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Integrated coastal zone management for sustainable development : a case study of the Gambia

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INTEGRATED COASTAL ZONE MANAGEMENT FOR SUSTAINABLE DEVELOPMENT

Case Study of the Gambia

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DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

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ABSTRACT

Title of Dissertation: **Integrated Coastal Zone Management for Sustainable Development – Case Study of the Gambia**

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The development of an Integrated Coastal Zone Management Plan for the Gambia is the only solution to mitigate against the degradation of the country's coastal zone and encourages the sustainable development of the zone. The development has been initiated, but a Master Plan is yet to be formulated.

This dissertation critically examines the development of an Integrated Coastal Zone Management Plan for the coastal area of the Gambia. It outlines the development stages of an Environmental Protection Framework for the Gambia from the Comite Inter-Etats de Lutte Contre le Secheresse dans le Sahel (CILSS) initiative in the Sub-Saharan African Region, the Stockholm Conference of 1972, the United Nations Conference on the Environment and Development,1992 and the formulation of a national environmental action plan. This action plan recognises the coastal zone of the Gambia as an important economic resource that could yield tremendous benefits. Tourism and Fisheries being the major foreign exchange earners for the country, and concentrated on the coastal zone, gave the coastal zone of the Gambia the immediate attention it deserves from policy makers to ensure its sustainable development.

The dissertation emphasises the need for such a development leading to the advent of an Integrated Coastal Zone Management Plan. Some stages of the Plan have been implemented and the inadequacies of the development stages identified and suggestions made accordingly. A methodology to implement an Integrated Coastal Zone Management Plan in a sustainable manner is outlined. Several socio-economic conditions are taken into full consideration for the successful implementation of an Integrated Coastal Zone Management Plan in the Gambia.

The concluding chapters of the dissertation examine the possibilities and constraints that could affect the implementation of an Integrated Coastal Zone Management Plan in the Gambia and recommend the adoption of sustainable management practices that would yield a successful implementation of the plan.

KEYWORDS: Integrated, Stakeholder, Socioeconomic, Coastal, Management, Process.

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LIST OF ABBREVIATIONS

ADF	African Development Fund
CILSS	Comite Inter-Etats de Lutte Contre le Secheresse dans le Sahel
CMC	Center for Marine Conservation
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ERP	Economic Recovery Program
EU	Environment Unit
FAO	Food and Agricultural Organisation
GDP	Gross Domestic Product
GEAP	Gambia Environment Action Plan
GIS	Geographical Information Systems
GPA	Gambia Ports Authority
ICZM	Integrated Coastal Zone Management
IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature
LEAP	Local Environment Action Plan
MSA	Maritime Safety Administration
NEA	National Environment Agency
NEMA	National Environment Management Act
NEMC	National Environment Management Council
NGO	Non-governmental Organisation
OECD	Organisation for Economic Development
PSD	Program for Sustained Development
RRA	Rapid Rural Appraisal
TAC	Technical Advisory Committee
TDA	Tourism Development Area
UN	United Nations
UNCED	United Nations Conference on the Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDPI	United Nations Department of Public Information

UNEP	United Nations Environment Program
UNSO	United Nations Sudano-Sahelian Office
USAID	United States Agency for International Development
WWF	World Wildlife Fund for Nature

CHAPTER 1

1. INTRODUCTION

The coastal regions of the world provide a lot of employment opportunities for a significant number of people, resulting in high population densities in these regions. It is estimated that by 2025 two-thirds of the world's population will be living in coastal areas, more precisely in coastal zones (Olsen et al, 1997). Hansom describes the coastal zone as **"** a zone that includes the land-sea-air interface zone around continents and islands and is defined as extending from the inland limit of tidal or sea-spray influence to the outer extent of the continental shelf "(Hansom, 1988). However, definitions might vary depending on tidal influence or other physical characteristics determining the limits of the shoreline.

The impact of human activities on coastal environments is a major concern in the maritime field. Coastal environments harbour a lot of activities, the most prominent being recreational. In most nations of the world, coastal recreational activities such as tourism, due to the aesthetic nature of coasts, make significant contributions to socio-economic development. Other important attributes of coastal zones are that they are highly productive in terms of resources. Clark states in his article ' Coastal zone management for the new century': " The shoreline is a frontier that stands between two worlds; the solid world and the liquid world. Both worlds – earth and water – hold resources of immense value to mankind. But these resources are limited and must be conserved on both sides of the frontier" (Clark, 1997). These resources range from fish resources, plant species (mangroves), and mineral resources such as sand, all of high value to the surrounding coastal communities and beyond.

The use of these coastal resources by different sectors of society cause numerous stresses on coastal areas; in addition to the pressures caused by the natural processes, such as storms and hurricanes and other physical phenomena. While coastal areas recuperate after a certain period of time from these natural phenomena,

anthropogenic stresses might take a different turn; impacting negatively on coastal zones.

Importantly, given the diversity of the use to which coastal areas are put, they are often the objects of numerous user-conflicts. This provides strong justification for a consultative process in the design of their effective and proper management.

Over the years, environmental scientists and policy makers have come to accept that the success of this consultative approach is determined by the formulation and implementation of Integrated Coastal Zone Management Plans. Integrated Coastal Zone Management (ICZM) also referred to as Integrated Coastal Areas Management (ICAM), (for the purposes of this discussion the term Integrated Coastal Zone Management (ICZM) will be used) is defined as *" a continuous and dynamic process that unites government and the community, science and management, sectoral and public interests in preparing and implementing an integrated plan for the protection and development of coastal ecosystems and resources"(Olsen et al, 1997).* It is a process that recognises and takes into account all stakeholder interests in the coastal zone, as the only way of bringing about their sustainable development. It uses as its tools, *inter-alia*, the policies laid by government institutions for natural resource management as well as environmental impact assessments, that today must regularly guide all planned developments (Clark, 1997).

The debate on the issue of sustainability got increasingly fervent, as it became apparent to some people that the world was at the brink of unprecedented, environmental degradation, perhaps even a disaster. This consciousness has led to the call for another kind of development- sustainable development – that would be based on sound principles of environmental protection and management. Its broad advocacy was first launched at the Stockholm Conference of 1972, the first global meeting of its kind to address environmental management in the world. The delegates to this historic meeting urged in their report that,

"The natural resources of the earth, including the air, water, land, flora and fauna especially representative samples of natural ecosystems, *must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate"* (UNEP, 1997). The concept was later developed by the *1987 Brundtland commission on Environment and Development as " development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (*UNEP, 1997*)*. This latter definition has itself triggered a debate of its own. The

words ‘sustainable’ and ‘development’ seem to contradict each other, as ‘sustainability’ is usually connected with long- term perspectives, and a situation of minimal resource exploitation; while ‘development’ is more often geared to, and associated with maximisation, ie the attaining of maximum benefits in the short term and it is more individual oriented than collective.

Furthermore, the Brundtland definition sounds anthropocentric and allows a wide range of interpretations “ the definition does not adequately recognise the intrinsic right of the environment and its living creatures to their own existence, independently of any service they may provide to mankind” (Sullivan, 1997). “Development which meets the needs of the present” stated in the Brundtland definition should take into account that the environment could only withhold the pressures imposed upon it to a certain degree, it is not a finite environment, neither are its ecosystems. The sustainability concept is further developed in “ Caring for the Earth: a Strategy for Sustainable Living” as “ improving the quality for human life while living within the carrying capacity of the Earth’s supporting eco-systems” (IUCN/UNEP/WWF, 1991). This definition of sustainable development eliminates the idea of an infinite planet earth, and encourages the adoption of sustainable practices. These definitional disagreements notwithstanding, many now believe that sustainability and environmental protection should be the principal governing ideas behind all development projects.

Integrated Coastal Zone Management, as a strategy for the rational use and management of the coastal resources of the earth, today owes much to the concept of sustainable development. It received significant attention during the 1992 United Nations Conference on Environment and Development (UNCED, 1992) whose plan of action “Agenda 21”, has become the blueprint of all environmental management efforts globally. Chapter 17 of this document focuses on ‘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’. More precisely, section 17.5 lists the following recommendations to the concerned UN member Nations.

Coastal States should commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their national jurisdiction. To this end, it is necessary to, inter alia:

a. Provide for an integrated policy and decision-making process, including all involved sectors, to promote compatibility and a balance of uses;

b. Identify existing and projected uses of coastal areas and their interactions;
c. Concentrate on well-defined issues concerning coastal management;
d. Apply preventive and precautionary approaches in project planning and implementation, including prior assessment and systematic observation of the impacts of major projects;
e. Promote the development and application of methods, such as national resource and environmental accounting, that reflect changes in value resulting from uses of coastal and marine areas, including pollution, marine erosion, loss of resources and habitat destruction;
f. Provide access, as far as possible, for concerned individuals, groups and organisations to relevant information and opportunities for consultation and decision-making at appropriate levels.

In a similar vein, Chapter 17 section 6 of Agenda 21, specifically emphasises the importance of implementing integrated coastal and marine management and sustainable development plans and programmes at appropriate levels – national, regional and global (UNDPI, 1992).

It is the objective of this dissertation to offer a critical analysis of the process and design and implementation of an Integrated Coastal Zone Management Plan for the Gambia emphasising on the need to evolve the correct strategies for its realisation. In the pursuit of this objective, the dissertation will advocate the adoption of the principles of good environmental management and sustainable resource use.

THE GAMBIA

The Gambia lies in the western-most tip of West Africa and enjoys a strategic location with its coastal waters located in an upwelling zone, precisely in the East Central Atlantic Zone; the sixth most productive fishing area in the world (Douglas et al, 1988). The country is bordered in the North, South and East by Senegal and in the West by the Atlantic Ocean. It covers an area of 11,300 km^2 with a population of over a million inhabitants (1993 census). It is 48km wide at its westerly end towards the Atlantic Ocean and narrows down towards its eastern end, 480km inland (NEA, 1997). The country is endowed with an 81km coastline (Fig 1).

The main environmental issues facing the Gambia today range from natural resource depletion, coastal degradation, rapid population growth (characterised by densely populated coastal areas and a continuous rural-urban migration) and dwindling

resources. The long drought of the Sub -Saharan African region of the 1970's has left its devastating effects; periods of scanty rainfall forcing the populations of the rural areas to migrate to the urban cities. This migration pattern significantly contributes to the overcrowding in the areas along the country's coastal zone.

The coastal zone of the Gambia provides numerous socio-economic activities and employment benefits. These include fisheries and tourism, both of which make significant contributions to the country's socio-economic development.

These activities, similar to those pursued in many coastal regions in the developing world, are invariably the basis for conflict with regards to resource utilisation. The conflicts are engendered by the competition, which often results in over-exploitation of marine resources, habitat degradation and biodiversity loss; not to mention the often quite serious inter-communal violence. The immediate users of these coastal resources in the Gambia are coastal communities.

Over a long period of time, the management of these resources was thought to be the responsibility of policy makers alone. As the concept of community-based management gained ground, it is being realised that the communities need to be involved in the decision making process that affect their lives and livelihoods. The question many raise now is, how effectively has the transition been made? How inclusive really, is the process? The answers to these questions are not uniformly satisfactory, although many in the developing world including the Gambia, are beginning to understand the benefit of adopting the participatory approach for the effective management of natural resources, such as those of coastal zones.

Integrated Coastal Zone Management represents a powerful tool for the enhancement of this participatory approach. In the Gambia the process has been initiated with the development of a Coastal Profile and a Management Strategy. A Master Plan for the development of the coastal area is yet to be drawn. The chapters that follow will discuss and assess present and future orientations of the ICZM process in the Gambia, against the background of the global call for environmental and socio-economic sustainability.

CHAPTER 2

Environmental Protection Framework of the Gambia and the Demarcation of the Coastal Environment

2.1 Marine Environment Protection Framework

2.1.1 Development of an Environmental Protection Framework for the Gambia

The devastating long drought of the 1970's in Sub-Saharan Africa brought about an unprecedented environmental awareness in the region. The drought had serious and devastating consequences on the economies and people of the area such as famine and natural resource depletion. The latter, especially the depletion of forestry resources, became a key feature of the Sub-Saharan African landscape, additionally putting the Sahel's already fragile environments at even greater risk. The governments of the region decided in 1973 to establish a subregional co-ordinating mechanism, 'the Inter-state Committee for Drought control in the Sahel, more commonly known by its French acronym - CILSS (Comite Inter-Etats de lutte contre le secheresse dans le Sahel). The international community supported this intergovernmental effort, mainly the industrialised countries of the West and major UN Agencies.

CILSS was the first regional environmental initiative of the Sub-Saharan African region. Its membership includes the eleven countries that make up the Sudano-Sahelian agroecological zone. Its major aim was to elaborate strategies for curbing the drought disaster at the regional level, while at the same time attempting to rehabilitate the agricultural economies and rural livelihoods in the countries affected. It is interesting to note that this regional strategy was also being formulated barely a few months after the Stockholm conference of 1972, where several countries participated. The CILSS initiative, because of the political and public support it received both within and outside the region, became a source of inspiration and new thinking on environmental planning and management for the Sub-Saharan African countries including the Gambia.

CILSS still functions today as an intergovernmental secretariat based in Burkina Faso. It has two main technical organs, the Sahel Institute in Mali and the Meteorology

and Hydrology Centre, the " Centre Agrhymet" in Niamey, Niger. A partner organisation, the "Club des Amis du Sahel " created in 1975 and headquartered in Paris, is largely an initiative of the Organisation for Economic Cooperation and Development (OECD), endorsed by the CILSS member nations. In addition to providing technical support for the environmental programs of CILSS, the "club" advocates for, and helps co-ordinate the emergency relief and development assistance to the latter countries.

The CILSS initiative was conceived fundamentally, as a regional environmental protection plan, dealing with rangelands, forestry and marine resources depletion, as well as the building of feeder roads in the rural areas. CILSS initiatives are today actively supported by the United Nations Sudano - Sahelian Office (UNSO) and its umbrella organisation the United Nations Development programme (UNDP), all dynamic United Nations agencies whose collective contribution to the UNCED process and the implementation of Agenda 21, is widely recognised today.

CILSS encouraged its member states to develop national plans of action to support the regional strategy, a call that resulted in a variety of environmental protection initiatives at the country level. In the Gambia, *the Banjul Declaration*, formulated at the top helm of the Government of the Gambia was promulgated in 1977. The Banjul Declaration soon became publicised. Publications were exhibited in most government organisations especially the natural resource management sector. The first President of the country who was deeply involved at the heads of Government level in CILSS activities and as its one time Chairman initiated the Banjul declaration.

The underlining tone of the Banjul declaration was *'the conservation of our natural resources for present and future generations'* this theme will later change and develop since the adoption of the 'sustainability concept' born out of UNCED as already mentioned in the previous chapter. The declaration provided inspiration for the formation of a small policy coordination unit, the Environment Unit, under the Ministry of Natural Resources in the Gambia in 1981.

In 1987, the Government enacted the National Environment Management Act, NEMA, which supercedes all other environmental legislation in the Gambia. The Act contains provisions on all aspects of the environment and established a National Environment Management Council (NEMC) whose membership consists of the Secretary of States[1] of Natural Resources & the Environment, Finance and Economic Affairs, Local Government and Lands, Health and Social Welfare, Works and Communications, and Agriculture.

Another milestone in the development of environmental management in the Gambia was the formulation of the Economic Recovery Programme (ERP). The ERP was initiated because by the 1980's Gambian agriculture had started experiencing a slow growth rate (3%), a decline in output per capita, a lower contribution to GDP and unfavourable external terms of trade. The subsequent agricultural crisis, which was primarily an environmental crisis, triggered by several levels of drought and population pressure, was the beginning of the severe economic crisis that characterised that decade in the Gambia (Jabara et al, 1990). The ERP was an endeavour to revive the Gambian economy. It ran parallel to the Programme for Sustained Development (PSD). and the latter reinforced its policies. The major objective of the PSD is to improve the living standards of all Gambians (EU, 1992).

A country so completely dependent on a few natural resources (agriculture & tourism) for its survival and socio-economic development, needed to urgently formulate a holistic and coherent policy to address its pressing environmental problems. This led to the formulation of the National Environmental Action Plans (GEAP I & II). The Action Plans reinforce the major objective of the Program for sustainable development, especially in advocating and establishing improved environmental and sound ecological standards.

2.1.2 The Gambia Environmental Action Plans (GEAP I & II)

The blue print of UNCED, Agenda 21, emphasises the importance of the formulation of country-specific National Environmental Action Plans:" States should consider the preparation of national reports. In this context, the organs of the United Nations system should, upon request, assist countries, in particular developing countries. Countries should also consider the preparation of national action plans for the implementation of Agenda 21"(Chapter 38, section 37). The preparation of the national environmental action plan in the Gambia started as a component of the World Banks' perspective Study on Sub-Saharan Africa. The implementation process started with the formulation of GEAP I in 1992.

GEAP I emphasises the importance of the Coastal area in the Gambia and triggered coastal zone management initiatives in the country. It characterised the coastal zone as follows; *" The coastal zone is an important natural and economic resource which if utilised in an appropriate manner will yield important economic benefits.*

Uncontrolled sand removals from the beach, and unplanned tourist development along the coastline are serious problems, which need to be stopped. There is a lack of basic technical information on coastal dynamics necessary for effective management of the coastal zone." This statement, so pertinent, in the first Gambia Environmental Action Plan, encouraged the adoption of a process towards the sustainable management of coastal areas in the Gambia. As mentioned, tourism, agriculture and fisheries being major foreign exchange earners, caused the top policy makers to pay attention to coastal development.

The main objective of GEAP I was to " set out a framework for future actions to address the problems of natural resource management and environmental degradation through the involvement of all levels of decision- makers". The specific objectives are to:

- Provide a state-of-knowledge overview of the environmental conditions in the country;
- Identify, prioritise and where possible quantify environmental problems;
- Propose solutions to immediate environmental problems in the form of programmes and projects, and institutional and legislative reforms together with details of their funding requirements and their human resource needs;
- Establish a clear indication of Government's priority areas with respect to the environment so as to guide and give proper orientation to donor intervention in this field;
- Establish a framework which provides coherent direction for the process of environmental monitoring and planning in the future; and
- Provide a framework for continuous development and environmental policy dialogue within a country and with donor partners (GEAP I, 1992).

It was realised at the initial stages of the planning process that for management purposes, the adoption of a participatory approach and putting an emphasis on the inter-sectoral nature of environmental issues are key to achieving the objectives of the Gambia Environmental Action Plan. It was later realised that the mechanisms to bring about this participatory approach had really not been put in place. The main program areas outlined in GEAP I were, Natural Resources Management, Environmental Health and Energy. Supporting programs for the above include institutional development, public awareness and education and Information management. GEAP I was the stepping stone

that provided a learning curve for environmental managers in the Gambia: from top decision-makers in the administration to community-based managers.

The outlined objectives of the first Gambia Environmental Action Plan were expected to be achieved through the implementation of the above mentioned programs. As of now, the key implementation successes of the first Gambia Environmental Action Plan are:

1. The establishment of a functional institutional framework

   The establishment of the National Environment Agency, stipulated under the National Environment Management Act, was a turning point in the development of environmental management in the Gambia. The NEA has proved to be an effective co-ordinating centre of environmental management in the Gambia. With the co-operation of other agencies involved in Natural Resources Management, the National Environment Agency has by and large, successfully implemented the programs of the Gambia Environmental Action Plan thus putting the Gambia in the forefront of implementing National Environmental Action Plans as recommended at UNCED in 1992.

2. Raised Public Awareness on environmental issues

   The Gambia Environmental Action Plan and its translated simplified versions into the local languages, spoken by a significant majority of Gambians, has been put to quite effective use in raising the consciousness of the average Gambian. Consciousness levels have been raised on the most prominent and critical national environmental concerns, such as the degradation of the coastal area of the Gambia.

3. Making the environment a high profile issue on the national agenda

   The establishment of the National Environment Management Council made up of key players in the Government, gives Environmental Management the political clout it deserves in order for it to be a successful program; basically environmental considerations are expected to be incorporated in top decision making at the helm of Government.

Despite the above gains, however, a number of shortcomings in the progress of GEAP implementation must be noted, one major defect is the still very inadequate consideration and role given to civil society stakeholders who are involved in natural resource development. The low involvement of communities, non-governmental organisations, the private sector and local authorities has led to the development of a strictly government-oriented process; thus limiting and undermining the principle of partnership and participation on which the ultimate success will depend. If this continues, it will require a much longer time for the Action Plan to make the transition from a merely awareness-oriented process to an action-oriented one with the attendant risks of failure. Other sources of difficulty for GEAP implementation stemmed from a number of wrong assumptions that were made during its formulation. These now need to be reconsidered. They include the following:

- That sufficient capacity for environmental management existed in the country
- That participation in the GEAP process would be spontaneous
- That the rate of disbursement of funds would be as expected
- That tangible outputs would be achieved in the shortest possible time
- That other line agencies in country would go along with the National Environment Agency at all times to meet deadlines
- That the donor community will streamline their activities to ensure better coordination of GEAP activities (GEAP II, 1998).

The above listed assumptions, quite often proven wrong, later became constraints that stifled the implementation of GEAP I. It had been agreed, at the formulation stage of GEAP I, that the project would be reviewed every five years unless an earlier review was deemed necessary. This review which took place in 1997 started with assessing the impact of the various implemented GEAP activities on the environment. An outcome of this assessment exercise was to lead to the publication of the first State of the Environment Report of the Gambia in March 1997, five years after the GEAP implementation process had already started. The report contains an analysis of environmental trends in the Gambia as stated; "the information contained in the report looks at what happened in the past, what is happening currently and what is likely to happen in the future. It further suggests possible interventions to be put in place"(NEA, 1997).

A second assessment phase took the form of a Donor and Stakeholder review in 1998, leading to the introduction of the second Gambia Environment Action Plan (GEAP II). An attempt was made to incorporate the lessons learnt during the implementation of GEAP I in the new Gambia Environmental Action Plan II, formulated in 1998 in the presence of the donor community; the World Bank being a key player. Unlike its predecessor, GEAP II was drawn up with a better representation of the stakeholders of the coastal area, including non-governmental organisations (NGO) in the Gambia.

The review stage, usually, poses to be the most important of any project implementation process and enables the planners to realise pitfalls and shortcomings that usually characterise any development process. These characteristics marked the GEAP I implementation process. Major ones were: How well were the communities were integrated into the coastal management process? How effective were the public education awareness schemes? Should more emphasis be put on new emerging devastating coastal problems such as coastal erosion and salt water intrusion? Should an even greater focus be put on community management of coastal resources?

These elements have now been incorporated in the second Gambia Environmental Action Plan. Whether the constraints and pitfalls they posed in GEAP I will be wholly or only partially eliminated, is the major challenge for all stakeholders of the Gambia Coastal area. As stated in GEAP II;" in order to remain responsive, relevant and efficient the GEAP development process will need to evolve with the changing needs and circumstances of the different stakeholders. It will also need to be grounded in the reality of the current trends and processes of the overall political economy" (NEA,1997). This statement embodies the mechanism that would lead to successful implementation, because for any nation, the social, economic and political surroundings must be taken into consideration in order to achieve success in any developmental process, otherwise failure becomes inevitable.

To summarise, the two Gambia Environment Action Plans (GEAP I & II) aim to conserve and promote the sustainable use of natural resources in the Gambia and set the required marine environmental protection framework to achieve sustainable management of our coastal areas. However, there have been various problems in the implementation of these plans, and particularly during the start-up phase under GEAP I. Review of the shortcomings in the implementation of GEAP I has led to improvements in GEAP II.

2.2 The Coastal Environment

2.2.1 Geomorphology

The Gambia coastline is well known for its beautiful sandy beaches and clear, oligotrophic waters. The coastline stretches over a distance of 81km along the Northern and Southern regions of the country, from the mouth of the Allahein river in the Southern region (130' 4'N) to Buniadu Point (130' 31'56' N) in the North as shown on the map (Fig 1). Landwards, the coast consists of the Gambia, Saloum and Allahein rivers at the Northern and Southern borders with Senegal.

From the Allahein River to Buniadu point the coastline consists of barren flats, beach sand dunes and mangroves along the inner parts of the Southern coastal region; the beach sand dunes make up nearly eighty-five percent (85%) of this coastal strip. The Northern coastal stretch is characterised by sand dunes and few barren flats and covers a distance of 11 km, " seawards the coast is separated from the continental slope or deep sea by the continental shelf with a width of 80km, marked by the 200 bathimetric line " (Whyte et al, 1981).

The sandy embayments on the coastline have formed over the past 5500 years. Progradation amounts vary from one location to the next along the coastal area. These sand deposits in the lower and raised beach areas are referred to as 'the Holocene coastal beach complex' (UNEP/FA0/ PAP, 1998). The beaches are made up of yellowish sands spotted with black shadings indicating the presence of minerals which have not yet been exploited, although their marked presence has led the Government of the Gambia through its relevant line agencies to make considerations in this endeavour.

2.2.2 Demarcation of the Coastal Zone of the Gambia

The demarcation of maritime boundaries, coastal areas inclusive, is highly influenced by geographical locations of nations, national security interests, oceanographic features and political and socio-economic conditions. The development of the United Nations Convention on the Law of the Sea conferences (UNCLOS I, II & III) is a clear indication of the factors that influence the demarcation of maritime boundaries of nations.

In this era of international concern for sustainable development, emerged a new challenge to integrate the concerns for better environmental stewardship of the world's resources, and at the same time utilise those resources for development purposes. This concept of sustainable development has urged nations to perceive the transboundary nature of the oceans leading to the justification of the sharing of its resources in an equitable fashion; a basis for social equity (Payoyo, 1994). Despite this shared view by nations, negotiations at the conferences (UNCLOS I, II, III) were based on biased judgements influenced by the new economic order. Each nation sought to secure its own interests.

The convening of the UNCLOS III conference was a direct consequence of the failure of nations during the previous UNCLOS I & II conferences to reach a consensus on pertinent disputes with regards to fisheries and the demarcations of the territorial sea. As a result of the lack of consensus on pertinent disputes during the negotiations, coastal states mounted pressure to claim access to the living resources of their coastlines. The United Kingdom vs Iceland fisheries' case reflected the growing tensions between nations (coastal and distant water fishing states) concerning the utilisation of the oceans. This case, amongst others, set the pace for the negotiations at UNCLOS III for nations to extend their coastal state jurisdictions to the 200 nm offshore limit, taking into consideration the interests of other states as reflected under the Exclusive Economic Zone section; articles 59 and 62 of the Law of the Sea Convention.

The term Exclusive Economic Zone emerged as a compromise between world maritime nations and the third world nations; the Gambia being amongst the latter. For these developing nations, the concern was gaining adequate jurisdiction over their coastal waters to meet their needs beyond national security that would involve economic development aspects as provided under the Exclusive Economic Zone regime. One of the greatest achievements of UNCLOS III was the combination of various issues in a single code of International law geared towards achieving a sustainable use of the world's oceans and the necessary linkages to achieve sustainable development within this context.

The Gambia claimed a 200 nm fishing zone in 1978 and later declared an Exclusive Economic Zone. It is beyond reasonable doubt that the strategic location of the country and the existing socio-economic conditions within its boundaries highly influenced its position during the negotiations on the demarcation of the boundaries of the EEZ and Territorial Sea Zones at the UNCLOS III conference. The Gambia entered

into an agreement with Senegal in 1975 to demarcate its northern and southern maritime boundaries, allowing the country to gain an additional zone of 30% over its neighbours (Douglas et al, 1993).

Coastal ecosystems are dynamic and an exercise to define the limits of coastal areas could turn out to be a tedious one. Legal definitions of coastal zones do not enhance the dynamic nature of these ecosystems since limits are set within an environment whose parts are interrelated and interdependent for its effective functioning.

Taking into consideration stakeholder interests, the same policies that applied to the demarcation of the maritime boundaries of nations during the UNCLOS negotiations applies to the demarcation of the coastal zones of many nations, the Gambia not being an exception. A rigid definition for the coastal zone was developed in 1995 through a World Bank funded coastal area definition study. Different approaches could be taken to define coastal areas; a framework definition, substantive definitions usually limited by boundaries, coastal property rights definition and multiple definitions (NEA/WB 1995). The definition for the Gambia coastal zone took the multiple definition approach; a more flexible approach than the others where " the approach adopts a precise definition of the core area – the coastal marine area, while making it clear that the area is a component of a larger ecosystem, the coastal environment as a whole" (NEA/WB, 1995).

During the coastal area definition process the territorial sea where the coastal state asserts full sovereignty had to be considered. In determining the landward boundary, the land use plan of the coastal area was taken into consideration in addition to all the sectoral conflicting interests.

According to the Coastal Zone definition Study the coastal zone of the Gambia is defined as follows: -

"That area of the foreshore and seabed of which

i) the seaward boundary is the limit of the 12 nm territorial sea- fishing zone of the Gambia and;

ii) the landward boundary is:

   a) the line 1000 metres from the high water mark along the Atlantic coastline between the River Allahein and a point 1000 metres South of Cape Point, and between Essau and Jinak along the northern coastline and;

b) the line between the point 1000 metres south of Cape Point and a point 300 metres from the South bank of the River Gambia along Lamin Bolong and ;

c) The line 300 metres from the banks of the River Gambia between Lamin Bolong and Mootah Point on the South bank of the River Gambia, and between Essau and Miniminium Bolong"
(NEA/WB, 1995).

Fig 1. The Coastal Zone of the Gambia
Source: NEA, WB 1996, p 41.

The above definition of the coastal area, and the corresponding map, integrates to a favourable extent, all other sectoral interests in the coastal zone and not only a major sector such as fisheries. As stated in the study " the defined zone is an area where the activities of the stakeholders are more intensive and interdependent" (NEA/WB, 1996). This provides the required framework for the implementation of an integrated management program.

It is pertinent to mention that before the formulation of the above definition, the coastal area was regarded as the sea-land interface of the northern and southern coastal regions along the 81 km coastline – an arbitrary definition that could not aid any development process. Worse than that, it deterred the implementation of coherent coastal zone management policies.

[1] All Departments of State mentioned in this document were previously referred to as Ministries. The name change occurred after the second Republic of the Gambia was established in 1996. These Departments of State have the same mandates as the previous Ministries. The then Ministers are now referred to as Secretaries of State.

CHAPTER 3

3. Coastal Resource Utilisation, Erosion and Development in the Coastal Zone of the Gambia.

3.1 Resource Utilisation

The utilisation of various natural coastal resources provides numerous livelihood opportunities for a significant majority of the Gambian population, thus contributing to the socio-economic development of the country. The pursuit of these activities leads not only to numerous user conflicts but results in significant damage to the coastal areas. This calls for the adoption of sustainable coastal zone management practices. This section will give an overview of the resources, their present exploitation and their use.

3.1.1 Fisheries

The coastal waters of the Gambia are endowed with numerous fish stocks located in an upwelling zone. The continental shelf covers an area of 3,855 km² in addition to the tributaries of the River Gambia, which run the entire length of the country in an East Westerly direction (Appendix 1). Estuaries represent " some of the most ecologically productive elements of the coastal environment, rivaling tropical rain forests in their primary productivity" (Beatley et al, 1994). The estuary at the mouth of the River Gambia joins the river to the Atlantic Ocean. The existence of this ecosystem adds to the productivity of the Gambia coastal waters because of the mixing of fresh water from the riverine environment and salt water from the Atlantic Ocean.

The marine and fresh water resources harbour a variety of fish stocks. The exact fish resource potential is unknown due to the lack of accurate data as knowledge is " constrained by inadequate financial and technical resources to conduct comprehensive and in-depth resource assessment studies" (UNEP,FAO,PAP, 1998). The most common fish resources are the Demersals and the Pelagic fish stocks. The latter are found in abundance in the form of small pelagics such as the *Sardinella eba, Sardinella aurita*

and *Sardinella maderiensis* usually offshore. Closer inland the *Ethmalosa Fimbriata* local name “bonga” is found (UNEP/FAO/PAP, 1998). Due to its relative abundance, this fish species today proves to be the cheapest amongst all other species and provides a protein source for the majority of people.

The resources stimulate diverse fishing activities on the coastal zone. Fishing activities include both industrial and artisanal fisheries[2]. The latter which has quite a visible impact on the coastal zone, largely caters for the domestic market, whilst the former generates foreign exchange earnings for the nation. The artisanal fisheries sector has developed at a relatively slow space over the years, due largely to the lack of proper facilities and equipment. Despite these constraints, however, visible progress has been made: the sector provides ninety percent (90%) of the fish supply consumed by locals and employs nearly twenty thousand people; the minority being women, who are mainly engaged in the processing, handling and marketing of the catch. Fishing methods used today include bottom gill nets, drift gill nets, bottom long line fishing and hand line techniques.

Some of these fishing methods are now being either discouraged or restricted in many parts of the world; a case in point is the recent lawsuit filed by the Center for Marine Conservation (CMC) in the USA and the Sea Turtle Restoration Project of the Turtle Island Restoration Network. The lawsuit which is against Hawaii, seeks to put a stop to the killing of endangered sea turtles by longline fishery (CMC, 1999). This fishing method still prevails today in the Gambia, and little has been done to assess its impact on the aquatic environment.

The lack of proper amenities such as jetties, has for long hampered the work of fishermen engaged in artisanal fisheries and probably contributes to the low catch, and thus the inability of the sector to meet the demands of the local population.

Fish processing methods, especially fish smoking, is the predominant fish preserving method used in the artisanal fisheries sector and one that poses one of the biggest challenges to the fishing industry today. Tremendous amounts of our forest resources are used as a fuel source, and the smoke generated pollutes surrounding coastal communities, posing severe health hazards for the populations within. The littering of coastal beaches is another problem that occurs as a result of fish processing. Large amounts of fish waste are generated; some of this is recycled and used as poultry feed, the rest is left to rot, only to worsen the already serious beach littering.

Amongst the artisanal fishing activities is oyster harvesting; the most common oyster species is the West African Mangrove Oyster, *Crassostrea tulipia.* This species is most often found in the shallow waters of the Gambia Estuary. Oysters are highly priced; being a delicacy not only for Gambian nationals but also for the tourists who visit the country during the cold winter months of the Northern Hemisphere.

Women folk constitute the significant majority engaged in oyster harvesting. Some of these workers come from the neighbouring countries of Senegal and Guinea Bissau. Unfortunately, the harvesting method most often used involves the cutting down of the roots and branches of mangroves to access the oysters. The negative consequences of this activity cannot be overemphasised. Mangrove populations in these coastal waters serve as spawning grounds for fish stocks, and a habitat for juvenile species. Oysters are usually found in clusters firmly attached to the roots of mangroves and their collection mean systematic deforestation, habitat degradation and the loss of spawning grounds for the juvenile species that use the mangrove ecosystem as breeding grounds. Such inappropriate harvesting methods lead to a decline of the oyster populations.

The potential for the development of aquaculture has not been fully explored. Efforts made for its introduction have all failed over the years. Consequently, this activity is for the moment, non-existent. Its re-introduction should, however be preceded by proper environmental impact assessment studies in order to mitigate adverse impacts such as coastal water pollution.

The Industrial fisheries sector is export-oriented. Its contribution to domestic consumption is minimal and its impacts on the coastal area are not devastating, when compared to Artisanal fisheries. The challenge faced in this sector is not to exceed the Maximum Sustainable Yield (MSY) inorder to maintain an adequate biomass for the protection of the fish resources on a sustainable basis. However, with the non-existence of data on potential stocks, meeting this objective is rather difficult. A study funded by the FAO technical co-operation project in 1994 to develop a database inventory on current fish stocks has yet to produce satisfactory results.

Fisheries contribute 2.8% to the Gross Domestic Product (GDP) of the nation; provides considerable employment and generates valuable foreign exchange earnings through the industrial sector. Its biggest challenge is to maintain a balance between the rational and sustainable exploitation of the resources and the maximisation of the socio-economic benefits being reaped from it (NEA, 99).

Fig 2. Fishing activities along the southern coastal region.
Source: UNEP/FAO/PAP, 1998. Map 2.

3.1.2 Forest Resources - Mangroves

The Gambia is characterised by a Sudano-Sahelian vegetation type with a dry forest cover. Forest categories include open woodlands, tree and shrub Savanna and closed woodlands defined as having a canopy closure of more than 50% (UNEP, FAO, PAP, 1998). Fifty five percent (55%) of the closed forest vegetation is concentrated along the Atlantic coastline. These include the mangrove populations lining the estuary of the River Gambia. Mangroves have an important role to play in coastal ecosystem functioning. Mangroves serve as breeding grounds for various fish species and help in stabilising the soil around the coastal region serving as a protective natural barrier in a relatively flat relief atmosphere where natural barriers are lacking. Lack of natural barriers in the coastal zone increases its susceptibility to the forces of wind waves, sediment transport and sea level rise (Beatley et al, 94). It is not surprising that the United Nations Environment Program (UNEP) ranks the Gambia as one of the top ten countries in the world affected by sea-level rise (NEA, 1992).

Different species of mangrove are found in the Gambia, they include *Avicienna africana, Laguncularia Racemosa, Rhizopora Racemosa, Rhizophora Mangle* and a hybrid of the last two species, *Rhizophora harrisonii* (NEA, 1997). These species have varying salt-water tolerance levels; the *Avicenna africana* with high salt-water tolerance levels, thrives in lagoons near seas.

The mangrove populations have remained stable over the years but they now face environmental threats, due mainly to habitat degradation. These threats come from oyster harvesting, clearing of mangrove swamps for rice cultivation and using mangroves as a source of fuel wood. It is noted that “the Gambia, Senegal and Sierra Leone along the West African Coast have converted considerable hectares of mangrove vegetation into rice paddies, subsequently acid sulphate conditions developed making rice cultivation impossible” (Hinrichsen, 1997).

Recent infrastructure developments such as the construction of a bridge at Brumen in the Gambia visibly aggravated a localised population of mangroves, leading to a high death rate of the mangrove populations. The regeneration process is slow and it is not certain whether the mangrove populations will recover. The effects of the absence of an Environmental Impact Assessment (EIA) study before the construction of the Brumen Bridge was one of the lessons learnt after this experience. Along the periphery of the urban area, mangroves are cleared for construction purposes as the

cities try to accommodate the growing population pressures. As urbanisation continues to spread, this trend might continue.

3.1.3 Mineral Resources

The presence of some mineral resources in the Gambia coastal zone has been marked but the resources remain largely unexploited. Minerals found within the coastal area include heavy minerals - ilmenite, rutile and zircon. These occur along the raised beach complex of the coastal zone and were mined in the 1950's. At the moment, sand and gravel are the only mineral resources being utilised from within the coastal area. These are exploited to meet the needs of a booming construction Industry. Although low in value, both are high volume commodities needed for infrastructural development.

Sand was previously legally mined along the coastal area (Sanyang and Bijilo) and had serious repercussions on the coastal ecosystem. The volume of sand mined along the coastal area amounted to 100,000 to 150,000 m^3. The Government of the Gambia through its relevant organisations, the Department of State for Trade, Industry & Employment and the National Environment Agency, put a ban on mining sand along the coastal area and relocated sand mining activities to Kartong, a town further inland from the coastal zone. Sand is excavated from sand dunes at Kartong. The Kartong Sand Mining site covers an area of 27.6 hectares with a total volume of 0.8 million cubic metres of sand. Under a Sand Mining Management Plan (1994), the first of its kind, these volumes of sand were envisaged to give an adequate supply of sand to a booming construction Industry for a five-year period. Towards its third year of operation, it was realised that the supply was inadequate and that the Government had to open new mining sites. The process of locating these new sites is ongoing, but at a slow pace, as it involves tests meant to ensure that the quality of sand is suitable for construction purposes

The impacts of sand mining on the coastal area are devastating. Sand mining activities in the Gambia are categorised into two different activities, namely legal and illegal sand mining activities. The former is regulated by national law and carried out under the supervision of the mandated government departments and local authorities. Illegal sand mining which has become quite rampant; involving a significant number of people living around the coastal area. A situation that largely reflects the lack of capacity of the concerned agencies to police the coastal regions on a regular basis. The

combination of both legal and illegal mining has led to the excavation of tons of sand from the coastal area, disturbing the natural processes of the coastal ecosystem such as sediment transport – the end result being coastal erosion, today the most devastating problem faced today in the Gambia coastal zone.

3.2 Coastal Erosion

3.2.1 General

Coastal areas are dynamic ecosystems because of the combination of different natural processes occurring at the same time. These include interactions between wind water and land. Sediment transport from one location to another lead to erosion and accretion patterns. The wave patterns on a typical coastline causes longshore currents or littoral drifts. If these waves reach the shoreline at oblique angle sediments are transported from updrift locations to downdrift locations (Beatley et al, 1994). If the rate of erosion is not balanced by the rate of accretion a substantial amount of shore areas are washed away as a result. However, the sand volumes never leave the ecosystem unless disturbed by other anthropogenic interference. As described by Haznet, “In the Northern Hemisphere winter storms may remove significant amounts of sand, creating steep, narrow beaches. In the summer gentle waves return the sand, widening beaches and creating gentle slopes” (Haznet, 1999).

The phenomenon of coastal erosion has prevailed in the coastal areas of the Gambia for the past three decades. Records show impacts of coastal erosion in the Gambia coastline from the 1950’s (Fig 3). The following sections detail the natural and man-made causes of coastal erosion in the Gambia.

3.2.2 Natural Causes

Natural coastal processes will continue to have dynamic effects along coastal areas. They result largely from longshore currents or the littoral drift, which because of the oblique wave patterns they create, washes the shoreline away. This phenomenon coupled with anthropogenic interference such as sand mining result in accretion rates failing to equate with the rate of erosion, causing substantial sediment loss.

Littoral drift which particularly affects the Gambian north coast, involves the transportation of sediment; sand, clay and silt particles, by combined action of wave

agitated particle motions perpendicular to the wave fronts, combined with the downstream transport effect of longshore currents in the downwind (DHI, Portconsult 1997). A thin layer of sediment accumulates on the seabed surface, and is then transported downstream in a zigzag pattern. The phenomenon occurs daily with small waves and gradually increases with bigger waves. The waves approaching the north coast of Banjul from a westerly direction produce a littoral drift towards the east and when approaching the east coast of Banjul produce a littoral drift towards the west.

3.2.3 Sea-Level Rise

The low-lying relief of the country makes it susceptible to sea level rise. It is predicted that the low-lying coastal areas around Banjul Point (Fig 2) will be greatly affected by sea level rise in future. The lack of data on sea-level rise at the regional and national level makes the analysis of the impacts of sea-level rise on the Gambia coastline a cumbersome process. It has been noted that the Gambia is ranked by UNEP amongst the top ten countries in the world affected by sea level rise but exact measurements are unavailable currently to support this (EU, 1992). However, there is evidence of impacts of global climate changes around the world and sea level rise is one of those changes. The rest of this section analyses such global impacts around the world and their impacts on the environment.

Climate changes have been observed and recorded over long periods. The experience of a global climate anomaly, El Nino is evidence of the impacts of global climatic changes and the positive impact data analysis of such events could have on civilisations. As Fagan reiterates in ' Floods, Famines & Emperors, *El Nino and the fate of civilisations*': " The 1998 El Nino, the greatest in living memory, brought record rains to the California coast: nearly 1,270 mm in Santa Barbara, almost three times its yearly average. But because federal, state, and local governments had spent millions clearing flood control channels, stockpiling sandbags (a soft coastal protection measure), and taking other precautions, the damage was less than anticipated. It was the first time the authorities had the benefit of accurate long- range weather forecasts. Computer models and satellite images tracked the El Nino from birth to death" (Fagan, 1998). Fagan continues to attest that the El Nino phenomenon existed centuries ago and was documented by the then Spanish colonists who referred to those years as "the years of plenty and heavy rainfall". The impacts of El Nino were also evident in Australia and

Southeast Asia as severe droughts were experienced. This scenario depicts that global climate changes create erratic weather patterns over the world and would affect human civilisations at times in the most devastating manner in the absence of appropriate precautionary measures.

The greenhouse effect is a natural phenomenon where green house gases trap the energy from the sun, which in turn raises the temperature of the earth. This creates a warm conducive environment, providing a hospitable habitat for life forms on earth. The ‘ enhanced greenhouse effect’ has caused the publicity of the adverse effects of global warming. This is the increasing concentration of the greenhouse gases carbon dioxide, methane and nitrous oxide as a result of heavy industrialisation. This warming of the atmosphere could have an effect on the coastal environment such as sea level rise. The issue of the greenhouse effect is enjoying considerable discussion within scientific circles, but the world is yet to see its predicted devastating impacts such as the rise in sea levels, to believe in its existence.

The data below (table 1) produced by the Intergovernmental Panel on Climate Change (IPCC) depicts an increase in sea level rise in the future as a result of increasing aerosol levels. The low and high projections of sea level rise are 20 and 96 cm respectively. The IPCC has projected global mean sea level rise to reach 50 cm by the year 2100 (May et al, 1998).

Table 1. Global Mean Sea Level Rise Projections (cm)
Source: May et al, 1998, page 10

Levels	Low	Mid	High
Constant 1990 aerosol	20	49	86
Increasing aerosol	23	55	99

According to this report the rise in the earth’s temperature is expected to be greater towards the north and south poles than nearer the equator. Rainfall patterns will become erratic and might increase in some areas and decrease in others (May et al, 1998). These arguments indicate that global warming may have caused the devastating drought of the Sub-Saharan African region two decades ago.

With regards to coastal areas, scientific research illustrates that climate changes could induce inundation, accelerated erosion, wave damage and the aforementioned

erratic rainfall patterns. The southern and western Australian coasts are typical examples, where the southern area might experience an intensity of storms and the western coastal area could experience drier conditions respectively. In the case of the Gambia, accelerated coastal erosion is having the most devastating impacts on the coastal environment.

For a country like the Gambia, other elements of this complex phenomenon, are at work, leading to consequences such as accelerated coastal erosion, severely affecting the coastal environment. Indeed the foregoing assessment of global climate changes and its impacts on coastal environments in general, does tend to suggest that the phenomenon may be one of the causes of the accelerated erosion being experienced in the Gambia, possibly through the gradual rise in sea levels.

3.3 Coastal protection measures

Groynes

Groynes are structures made up of rhun palm or wood erected at right angles to the coast to halt beach erosion. They are the oldest coastal protection measure used in the Gambia. They have been used over several decades, when the coastal erosion phenomenon became increasingly evident. These wooden structures built over decades ago are still evident along the Gambia coastline and have stabilised parts of it. The groynes that have been maintained, continue the stabilisation trend whilst others form scattered remains. Groynes function by reducing the velocity of approaching waves and trap the longshore littoral drift, in the event stabilising the sand. The structures require maintenance at ten-year intervals. The cost per metre of stabilised area is relatively high. (DHI, Portconsult, 1997).

Gabion Baskets – Sea Wall

This is a hard coastal protection measure[3] which involved the construction of Gabion baskets to halt the erosion along a hundred-meter section of the coastline. This section of the coastline recovered and accretion rates began to stabilise after a certain period, however, the erosion shifted to other adjacent sections following the direction of

the longshore drift. This intervention was funded by the World Bank, coordinated, and implemented by the National Environment Agency and the Gamworks Agency.

Sand Bags – Sea Wall

This soft coastal protection measure is now largely being implemented by the hotel industry to protect the hotel Infrastructure along the Cape point to the Bald Cape Section (Fig 3). At certain locations of the coastline cliff recession is also evident at a rate of half a meter per annum (UNEP,FAO,PAP, 1998). The construction of sandbags proves to be a cheaper coastal protection measure. The big disadvantage of such a measure is its inability to withstand the forces of waves; usually the bags are forced open by such wave action. However, the Government of the Gambia encourages softer coastal protection measures. These have limited impact on the surrounding coastline and would serve as temporary measures until the coastal dynamics are thoroughly understood for the implementation of more concrete measures thus enabling a more holistic approach to the problem of coastline erosion.

Revetments – Sea Walls

These are hard coastal protection measures used, despite Governments preference of soft coastal protection measures over hard coastal protection measures. Revetments were constructed along a 160-meter stretch of a section of the coastline adjacent to the Cemetery area in Banjul, previously protected with Gabion Baskets. This intervention was the result of a public outcry to halt the erosion and save the rest of the cemetery areas being washed away. Graves were washed away over the years and as a consequence human bones strewn over the area.

The United Nations Development Program (UNDP) under its Strategy funded the project for Poverty Alleviation Program, at a cost of $400,000. The materials used were laterite and granite boulder stones, the former was readily available in the Gambia, the latter had to be imported from neighboring Senegal, adding to the project costs. A section of the coastal area around the Gambia Ports Authority (GPA) has been stabilised using this hard coastal protection measure.

The African Development Bank (ADB) - funded Coastal Protection Study

This long awaited coastal protection study is finally on course and project implementation is planned to start during the last quarter of 1999. Whilst parts of the Gambia coastline were being studied on a piecemeal basis, this ADB funded project would take a holistic approach and study the dynamics of the entire coastline, incorporating the northern and southern coastal areas of the Gambia. The major objective of the study is "to assess and determine the causes of beach erosion and sedimentation along the coastline and recommend the best possible protective measures to mitigate these problems" (ADF, 1997). The importance of the Environmental Impact Assessment aspects of the study cannot be overemphasised. This would take into consideration the potential environmental impacts of the project on the surrounding coastal habitats such as wetlands and scenic historic sites.

Methods to combat coastal erosion along the Gambian coastline such as the installation of groynes and jetties have failed to halt the erosion around strategic locations of the coastline. These coastal protection measures interfere with natural processes like sediment transport and in fact exacerbate the rates of erosion (Beatley et al, 1994). In addition, the lack of proper studies of the coastal dynamics before the implementation of coastal protection measures has led to the failure of such measures.

3.4 Development Effects on the Coastal Environment

3.4.1 Man – Made Causes of Coastal Erosion

Legal and illegal excavation of sand is a main cause of erosion in the Gambia. Moreover, although control measures are being put in place they have yet to prove effective. Other man-made causes of coastal erosion could be attributed to dredging activities of the Port and deforestation. An Environmental Impact Assessment (EIA) carried out at the Gambia Ports Authority revealed that dredging activities have an insignificant impact on the natural environment. Monitoring and assessment studies should be ongoing to test the validity of these claims.

Lack of data has made it impossible to monitor the impacts of deforestation on the coastal environment. It has been evident between 1980 and 1990 that deforestation enhances erosion rates. Within this period, the boom in the tourism sector resulting in

the construction of hotels on the coastal area warranted the removal of large areas of natural vegetation cover. The removal of vegetation cover from the coastal area makes it vulnerable to natural erosion.

The areas mostly affected by coastal erosion are the beach areas in the urban environment (appendix 2). These areas include Cape point to Banjul Dockyard, Cape point to Bald Cape and some parts of the northern coastal area around Barra Point. The erosion threatens monuments; significant cultural sites cemeteries, the hotel industry, housing Industry and infrastructure including government administrative buildings, moreover the city of Banjul. Erosion rates have been estimated at two meters annually and higher rates have been estimated at strategic locations of the coastline. This results in a loss of 2.5 to 3 hectares of land annually (Delft Hydraulics, 1992).

Fig 3. Sections of the Gambia coastline affected by erosion and implemented coastal protection measures
Source: UNEP/FAO/PAP, 1998.

3.4.2 Tourism

The aesthetic nature of the coastline has attracted a booming tourism industry over the years and provides a significant source of revenue for the country. Tourism contributes 12% to the Gross Domestic Product (GDP). Increasing developments were realised in the tourism industry in the 70's and the Government of the Gambia promoted its development by demarcating a coastal strip for tourism development. This is known as the Tourism Development Area (TDA). The tourism industry maintained these positive trends until the mid-nineties when a military government took over. The country was considered politically unstable by some of the dominating tourist operators around the world, specifically Great Britain that had a market share of 60% before that time (UNEP, FAO, 1998). The Industry nearly collapsed but started to pick up again after the lifting of the travel advisory issued to tourists in various countries from which the tourists came to the Gambia.

The activities of the industry have numerous impacts on the coastal area of the Gambia. These range from over-exploitation of coastal resources, improper waste management activities and negative social consequences. The major impact on the coastline is improper waste management. It should be noted that tourism in the Gambia is predominantly coastal based. The introduction of ecotourism that could focus tourism activities further inland is still in its early stages thus it is not yet developed to shift the concentration of tourism away from the coastline.

Today some of the hotels and beach bars have improper waste disposal facilities and wastes from their activities are emptied into the surrounding coastal waters. This could lead to groundwater contamination in the Tourism Development Area (TDA) although there is no data supporting this yet.

A considerable amount of liquid waste generated in the Gambia originates from domestic and industrial waste discharges. Around the Tourism Development Area, an average of 1805 m^3/day of liquid waste is generated (UNEP, 1997). It is important to note that the amount and quantity of the wastes vary depending on the time of year; huge quantities are generated during the tourist season in the Gambia, which run half of the year. The waste is collected in oxidation ponds then discharged into a nearby stream (Kotu stream).

Beach littering remains a major problem and contributes to the accumulation of marine debris. Marine debris is a collection of objects found in the marine environment; the ocean and other surrounding ecosystems such as mangrove swamps, estuaries and salt marshes (EPA, 1997). These objects are plastic pieces, plastic bags, plastic pellets, bottles and straws inclusive, all foam containers, fishing nets, glass, metal cans especially drinking cans, and cigarette buts.

Plastics are non-biodegradable materials that remain in the marine environment for a long time. They cause suffocation to marine life, which mistakenly identify plastic substances as food. Plastics are widely used in the Gambia, appropriate disposal methods are not available and recycling options would need to be considered in the future.

3.4.3 Port Activities

Port activities in the Gambia have so far done inconsiderable damage. The Gambia has two ports, one located in the capital city, Banjul and the other at Kaur, further inland. Most maritime activities in the Gambia are handled by a specialised, autonomous Maritime Agency, the Gambia Ports Authority, (GPA), established under a Ports Act in 1972. The specialised maritime agency has the following objectives; provision, operations, maintenance, improvement and regulation of all ports in The Gambia (Banjul, Kaur & Kuntaur), provision of pilotage and navigation services, provision and operation of ferries and river transport and regulation of Gambia waters including pollution prevention and control (Blell, 1988). To meet the above objectives, the GPA employs three master mariners, three marine engineers, five port managers, one maritime lawyer, two certified radio officers and five ship pilots (Touray, 1997). This constitutes the available expertise at the GPA whose workload is largely dominated by the recently port expansion projects leaving little time allocated to maritime safety and marine environmental protection matters.

No major oil spills have occurred in Gambia waters but being along the navigational routes of oil tankers, accidental spillages could occur. With regards to domestic activities, accidental spillage from small fishing boats does occur. A major oil spill that occurred earlier this year was a result of inefficient handling and transport of fuel oil to one of the *'Shell'* fuel Oil company depots'. The spillage covered considerable hectares of marshland near the urban city of Banjul.

The marshland is known to provide a habitat of many avifauna. The effects of the spill on the flora and fauna which thrive on the marshland is yet unknown. Studies are ongoing in this regard. It has been scientifically proven that oil spilled in a tropical setting, where there are usually low energy sedimentary areas, such as mangrove swamps, salt marshes and sea grass beds, the oil is likely to be trapped. The longer the oil stays in the environment, the higher the possibility of toxicity (Clark, 1997).

3.4.4 Coastal Farming

The Gambia's coastal plains contain fertile alluvial soils ideal for crop cultivation. Rice is a staple food, thus a lot of importance is attached to rice production, an activity concentrated on the swamps and marshlands. Strips of the banks of the River Gambia are used for farming purposes. Pesticides and fertilisers are used to enhance crop yields. This might produce economic benefits but the residues from these farming activities would need to be disposed of. Nitrates and phosphates are the major chemicals found in such pesticides. Their proper disposal remains a big challenge for the agricultural industry. Excess amounts of these chemicals disposed cause the eutrophication of lakes and rivers in coastal waters of the world.

West African states consume 10% of the worlds annual pesticide produce (Hinrichsen, 1998). The justification of this pesticide use is understandable from an economic point of view, since, agriculture is the basis of nearly all the West African economies. Nevertheless, run-off from these largely used pesticides, sprayed on agricultural fields, degrade the water quality of the region. Further, upon entering the marine ecosystems, these chemicals accumulate in tissues of marine organisms and might affect human health through biomagnification[4] processes. In this regard, crustaceans and shellfish seem to hold particularly high concentrations of these chemicals.

The coastal waters of the Gambia and the resources within are susceptible to pesticide pollution from neighbouring states along the West African region. In addition, at the domestic level, pesticides are used to boost annual crop yields. An inventory has shown that 10,200 litres and 8,048 kg of obsolete pesticides are stored in different parts of the country and methods of their disposal are being discussed (NEA, 1997). Efficient disposal methods could prevent future pesticide contamination of the coastal environment.

3.4.5 Industrial Development

Industrial development is at its early stages. Its growth, which without doubt is very desirable, nonetheless harbours the risks associated with industrialisation everywhere, it could have adverse impacts on the coastal environment, given the country's geography. These risks can however be reduced with the development of cleaner safer technologies for the industry.

3.4.6 Wildlife Activities

Wildlife diversity along the coastal area, specifically the southern region (Fig 6) has been greatly reduced due to habitat destruction. This includes the degradation of the natural vegetation cover home to a variety of fauna and flora.

The vegetation and favourable climatic conditions in the Gambia provide habitats for a large variety of avifauna (bird species) and other fauna and flora. The original coastal strip was made up of closed woodland, predominantly rhun palm (*Borassus aethiopum).* A significant amount of this vegetation has been degraded as a result of some of the aforementioned activities such as fisheries and tourism. The remaining vegetation is mostly bushed grassland. These areas have a high ecological value and still harbour a variety of avifauna, small mammals and reptiles.

Areas of high ecological value are shown in table below (table 1). Some of these areas are already protected areas such as the Bijilo Forest and the Tanji bird Reserve. These areas contain closed canopy forests and a variety of avifauna species and small mammals such as the colubus and vervet monkeys. The mammalian populations along the coastal regions of the Gambia have also dwindled due to habitat degradation. Some of these mammals are extinct.

The Senegambia (Senegal & the Gambia) region supports six hundred species of birds, a total of 540 of these species have been recorded from the Gambia (Barlow et al, 1997). This natural endowment has made bird watching a tourist sport attracting bird watchers from different parts of the world. Bird watching is an important aspect of Ecotourism, an activity at its' primary developmental stages in the Gambia which, when fully developed, could shift tourism from the coast to the inland zones of the country minimising the pressures impinged on the coastal regions.

Wildlife species are protected by the 1977 Wildlife Act; certain species are not protected. Illegal hunting activities still occur. The Green turtle is still hunted down by fishermen and sold in markets. At the international level, the Gambia is a signatory to the Ramsar Convention. The major objective of the convention is "to stem the progressive encroachment on and loss of wetlands, recognising the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value" (EU, 1992). Key provisions of the convention are as follows:

- Parties to designate at least one national wetland for inclusion in a list of Wetland of International importance
- Parties to consider their international responsibilities for conservation, management and wise use of migratory stocks of wildfowl.
- Parties to establish wetland nature reserves, co-operate in the exchange of information and train personnel for wetland management.
- Conferences on the conservation of wetland and waterfowl to be convened as the need arises.

Little emphasis has been placed on Ecotourism, with the exception of Bird watching activities. The following table lists various regions of the coastal area of the Gambia where Ecotourism could be fully developed. It is pertinent that the appropriate precautionary measures be taken to develop these sensitive areas of the coastline in a sustainable manner. The Gambia being a signatory to the Ramsar convention should ensure that some of these sites in future are declared as Ramsar sites and would be protected under the above listed provisions.

Table 2. Sites of Ecological Importance within the Southern Coastal Region of the Gambia

Source: UNEP/FAO/PAP, 1996, page 25

SITE NAME	STATUS	HABITAT TYPES	ECOLOGICAL VALUE	TOURISM POTENTIAL	THREATS
Toll Point to Cape Greek (includesCamaloo Corner)	This area, along with the entire mangrove swamp (site 2) extending to Mandinari Point, is due to be proposed as a Ramsar site.	The seaward strip to the north is composed of a mosaic of habitat types including coastal lagoon, mangrove, saltpan coastal scrub and grassland, and freshwater ponds, which form in the Camaloo corner.	The area has a high ecological value. Botanical, avifauna, fish breeding and nursery grounds, possibly also for reptiles and invertebrates. Some data available on avifauna.	There is a limited amount of birdwatching currently taking place. Its proximity to the Cape Point hotel area makes it very accessible.	Commercial development especially along the Banjul highway (as evidenced by Petrol station development); agricultural intensification; dumping; tourism development especially along the coast (beach bars etc); motorised sport activities (quads, water skiing); industrial pollution
Oyster Creek mangrove swamp (to Mandinari Point)	This area (along with the site 1) is due to be proposed as a Ramsar site	Mangrove swamp with fringing salt pan and grassland, some relic patches of woodland esp. towards Abuko to Mandinari.	High ecological value for avifauna, fish breeding & nursery grounds, and for zoological (esp. the manatee)	Currently used for tourist boat trips and fishing access from Denton Bridge to the river proper. Also birdwatching trips, esp. from Lamin Lodge. Potential for manatee watching site	Urban encroachment . Current fishing timber harvesting, oyster collection appears to be done on a sustainable basis, but no baseline information available. Some Illegal hunting of manatee. Need for speed controls for boats using the waterways, both commercial and private.

SITE NAME	STATUS	HABITAT TYPES	ECOLOGICAL VALUE	TOURISM POTENTIAL	THREATS
Tanji Bird Reserve	Gazetted 1993. Nature Reserve under DPWM. Area ca 616 ha.	Coastal lagoons, stabilised sand-dunes with woodlands, scrub and grassland components, fresh water swamp, river with fringing mangrove & saltpan ,	Very high avifauna, botanical, and also encompassing a cultural site at Ghana Town.	High, currently receiving a limited # of bird watchers. Reserve infrastructure not well developed.	Currently timber collection, clearance for agriculture, potential road development through reserve.
Brufut Wood	None	Relic patch of riverine woodland	High,important botanically and also for presence of specific riverine woodland bird species limited in dist. To sites such as Abuko and Pirang.	Currently being used for limited bird watching activities, and potential for increase in this sector.	Active clear felling currently under way for timber and agriculture.
Solifor Point	None	Coastal Woodland/scrub, inshore reef, laterite cliffs	Moderate, Little available information. Potentially important for avifauna and botanically, possibly also geologically.	Good potential for development of coastal walkway with views from along cliff – Tanji to Tujereng. None at present.	Timber collection for Tanji and Tujereng fish smoking operations. Also residential and agricultural development.
Tujering lagoons	None	Coastal lagoon with mangrove salt pan fringe also stabilised dunes with grassland/shrub/woodland complex	Moderate to high for avifauna and possibly also botanically.	Potential for inclusion in coastal walk mentioned under site 5. None at present, inland is the Tujereng parrot Park.	Tourism development, timber collection. Point of entry to beach for tourist safaris driving south to Sanyang.Threat to coastal stability
River kakima Delta – Kachuma forest	None	Outflow of the River Kakima. A mosaic of lagoons, mangrove saltpan and stabilised dune vegetation, backed by a relic fringe of high coastal woodland.	High. No assessment made. A mosaic of lagoons, mangrove, saltpan and stabilised dune vegetation, backed by a relic fringe of high coastal woodland.	None at present, though some potential for birdwatching or inclusion in coastal walk.	Beach driving by tourist safari companies. Illegal rhun palm and timber felling in Kakuma.

SITE NAME	STATUS	HABITAT TYPES	ECOLOGICAL VALUE	TOURISM POTENTIAL	THREATS
Dau Dula to Kartong	None	Coastal forest merging to scrub grassland in stabilised dune complex towards Kartong.	High for forests both botanically and for avifauna. Stabilised dune scrub of moderate value for avifauna.	None at present though Dad Dula was the site of a now abandoned tourist development.	Possibly timber/rhun palm felling, agricultural development.
Kartong Point – Allahein river mouth	None	Coastal Scrub grassland on stabilised dune system, lagoon complex, river estuary.	Unknown, but potentially moderate to high, especially for avifauna, and botanically.	Limited at present – boat trips up the river, visits to Falonko crocodile pool.	Timber collection, agriculture road development for commercial sand mining.

3.4.7 Population Growth

The great variety and high concentrations of these numerous activities on the coastal zone of the Gambia attracts populations from different parts of the country, intensifying the trend of rural-urban migration. Furthermore, a significant percentage of the administrative sector is centered in the capital city, Banjul and surrounding towns in the Kombo Saint Mary Area, where by and large, the bulk of the nations salaried workers live.

The Gambia has a population density of 96 inhabitants per square kilometer and an annual population growth rate of 4 %. There has been a steady increase of the numbers of people residing in coastal areas over the years as shown in Table 3.

Table 3. Population and Growth Rates in Local Government areas (Coastal LGA's shaded).
Source: Dept of Central Statistics, 1993.

Local Government Areas	Population (No)			Increase (%)	
	1973	1983	1993	1973 - 83	1983 - 93
Banjul	39,179	44,188	42,407	12.8	-4.0
Kanifing	39,404	101,504	228,945	157.6	125.6
Brikama	91,013	137,245	233,063	50.8	69.8
Mansakonko	42,447	55,263	64,687	30.2	17.1
Kerewan	93,388	112,225	151,342	20.2	37.5
Kuntaur	47,669	57,594	68,292	20.3	18.6
Georgetown	54,232	68,410	86,618	26.1	26.6
Basse	86,167	111,388	147,513	29.3	32.4
The Gambia	483,499	687,817	1,025,867	39.4	49.2

The table further illustrates that the years 1973 to 1983 and 1983 to 1993 were characterised by a tremendous increase in the population of the coastal regions and the Gambia as a whole. This was a time when considerable expansions were made in various sectors of the economy, attracting population masses from all levels of society into the urban cities.

[2] Artisanal Fisheries is a small-boat, highly labour-intensive inshore fishery that uses traditional fishing methods and provides mainly for subsistence and local consumption. Industrial fishery involves larger more technologically advanced boats (trawlers) which concentrate on offshore fishery, capital intensive and is done largely for exports to earn foreign exchange.

[3] A term used by coastal engineers, hard coastal protection measures usually involve the use of hard structures such as wood and stones as the core material to construct such measures. Soft coastal protection measures are made up of material that could easily disintegrate such as sand used in the making of sand bags; used as a temporary protection measure to protect coastlines.

[4] Biomagnification is a process that involves the gradual increase of contaminants, as they are absorbed at different levels of the food chain. It usually occurs after bioaccumulation; when organisms fail to get rid of contaminants in their systems that accumulate over the life of the organisms.

Chapter 4

4. Current Status of Coastal Zone Management in the Gambia

Coastal zone management activities like most environmental management activities cuts across different governmental sectors, thus coastal zone management processes have to be cross- sectoral to be efficient and adaptive to various coastal management activities and developments.

4.1 Legal and Institutional Framework

4.1.1 The National Environment Agency

The Department of State for Fisheries, Natural Resources and the Environment is the leading Department of State in charge of the marine environment in the Gambia. The National Environment Agency (NEA) under this Department is the leading Agency in coastal development matters in the Gambia. The NEA was established in 1993, after the upgrading of the Environment Unit, established in 1981 under the then Ministry of Natural Resources & the Environment. The NEA was established by an act, the National Environment Management Act (NEMA). NEMA provides the framework for overall environmental management in the Gambia. The National Environment Management Act has the following provisions:

1. The establishment of a National Environment Management Council made up of The President of the Republic of the Gambia who would serve as Chairman of the Council, the Minister responsible for Natural Resources, the Minister for Agriculture, the Minister of Local Government and Lands, the Minister responsible for Health and Social Welfare, the Minister responsible for Trade, Industry & Employment, and other persons whom the President of the Council might co-opt.

2. The National Environment Management Council shall:

- be the policy- making organ of the National Environment Agency and coordinate policies; government or private activities likely to have an impact on the Gambian environment,
- promote the integration of environmental considerations in all aspects of social and economic planning, harmonise the plans and policies of the various sectors dealing with the environment and approve all environmental plans and policies,
- promote the use of renewable sources of energy and the conservation of traditional sources, supervise the work of the National Environment Agency and liase with other Government agencies on all issues affecting the environment, commission and publish studies on the environment and promote public awareness of the environment; and
- adopt standards guidelines and regulations proposed by the Agency; and perform such other matters as Government may assign to the council.

3. The National Environment Agency is to serve as secretariat to the National Environment Management Council and should undertake the following.

- be the principal body responsible for the management of the environment in the Gambia and shall coordinate all activities of the Government of the Gambia in the field of environmental matters;
- implement the policies of the council on the environment ;
- liaise with the various ministries, departments and agencies of the Government on all issues relating to the environment, and ensure that environmental concerns are integrated into all spheres of national planning and project implementation;
- liaise with the private sector, intergovernmental organisations, governmental agencies of other states on all issues relating to the environment;
- prepare proposals of environmental strategies for the council;
- initiate legislative proposals, standards guidelines and regulations in accordance with the provisions of this Act;
- undertake studies and submit reports and recommendations to the council on the matters likely to have an impact on the environment; and

- promote public awareness of environmental issues through gathering, analysing and disseminating information about the environment, and publishing periodic reports on the State of the Environment (NEMA, 1994).

The above legislative framework gives the National Environment Agency the mandate to coordinate all environmental activities in the Gambia whereas the National Environment Management Council provides the necessary "political will" to formulate and implement environmental policies and programs.

The National Environment Management Act stipulates that a Technical Advisory Committee (TAC) should be established as an advisory body to the Agency. The committee should consist of fifteen members whose expertise shall reflect the various fields of environmental management. However, the Technical Advisory Committee (TAC) never came into existence. Instead, the National Environment Agency established Technical Working Groups in the respective environmental disciplines and have assumed the role of the proposed Technical Advisory Committee. The NEA today implements its' programs through these technical working groups. The eight technical working groups are:

- Agriculture and Natural Resources (ANR)
- Environmental Information Systems (EIS)
- Chemicals and Pesticides Control and Management Board (CPCMB)
- Environmental Education and Communication (EEC)
- Coastal & Marine Environment (C&ME)
- Environmental Impact Assessment (EIA)
- Environmental Legislation
- Environmental Quality

Each working group consists of a number of technocrats who have acquired expertise in the related environment disciplines. The working groups under the auspices of the NEA, implement the various programs of the Gambia Environmental Action Plan previously discussed. For the purposes of this discussion the activities of the Coastal & Marine Environment Working Group will be dealt with in detail. Since coastal zone management issues are cross- sectoral in nature, overlaps in functions do exist with

nearly all the other working groups. Coastal Management issues embody natural resource management issues, Environmental Information Systems, Pesticides as discussed in the previous chapter, Environmental Education & Communication, Environmental Legislation, Environmental Impact Assessment and Environmental Quality.

The first management body in charge of coastal and marine environment issues in the Gambia was a Technical Committee mainly comprised of the then Environment Unit, Geology Unit, the Gambia Ports Authority and the Department of Technical Services. It was envisaged in 1995 that the membership of the working group needs to be expanded to incorporate all stakeholders of the coastal area in the Gambia. This would encourage a co-ordinated policy that would eliminate the existence of overlapping functions in various maritime institutions in the Gambia as "ad-hoc and uncoordinated efforts cannot and do not lead to success'' (Srivastava, 1987). In addition, it works towards achieving the major objective of the Gambia Environmental Action Plan which is " to set out a framework for future actions to address the problems of natural resource management and environmental degradation through the involvement of all levels of decision makers" (NEA, 1992). The Coastal and Marine Environment Working group then assumed the following membership.

The Department of State for Works, Transport & Communications	Gambia Ports Authority Gambia Public Transport Corporation Department of Technical Services
The Department of State for Natural Resources, Fisheries and The Environment	National Environment Agency Department of Water Resources Department of Fisheries Wildlife Services Department of Forestry
The Department of State for Agriculture	Soil & Water Management Unit
The Department of State for Trade, Industry & Employment	Geological Unit
The Department of State for Tourism and Culture	National Tourism Office
The Department of State for Finance & Economic Affairs	
The Department of State for Local Government and Lands	Dept. of Physical Planning Department of Lands and Surveys Kanifing Municipal Council Brikama Area Council

All of the above institutions have vested interests in the coastal area of the Gambia and their activities have impacts on coastal area development. A major omission made during the establishment of the working group, was the non-inclusion of the non-governmental organisations and the coastal communities, whose participation in coastal management is vital, especially where the utilisation of resources is concerned.

Coastal communities are the direct users of coastal resources. It is now being realised that encouraging these communities to adopt sustainable management practices make them better resource managers, in comparison to policy makers who are usually distant from the realities on the ground.

Non-governmental organisations usually elicit, encourage and promote local leadership better than their governmental counterpart institutions. This might be due to the non-biased nature of their operations as a result of non-political motives. Responses of governmental organisations could at times be affected by the existing political order in a particular place at a given time. This usually affects their decisions, in the process, sometimes compromising appropriate environmental protection measures.

Non-governmental organisations in the Gambia establish working partners with rural communities without government interference. The work of non-governmental organisations involved in environmental matters emphasises stakeholder participation at all levels of society.

The interrelated activities of the above listed member institutions of the Coastal and Marine Environment Working Group with regards to coastal area development called for a participatory approach to coastal development. This was fostered through the aforementioned Coastal and Marine Environment Working Group under the auspices of the NEA, the co-ordinating institution of all environmental affairs in the Gambia. The working group co-ordinates coastal and marine activities at the national level. The terms of reference for the working group are as follows:

- To formulate, review and revise policies relating to all coastal, marine and fluvial activities;
- To advise the National Environment Agency and the Government on matters arising on the sustainability, protection , development and monitoring of the coastal, marine and fluvial environment; and
- To define and guide the work of the task forces on issues that may arise relating to coastal and riverbank erosion, marine and riverine environments, sand mining, and oil spill contingency plans.

The working group meets as and when the need arises and serves as an advisory body to the National Environment Agency. The fifteen institutions represented in the Coastal and Marine Environment Working Group, deal with the different aspects of coastal zone management as outlined in the above terms of reference. The meetings of the working group create a forum for the exchange of ideas on these different aspects of coastal zone management, to solve coastal problems in a holistic manner. The Executive Director of the Agency chairs the working group meetings. The group has been active in co-ordinating coastal protection measures to halt coastal erosion and has also relocated sand mining activities from the coastal area to further inland.

4.1.2 The Gambia Ports Authority

Legislative procedures in relation to the coastal area are also laid down for institutions represented in the Coastal and Marine Environment Working Group. The jurisdiction of the Gambia Ports Authority (GPA) is regulated by the Ports Act: ”the jurisdiction covers the Port of Banjul including the shores and beaches thereto, bordered to the North by an imaginary line drawn from the Buniadu Point to the northern extremity of the Dog Island Point to the south bank of the Medina Creek” (Fig 1). The GPA is mandated by the Ports Act to undertake the following activities:

- acquire, construct, manufacture, maintain or repair anything for the purpose of the Authority.
- clean, deepen, improve or alter any Port or its approaches or any other waterway, if so required by the Secretary of State for Works, Transport & Communication.
- supply water to ships and generate and supply electricity
- control the erection and use of wharves in the area of its jurisdiction
- reclaim, excavate, enclose or raise any part of the lands vested in it; and
- prevent pollution in the Gambian waters.

In addition, the GPA is mandated to play an active role in the international arena on behalf of the Gambia concerning maritime activities and has participated in numerous IMO conferences. The Gambia over the years has ratified some conventions and codes set by the International Maritime Organisation. However, the country has failed to ratify some international regulations set by the IMO due to inadequate material

and human resources and those that have been ratified have not been implemented to a satisfactory level due to other institutional constraints.

Amongst the conventions ratified by the Gambia is the Marpol 73/78 convention. Annex 5 of Marpol 73/78 contains stringent regulations on the prevention of Pollution by Garbage from ships. Regulation nine specifically requires each party to the convention to ensure the provision of facilities at ports and terminals for the reception of garbage. These facilities exist at the GPA, although they are inadequate.

Annex 1 of Marpol deals with oil pollution prevention, the lack of a Maritime Safety Administration unit at the Port hinders initiatives made by the GPA towards oil pollution prevention.

4.1.3 The Department of Technical Services

The Department of Technical Services is the technical arm of the Department of State for Works, Information and Communication. It is mandated to implement all constructional works under the control of the Government. These include all engineering works such as coastal protection works. Thus the Department of Technical Services plays an important role in implementing coastal protection measures to halt the devastating coastal erosion problem around the Gambia Coastline.

4.1.4 The Geological Unit (State Department of Trade Industry & Employment)

The Unit is mandated amongst other duties to regulate the mining of minerals in the Gambia. According to the Minerals Act of 1994. The Act was amended to incorporate a new definition for minerals as follows:

"Metalliferous ores, industrial minerals, and rocks such as sand, sandstone, laterite, clay, gravel, cockleshell, limestone, salt, workable deposits of ilmenite, rutile and zircon, and other substances of similar nature in their natural state which are obtainable only by mining and quarrying in the course of prospecting operations (Minerals Act, 1994).

The mining of sand, salt and gravel in the Gambia fall under the jurisdiction of the Unit. Sand and gravel mining are the prominent mining activities in the Gambia. Sand mining plays a leading role in support of a booming construction industry in the Gambia. The major activity of the Unit within the coastal area is to monitor the beach areas to prevent illegal sand mining activities. The Unit's activities are hampered by the lack of

adequate material and human resources; the unit has one vehicle and only a few inspectors, making it impossible to conduct regular monitoring exercises.

4.1.5 Fisheries Department

Fishing is an important economic activity in the Gambia and thus the need for proper legislative measures to regulate the activity. The Fisheries Department regulates fishing activities in the Gambia by administering the Fisheries Act. The Act makes provisions for the establishment of infrastructural facilities for the fishing industry. Furthermore, provisions are made in the Act to locate these infrastructural facilities in areas which are " free from objectionable odours, smoke, dust or other contaminants, and are not subject to flooding " (UNEP/FAO/PAP, 1996). The above provisions of the Fisheries Act, if strictly enforced, could minimise beach littering and air pollution from fish processing activities of the artisanal fisheries sector, which pollute neighbouring coastal villages.

4.1.6 The Gambia Public Transport Corporation

The above corporation regulates transport activities in the country. With regards to the coastal area, the GPTC conducts ferry services between Banjul, in the southern coastal zone and Barra Point in the northern part of the coastal region (Fig 1). A lot of siltation occurs along this navigational route, enough to obstruct waterways. The Gambia Public Transport Corporation dredges the area to provide free access to incoming and outgoing ferries. The repercussions of this dredging are still unknown but are probably altering habitats of marine fauna and flora and changing the environment of the benthos.

4.1.7 Area Councils

Under the auspices of the Department of State for Local Government and Lands**,** area councils play an important role in coastal area development in the Gambia. The Local Government Act makes provisions for Local Government procedures in the Gambia. Area councils are mandated to carry out the following activities in the areas under their jurisdiction:

- Prevention of soil erosion
- Prohibition, restriction and control of the cutting and selling of trees and forest products, the management of selected forest parks and areas, and the planting and tending of trees in general;
- The regulation of the disposal of refuse, the prevention and abatement of nuisances, and generally monitoring of health and sanitation; and
- The establishment and management of recreation grounds, open spaces and parks.

A major activity listed above and carried out by area councils is the disposal of refuse. Past trends have shown great improvements in this area especially around areas under the jurisdiction of the Kanifing Municipal Council. The Banjul City Council is mandated under the Local Government Act to establish and manage parks, and other public areas or recreation resorts, prevention of damage to the surrounding land areas.

4.1.8 The Departments of Physical Planning and Lands & Surveys

The above institutions under the auspices of the Department of State for Local Government and Lands are responsible for land administration in the Gambia. The Department of Lands and Surveys carry out four major activities: they are National mapping, Cadastral surveys, which includes " the demarcation of new layouts and individual parcels for which leasehold titles are to be granted by the state, recording of rights and interests in land, and the valuation of properties for taxation purposes" (UNEP/FAO/PAP, 1996).

The department of physical planning is responsible for long-term planning, design of layouts and the issuing of developmental permits for all new physical developments. Another important area under its jurisdiction is the formulation of housing policies, research into technical aspects of housing, and the administration of building codes and rent control.

In addition to the aforementioned institutions, the Department of State for Justice carries out land administration related activities. The department runs a registry of deeds, which record all transactions involving land matters. The area councils also play a role in the administering of land in the Gambia, although this role is limited to a small number of public services and the collection of rates for utilisation of coastal resources

such as sand. Village heads play a similar role in land administration matters. Their participation in the administration process is regulated through customary law.

4.2 Coastal Zone Policies

The National Environment Management Act (NEMA) makes provisions for the overall management of the coastal zone and all other wetlands in the Gambia. Amongst the provisions of the Act are restrictions for the introduction of animals or micro-organisms whether alien or indigenous into the marine environment and the dumping of any substances which are likely to have adverse effects on the marine environment.

Besides the NEMA, policies to manage the coastal area of the Gambia exist in a sectoral manner. Each institution has its own policies supported by their respective legislation. The major ones related to coastal development are the natural resource and land use planning policies. The establishment of the Coastal & Marine Environment Working Group assisted in correlating and streamlining coastal zone policies.

4.2.1 Development of an Integrated Coastal Zone Management (ICZM) Plan

A major breakthrough occurred in the field of Coastal Zone Management with the initiation of the development of an ICZM plan. The United Nations Environment Program (UNEP) and the Food and Agricultural Organisation through implementing the project " Integrated Coastal Areas Training and Development of National Capabilities for Planning and Management of the West and Central African Region" chose the Gambia as one of the countries in West Africa to initiate the development of an Integrated Coastal Zone Management Plan. The National Environment Agency is the national counterpart Agency facilitating the development process. Numerous coastal issues outlined in the previous chapter, triggered the launching of an integrated coastal areas management program. Most prominent amongst these issues were the following:

- The development of the coastal area in a sustainable manner outlined in chapter 2, could yield economic benefits for present and future generations. This is an absolute necessity for a developing nation with a limited natural resource base, ranked amongst the least developed nations (LDC's) of the world with an increasing population rate of nearly 5 percent per annum. The most densely populated areas are in the coastal regions.

- The numerous user conflicts that exist between the different stakeholders of the coastal area that could be resolved using an integrated management approach. The bulk of these activities entail the management of coastal resources such as fisheries, mining of minerals, forest products and firewood.

- The Gambia is a signatory to the following international conventions and regional treaties that provide a base for international and national co-operation for the management of the environment, and coastal area development.

    - The United Nations Convention on the Law of the Sea, 1992
    - The Treaty Banning Nuclear Weapon Testing on the Atmosphere in Outer Space and Under Water, 1965
    - The Convention Covering the Protection of the World Cultural and Natural Heritage, 1987
    - The Convention for Co-operation in Protection and Development of the Marine and Coastal Environment of the West and Central African Region, 1985
    - The Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1977
    - The Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement of Management within Africa of Hazardous Wastes, 1991
    - The Convention for Co-operation in Protection and Development of the Marine and Coastal Environment of the West and Central African Region, 1985

- The final but critical issue, the absence of a land-use plan and development control system that would put in place coherent and practical policies to ensure the protection of the coastal area of the Gambia in a sustainable manner.

The National Environment Agency within its mandate, co-ordinates the development of the Plan through the Coastal and Marine Environment Working Group.

The development of the ICZM process called for the incorporation of the Tourism Office into the Coastal and Marine Environment Working Group. This helped to address the impacts of tourism activities on coastal area development, as they relate to the development of any integrated coastal management policy for a developing nation economically dependent on a tourism industry.

It must be emphasised that the ICZM process in the Gambia from the onset, was designed to fit within the existing established institutional and legislative framework. The ICZM process is multisectoral and aims to integrate the activities of all the stakeholders of the coastal area of the Gambia. " The Managerial dimension of the Gambia ICZM initiative should involve political, legal and institutional aspects which are needed to clarify programme jurisdictional scope and to minimise running into conflict with the existing jurisdictional powers" (UNEP, 1996). This is a major challenge for ICZM planners in the Gambia and the satisfactory completion of this task would determine the success of the ICZM process.

The process constitutes three critical stages: Coastal profiling, Strategy formulation and the development of a Master Plan. The first two stages have been completed and the remaining stage of creating a Master Plan is yet to be tackled. The coastal profiling stage identified prominent coastal issues in the Gambia and the constraints faced at the management level. The ICZM strategy formulated the goals and objectives of the ICZM process, proposed solutions to pertinent problems, suggested ways to minimise bottlenecks hampering the coastal development process in the Gambia in addition to the needed legal and institutional arrangements. Preparation of the ICZM Master Plan will entail a rigid analysis of the coastal profiling and ICZM strategy stages. The Master Plan will contain the following components:

- Land classification as a basis for future coastal land use planning (including the designation of the ecologically and historically sensitive areas that deserve some form of protection as well as open space and buffer zones);
- Regulatory system (permits, prohibited activities, setbacks, environmental impacts etc); and
- Delineation of the management boundaries and jurisdictions for different sectoral policies.

The already formulated ICZM strategy proposes the following policy framework for the implementation of an ICZM program in the Gambia.

4.2.2 Proposed Institutional and Policy Framework for the Implementation of an ICZM plan for The Gambia

Integrated coastal zone management plans in the Gambia can be introduced in two different ways, using a nation wide format, or by a gradual, incremental process . The state of the coastal zone in the Gambia warrants the second option, since the currently experienced coastal problems outlined in the previous chapter are not of the same magnitude, thus some of the pressing coastal problems such as tourism, coastal erosion and land-use planning should be given higher priority.

The formulated ICZM strategy emphasises on the establishment of the needed institutional capacity to implement the Integrated Coastal Areas Management process in the Gambia. The Gambia has no inter-agency or inter-ministerial entity positioned jurisdictionally to implement an ICZM program (UNEP, 1996). The Coastal and Marine Environment (CME) Working Group under the auspices of the National Environment Agency serves only as an advisory body to the NEA on prominent coastal matters such as coastal erosion.

The establishment of a multi-sectoral planning body is suggested to implement an ICZM program. Unlike the Coastal and Marine Environment working group, made up of only government institutions, the membership of the multi-sectoral working group should consist of non governmental organisations and the private sector (especially industries) in the Gambia, whose activites have an impact on coastal area development and some whose mandates include the protection of the environment as a whole.

The already developed ICZM strategy suggests two institutional solutions for the implementation of the ICZM program in the Gambia.

(a) A new lead agency with an interagency mandate to accomplish the coordinative management and planning functions of ICZM; or an

(b) ICZM office, located within an existing agency that already has appropriate regulatory powers (such as NEA, or Department for Physical Planning).

The biggest challenge in the ICZM development process is the integration of all the multiple interests of the stakeholders of the coastal regions into a common plan. This was envisaged by the ICZM process developers at the initial stages, thus the second option seems to be a more viable option since the institutional framework being proposed will be composed of already existing organisations involved in maritime

matters in the Gambia. These are the members of the Coastal and Marine Environment Working Group of the National Environment Agency (NEA), the non-governmental organisations and the private sector.

The establishment of such a planning body, would create a one - stop shop for all interested in coastal zone development matters in the Gambia. It would permit coherent maritime policies to develop "in house" without cross-departmental difficulties or rivalries and would aid to give coastal matters a much higher profile in government.

It is suggested in the drafted ICZM strategy that the ICZM office should be housed with adequate material and human resources to carry out the following ;

- Inter-institutional co-ordination on coastal development and resource conservation matters;
- Environmental assessment and permit issuance for all major coastal developments; and
- Empowerment to ensure compliance with the adopted policies
- Full participation in the development of the ICZM Master Plan, the final stage of the ICZM process development. This participation will include the review exercises of the whole ICZM process
- Coordination and supervision of stakeholder activities, whilst direct management and implementation functions will be carried out by the line agencies.
- Public awareness programs to keep stakeholder participation alive throughout the the Integrated Coastal Areas management process.

4.2.3 Proposed Management Strategies for the Implementation of an ICZM Program.

The management strategies for effective ICZM development are sectoral strategies, each relevant to a specific coastal issue. These issues were outlined in chapter three. The proposed strategies deal with population densities, land use planning and tourism which are central to coastal area development in the Gambia.

4.2.3.1 Population Densities

The high population density in the coastal areas of the Gambia is largely due to the centralisation of activities along the coast. Most administrative buildings are along the coast and are found in the capital city,Banjul. The Government's

socio-economic policy with respect to the coastal area aims to reduce the high migration rates of people to the coast. This can only be achieved with the introduction of decentralisation policies such as the shifting of administrative functions to regional offices and the encouragement of the development of industries in rural Gambia. Decentralisation policies should be able to create alternative employment opportunities for the population masses throughout the six major districts of the country.

The Government of the Gambia has made an initiative to decrease coastal populations, with the establishment of the National Population Commission. The National Population Commission was set up by the Government of the Gambia in 1981 to analyse the high rates of population growth in the Gambia and its related problems. The commission's objectives are to :

- achieve reduction in the rate of growth, ensure balanced spatial distribution of the population, monitor and manage international migration,
- promote health and welfare of the population to enhance the status of specific target population such as women, children, youths and the aged, and
- strengthen population statistics, increase awareness about the effect of population growth on major economic and social issues and to increase the awareness on family planning methods.

4.2.3.2 Land-Use Planning

Land - use planning is a critical component for coastal area development in the Gambia. The lack of coordination and strict development controls of this sector has resulted in haphazard planning of the coastal area and resulting in considerable damage to the surrounding environment. The major objective of land use planners in the Gambia should be the identification of the level and patterns of development that can be sustained without critical environmental damage in line with meeting economic and social needs of present and future generations.

4.2.3.3 Tourism

Tourism is identified as the ultimate coastal activity that could assist the country's medium-term development (UNEP, 1997), generating employment opportunities as well as earning foreign exchange. Thus a lot of importance is given to the tourism sector. The suggested management strategy underlines the goal of the Tourism Industry to be

" to maximise the economic and social benefits that are derived from the totality of the Tourism industry, by the different categories of the Gambian service and skill providers" (UNEP/FAO/PAP, 1996). The various ways suggested to accomplish this goal are as follows:

- Diversification of traditional tourism products

- The planning of the Tourism Development Area according to the principles and design given by the existing planning documents at the Department of Physical Planning

- Protection and Preservation of the natural environment and socio-cultural heritage by minimising the negative effects on the coastal environment, in particular on ecologically sensitive areas (UNEP/FAO/PAP, 1996).

The initiation of the development of an ICZM Plan sets the pace for the formulation of a Master Plan for the coastal area, if the inadequacies of the completed development stages of the plan are recognised and eliminated. The next section elaborate on the progress of these developmental stages of the ICZM Plan over the past years; from 1995 to 1997.

Chapter 5

The Practice and Lessons of Coastal Zone Management

5.1 Integrated Coastal Zone Management Methods

Integrated Coastal Zone Management is a new management tool introduced in the environment field over the past two decades. Lack of accurate data and analysis of Integrated Coastal Zone Management initiatives worldwide, has severe impacts on the development of coastal zone management today. This results from the lack of proper indicators and established parameters to measure the success of these initiatives. As a consequence, the assessment procedures to date depend on past experiences of coastal planners once involved in the implementation of Integrated Coastal Zone Management plans; the lessons and methodologies of ICZM implementation outlined in this section are from their experiences.

5.1.1 Methodology for ICZM Implementation

The diagram below (Fig 4) illustrates a model for Integrated Coastal Zone Management implementation, which stems from past experiences of ICZM planners. This methodology tends to work towards more sustainable forms of Integrated Coastal Zone Management for the 21st century. A critical analysis of each stage of the implementation cycle will be made in relation to the past and future orientations of the Integrated Coastal Zone Management process in the Gambia.

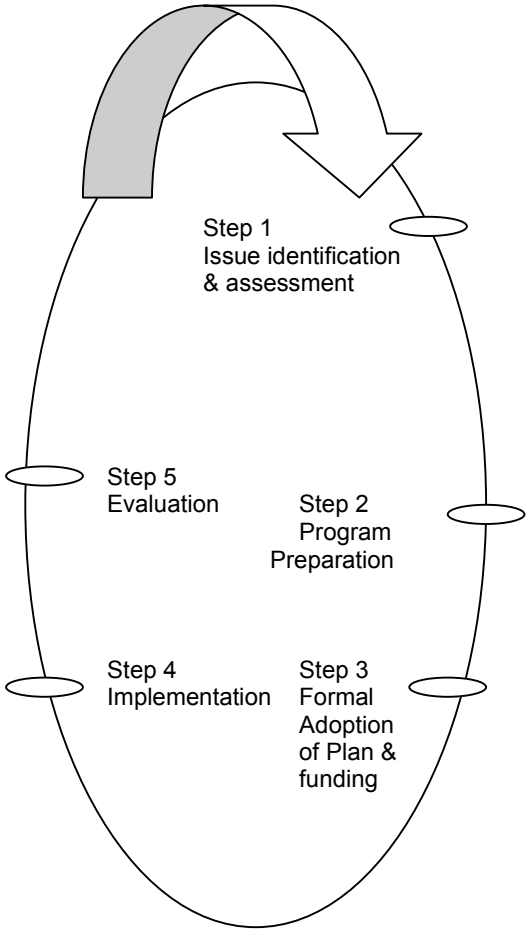


Fig 4. The Integrated Coastal Zone Management Policy Cycle.
Source: Olsen et al, 1997, p 162.

Prior to implementing the different stages of the ICZM policy cycle, the following should be considered:

i. The ICZM implementation process could take different forms: the resource by resource approach, the region by region approach or the issue by issue approaches. The issue by issue approach will be considered as it seems more useful for the Gambia. In the issue by issue approach, a country starts with one or two pressing issues and gradually adds other issues on an incremental basis.

ii. Clear objectives to be achieved by an Integrated Coastal Zone Management program must be established. The basic objective of ICZM development " is to maximise long-term economic and social benefits from the sustainable use of coastal resources" (Burbridge, 1997). However, whatever objectives are established at the start of the project, must be in line with the economic, social and political environment within which ICZM is being developed. If these factors are omitted the plan is doomed to failure (Mottram, 1998). It is suggested for most developing nations to implement a first generation ICZM program that would typically focus its objectives on one or more pilot sites and on a limited set of issues. Pilot projects on a limited number of issues may achieve improvements in a certain section of a community within one generation, but similar achievements for an entire nation might take many generations to be accomplished. Furthermore, nation-wide ICZM programs are usually expensive and unaffordable for most countries of the developing world.

iii. Integrated Coastal Zone Management is a unique developmental process that treats land and marine resources under a single management framework. This in itself is a challenge. In addition, the myriad of users of these resources; government, communities, NGO's and the private sector would have to be sensitised on the importance of the sustainable use of these resources for there to be successful ICZM implementation. This has proved to be a difficult process where user-conflicts arise as a consequence of overlapping economic and environmental interests.

A case in point is the dependence of a coastal community on oysters sustained by a population of mangroves in the coastal area, a likely situation for oyster harvesters in the Gambia. Trade-offs exist between degradation of the mangrove populations and economic benefits of the oyster harvesters. Public awareness schemes, will point out that environmentally unfriendly methods of oyster harvesting, such as cutting the roots of mangroves, which serve as breeding grounds for the oysters will finally eliminate the mangrove and oyster populations in that locality as well. In the end, no gains will be achieved.

iv. The whole concept of " integration" in the ICZM process focuses on mitigating user-conflicts by coordinating interests and the initiatives of the myriad of users of the coastal area to yield the best long term socio-economic outcomes (Clark, 1997). The coordination process should encourage vertical and horizontal lines of integration.

5.1.1.1 The Issue identification & Assessment Stage (Step 1)

All stakeholders of the coastal zone must participate at the formulation of this stage. The stakeholders include top decision makers and coastal community representatives; economic development planners, housing authorities, village chiefs, religious leaders. The latter two usually play a leading role in most developing countries.

The issues identified could be numerous, again due to the wide array of interests of coastal zone users. It is important that the coordinators of the Integrated Coastal Zone Management plan prioritise these issues in order of importance corresponding to the immediate issues that cause the most visible impacts on the coastal zone. The issues outlined for the coastal zone of the Gambia are coastal erosion, land - use planning, high population densities and tourism activities. These are the prominent coastal issues in the Gambia having the most adverse impacts on the coastal environment outlined in chapter 3.

5.1.1.2 Program Preparation (Step 2)

This phase should involve the planning stages of the ICZM process, namely the Strategic planning and Master planning stages. The public education programs established in the previous stage must be maintained during this stage. The most important aspects of this phase are the following:

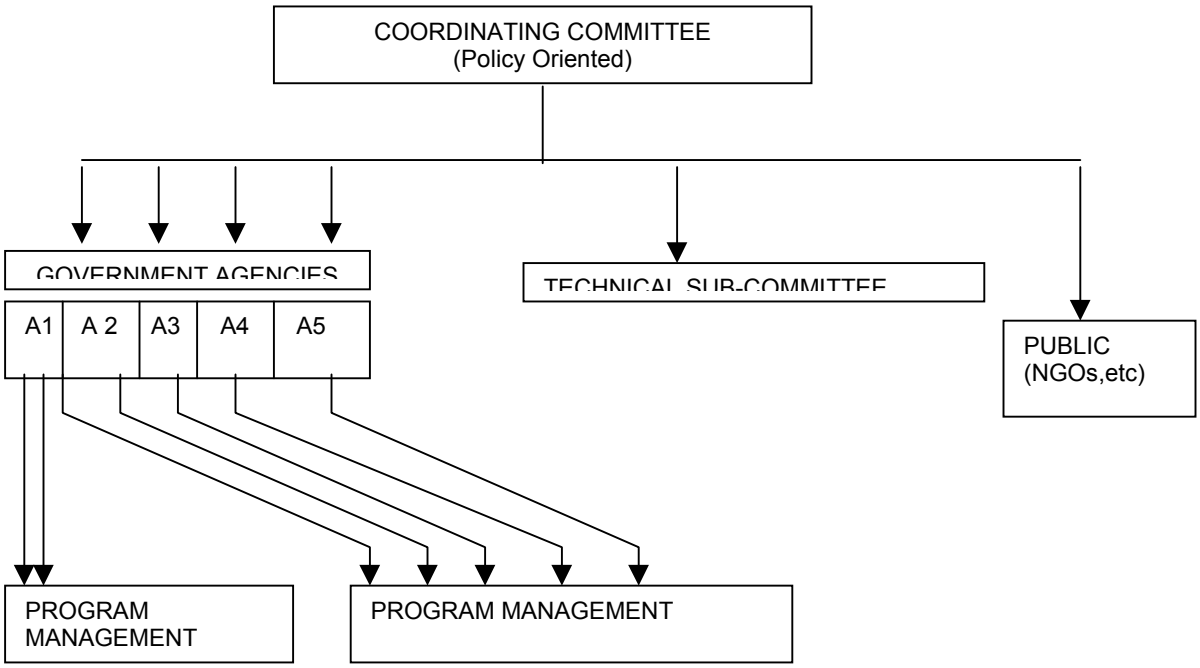
i. Strategic Planning

This involves a rigorous assessment of the prioritised issues identified during the identification and assessment stage. This assessment will include an examination of the prioritised issues, proposals for management strategies to tackle these issues. The

focus of the management strategies will be on the institutional and legal arrangements that would ensure the validity of the ICZM plan.

The institution to be responsible for ICZM development should be a coordinating institution empowered with appropriate jurisdictional control that cuts across the natural resource management sector. This situation fits well within the suggested ICZM institutional and policy framework for the Gambia, as mentioned in the previous chapter. The National Environment Agency (NEA) in the Gambia is empowered by the National Environment Management Act (NEMA) to initiate legislative proposals, standards guidelines and regulations in accordance with the provisions of the Act. The Act makes provisions on sectoral matters including the management of forest resources, mining and biodiversity. Although this creates overlap between the overriding legislation, NEMA, and the other coastal related sectoral legislation such as the Ports Act, and Fisheries Act and the National Environment Management Act, it is beneficial to the establishment of an institutional framework for ICZM development in the Gambia. The suggested institutional framework for ICZM development during the formulation of the Strategy Plan in the Gambia, outlined in the previous chapter, takes note of this.

It might be worthwhile for the planners of the ICZM process in the Gambia to consider the following proposal to set up an ICZM office (Fig 5).



(OPTION A) (OPTION B)

Fig. 5 The Optional Methods for establishment of an ICZM agency

Source: Clark, 1997, p194

The above diagram illustrates two options.

i. In option A, one government institution manages the coastal program and staff seconded from other agencies could assist in the implementation process.

ii. In option B, each agency manages different components of the coastal program under the guidance of the coordination office.

The ICZM process in the Gambia would be better undertaken using the first option (Fig 5) according to the already proposed institutional framework for ICZM development detailed in the previous chapter. It is being suggested that the Coordinating committee consisting of the top officers of the Integrated Coastal Area Management office be comprised of a high representation of key government officials to give ICZM the political clout it deserves for its successful operation. The technical committee and the

rest of civic society should provide advisory services and representatives may be attached to the ICZM office when the need arises.

The coordination mechanism of Option A will:

i. Provide a forum for conflict resolution among sectors
ii. Minimise duplication of functions of line agencies
iii. Reduce inter-agency rivalry and conflicts
iv. Promote and strengthen inter-agency and inter-sectoral collaboration
v. Implement actions that result from the ICZM evaluation exercise
vi. Monitor and evaluate progress of ICZM development (Okemwa, 1997).

The legal framework should specify the goals and purposes of the ICZM program and provide for a passage of necessary legislation. In the case of the Gambia, the provisions laid out in the umbrella environmental management Act, NEMA, inadequately fits this purpose, thus an amendment to the Act would be necessary.

After full consideration of the above suggestions, policies and objectives could be established for the management of the identified sectoral issues. These policies should take into account the different forms of conservation needed for the different sectors. For the case of the Gambia, the three major issues identified were coastal erosion, tourism activities and land-use planning.

ii. Master Planning

The Master Plan is the basis for the implementation of an ICZM program. It provides the operative framework to implement an ICZM program. The Plan should contain methodologies to carry out the strategies developed in the strategy-planning phase. These methodologies should outline the legislative approaches for successful implementation. A case in point would be relocating the inhabitants of a coastal area to establish set back lines as described ; certain provisions must be laid out in legislation giving the Government Authorities the right to carry out the relocation process. Relocation processes could be sensitive as it involves the separation of people from a piece of land they might be bonded to for ages. This is a basis for disputes, and in certain circumstances people are not willing to move.

Staffing and financing requirements should be a major component of the Master Plan. Budgeting procedures should take into consideration pitfalls that might occur and should incorporate contingencies to avoid running short of funds at respective stages of the ICZM cycle.

Environmental Impact Assessment (EIA) studies are a fundamental element of the Master Planning stage. EIA has been a catch phrase for many environmental projects during this century. EIA is described as " a structured approach and formal set of procedures for ensuring that environmental concerns are taken into account during project planning and decision making" (Karker, 1998). Furthermore it is a form of risk assessment with the objective to mitigate environmental risks. It has received a lot of publicity because of increasing public concerns over projects that might have severe negative impacts on the surrounding environment. The severity of these impacts vary from one case to the next; the impact of an explosion from a nuclear power plant would be much more severe in comparison to the impacts of the construction of a bridge on the surrounding environment.

It is now being realised that EIA aids the planning and decision making process and does not always mitigate environmental disasters where the planning and decision making process fails. Karker, emphasises this: "the fundamental aim of EIA is not to determine the balance placed by the decision maker on environmental concerns compared to economic, social or other considerations but to ensure that the decision is made based on informed knowledge on the environmental consequences of that decision" (Karker, 1998). This informed knowledge is strictly based on baseline data. The unavailability of this data is the cause of failure for many EIA processes in the world today. Without accurate baseline data, inaccurate decisions may be made.

The coastal area is a dynamic zone which recuperates after natural interference but man-made ones could have adverse impacts for example, beach sand mining resulting in significant amounts of permanent sediment loss. This calls for the introduction of EIA studies. It is assumed that the failure of some of the coastal protection measures such as the construction of sea walls in sections of the Gambia coastline failed due to the lack of an EIA study.

The Master Planning stage of the ICZM process should include prerequisites for carrying out an EIA when necessary. In the case of the Gambia the EIA process has started to gain ground and it has become a prerequisite under national law to conduct an

EIA study prior to the development of any project that might have impacts on the environment.

5.1.1.3 Formal Adoption of the Master Plan and Funding (Step 3)

The definition adopted for ICZM in this paper is " a continuous and dynamic process that unites government and the community, science and management, sectoral and public interests in preparing and implementing an integrated plan for the protection and development of coastal ecosystems and resources"(Olsen et al, 1997). The process must be flexible and should be able to adapt to changes encountered during the project cycle. The adaptive management process is defined as a style of management where when circumstances change and emerge and more knowledge and experience are added, the ICZM process should be able to adapt and incorporate these changes (Clark, 1997).

The fund seeking process could be tedious in circumstances where the Master Plan is not coherent and does not fit within the legal, institutional and political framework that exists. In the case of the Gambia, caution should be taken to ensure that the Master Plan fits within the above set parameters before considering its adoption and funding. The World Bank has been instrumental in the area of ICZM development and has funded projects in Eastern Africa and the Western Indian Ocean (Hatziolas, 1997). The Bank is a likely funding source for ICZM implementation in the Gambia. The Bank already supports projects within the National Environment Agency (the suggested institution to establish an ICZM office in the Gambia) and has shown interest in coastal area development during recent Bank review meetings.

5.1.1.4 ICZM Implementation (Step 4)

The Implementation stage is the most critical stage of ICZM development.The ICZM process cannot be predicted as " the Integrated Coastal Zone Management process does not offer a blue print that merely needs to be applied and will then produce known results" (Olsen et al, 1997). The process is a continuous cycle of action and reflection where reflection on the past experiences may lead to periodic changes and adjustments.

This stage is complicated if user-conflict situations arise and conflict resolution techniques are necessary to mitigate such conflicts. Conflict-resolution is a technique where the users of the resource reach a consensus on how the resource could be used in an efficient manner. Each party is allowed a certain amount of the resource based on respective interests, equal shares of the reserve may not always be the end result of conflict-resolution cases.

The implementation of sustainable environmental practices is also a key feature of this stage. Community-based management is key to sustainable resource utilisation in coastal areas. It is much easier to empower coastal communities to manage the resources within coastal areas than commanding them to manage these resources. Community based management has developed in the Gambia since the decentralisation activities of the Gambia Environmental Action Plan (GEAP) started. The decentralisation process involves the transfer of authority from central government to the grassroots. This led to the development of Local Environment Action Plans (LEAPS) to govern the community based management process throughout the five administrative divisions of the Gambia (appendix 1). This initiative would empower communities; including coastal communities to manage various sectors of the environment.

5.1.1.5 The Evaluation Stage (Step 5)

The Evaluation stage cannot be undertaken without proper established monitoring mechanisms. These monitoring mechanisms should be set at the initial stage of the ICZM development process (the issue Identification and Assessment stage). For effective ICZM monitoring, tools to gather relevant data must be acquired. These would record baseline data, essential to any development process and the basis for carrying out Environmental Impact Assessment Studies crucial to ICZM development. It is suggested that the following tools of data acquisition, dissemination and analysis are indispensable to the ICZM monitoring process.

1. Computerised Data Bases

The term Geographical Information Systems (GIS) refers to the collection and processing and display of spatial data. Improvements in the modern technology era now provides this management tool in smaller settings such as microcomputers and work

stations, unlike in the past when large computers and other machinery were needed to install GIS programs.

GIS has become a much used coastal area management tool. It displays different scenarios in the coastal zone such as resource utilisation and the allocation of resources. GIS was used during the coastal profiling stage of ICZM to depict the status of resource untilisation in the southern coastal zone of the Gambia. This work was enhanced by the availability of GIS tools at the EIS Information Center of the National Environment Agency. This center should serve as the Information dissemination center for ICZM development in the Gambia, since it is well equipped with adequate material and human resources.

A joint effort of the Coastal and Marine and Environmental Information System Units of the National Environment Agency, resulted in the development of a coastal resource database for the Gambia. This database should be updated on a regular basis and will prove useful to ICZM development.

2. Information Dissemination

The dissemination of information on ICZM activities to civic society is a crucial aspect of ICZM development. It is suggested that different methods should be used such as the television, print media, Participatory Rapid Appraisals (PRA) and workshops. Participatory Rapid Appraisals is widely used as a method of involving clientele in problem identification and concensus building on practical solutions in quick time-bound exercises (NEA,1997). During the development of ICZM in the Gambia, Participatory Rapid Appraisals were carried out in several coastal communities namely, Bakau, Tanji and Ghana town. The outcome of these appraisals was positive in the sense that it created a dialogue with the immediate beneficiaries of the ICZM implementation; the coastal communities and the ICZM planners.

The above tools would be adequate to evaluate the ICZM development process and would help to identify the shortcomings of the process. This would lead to a reassessment process if necessary to ensure successful implementation.

After successful implementation, the ICZM process would continue as the cycle indicates in Figure 4. Successful implementation of ICZM involves painstaking work as constraints faced at respective stages will affect the implementation of each stage, given the unpredictability of the project outcomes.

Chapter 6

Constraints and Possibilities Concerning Effective Coastal Zone Management in the Gambia

6.1 Environmental Education in the Gambia

The high illiteracy rate in the Gambia mitigates against many developmental initiatives geared towards the country's development. A significant majority of the Gambian populace is uneducated; recent illiteracy rates are high, estimated at a staggering 65%. This has adverse consequences in the various developmental sectors including the environmental management sector.

Nonetheless, improvements are being made in this endeavour. In the environment sector, women are being recognised as the most active participants in the Natural Resource Management sector and the women inhabitants of rural Gambia are being sensitised on encouraging the enrollment of their daughters in schools. This development arose, as it became evident that the enrollment rate of boys in school was much higher than that of girls and also to raise the awareness levels of women in the Natural Resource Management sector.

The appropriate measures are not yet established to indicate the level of awareness of Gambians on environmental management issues. Known estimates from recent surveys indicate a 90% level of awareness at the institutional level and a 20-30% level of awareness at the community level (NEA, 1997). An Environmental Management Training Needs Assessment survey of 84 interviews was conducted in 1995. The survey revealed that 35% of the interviewees were aware of the essence of having a National Environment Agency, 19% had a fair knowledge of the objectives of the Gambia Environmental Action Plan (GEAP) whilst 74% had poor knowledge on it.

This indicates that a lot of work needs to be done in environmental education to make significant improvements. Environmental concerns started being introduced into the school curriculum in the Gambia by the Curriculum Research and Professional Division (CRPDD) of the Ministry of Education in 1988 prior to that they were

non-existent. The division covers both the Formal and Non-formal Education sectors. Some of the incorporated courses into the Formal Education sector at the secondary and tertiary levels are Population, Demography, Environmental Studies and Family life Education and Urbanisation. The Formal and Informal Education sectors are being encouraged to adopt appropriate environmental conservation and management methods by the National Environment Agency. The Agency launches an Environment Award scheme annually in this regard.

The above laudable efforts of the Government of the Gambia are encouraging. It is evident that environmental concerns such as coastal development issues are now being discussed in many Gambian circles and are increasing environmental awareness levels, especially on the subject of coastal erosion. Yet there are other constraints faced by the Government to mitigate such problems with the establishment of an ICZM program as the following sections elaborate.

6.2 Institutional and Legal Framework

The suggested institutional framework for an ICZM program for the Gambia in Chapters 4 and 5 of this discussion paper will prove feasible only if the National Environment Agency where the ICZM office is proposed to be instituted, has the support of member line agencies that are stakeholders of the Gambia coastal zone. This requires the following:

i. Giving the ICZM process the "political clout" it requires

The political body of the National Environment Agency is the National Environment Management Council which serves as board for the National Environment Agency. The last meeting of the Council was convened at the establishment of the National Environment Agency, when it was upgraded from being a small Unit under the then Ministry of Natural Resources and the Environment, prior to the military take-over of 1994. The lack of meetings since that time has isolated (alienated) the National Environmental Management Council from the realities experienced in the environmental management field in the Gambia. More importantly, this lack of regular meetings and full knowledge of the current situation diminishes the political will needed to develop the natural resources management sector.

This past experience depicts a scenario that the coordinating committee of the ICZM process (Fig 5), suggested to be made up of a similar high representation of government officials might cease to exist. This should be avoided for successful ICZM implementation. If the political will is lacking the ICZM process will be seriously hampered in the Gambia. The lack of political will was one of the impediments of the ICZM program implemented in Kenya, East Africa (Okemwa et al, 1997).

ii. Harmonisation of Sectoral Coastal Legislation

The ICZM legal framework should be a solid piece of legislation empowering the National Environment Agency to successfully carry out an ICZM program. NEMA, the umbrella legislation empowers the NEA to propose legislation and initiate review of environmental affairs (NEA, 1997). Secondary legislation in the form of an action plan has been drawn up. The Environmental Legislation Action Plan focuses on four areas of the Environment, namely, Forestry, Public Health, Water Resources and Environmental Impact Assessment (NEA, 1997). It is evident that all four contribute to coastal area development. The Environmental Legislation Action Plan should incorporate aspects of land use planning to suffice for the initiation of ICZM implementation in the Gambia. This would set the stage to harmonise various sectoral legislation and eliminate duplication by not establishing different sets of legislation for ICZM development in the Gambia.

For successful ICZM implementation, the National Environment Agency should have the adequate powers to enforce ICZM legislation. The National Environment Management Act gives the Agency the mandate to carry out enforcement procedures. The NEA Inspectorate carries out enforcement in cases where there is foreseen damage to the environment. However, enforcement by the NEA has been relatively weak due to the following:

- Reluctance by the National Environment Agency inspectorate to carry out rigorous enforcement procedures that could lead to the closure of small -scale manufacturing industries in a setting where a low rate of industrialisation exists.

- The relative size of the Gambia lends a closely-knit society where people thrive in close communities and are familiar with each other against the background of other cultural dimensions such as the “extended family system”. Law enforcement officers

usually take these factors into consideration consequently deterring the law enforcement process by prosecuting a lower number of culprits than expected.

- The inherent delays in the Gambian Legal system coupled with the high burden of proof required for conviction, leading to slow outcomes or none at all, discourages one to start such cases (NEA, 1997).

Adequate and proper training for law enforcement officers could mitigate the above factors, in the pursuit of proper law enforcement. In addition, the National Environment Agency Inspectorate should recognise its powers and use them accordingly.

6.3 Resource Implications

The relatively small size of the Gambia, likewise its surrounding coastline would not require significant amounts to implement an ICZM program. Notwithstanding, the Government of the Gambia is not in a position to fund the implementation of an ICZM program. The United Nations Environment Program funded the preparation for the development of the ICZM plan; Identification of Issues and the Strategic Planning stages. Adequate resources would need to be tapped to fund the formulation of the ICZM Master Plan and its implementation. The collaboration between the National Environment Agency and the World Bank previously mentioned could facilitate the funding process.

Even with necessary funding, the need to have a qualified cadre of personnel to implement the ICZM plan will become a major issue. Past experience from the initiation of the ICZM process in the Gambia indicate the following staff problems:

- Lack of knowledge on the interrelationships among coastal resources and their use, and the impacts of development on the environment (UNEP/FA0/PAP, 1998) led to the delay of the formulation of the Strategic Planning phase against the background of provision of incentives for the Coastal and Marine Environment Working Group members.

- Inherent lack of punctuality of civil service staff delayed ICZM work.

- Lack of feedback from some ICZM team members.

From the above observations, it must be emphasised that human resource management is one of the most important aspects of any developmental process. The human resource base is strengthened through the following main channels.

The acquisition of appropriate and adequate training on coastal development is a must for ICZM planners in the Gambia. Training methodologies should be thoroughly examined and training components included in future ICZM projects. The acquisition of proper training motivates people to realise set objectives of the management process. Some members of the Coastal and Marine Environment Working Group, when formulating the Management Strategy were motivated for their work by receiving remuneration, but the lack of knowledge on sustainable coastal development processes led to the delay of the formulation of the Strategic Planning Phase.

Most environmentally related projects in the Gambia are implemented with Technical Assistance from the Donor Community. The process involves the attachment of external consultants to a particular job with the assistance of a national counterpart. The usual objective is to transfer knowledge that would aid the national consultant to carry out such work when the project ends. One of the project aims is usually to build manpower capacity at the national level.

Personal experience has shown that most of the external consultants formulate their reports with a lot of assistance from their national counterparts. In some cases, the national counterparts are not entitled to any form of remuneration for expended efforts on the project. This has created disincentives and discourages the national counterparts involved in the development process. ICZM coordinators should ensure that they have exhausted the national capacity before requesting for external assistance. This might be a challenge since the conditions laid out for the acquisition of donor funds usually spell out the use of Technical Assistance even where it is not needed.

6.4 Stakeholder Participation

Members of the ICZM planning team, who developed the coastal profile and strategy carried out public awareness programs to keep stakeholders of the coastal area of the

Gambia abreast of the objectives of the ICZM process while at the same time encouraging them to participate. The following public awareness programs were implemented.

- *Stakeholder analysis* undertaken by the working team for each *coastal issue* identified.

- *Village meetings* held in the areas close to the main tourist capacities as well as in the Southern villages mostly engaged in fishing and fish smoking (Ghana Town). Discussions were held on various coastal management issues and how the development of an ICZM program will aid the communities to derive more long-term benefits from the utilisation of coastal resources.

- *Visits by the ICZM team* members to the government stakeholders; and

- *Organisation of a Stakeholder seminar* where the coastal profile and strategy documents were discussed and the comments of stakeholders taken into consideration and incorporated into the final drafts. Participants covered few representatives of the coastal communities whose views were critical to the ICZM development process, since they represent the direct beneficiaries of coastal resources.

ICZM implementation will fail in the absence of stakeholder participation. It is noted that the coastal communities in the Gambia form the majority of the stakeholders of the coastal area. On the whole, their participation in the initiated ICZM process has been minimal, limited to the above held rural appraisals. Language barriers and lack of infrastructure facilities in the coastal area also work against effective stakeholder participation.

i. The Language Barrier

Seven local languages are spoken in the Gambia besides English, which is the official language. The educated minority speaks the latter, while most of the uneducated majority only speak their native languages.

At Participatory Rapid Appraisals (PRA's) carried out by the ICZM team members, it was realised that interpreters voluntarily facilitated the sensitisation process by offering their interpretation services, which were accepted, but no assessment has been made on how well ICZM methodologies and set policies were communicated to the communities. To eliminate such communication barriers, the hiring of professional interpreters must be considered. This would enhance the participation of coastal communities in the ICZM process leading to better planning and decision making.

ii. Inadequate Infrastructure development

Access to some coastal communities in the Gambia proved difficult when the Participatory Rapid Appraisals held during the initial stages of ICZM development, were conducted. This was largely due to the lack of feeder roads to gain access to these communities. Some of the roads leading to the coastal villages are in deplorable conditions. The government is now implementing the "Kombo Coastal Road project", which would help to lift the burdens faced during travelling to some of the coastal regions. Feeder roads leading to the inner coastal villages need to be constructed which would aid ICZM implementation in the Gambia.

6.5 ICZM Study Area

The demarcated study area by the ICZM team members in 1996 for ICZM development was limited to the southern coastal region (Fig 6) of the Gambia due to a number of reasons. The southern coastal region embodies coastal issues that pose the most adverse impacts on the coastal environment such as coastal erosion and tourism activities, likewise other ecologically sensitive areas such as the proposed Ramsar sites (table 2). The seaward boundary is maintained at the 12 nm seaward limit, where the coastal state has full sovereignty as defined by UNCLOS, 82.

It will be necessary for the ICZM study area to be extended to the northern region of the coastal zone where erosion rates have been marked high in recent years and other ecologically sensitive areas also exist. This might require a revisiting of the already formulated management strategy plans for the coastal zone and a more holistic approach to coastal area development.

Fig 6. Current ICZM Study area

Source: UNEP/FAO/PAP, 1998.

6.6 Regional and International cooperation

The small size of the Gambia coastline warrants the adoption of regional and international measures for effective coastal development. The Gambia is a signatory to numerous regional and international agreements (bilateral and multilateral agreements). Those that relate to coastal area development previously listed have enhanced work in this area and the country has benefited from various initiatives. These initiatives include the development of ICZM plans in the West and Central African Region. The Food and Agricultural Organisation through implementing the project " Integrated Coastal Areas: Training and Development of National Capabilities for Planning and Management of the West and Central African Region" chose the Gambia as one of the countries in West Africa to initiate the development of an Integrated Coastal Zone Management Plan. The development of a coastal area resource database was also done through similar means.

The Gambia has also participated in the development of a global action program by the United Nations Environment Program to protect the marine environment from land-based sources of pollution and its subsequent regional programs. Although these programs have not been implemented as yet, it is hoped that the Gambia will benefit from future initiatives.

CHAPTER 7

Summary and Conclusion

The long droughts of the 1970's in Sub-Saharan Africa had serious and devastating consequences on the economies and people of the region. This caused the international community and the West African states to pay attention to the unprecedented environmental degradation in the West African region during that period. It also led to the establishment of the Committee for Drought Control in the Sahel (CILSS), the first regional environmental initiative of the Sub-Saharan region. More importantly, the Stockholm Conference was convened in 1972, the first of its kind to address environmental issues at the global level. The CILSS initiative was largely recognized in the international arena as a regional environmental action plan dealing with rangelands, forestry and marine resources depletion, as well as the building of feeder roads in the rural areas.

CILSS encouraged its member states to develop national plans of action to support its formulated regional strategies. In the Gambia, the Banjul Declaration was formulated which emphasised the conservation of natural resources for present and future generations. A theme which later changed with the 'sustainability concept' born out of the United Nations Conference on the Environment and Development in 1992. The blue print of UNCED - Agenda 21, then emphasised the importance of the formulation of country-specific National Environmental Action Plans which led to the development of the Gambia Environmental Action Plans I and II in 1992 and 1998 respectively. These plans demand considerable effort to conserve and promote the sustainable use of natural resources in the Gambia. The coastal zone of the Gambia is one of these natural resources recognised in the first Gambia Environmental Action Plan as "an important natural and economic resource, which if utilised in an appropriate manner will yield important economic benefits…." This statement was the turning point in the development of the coastal zone of the Gambia.

To sum up, the formulation of the marine environmental framework in the Gambia was inspired by the high rate of resource depletion in Sub-Saharan Africa in the 1970's and the advocacy of the Stockholm Conference and the United Nations Conference on the Environment and Development to states to adopt principles of good environmental management and sustainable resource use. For the Gambia, these principles were embodied in the National Environment Action Plans of the country, the Gambia Environmental Action Plans I and II formulated in 1992 and 1998 respectively. All the above developments at the global, regional and national levels set the required environmental framework to develop any aspect of the environment in the Gambia including the coastal environment.

The Gambia is a developing nation with a fragile economy largely dependent on agriculture, tourism and fisheries as the main foreign exchange earners to meet the demands of a rapidly growing population. The latter two economic activities are concentrated on the coastal zone of the Gambia and make significant contributions to the country's socio-economic development. The coastal communities benefit tremendously from fishing and tourism activities, amongst others. These activities have adverse impacts on the coastal regions and do not encourage the sustainable use of the resources within.

The lack of a holistic approach to coastal area development before the advent of an Integrated Coastal Zone Management Plan added to the already worse situation. The coastal zone was managed in a sectoral manner, each sector sought its own interests irrespective of those of other sectors. Furthermore, the arbitrary definition of the coastal zone deterred the implementation of sound coherent policies. The coastal zone was redefined in 1995 - a definition that took into consideration the seaward and landward boundaries as well as sectoral interests in the zone.

The above developments caused the Government of the Gambia to establish coherent policies for the sustainable development of the country's coastal regions and to collaborate with the international community in this endeavour. The United Nations Food and Agricultural Organisation through the " Integrated Coastal Areas Training and Development of National Capabilities for Planning and Management of the West and Central African Region" project, chose the Gambia as one of the countries in West Africa to initiate the development of an Integrated Coastal Zone Management Plan. The National Environment Agency, as the coordinating institution of all environmental matters in the Gambia is charged with the responsibility to develop the Plan.

The ICZM Plan will address the myriad of problems being faced in the coastal zone of the Gambia today. ICZM is the only management tool that could create the balance needed between the sustainable utilisation of coastal resources and the effective conservation of the ecosystems within the coastal zone. As emphasised in its chosen definition for the purposes of this discussion," ICZM is a continuous and dynamic process that unites government and the community, science and management, sectoral and public interests in preparing and implementing an integrated plan for the protection and development of its coastal ecosystems and resources".

The numerous coastal problems being experienced in the Gambia coastal zone are outlined in this dissertation as follows:

- haphazard planning of the coastal area due to ineffective land-use planning policies,
- unwanted removal of beach sand from the coastal area,
- improper waste disposal,
- beach littering from the hotel and fishing industries
- pesticide pollution of the coastal waters of the Gambia from coastal farming,
- habitat degradation of the coastal area; this includes the most devastating problem being faced in the coastal regions of the Gambia – coastal erosion and lastly wildlife activities.
- sea level rise and
- numerous user-conflicts which emanate from the use of the resources within the coastal zone.

The dissertation critically analyses the five respective stages of ICZM development, namely the Issue Identification and Assessment Stage, Program Preparation: the Strategy Planning and Master Planning Stages, the Formal Adoption and Funding Stage, the Implementation Stage and the Evaluation Stage. The first two stages, the Issue Identification and Assessment Stage and the Program Preparation Stage, have been completed, leaving the operative stage of ICZM development, the Master Planning Stage, to be formulated and implemented. The implementation of the first two stages brought together a majority of the stakeholders of the coastal regions of the Gambia to assess the state of the coastal area and its resources within the existing cultural, social, political and economic setting. The paper evaluates the implementation of these first two stages, identifies inadequacies during their implementation and makes

suggestions for improvement. The other stages that are yet to be implemented are discussed and plans are outlined for their implementation.

In addition, the constraints and possibilities affecting the development of an ICZM plan are outlined as follows:

- environmental education in the Gambia
- institutional and legal framework
- resource implications
- stakeholder participation
- inadequate infrastructure development
- integrated coastal zone management study area, and
- regional and international cooperation.

The paper focuses on mitigating the constraints and ways of strengthening the possibilities that exist for ICZM development.

A main feature of the chapters of this study is the focus on the adoption of sustainable practices to develop the coastal zone of the Gambia. These practices are embodied in the formulation and implementation of an Integrated Coastal Zone Management Plan. The suggested framework for Integrated Coastal Zone Management development in the Gambia advocates particularly for the following:

i. Acquisition of reliable data and information on the coastal environment

Reliable data and information on the coastal environment would aid the ICZM policy making body, the coordinating committee, to be better planners and managers. It is suggested that Geographical Information Systems and other coastal resource databases are some tools that could be used to aid ICZM managers. Past studies done on an ad-hoc basis on specific coastal related problems such as coastal erosion and coastal pollution could provide solid background information on these problems.

ii. **Effective environmental impact assessment procedures**

Environmental impact assessment is an indispensable tool for successful ICZM implementation, and properly implemented environmental impact assessment studies could provide the necessary information for programs to alleviate coastal degradation in the Gambia in the future. An important area where environmental impact assessments should continue to be mandatory is in the land-use planning sector, specifically the Tourism Development Area in the coastal zone of the Gambia.

iii. Use of cost effective measures in the establishment of an institutional and legal framework for ICZM implementation

The limited budget for environmental protection in the Gambia warrants the adoption of cost effective measures in every aspect of environmental planning including the implementation of ICZM. The environmental planning sector in the Gambia like other sectors is largely dependent on donor funding. The paper suggests cost effective measures in the human resource management area by using the members of the Coastal and Marine Environment Working Group who are already committed to ICZM development in the Gambia. Since they are already staff members in other line agencies and not where the ICZM office will be established, the National Environment Agency, they could be seconded to the ICZM office.

The establishment of the ICZM office at the National Environment Agency, the coordinating agency for all environmental matters in the Gambia would curtail costs that would otherwise be incurred by establishing a new office in its entirety. The National Environment Agency as the custodian of the National Environment Management Act, the overriding umbrella act on environmental issues, has the benefit of harmonising all other coastal legislation and eliminates the need to establish new legislation for ICZM implementation in the Gambia.

iv. Adoption of the precautionary principle and the principle of preventive action.

The precautionary principle advocates for the use of preventive measures to halt any form of environmental degradation in the absence of scientific data that could assist

the process. A typical example given in this paper is the halting of coastal erosion on a piecemeal basis in the Gambia in the absence of a holistic study that could detail the coastal dynamics and hence lead to better preventive measures. Besides coastal erosion the precautionary principle is being adopted in other natural resource management sectors such as the wildlife sector. Table 2 details sites that could be declared as Ramsar sites due to the ecological sensitivity of the sites and their envisaged valuable contributions to ecotourism development.

v. Ecologically- sustainable land use planning with reference to the Tourism Development Area (TDA) in the Gambia

A great deal of attention must be paid to land-use planning around the coastal area with due regard to ecologically sensitive sites. The haphazard development of the Tourism Development Area has comprised such an initiative and future planning for the area should avoid such occurrences.

vi. **The promotion of education, public awareness and cooperation with NGOs, industries and the private sectors**

A lot of emphasis has been placed on the importance of stakeholder participation as a key to successful ICZM implementation. Stakeholders include line agencies involved in natural resource management in the Gambia, the private sector, especially the few established industries in the Gambia, and the coastal communities. The participation of coastal communities in implementing an ICZM Plan in the Gambia is of utmost importance. Coastal communities are the direct users of most coastal resources and if educated well on the management of these resources, could be better managers than most policy and decision makers who are usually distant from the realities experienced in the coastal zone of the Gambia. This could only be done through the establishment of proper education and sensitisation programs. An overview of the status of these programs is given in various sections of this paper and the initiatives are promising.

The Donor community such as the World Bank and the US Agency for International Development (USAID), after initiating several ICZM programs in Latin America, Africa and Asia, have established the following guidelines for successful ICZM implementation:

i. Think of ICZM as an experiment with a ‘steep learning curve’.
ii. Work with all levels of government (central and local)
iii. Focus on a limited set of issues.
iv. Emphasise public education early in the program.
v. Gain strong participation of ‘resource user groups’.
vi. Utilise scientific information and monitor the program
vii. Emphasise training of coastal managers
viii. Move quickly from planning to management with sub-projects
ix. Encourage flexibility and adaptability

The proposed methodology for ICZM implementation and the suggestions made to develop the ICZM process in this paper suggest that the above guidelines be strictly followed to ensure successful ICZM implementation in the Gambia. A fully developed and implemented Integrated Coastal Zone Management Plan is the only solution that would encourage sustainable resource utilisation within the coastal zone of the Gambia and ensure the sustainable development of the country’s coastal regions. ICZM for the purposes of this discussion is defined as a process that unites all sectors of society at large to prepare and implement a plan for the protection and development of coastal ecosystems and resources. This definition complements the best adopted definition for sustainable development in this paper developed in “Caring for the Earth: a Strategy for Sustainable Living” as “ improving the quality for human life while leaving within the carrying capacity of the Earth’s supporting ecosystems”. The quality of life of a significant number of Gambians, especially the poor majority, will be improved with the sustainable development of the Gambia’s coastal regions.

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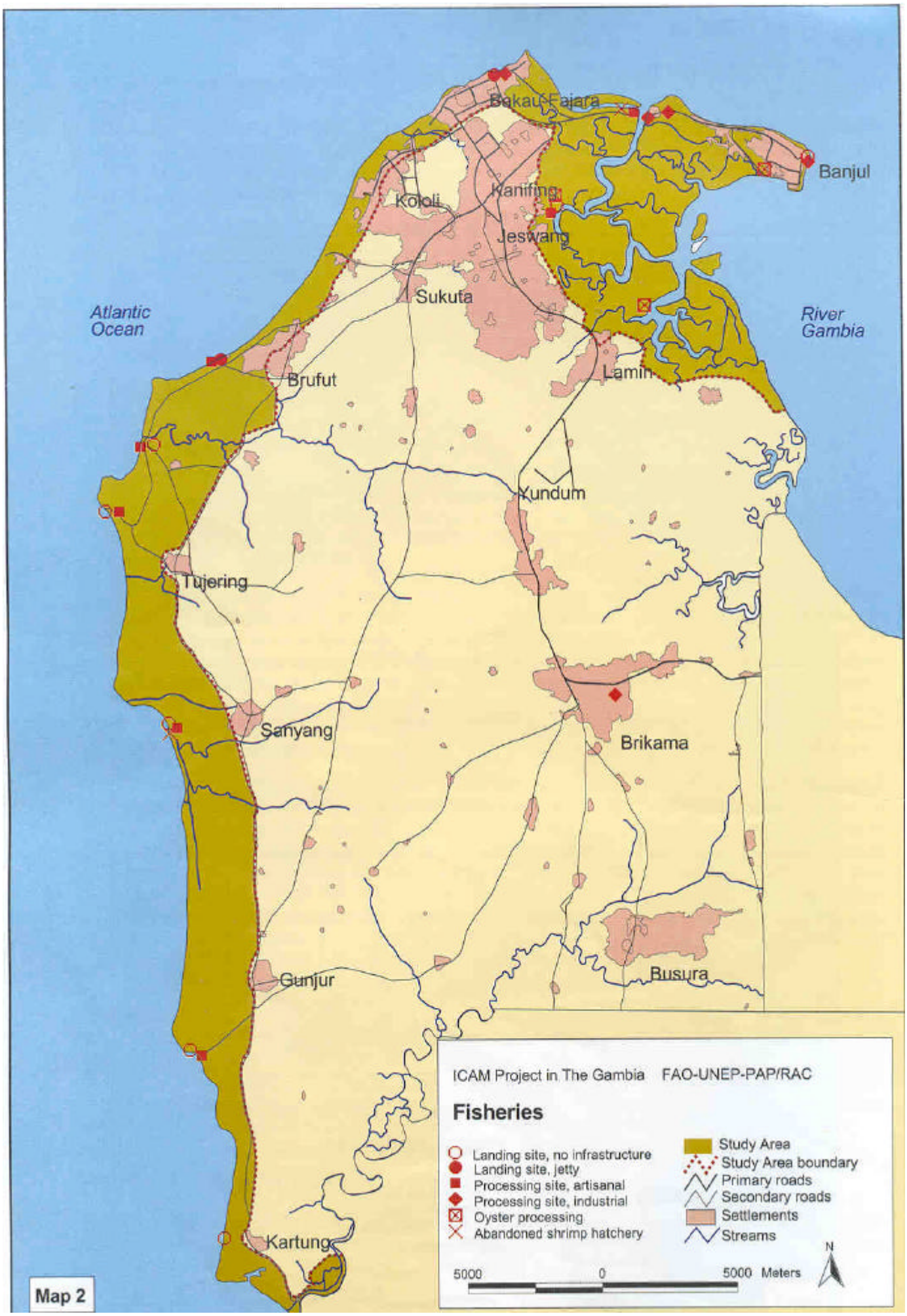
APPENDICES

Appendix 1 Map of the Gambia showing the six Administrative Divisions


Bakau-Fajara
Banjul
Kololi
Kanifing
Jeswang
Sukuta
Atlantic Ocean
River Gambia
Brufut
Lamin
Yundum
Tujering
Sanyang
Brikama
Gunjur
Busura
Kartung
ICAM Project in The Gambia FAO-UNEP-PAP/RAC
Fisheries
Landing site, no infrastructure
Landing site, jetty
Processing site, artisanal
Processing site, industrial
Oyster processing
Abandoned shrimp hatchery
Study Area
Study Area boundary
Primary roads
Secondary roads
Settlements
Streams
5000 0 5000 Meters
N
Map 2