZM) in SADC faces several challenges that need to be addressed for successful implementation. Some of the challenges include:

a. *Limited Capacity:* There is a limited capacity in terms of human, institutional, and financial resources for implementing ICZM. This is particularly true for smaller Member States, which lack the resources to invest in coastal management and development initiatives.

b. *Fragmented Institutional Frameworks:* The institutional framework for coastal management is fragmented, with multiple agencies and stakeholders involved, leading to overlapping mandates and unclear lines of responsibility. This can create conflicts and inefficiencies in the management and development of coastal areas.

c. *Inadequate Legal and Regulatory Frameworks:* Inadequate legal and regulatory frameworks, including weak enforcement mechanisms, undermine effective implementation of ICZM initiatives. There is a need for comprehensive legal and regulatory frameworks that are integrated across different sectors and levels of government.

d. *Limited Public Awareness and Participation:* There is limited public awareness and participation in coastal management and development initiatives. This can lead to a lack of support for ICZM initiatives and limited accountability of government agencies and other stakeholders.

e. Climate Change and Environmental Degradation: Climate change and environmental degradation pose significant challenges to coastal management and development in the region. This includes increased coastal erosion, sea-level rise, and degradation of coastal ecosystems. These challenges require innovative approaches to coastal management and development that take into account the impacts of climate change and environmental degradation.

f. *Transboundary Issues:* Many coastal areas in SADC are transboundary, with shared resources and ecosystems that require coordinated management and development initiatives. However, there are limited mechanisms for cross-border cooperation and collaboration, leading to conflicts and suboptimal outcomes in the management of shared resources.

Addressing these challenges requires a collaborative and multi-sectoral approach, involving stakeholders from government, civil society, private sector, and academia. It also requires strong leadership and political will to prioritize coastal management and development initiatives and invest in the necessary resources and capacities.

6.2 The Current Institutional Framework for SADC ICZM

Currently SADC as a regional body located in Gaborone, Botswana and headed by an Executive secretary, the SADC Secretariat is responsible for the strategic planning, coordination and management of the SADC programmes (Saurombe, 2011). It was established in 1981, after which it underwent restructuring in 1992 and in 2001. Since 2001 it has become the implementing agency of the SADC economic development programmes (Peters-Berries, 2010). Moreover, it is tasked with executing the resolutions of the summit and council (Saurombe, 2011).

These include among others the implementation of the FTA, CU and CM, representing and promoting the SADC continentally and globally. Other mandates that are the responsibility of the secretariat are those of managing and organizing the SADC meetings, promoting gender mainstreaming, monitoring regional policies and programmes, managing projects, undertaking research on community enhancement and integration processes (SADC Treaty 2015, Article 14). New developments in the secretariat are amongst others the advent of the SADC's sustainable Blue Economy Strategy, which needs to be operationalised. However, institutional arrangements must be put in place in order to oversee this very important economic vehicle for the region. There is currently no institutional framework for the neither Blue Economy nor Integrated Coastal Zone Management. A coordination centre for the Blue Economy, would be an ideal place to host aspects of ICZM, MSP, and MDA.

6.3 Efficiency of the existing Institutional Structure for ICZM

There are no existing Institutional Structure for ICZM at a SADC level, and it should be established by SADC Secretariat. However, member states who have developed and implemented their ICZM plans have some institutional structures where ICZM operates from. Integrated Coastal Zone Management (ICZM) in the Southern African Development Community (SADC) region is a complex issue that requires a well-coordinated and effective institutional structure. The efficiency of the existing institutional structure for ICZM in the SADC region can be evaluated based on several factors, including:

- *Coherence and effectiveness of legal and policy frameworks:* The institutional structure for ICZM in the SADC region should be supported by coherent and effective legal and policy frameworks that promote sustainable coastal management. This includes laws and regulations that protect the environment, promote sustainable development, and ensure that all stakeholders are involved in decision-making processes.
- *Capacity building and technical support:* Effective ICZM requires a skilled workforce with expertise in a range of disciplines, including environmental management, social sciences, and economics. The institutional structure should provide training and technical support to these professionals to ensure that they have the knowledge and skills necessary to implement ICZM initiatives.

- *Collaboration and stakeholder engagement:* Successful ICZM requires collaboration and engagement with a range of stakeholders, including government agencies, NGOs, community groups, and private sector organizations. The institutional structure should facilitate these collaborations and ensure that all stakeholders have a voice in decision-making processes.
- *Adequate funding and resource allocation:* ICZM initiatives require significant funding and resource allocation. The institutional structure should ensure that adequate resources are available to support these initiatives and that they are allocated effectively.

Based on these factors, the efficiency of the existing institutional structure for ICZM in the SADC region can be evaluated. While there have been efforts to establish ICZM frameworks in some SADC countries, the institutional structures still face several challenges, including limited financial resources, inadequate technical capacity, and weak collaboration among stakeholders. However, there have been some successes in the region, such as the establishment of the Benguela Current Commission, which has promoted collaborative coastal management in Angola, Namibia, and South Africa. Overall, there is still room for improvement in the institutional structure for ICZM in the SADC region, and continued efforts are needed to strengthen its effectiveness

6.4 The Creation of an Institutional Mechanism for Effective Integrated Coastal Zone Management

The SADC Secretariat places so much importance on the development and implementation of ICZM at Regional level, thus the need to establish a coordination office, which will assist member states to develop, implement, monitor and evaluate the ICZM programmes. This should be under the auspices of the SADC office for Sustainable Blue Economy, since ICZM becomes a tool for effective implementation of the Blue Economy strategy. Integrated Coastal Zone Management (ICZM) seeks to balance the economic, social, and environmental objectives of coastal areas while ensuring their sustainable development. Effective ICZM requires the creation of an institutional mechanism that can coordinate the various stakeholders and ensure that the objectives of ICZM are met. Below are some steps that can be taken to create an institutional mechanism for effective ICZM tool in the Blue Economy:

- *Identify the key stakeholders:* The first step is to identify the key stakeholders who are involved in the coastal zone management. This includes government agencies, local communities, NGOs, academia, and the private sector.
- *Establish a coordinating body:* A coordinating body should be established to oversee the ICZM process. This body should have representation from all stakeholders, and its primary responsibility should be to ensure the effective coordination and integration of all ICZM activities.

- *Develop an ICZM plan:* An ICZM plan should be developed that outlines the goals, objectives, and actions necessary to achieve effective ICZM. This plan should be based on an understanding of the key social, economic, and environmental issues facing the coastal zone.
- *Allocate resources:* The coordinating body should be given the necessary resources to implement the ICZM plan. This includes financial resources, technical expertise, and personnel.
- *Monitor and evaluate progress:* Regular monitoring and evaluation should be conducted to determine the effectiveness of the ICZM process. This should be done in consultation with all stakeholders and used to make adjustments to the ICZM plan as necessary.
- *Establish legal and regulatory frameworks:* Legal and regulatory frameworks should be established to support the ICZM process. This includes laws and regulations that protect the coastal zone, promote sustainable development, and allocate responsibilities among stakeholders.
- *Build capacity:* Capacity building should be undertaken to ensure that all stakeholders have the necessary skills and knowledge to participate effectively in the ICZM process. This includes training programs, workshops, and other capacity-building activities.
- *Promote public awareness:* Public awareness should be promoted to ensure that all stakeholders understand the importance of ICZM and their role in the process. This includes public education campaigns, stakeholder consultations, and other outreach activities.

The creation of an institutional mechanism for effective ICZM requires the active participation of all stakeholders and the development of a comprehensive and integrated approach to coastal zone management. By following these steps, it is possible to create a successful ICZM process that balances the economic, social, and environmental objectives of the coastal zone.

6.5 Capacity Needed for ICZM

Implementing Integrated Coastal Zone Management (ICZM) requires a range of capacities at various levels, including technical, institutional, financial, and human capacities. Some of the key capacities needed for ICZM include:

- *Technical capacity:* This involves the ability to carry out technical activities related to ICZM, such as coastal monitoring, assessment of coastal vulnerability and risk, development of management plans, and implementation of management measures.
- *Institutional capacity:* This involves the ability to coordinate and collaborate among various institutions and stakeholders involved in ICZM, including government agencies, NGOs, and communities. It also includes the ability to establish and enforce legal and regulatory frameworks to support ICZM.
- *Financial capacity:* This involves the ability to secure and mobilize adequate financial resources to support ICZM activities, such as funding for research, monitoring, and management activities.

- Human capacity: This involves the ability to develop and retain a skilled workforce that can carry out ICZM activities, including scientists, planners, managers, and other professionals.
- *Information management capacity:* This involves the ability to collect, analyze, and share data and information related to coastal ecosystems and human activities, as well as the ability to develop and maintain information systems to support ICZM.
- *Communication and awareness-raising capacity:* This involves the ability to effectively communicate with stakeholders and raise awareness about the importance of ICZM and the need for sustainable coastal development.

Therefore, building and strengthening these capacities is critical for successful implementation of ICZM and for achieving sustainable development in coastal areas. It requires a sustained effort and investment in capacity-building activities, such as training, technical assistance, and knowledge sharing.

CHAPTER 7: SADC ICZM Survey

6.1 Background

The SADC Coastal and Island States are well endowed with natural resources, which makes the centre-stage for the sustainable development of the blue economy. Data and information sharing plays a very important role in analyses of the ICZM current situation pertaining to the SADC region. Literature sources that were collated was used for the situation analysis, however there were some gaps in data, which needed and extra effort to obtain, thus a survey was conducted.

6.2 Methodological approach for the survey

Both quantitative and qualitative sampling methods were applied during the survey. Key informants were drawn from the Blue Economy Focal Point Persons from the SADC Member States covered by the study, and these were requested to participate in the survey. The participants had to give their consent to participant in the survey before proceeding with the questionnaire or interviews. Ten SADC countries (4 Coastal) and (4 Island) states were targeted for the survey.

6.3 Results and Discussion

The results from the survey show that the 83.3% of the respondents confirms the presence of ICZM programmes in their countries, and 16.7% said there is no ICZM programmes in their countries (Figure 18). Out of 11 responses, 10 (about 90%) indicated that there is existing legal framework under which ICZM can operate within; and 1 respondent (10%) signalled no existence of a legal framework (Figure 19). It is very important to have a legal framework in place, so that ICZM does not come as a stand-alone programme without any legal basis. It becomes difficult for countries to implement ICZM. In terms of the status of ICZM in SADC Coastal and Island States, 70% of the respondents have indicated that ICZM is fully developed and implemented in their countries (Figure 20) while 20% fully developed but not endorsed by government. Respondents were also in agreement (75%) that there is a link between ICZM and Blue Economy (Figure 21). ICZM shows that it is funded through mixed methods of funding (Figure 22).

Figure 18. Does your country have ICZM?

Figure 19. Is there any legal framework for ICZM in your country?

Figure 20. What is the status of ICZM in your country?

Figure 21. In your opinion, is there a link between ICZM and Blue Economy?

Figure 22. How was ICZM development and implementation funded in your country?

Chapter 8: A Step-by-Step Guide on how to use ICZM as a tool for the Blue Economy.

Integrated Coastal Zone Management (ICZM) is an approach that aims to balance the competing demands of various sectors in the coastal zone, while protecting the environment and ensuring sustainable development. It can be used as a tool in the Blue Economy, which refers to the sustainable use of ocean resources for economic growth, job creation and environmental sustainability. The following steps have assisted many countries in development of their ICZM programmes, and incorporation in Blue Economy:

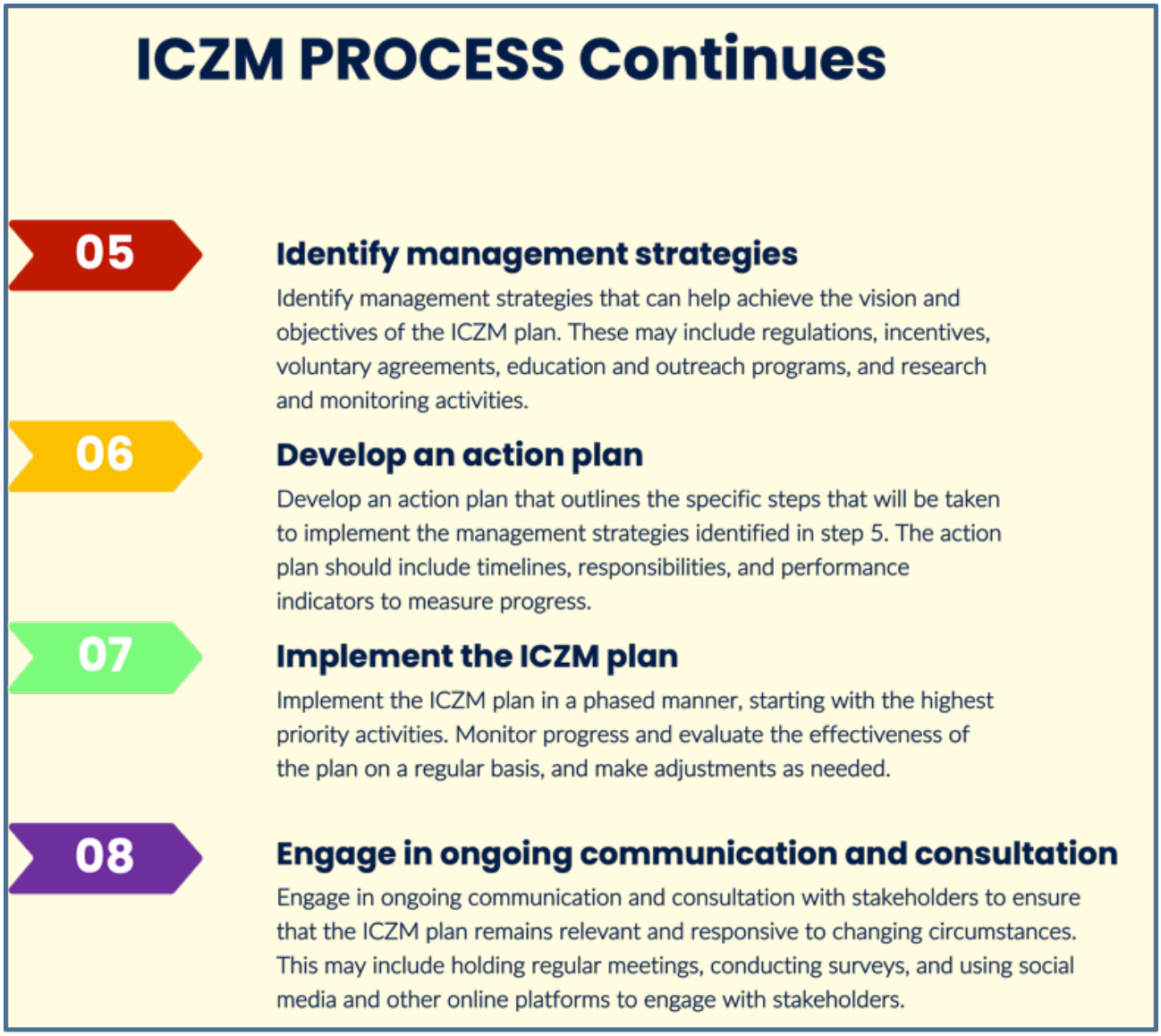


Figure 23. the simplified iczm as a tool for the Blue Economy

By following these steps, an ICZM plan can be used as a tool to support the sustainable development of the Blue Economy, while protecting the environment and ensuring the long-term viability of coastal communities.

CHAPTER 9

8.1 Recommendation

Integrated Coastal Zone Management (ICZM) tools can be very useful in the implementation of the sustainable Blue Economy in the SADC region (Figure 23). The recommendations are shown in the Figure. And explained below (Post and Ludin, 1996; Paterson et.al., 2017).

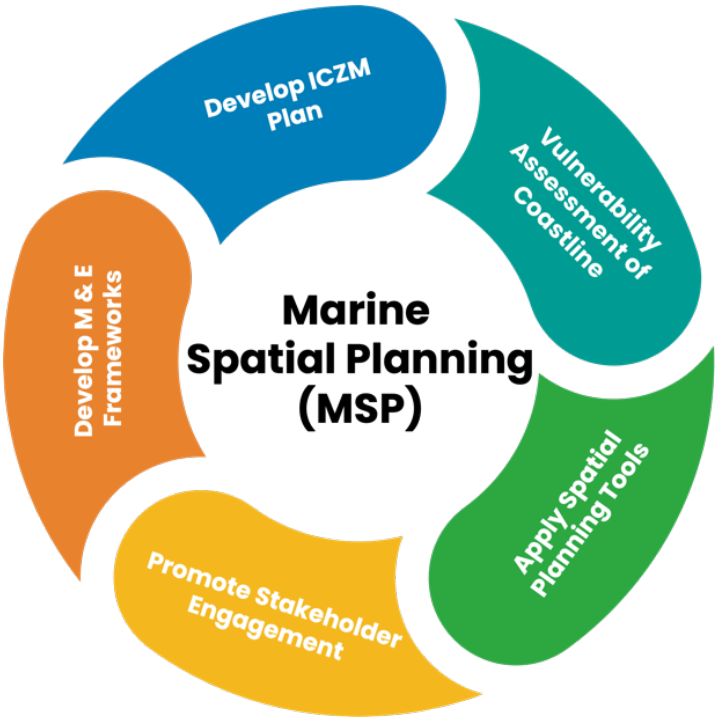


Figure 7. The Simplified ICZM as a tool for the Blue Economy.

a. *Develop a comprehensive ICZM plan:* A comprehensive ICZM plan should be developed for the SADC region, which takes into account the different socio-economic and environmental factors that affect the region. The plan should identify the different stakeholders involved in the sustainable Blue Economy and their roles in the implementation process.

b. *Assess the vulnerability of the coastal zone:* Vulnerability assessment of the coastal zone should be done to identify areas that are most vulnerable to the impacts of climate change and other environmental stressors. This assessment should be used to develop appropriate adaptation and mitigation measures.

c. *Apply spatial planning tools:* Spatial planning tools such as Geographic Information Systems (GIS) can be used to identify suitable areas for different uses such as aquaculture, fishing, shipping, mining, tourism, military operation areas, and conservation, all of which are blue economy activities. These tools can also be used to develop zoning regulations that balance economic development with environmental conservation in the SADC Coastal and Island States.

d. *Promote stakeholder engagement:* The success of ICZM depends on the active participation of stakeholders. The SADC region should promote stakeholder engagement by involving local communities, NGOs, academia, and the private sector in the planning and implementation process.

e. *Develop monitoring and evaluation frameworks:* The implementation of ICZM should be monitored and evaluated regularly to assess its effectiveness in achieving the sustainable Blue Economy. Monitoring and evaluation frameworks should be developed to measure progress, identify challenges, and guide decision-making.

f. *Develop a Legislative Framework:* It is imperative to develop a legislative framework within which ICZM would operate at a Regional level. Dealing with multiple coastal and island states with divergent legal framework would require a harmonization at the regional level.

g. *Develop an Administrative Capacity:* Institutional arrangements must be in place to roll out ICZM programmes in a coordinated manner.

h. *Adequate Financing:* There is no need to have large sums of new funding to put an ICZM program in place. The development of an ICZM plan can often be accomplished primarily by staff delegated from existing agencies, provided that the appropriate professional disciplines and experience are represented. However, extra funding will usually be required to fill selected new positions and to undertake programs to fill particularly important data or research gaps. The funding for these purposes should be able to be provided by the national government or with assistance from international agencies. Larger sums of money will be required for certain types of projects in the coastal zone. Outside sources may have to be considered for funding such projects. However, external donor and funding organizations may be more willing to support such requests if they are part of an integrated management effort.

The use of ICZM tools can play a critical role in the implementation of the sustainable Blue Economy in the SADC region. By promoting sustainable development practices, these tools can help to ensure the long-term health of the region's coastal ecosystems and the communities that rely on them.

8.2 Conclusions

Integrated Coastal Zone Management (ICZM) can be a useful tool for implementing the Sustainable Blue Economy in the Southern African Development Community (SADC) region. The Sustainable Blue Economy is an approach to ocean-based economic development that promotes social inclusion, economic growth, and environmental sustainability.

ICZM is a comprehensive approach to managing the coastal zone, which includes a range of activities such as planning, regulating, and monitoring coastal development. It is designed to ensure that the various economic, social, and environmental activities in the coastal zone are integrated and sustainable.

The SADC region has a vast coastline and a wealth of natural resources that can be harnessed for economic development. However, there are also significant environmental challenges, including pollution, overfishing, and climate change, which threaten the sustainability of the region's marine resources.

ICZM can help address these challenges by providing a framework for the sustainable development of the coastal zone. By promoting the integration of economic, social, and environmental considerations, ICZM can help ensure that the region's marine resources are used in a way that is both economically viable and environmentally sustainable.

In conclusion, ICZM is a valuable tool for implementing the Sustainable Blue Economy in the SADC region. By promoting the sustainable development of the coastal zone, ICZM can help ensure that the region's marine resources are used in a way that benefits both present and future generations.

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