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Coastal Risk Management in a Context of Climate Change: A Case Study of Kribi Town of the South Region of Cameroon

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Abstract

Coastal zones are attractive areas for human habitation. Even though these areas are often associated with high disaster risk. This study is with objective to assess the legal and policy frameworks aimed at mitigating the disasters and risks associated with coast line degradation in Kribi. A desk review of the different policy documents related to coast line management and disaster risks mitigation were analyzed. Stakeholders involved in this coastline management were also consulted. The results of the study revealed that two types of actors are involved in coastline management namely: state actors and non-state actors. There are different legal instruments aimed at managing coastline in Cameroon that range from International to National laws with Cameroon ratifying some of these conventions such as: the Ramsar convention; the Convention on the Protection of Wetlands of International Importance; the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). In conclusion, Cameroon has a political will, legal and institutional framework for coastal zone management. However, initiatives designed to promote integrated coastal zone management are facing challenges in its implementation. The reasons are due to the complexity of the institutional and legal framework for the implementation of these initiatives. It is therefore necessary to develop an integrated management strategy that takes into account the role of each institution and that clearly defines an effective mechanism for intervention and coordination between actors.

Keywords

Coastal Zones, Risk Management, Climate Change, Mangroves

1. Introduction

Climate change is now a major concern for the international community

(Pittock, 2009). One of the worrying manifestations of this phenomenon is sea level rise. The IPCC (2014) reports with a high degree of confidence that since the mid-nineteenth century, the rate of rise in mean sea level has been greater than the average rate over the past two millennia. Between 1901 and 2010, global mean sea level rose by 0.19 m. It is likely that the rate of sea level rise will continue to increase (IPCC, 2013).

The coastal zone is an attractive, densely populated area that is particularly sensitive to the effects of climate change (Noblet, 2015). Although there are widely varying figures on the distribution of the world's population near the coasts, the global trend is towards a concentration of populations on the coasts (Meur-Ferec, 2006). This permanent anthropic pressure towards the coasts is manifested by the urbanisation of the shores and the settlement of populations in areas often associated with high disaster risks (Tricot, 2012). Human developments that generate significant impacts on coastal natural systems represent an element of exacerbation of the instability of this fragile environment reinforcing vulnerability to hazards by influencing the dynamics of the coastal system (Weissenberger & Chouinard, 2015). Thus, the coast is a very particular territory in terms of risks. The multiplicity of natural phenomena to which it is subjected, the diversity and number of activities and human facilities that develop there give it a specific level and nature of vulnerability (Meur-Ferec, 2006). This intrinsic vulnerability of coastal areas is exacerbated by climate change, which is reflected in particular in the rise in sea level, the impacts of which threaten the well-being of the populations living there. The IPCC (2014) estimates that low-lying coastal areas are at risk of death, injury, disease, disruption of livelihoods, deterioration of infrastructure networks and essential services due to storm surges, coastal flooding, and sea level rise. Furthermore, a strong causal link between mortality and water height during rapid flooding such as marine submersion has been demonstrated (Vinet et al., 2011).

Climate change risks pose particular challenges for less developed countries and vulnerable communities, given their limited capacity to cope (IPCC, 2014). Cameroon is no exception, and is even particularly exposed to the impacts of climate change due to its estimated 402 km of coastline (Sayer et al., 1992). The National Climate Change Adaptation Plan (NCCAP) drawn up in 2015 identified the Coastal Agro-Ecological Zone with monomodal rainfall as one of the area's most vulnerable to the effects of climate change. The main exposure factors identified are sea level rise, extreme weather events and flooding. In addition, most urban centres are located in the coastal zone, which hosts nearly 60% of the national industrial fabric and concentrates about 15% of the country's population according to the general population census conducted in 2005 (MINEP, 2010). Cameroon's coastal zones are rich in biodiversity, which is found in national parks such as Campo Ma'an National Park (Tchouto et al., 2006).

The town of Kribi, which constitutes our study area, is located in the southern

part of the Cameroonian coastline. The particular interest given to this zone is explained by the fact that the Kribi coast is undoubtedly the one in Cameroon that has the most future, whether in terms of tourism or industrial development (Kuété & Assongmo, 2008). This coastline has been heavily used in recent years by development activities, particularly structuring infrastructures (Kribi deep-water port) which interfere with the hydro-sedimentary dynamics of the coastal system and reinforce beach erosion. Thus, the current relatively degraded environmental state of this coastline presages major difficulties in adapting in the event of a rise in sea level, if no measures are taken to protect it from this inevitable phenomenon.

Given the concentration of both biophysical and socio-economic issues that characterise Cameroon's coastal zones, adaptation is necessary if the population need to continuously live in this environment. The implementation of an integrated coastal zone management policy to inform risk, ensure prevention, protection and repair is a vital component of adaptation. This paper aims to question the risk management policies related to coastline recession by public authorities in Cameroon and in Kribi in particular. More specifically, the aim is to determine the political and legal framework of coastal risk management in Cameroon, to identify the actors and their roles, to determine the actions that are envisaged and implemented as well as their impacts on the evolution of risks linked to the retreat of the coastline in Kribi.

2. Methodology

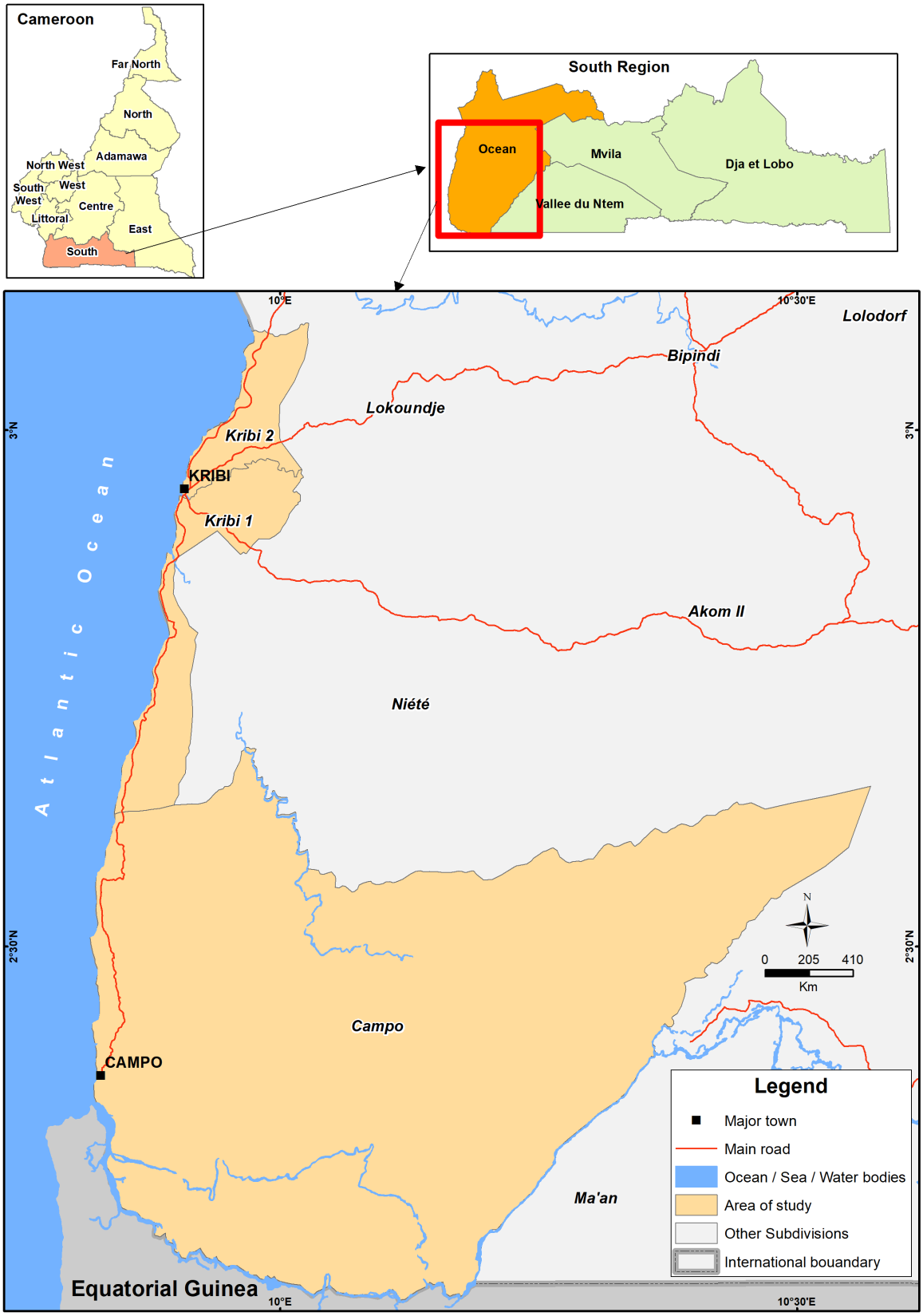
2.1. Study Area

The city of Kribi is located in the Southern Region on the Atlantic coast of Cameroon as shown in **Figure 1**. Administratively, Kribi is the capital of the Ocean Department. Its population is estimated at 93,246 inhabitants. Economic activities are essentially based on fishing, crafts, tourism and agro-industry. The climate is equatorial Guinean. The hydrographic network is dense and dominated by the Ntem, Nyong, Kienke, Lokoundje and Lobé rivers. The tide in Kribi is semi-diurnal with relatively weak swells and currents. The town is built on low-lying land with a coastal strip estimated at 107 km consisting of rocky, sandy and muddy coasts. The vegetation belongs to the Guinean-Congolian dense evergreen forest domain (Tchouto et al., 2006).

2.2. Procedures

In the context of this study, two methods were used to collect the data necessary to achieve the objectives of the study including: desk research and question guide.

The documentary research focused on the exploitation of publications dealing directly or indirectly with coastal risk management in Cameroon, including: nine articles, one dissertation, three regulatory texts and seven reports. The main documents used were: the implementation report on integrated coastal zone



Source: Alonstsi Dongmo, 2022.

Figure 1. Map of the study area.

management (ICZM) for the Kribi-Campo region in Cameroon; the national action plan for the management of marine and coastal zones; the national strategy for the sustainable management of mangroves and other coastal ecosystems; and the national plan for adaptation to climate change. These documents were obtained through internet searches, consultation of documents from public and private services such as the Mission d'Étude pour l'Aménagement de l'Océan (MEAO) in Kribi.

Interviews were conducted with the aid of an interview guide in order to gather information from stakeholders on their perceptions of the risks associated with the retreat of the coastline and the strategies implemented or envisaged to deal with it. Representatives of Kribi City Council; the mayors of Kribi 1st and Kribi 2nd; the Divisional Delegations of MINDUH, MINEPDED, MINMIDT, MEAO, MINEPAT, and CERECOMA were interviewed.

3. Results and Discussion

3.1. International and National Legal Framework for Coastal Zone Management in Cameroon

The exploitation of regulatory texts reveals that Cameroon has a set of international and national legal texts that directly or indirectly guide the management of coastal zones.

3.1.1. International and Regional Conventions Ratified by Cameroon

Several conventions have been adopted and ratified by Cameroon for the integrated and sustainable management of marine and terrestrial coastal ecosystems, including: the Convention on the Protection of Wetlands of International Importance; the Convention on Biological Diversity (CBD); the United Nations Framework Convention on Climate Change (UNFCCC).

The Convention on Wetlands of International Importance (RAMSAR) was signed on 2 February 1972 and entered into force in Cameroon on 20 July 2006. The objectives of the convention are to prevent, halt and reverse the loss and degradation of inland and coastal wetlands. This convention encourages the creation of coastal protected areas, especially those of international importance. Cameroon currently has 7 Ramsar sites, covering an area of 8270.6 km. Although there are still no coastal wetlands among those classified in Cameroon, this convention nevertheless constitutes an opportunity for the rational management of coastal ecosystems, given the multiform support it offers to the Contracting Parties for the conservation and management of wetlands.

The Convention on Biological Diversity (CBD), adopted at the Earth Summit in Rio de Janeiro in 1992, came into force on 29 December 1993. Its objectives include the conservation of biodiversity. The signatory countries of the said convention, like Cameroon, are committed to taking up various challenges particularly that related to the conservation and sustainable use of marine and coastal biological diversity. It calls for the integrated management of marine and coastal areas as a means of limiting the impact of human activities on coastal and

marine biodiversity (Nyogok, 2008). In order to meet its obligations under the CBD, Cameroon validated its first National Biodiversity Strategy and Action Plan (NBSAP) in 2000, which was updated in 2012.

The United Nations Framework Convention on Climate Change was adopted in Rio de Janeiro in 1992 and ratified by Cameroon on 19 October 1994. The convention also refers to coastal areas as a sensitive ecosystem. In its preamble, the importance of the sinks and reservoirs of greenhouse gases constituted by terrestrial and marine ecosystems is noted, as well as the adverse effects of a possible rise in sea level on islands and coastal areas. The convention encourages the rational management and conservation of carbon sinks and reservoirs, particularly the oceans and coastal and marine ecosystems, through the preparation and design of appropriate and integrated plans for the management of coastal zones (Nyogok, 2008).

3.1.2. National Regulations on Coastal Zone Management

Cameroonian legislation is made up of a set of texts that directly or indirectly regulate the sustainable management of coastal ecosystems; without claiming to be exhaustive, we can note the following texts

- Law No. 96/12 of 5 August 1996 on the framework law for environmental management[1]. According to this law, mangrove ecosystems are subject to special protection that takes into account their role and importance in the conservation of marine biological diversity and the maintenance of coastal ecological balances (art. 94). This law defines in particular the modalities of protection of the coast and marine waters (section 3). Thus, in its article 34, paragraph 2, it is mentioned that only light and dismountable installations are authorised on the maritime and river public domain, as a temporary occupation, to the exclusion of any permanent construction or residential use.
- Ordinance n° 74-2 of 6 July 1974 establishing land tenure rules[2]. This text specifies that the public maritime domain is constituted by: the shores of the sea up to the limit of the highest tides as well as a zone of 50 m measured from this limit; the banks of the mouths of the watercourses subject to the influence of the sea up to the limit of the highest tides, as well as a zone of twenty-five metres from this limit. (art. 3).
- Law No. 2004/003 of 21 April 2004 governing urban planning in Cameroon[3]. Article 9 of this text stipulates that: land exposed to natural hazards (floods, erosion, landslides, earthquakes, etc.), parts of the public domain classified as such, and ecologically protected areas as defined by legislation relating to environmental management, are unbuildable, except for special prescriptions. According to the provisions of this text, it should contribute to regulating the occupation of the coastal strip.

[1]Source: https://minepded.gov.cm/wp-content/uploads/2020/01/LAW-NO.-9612-OF-05-AUGUST-1996-RELATING-TO-ENVIRONMENTAL-MANAGEMENT.pdf.
[2]Source: https://garoua.eregulations.org/media/ordonnance_fixant_regime_foncier_cameroun.pdf.
[3]Source: https://douala.eregulations.org/media/loi_urbanisme_cameroun.pdf.

From a legal point of view, there are many texts relating to coastal management, whether they are national texts or international conventions to which Cameroon is party. Despite the large number of regulations governing coastal zone management in Cameroon, it should be noted that their implementation remains timid. Thus, several limitations can be noted, including: the weak application of the law in favour of a system of 'administrative tolerance'; the absence of the application decree necessary for the implementation of certain laws; and the absence of a harmonised legal instrument specific to coastal zone management that is enforceable against all stakeholders (MINEP, 2010).

The above-mentioned regulation is implemented by several categories of actors acting at various levels and sectors of activity.

3.2. Stakeholders in Coastal Zone Management in Cameroon

Several actors are involved in coastal zone management in Cameroon. These can be classified into two broad categories as presented in **Figure 2**: government or state actors and non-state actors.

3.2.1. State Actors

Several state institutions are directly or indirectly involved in coastal zone management in Cameroon. These actors can be grouped into three main categories: Ministries and related services, decentralised territorial authorities and public and semi-public establishments.

With regard to the Ministries of decentralization services of the State, it can be noted that Cameroon has a plethora of Ministries that can be involved in one way or another in the management of coastal issues. However, the main ministries that intervene in the coastal strip are those of the Environment, Forestry and wildlife, Urbanism, planning and land use, Cadastre and land affairs, Defence, and territorial administration.

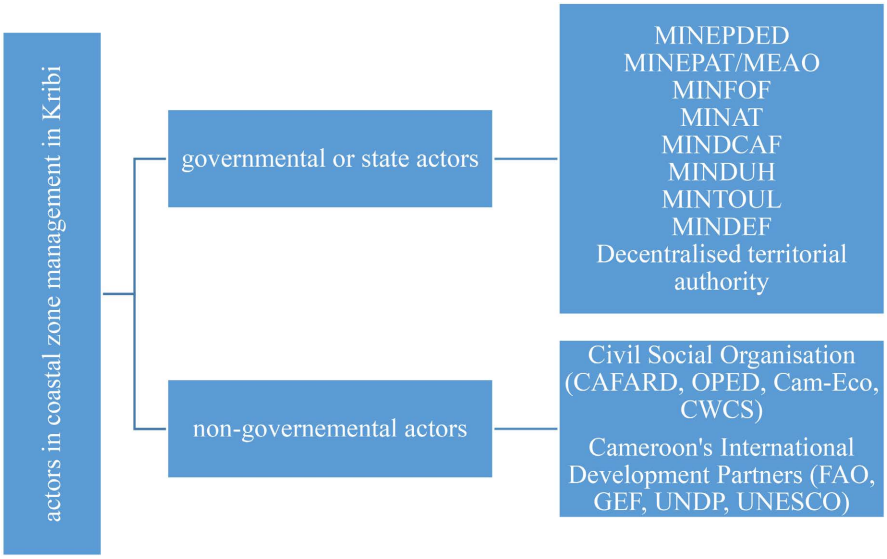


Figure 2. Diagram of main actors involved in coastal zone management in Cameroon.

In Cameroon, the Ministry of Environment and Protection of Nature and Sustainable Development (MINEPDED) is responsible for the management and coordination of programmes and activities related to environmental protection in general, including marine and coastal ecosystems.

The Ministry of Forests and Wildlife (MINFOF) is responsible for the elaboration, execution and evaluation of the national policy on forests and wildlife. It coordinates the management and conservation of the national forests, particularly those on the country's coastal fringe.

The Ministry of the Economy, Planning and Territorial Development (MINEPAT) is responsible for the elaboration and coordination of planning and development projects at the local and national level in the medium and long term. It has under its supervision specialised public institutions such as the "Mission *d'Étude et d'Aménagement de l'Océan*" (MEAO) based in Kribi.

The Ministry of Lands, Cadastres and Land Affairs (MINDCAF) is responsible for the overall design, implementation and evaluation of the national land ownership policy. It ensures the protection and issuance of land titles and designs cadastral plans. It plays a decisive role in the regulation of the occupation of the public maritime domain.

The Ministry of Urban Planning and Housing (MINDUH) is responsible for the development and implementation of the national urbanisation policy. The attractiveness of coastal cities requires the implementation of urban planning that reconciles the anthropic occupation of space and the protection of the coast.

The Ministry of Tourism and Leisure (MINTOUL) is responsible for the elaboration of national policy in the field of tourism. Its activities should be intense in coastal cities where the tourism sector is a key element of the economy and results in various types of development (hotels, restaurants, etc.) on the seafront with a more or less serious impact on the evolution of the coastline.

The Ministry of Defence (MINDEF) ensures the security of the national territory, coasts and territorial waters. Within the framework of its missions, it has operational bases in coastal towns such as the BIR DELTA base located in Kribi, whose presence influences the development of the coastline given the special status of these sites. This institution also carries out projects aimed at protecting the coastal zone in Kribi within the framework of these civil-military actions. These include the construction of a dyke and a pontoon at the Lobé Falls.

The Ministry of Territorial Administration (MINAT) is, among other things, in charge of natural risk and disaster management through its Civil Protection Department. It has under its supervision the National Risk Observatory (ONR), whose missions are: to collect, manage and disseminate information on natural, technological, industrial and anthropic risks; and to ensure consultation and collaboration between the various administrations concerned, and the public and private, national and international bodies involved in preventive risk management.

Decentralised local authorities (Regions and Council, etc.) are responsible, among other things, for planning land use at the local level and organising local

development by integrating disaster risk management, including that related to coastal recession. As part of the decentralisation process in Cameroon, their competences have been strengthened in terms of regulations, making these bodies the pivot of territorial development. However, the modalities of intervention of these actors in the maritime domain are subject to the approval of the State as indicated in Article 31 of Law 2019/024 of 24 December 2019 on the general code of decentralised territorial authorities.

The MEAO is the main public institution involved in the management of the coastal strip, specifically the Ocean Department. Its missions include: carrying out or commissioning studies that enable it to produce a report containing appropriate, concrete and detailed proposals on the actions to be undertaken for rapid, integrated and comprehensive local development of the intervention zone; ensuring the safeguarding of the natural environmental and tourist resources of the zones; monitoring the procedures for the rational occupation of the public maritime domain, the national domain and the State domain in the Ocean Department; etc. However, it appears from observations, literature and testimonies that this organisation has difficulty in fulfilling the missions assigned to it, particularly due to the nature of its prerogatives, which are limited to studies to the detriment of the implementation of concrete development projects. Also, it is said to be in competition with other public establishments such as the Autonomous Port of Kribi (PAK).

3.2.2. Non State Actors (NGOs)

There are several types of non-state actors involved in coastal management in Cameroon. These include civil society organisations. As far as the city of Kribi is concerned, some NGOs have been identified such as the African Centre for Applied Forestry Research and Development (CAFARD), which has worked on the project for the conservation and participatory management of mangrove ecosystems in Cameroon; the Organisation for the Protection of the Environment and Development (OPED) involved in the implementation of the FAO-funded "Community-based Sustainable Management of Mangroves" project; Cameroon Ecology (Cam-Eco); or the Cameroon Wildlife Conservation Society (CWCS).

The private sector includes economic operators with interests in the coastal fringe of Cameroon and whose activities have a greater or lesser influence on the environment. It should be noted that other actors such as the traditional authorities and Cameroon's International Development Partners (FAO, GEF, UNDP, etc.) are also involved in the implementation of these activities.

The analysis of the institutional framework shows that several actors are involved in the design and implementation of coastal zone management policies in Cameroon. However, the interviews conducted and the reports consulted reveal that several obstacles limit the effectiveness of these actors. The institutional problems are of several kinds, including the lack of synergy of action between the actors involved in coastal management in Cameroon, which is in contradiction with the integrated approach required for the management of this complex

territory, Conflicts of competence between the different administrations due in some cases to the inadequacy of certain organic texts of the public or semi-public institutions involved in this management, which causes redundancy in the implementation of certain activities, the inadequacy of human, material and financial resources in certain sectorial services, which limits their room for manoeuvre in order to carry out effectively the tasks that fall within their competence, the poor consideration of coastal risks by the Communes, which is reflected in the virtual absence of this issue in the Communal Development Plans (CDP), following the example of the commune of Kribi 1st and Kribi 2nd and management capacity of civil society organisations (CSOs) and local communities to enable them to participate fully in the protection and sustainable management of coastal ecosystems, and finally the multiplicity of actors which favours a diffusion of responsibilities and a rejection of the problem by one another, resulting in the status quo.

The above-mentioned actors intervene on the ground through strategies, programmes or projects in favour of integrated coastal zone management.

3.3. Coastal Zone Management Initiatives at National and Local Levels

Many initiatives have been developed by the State of Cameroon with the support in some cases of development partners for the integrated management of coastal zones. A distinction is made between initiatives with a national scope and those with a local scope.

3.3.1. Integrated Coastal Zone Management Initiatives at National Level

Multiple initiatives have been developed by the State of Cameroon with the support, in some cases, of development partners for the integrated management of coastal zones, including: "the Grand Ecosystème Marin du Courant de Guinée" (GEM-CG) project (MINEP, 2011); the National Action Plan for the Management of Marine and Coastal Zones (MINEP, 2010); the National Strategy for the Management of Mangroves and Other Coastal Ecosystems in Cameroon; and the National Plan for Adaptation to Climate Change (MINEPDED, 2015).

The GEM-CG project involves several countries in the Gulf of Guinea, including Cameroon. The first phase of the project focused on the assessment, monitoring, improvement and management of the marine and coastal environment. The second phase of the project focused on combating the decline in fisheries resources and the degradation of coastal areas in the Guinea Current Large Marine Ecosystem through regional ecosystem actions. This project resulted in the production in 2011 of the report on the implementation of Integrated Coastal Zone Management (ICZM) for the Kribi-Campo region in Cameroon. This report provides an overview of the situation and presents an action plan for the implementation of ICZM in this part of Cameroon. According to the report, the Kribi-Campo area is characterised by endemic coastal erosion, which degrades

the coast, beaches and infrastructure. This phenomenon is generally accelerated by human activities such as beach sand mining, and by global warming which results in rapid sea level rise. The document ends with the proposal of an Integrated Management Plan for the Kribi-Campo Region of Cameroon based on seven (7) components, namely 1) fisheries resources management; 2) coastal development and land use planning; 3) pollution control and waste management; 4) tourism management; 5) natural risk management in the Kribi - Campo area; 6) governance and capacity building and 7) Mangrove, Forest and Wildlife management in the Kribi Campo coastal area. The objective of the management plan is to effectively manage, through a global and concerted vision, the resources of the coastal and marine zone.

The National Action Plan for the Management of Marine and Coastal Areas (MINEP, 2010) is a planning document developed as a continuation of the GEM-CG project, whose objectives are firstly to establish a diagnosis of the institutional and legal obstacles that hinder the effective management of the marine and coastal environment and its natural resources, and then to propose an Integrated Coastal Zone Management Plan for Kribi-Campo (PGIZC-KC), whose theoretical implementation period was staggered between 2011 and 2015. The main obstacles identified in this report include: lack of coordination in the management of the coastal zone; inadequate enforcement of laws and their inadequacies on the management of the coastal strip.

The national strategy for the management of mangroves and other coastal ecosystems in Cameroon (MINEPDED, 2018) is the result of a process whose strategic vision is stated as follows: "By 2025, mangroves and all coastal ecosystems in Cameroon are conserved, protected and managed in a participatory manner, and contribute to the maintenance of ecological balances and the well-being of the populations". The objective of the strategy is to slow down and reverse the degradation of these ecosystems in order to sustain and develop their ecological, biological, economic and socio-cultural functions. The result of this process is the provision to the Cameroonian government of a management tool approved and adopted by all stakeholders. The strategy is based on 4 axes namely: 1) the reduction of anthropic pressures in mangroves and coastal ecosystems; 2) the exploitation of mangrove and coastal ecosystem resources within the framework of a development or management plan; 3) the improvement of living conditions/subsistence of riparian populations; and 4) the development of scientific research on mangroves and coastal ecosystems. The strategy is operationalized by an action plan that breaks down the axes into programmes.

The National Climate Change Adaptation Plan (NCCAP) was developed by Cameroon in 2015. This plan guides the necessary actions to ensure the country's adaptation to the effects of climate change in accordance with the requirements of the United Nations Framework Convention on Climate Change, which Cameroon has ratified. This document reveals that the coastal Agro-Ecological Zones (AEZ) with monomodal rainfall are among the most vulnerable zones to the effects of climate change. The main exposure factors identified are sea level

rise, extreme weather events and flooding. The PNACC proposes an adaptation policy based on 4 strategic axes that integrate multiple projects (15), one of which is "Protection of the coastline against the effects of climate change". Achievements under this plan have been slow to materialise, although its implementation period was planned between 2016 and 2020.

These initiatives are national in scope and have a strategic planning function to guide the implementation of concrete projects at local level.

3.3.2. Integrated Coastal Zone Management Initiatives in Kribi

In accordance with the above-mentioned national projects and plans, several activities have been carried out in the Kribi-Campo area within the framework of integrated coastal zone management, including: the project for the conservation and participatory management of mangrove ecosystems; the project for the sustainable community management and conservation of mangrove ecosystems in Cameroon; and the COAST (Collaborative Actions for the sustainable Tourism) project.

The project on the conservation and participatory management of mangrove ecosystems is one of the implementation mechanisms of the Guinea Current Large Marine Ecosystem project. The project focused on three coastal areas of Cameroon including the Kribi-Campo area in the Southern Region. Within the framework of this project, several activities were carried out, including the restoration of mangrove ecosystems in Londji by the NGO CAFARD.

The project "Sustainable Community Management and Conservation of Mangrove Ecosystems in Cameroon" was implemented during the period August 2012 to December 2017 (FAO, 2018). The project had a dual objective of mangrove ecosystem conservation and local development through the strengthening of the livelihoods of local communities living in and around mangrove areas. Thus, the project contributed, among other things, to the creation of the Londji development cooperative (COODEL) bringing together stakeholders with activities related to mangroves. The latter have benefited from training on the sustainable management of natural resources and the setting up of projects. Also, within the framework of this project, mangrove rehabilitation activities were carried out on the Mpolongwé site in Kribi.

The COAST project is a product of the World Summit on Sustainable Development held in Johannesburg in 2002. It was proposed at that time that an initiative be developed to demonstrate the best strategies and practices for reducing the environmental impacts of coastal tourism. The Kribi coastline was selected as the demonstration site for the implementation of the COAST project in Cameroon. The project was named at the national level "Sustainable Coastal Tourism in Kribi" and had among other objectives to develop and implement governance and sustainable management mechanisms that significantly reduce the degradation of coastal ecosystems by land-based sources of pollution and contamination in each of the sites (Londji, Lobé and Grand Batanga).

The protection of coastal areas in Cameroon seems to be a priority in view of the related strategic documents and all the institutional actors involved. How-

ever, observations in the field and interviews with key actors reveal that most of the projects carried out concern the protection of mangroves, whereas the coastal strip of Cameroon is mainly made up of sandy coasts. Moreover, many of the projects envisaged are not effectively implemented, mainly because of their strong dependence on external funding. Thus, with regard to the phenomenon of coastal erosion, the main achievements in terms of fixing the coastline, notably the construction of dykes and riprap, are carried out by individuals to protect their investments.

4. Conclusion

In summary, a political, legal and institutional framework for coastal zone management exists in Cameroon. However, initiatives designed to promote integrated coastal zone management are having difficulty in its implementation. This situation is due to the complexity of the institutional and legal framework for the implementation of these initiatives. It is therefore necessary to develop integrated management strategies that take into account the role of each institution and that clearly define an effective mechanism for intervention and coordination between actors. Also, the analysis of these different programmes and projects actually carried out in the field shows that the risks linked to coastal erosion and marine submersion are poorly taken into account in favour of the protection of mangrove ecosystems, whose impacts are mixed.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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