

COASTAL LIVELIHOODS IN THE REPUBLIC OF MOZAMBIQUE

GENERAL INTRODUCTION

The Agulhas and Somali Current Large Marine Ecosystems (ASCLME) project is focused on the two large marine ecosystems of the Western Indian Ocean (WIO) region, covering nine countries that are directly influenced by these current systems. It is estimated that at least fifty-six million people are reliant either directly or indirectly on the goods and services provided by these two current systems. The ASCLME project aims to support these countries in their efforts to collectively manage the marine resources on which their people and economies depend. Fisheries and other key coastal activities, including various forms of tourism, aquaculture, shipping and coastal transport, the energy sector, agriculture and forestry, are very important contributors to the economies of the countries of the WIO. In recognition of the complexity and importance of these activities, a Coastal Livelihoods Assessment (CLA) component was developed for the ASCLME project.

The CLA component had three main objectives:

- to collect as much existing information as possible about the main coastal activities in the nine participating countries as a contribution to the national Marine Ecosystem Diagnostic Analyses (MEDAs);
- to make input into ensuring that this information is stored and organised in a manner that will allow easy access and maximum utility to multiple stakeholders, both during and after the lifetime of the ASCLME Project;
- to review and synthesise the information collected in order to provide useful inputs to the TDA and SAP processes.

In order to achieve these objectives, the CLA component was separated into three distinct phases, with the first phase kicking off in May 2009. During phase one, a “desktop” review of available data was conducted by the regional project coordinators, input was made into the design of a literature management tool to facilitate the storage of information, and preparations were made for the in-country data gathering process. Planning meetings were held between the core CLA team and the in-country Data and Information (D+I) Coordinators in August 2009. The processes involved in the in-country component of recruitment and data gathering was discussed and confirmed at this stage.

Phase two involved in-country personnel having been identified and recruited through a regionally inclusive recruitment process. Nominations were invited and received from country focal points and D+I Coordinators. Twenty three consultants were recruited to assist with the project. For some sectors international experts (drawn from the region where possible) were asked to provide information for all countries in the region while in others, where good local capacity existed, in-country consultants were recruited. This group of consultants collected information from existing resources, such as published articles, government reports, regional reviews, project reports and outputs, policy documents as well as a range of other grey literature that was likely to be useful.

Phase three involved the organisation of the information into country Coastal Livelihood Reports where individual sector reports have been assessed and the key elements from each sector extracted and presented in a summarised format. These country reports will be reviewed by project representatives in each country and once accepted, will be incorporated as a separate Coastal Livelihoods chapter in the overall country MEDA documents. It is anticipated that the

information collated in these reports will allow examples of best-practice to be identified for application in other parts of the region. The objective is to build on approaches that work rather than to duplicate efforts. Information gaps will be identified and addressed in subsequent phases of the ASCLME, including during a Cost/Benefit Analysis (CBA) exercise designed to weigh up the costs and benefits of various development options. Key information from these reports will feed into the CBA and hopefully provide useful guidelines for the Transboundary Diagnostic Analysis (TDA) and the development of Strategic Action Plans (SAP) for the overall ASCLME project.

The following country report begins with an overview of coastal livelihoods in Mozambique, which provides a concise overview of the seven sector reports and the findings of the in-country and regional consultants. This overview ends with a conclusion which summarizes the collected information as it relates to the coastal zone in Mozambique in general. This overview is followed by the more detailed sector reports, which represent the original contributions by the in-country and regional consultants. The sectors are organized in the following order: Small-scale Fisheries, Tourism, Mariculture, Agriculture and Forestry, Energy, Ports and Coastal Transport and Coastal Mining.

Each sector report has been prepared by specialists in that particular sector drawn either from the country or internationally. Sector reports have been prepared according to a pre-determined template to ensure that the relevant aspects of that sector were captured by the consultants. Reports include descriptive sections on the biophysical environment, human environment, policy and governance, planning and management, and development, trade and projects related to that sector. Each report is concluded with a SWOT analysis which provides a summary of the Strengths, Weaknesses, Opportunities and Threats facing that sector. It is the outputs of these SWOT analyses that are of particular importance to the strategic planning aspects of the overall ASCLME project. These reports were initially submitted to the regional coordinators for review and have subsequently been corrected and updated by the consultants themselves.

Finally, each sector report has a bibliography containing key references and links to relevant information. Full details of the information resources collected during compilation of each sector report, as well as electronic copies of literature (where available), are included in the overall ASCLME reference management system.

OVERVIEW OF COASTAL LIVELIHOODS IN MOZAMBIQUE

I. Small-Scale Fisheries

Comprising of subsistence, semi-industrial and artisanal fishing, the small-scale fishery in Mozambique employs over 351,700 people, 2% of which are women, and accounts for 93% of the country's total marine catch, 91% of which is caught by the subsistence and artisanal fishers and 2% by the semi-industrial sub-sector. Income levels in the small-scale fisheries are largely dependent on position within the sector, whereby, three broad positions are classified in the report; Boat and gear owners, crew (employees) and fishers fishing by foot/collectors. Income in the sector is also dependent on region and subsequently distances to market.

Many structural constraints are apparent in the sector. For example, weak infrastructure has negatively affected processing, trade and the broader commercialization of the small-scale fishery's products. Credit and financial services are also weak, which again affects trade and innovation in the sector. Similarly, inadequate capacity at the national and local level has reduced

surveillance, regulation and data collection in the sector, while high levels of poverty and a lack of employment alternatives has placed pressure on coastal resources, subsequently resulting in environmental degradation. There are, however a host of strengths and opportunities that can be capitalized upon to mitigate these constraints. For example, the potential for aquaculture could help stimulate alternative income streams and reduce over-exploitation, while the international demand for fish products should provide incentive to further develop the sector. Likewise, strategies for credit concession, along with the availability of new technologies, should expand the sector's overall competitiveness.

It is also promising to note the commitment to decentralization and co-management being displayed by the government. For example, in the artisanal fishery, the issuing and charging of licenses, as well as the collection of fines, is now being managed by district administrators. Likewise, co-management committees have integrated local chiefs from fishing villages into the administrative process as a means to sustain traditional management techniques. Nevertheless, despite the fact that the actual rate of law enforcement is no more than 50% in the entire sector, and less than 10% in rural areas, 75% of the entire fisheries sector is still governed by the Ministry of Fisheries. There is therefore opportunity to further strengthen the decentralization process in the fisheries sector.

II. Tourism

Tourism contributed an estimated 3.2% to GDP in 2003, employing an estimated 356,000 people. With nearly 76.8% of total tourist expenditure coming from Africa-based residents, South Africa and the SADC region represent the biggest source markets, making up an estimated 51% of total arrivals. On average, tourists spend five nights in the country, spending an estimated \$45.00 USD daily. Nevertheless, despite the sector's growing importance in the Mozambican economy, little empirical data and information is currently available.

Several constraints have been identified in the sector which could slow down growth in the future. For example, revenue leakages, which are common in many African tourism markets, have become highly constrictive to local development, as the majority of goods and services purchased in the sector are outsourced. Weak capacity is also problematic for the sector, as it not only negatively affects infrastructure and planning, but it also often severely constrains the implementation of policies that could potentially improve the sector. Likewise, the country's poor business environment, its vulnerability to climate change and the prevalence of several low quality investment projects have all been highlighted as threats to the sector, while the informal nature of value-added businesses in the sector continue to make it difficult for the government to both monitor and recover taxes.

There are, however, many strengths and opportunities that are apparent in the sector. For example, the country's spectacular natural attributes, extensive bio-diversity and rich traditional culture are all comparative advantages that should accentuate the sector moving forward. Similarly, the lure of bush-beach tourism in the south, along with the country's well developed recreational diving industry, are both strengths that could be built upon in the future. There are also opportunities to develop vocational training and entrepreneurship within the sector, which could both be utilized as a means to formally integrate local communities into tourist-based activities. The government's commitment to both decentralization and private sector-driven sustainable development should also support growth and change in the sector in the coming years. Thus, if greater coordination and participation can be instilled in the sector, and combined with

more effective policy implementation, tourism has the potential to continue to grow and benefit local communities for years to come.

III. Mariculture

Mariculture employs 2,000 people in commercial seaweed farming, 80% of whom are women, and 1,000 people in commercial prawn farming, and is thus a strong developing sector in the Mozambican economy. There are also experimental projects underway in finfish and mudcrab, which highlight the opportunities for further development in the sector. The country's high quality seawater, its ideal environment for prawn farming, along with its large areas identified as suitable for mariculture development, should only accentuate these growing opportunities.

Like all developing sectors, however, there are constraints that challenge further development. For example, limited infrastructure for research and development in the sector has constricted technological growth for farmers. Similarly, the lack of available hatchery facilities and seed has constrained small-scale development, while a lack of marketing experience in aquaculture and strong international competition in prawn farming has made further market access difficult. Theft and vandalism, as well corruption at the provincial level, also highlight the challenges apparent in the sector.

In many cases, these constraints are nevertheless meager considering the strengths and opportunities prevalent in the sector. For example, an investor friendly environment, the potential for diversification into new species, the opportunities for the development of an industrialised prawn and marine finfish culture sub-sector, as well as national departments willing to support the sector, all highlight the potential inherent in mariculture moving forward. Although there are currently inadequate training and support services, the development of a realistic and achievable mariculture development plan by the governing authorities could assist in ensuring that these opportunities in the sector are realised.

IV. Agriculture and Forestry

Contributing 22.5% to GDP in 2005 and between 10% and 15% of total exports, agricultural and forestry is clearly a huge facet of the Mozambican economy. Cassava and Maize represent 50% of the value of production and it has been estimated that a 20% increase in output in these staples could potentially reduce poverty by 19%. Livestock has also become an important source of income, with 31% of households utilizing it as a source of income in 2002, an increase of 17% from 1996. The sector has, however, receded in recent years, most evident in the fact that 42% of households received some income from non-farm enterprises in 2002. This drop in production has been attributed to the development of aluminium exports, along with the increase in other large export projects since 2000.

Environmental degradation and the over-exploitation of natural resources has become a problem in the country's coastal zone, largely a result of a combination of variables including poverty, a lack of alternative employment and population pressure. For example, the utilization of cropping, as well as firewood and charcoal production, to supply urban centers has resulted in extensive deforestation of coastal forests. Mangrove forests have also been over-exploited and converted into other land uses that generate higher returns, such as real estate and even garbage dumps, resulting in nearly 15,000 HA being degraded across seven provinces. The government has, however, taken many steps to reverse this over-exploitation. For example, decentralization and community level management are being utilized as a means to promote the sustainable use of

resources in the coastal zone. Likewise, current forestry policy aims to not only incentivize the use of secondary species, but also promote the rehabilitation and effective conservation of protected areas in the coastal zone. Similarly, in planning and management, the report also noted that there is a common perception in Mozambique that to alleviate pressure on coastal resources alternative streams of income have to be provided, which is a positive and realistic assessment of the current situation.

Overall, there is clearly an acknowledgment by stakeholders and government of the importance of the sustainable use of coastal resources in relation to promoting employment and alleviating poverty. Despite the lack of capacity and knowledge of resource management at the community level, support from NGO's, as well as a commitment to participatory resource management, highlight the positives moving forward. While an over-dependence on tourism could become problematic and a strong South African economy may facilitate outward investment, Mozambique's rich and extensive resource base, along with the country's commitment to conserving its forests, should allow the sector to reach its potential in the future.

V. Energy

Activities in oil and biofuels are currently limited, with only natural gas being produced from twelve wells at the Pande/Temane gas fields. The field's present capacity is 120 mill GJ/year (3 billion cu.m/yr), with the government accruing 5% of the revenue from production. The downstream oil industry is dependent on imports to the ports in Maputo, Beira, and Nacala, all of which provide a supply corridor to adjacent, landlocked countries. The country has one processing facility in Temane, along with three pipeline routes, two of which are gas pipelines with links both to domestic customers as well as to South Africa, while one oil pipeline is linked to Zimbabwe. Mozambique is considered to have the largest biofuels production potential in Africa, but no commercial activities have yet been initiated.

Many constraints have been identified in the sector, possibly limiting development in the sector. For example, weak capacity at Temane processing plant has been highlighted as a constraining factor impacting on the expansion of gas extraction and exportation, while the country's limited capacity to exploit its own natural resources has also been identified as a weakness. The dominant position of the private-sector (investors) in relation to government and local communities has also been documented as a weakness, while the lack of social and environmental concerns in emerging-market companies has been identified as a threat. It is also likely that increases in oil and gas activity will increase the threat of spills, while a failure to comply with domestic regulation, particularly in biofuels companies, has also been documented as a potential threat.

Numerous strengths and opportunities have, however, been identified in the sector, many of which could open up new opportunities for employment in the coastal zone. For example, two oil refineries, port and storage upgrades, as well as three new pipeline projects, are all currently being planned and/or appraised. The government also developed a national biofuels strategy in 2009, which is not only being supported by the African Development Bank and DFID, but has also led to two biofuel projects being planned in Gaza and Manica respectively. Biofuels development in Mozambique is also under international scrutiny, which means the sector could benefit from 'best practices' support, while land availability, the strategic geographic position of country, as well as the presence of knowledgeable NGOs, have all been identified as great strengths in the sector. Thus, if the respective opportunities in oil, gas and biofuels can be realized and civil society can become more involved in extractive industry activities, it is likely that the sector will provide great benefits to Mozambican coastal communities in the near future.

VI. Ports and Coastal Transport

An extensive coastline, along with ten documented ports, highlights the strength and promise of coastal transport in Mozambique. Traditionally, the government played a large role in the administration of ports, however, since the end of civil conflict in 1992, reforms to introduce joint ventures into the transport system has facilitated rapid reconstruction and development in the sector, with the ports of Maputo, Beira and Nacala now all effectively operated by private-sector port operators. Reconstruction of rail services that were destroyed in civil conflict have also facilitated growth in trade with South Africa and further rehabilitation could expand cargo exports from the DRC, Zambia, Zimbabwe and Malawi, which could be beneficial to both coastal economies and the agriculture sector.

Due to its low lying coastal plain, most of the ports have, however, developed in shallow bays and estuaries, which poses problems in handling large deepsea vessels. Corruption and interference in private-sector operations have also become problematic, while a lack of training institutions and a weak manufacturing sector may also pose challenges to the sector moving forward. Despite these constraints, the efficiency resulting from the privatization of the ports, along with the transformation of customs procedures and increased investment in the sector, highlight the promise of ports and coastal transport in the country.

As a whole, the sheer scale of the country's coastline magnifies the importance of ports in Mozambique, particularly as a means to develop trade and grow economically. The country's extensive natural resource base, along with the opportunities for mining development, could potentially facilitate this growth even further, which will, in turn, have great benefits for coastal communities, particularly between Beira and Nacala. While dependence on foreign capital and the potential for South Africa to obstruct transport access to Gauteng could become problematic, the opportunities for development in the sector and the subsequent spillovers this could have in coastal regions, highlights both the economic significance of the sector, as well as the numerous positives inherent in the sector moving forward.

VII. Coastal Mining

Producing aluminum, titanium, zircon, rutile and sand from dunes, mining is one of Mozambique's fastest growing sectors, representing 1.6% of total GDP in 2006 with investments increasing from \$101 million USD in 2004 to \$804 million USD in 2008. All the aforementioned minerals, with the exception of sand from dunes which is mainly an artisanal practice, are also being produced for export, making the sector a vital source of foreign exchange and an essential means of facilitating economic growth. The processing of alumina in the Mozal aluminum smelter alone accounts for over half of the country's export earnings. In the coastal zone, only the Moma mine is currently operational.

Many of the mines are also being utilized to develop the communities within which they operate. For example, the Moma Mine has facilitated the development of the Moma Development Association, which is not only promoting the provision of secondary employment opportunities, but also contributing to the development of schools, health care and financial services for rural communities. Similarly, Mozal smelter production has led to the creation of the Mozal Community Development Trust, which has contributed to health care, education, housing projects and training programs for local communities. The government has also been a positive actor in the sector, particularly evident in the development of public-private partnerships, which have

been crucial in the reconstruction of infrastructure, as well as in its commitment to strong environmental regulation in the mining sector.

As a whole, while the sector has been a very positive asset for the country, there are constraints evident. One of the more challenging aspects is the potential for Mozambique to fall victim to the 'resource curse', whereby, the influx of investment around the mining sector could facilitate the appreciation of the metical, which has the potential to make all other sectors uncompetitive and, thus, reduce overall economic growth. A lack of coastal zone management, as well as a lack of attention being focused on non-mining provinces, also highlights some of the challenges surrounding the sector. Nevertheless, the opportunities for further growth in employment, the potential for gold and coal production in Tete, as well as technology transfers and greater NGO involvement, all highlight the great positives moving forward.

Conclusions

Each sector has had, and will continue to have, a distinct impact on the socio-economic and environmental status of the coastal communities concerned. There are many constraints that remain constant across sectors, such as weak infrastructure, the over-exploitation of natural resources and the potential for the 'resource curse', all of which have had a widespread impact on all of the sector's considered in the coastal livelihoods study. There are also numerous strengths and opportunities apparent, including the potential for spillovers from more successful sectors, the empowerment of local communities and an extensive natural resource base. As a whole, while each of the seven sectors have their own distinct institutions and processes that are unique to the sector in question, they are nevertheless extensively linked economically, socially and environmentally

One common constraint documented throughout all the sectors is that of weak capacity and infrastructure. In the small-scale fisheries, poor infrastructure has affected trade and the overall marketability of output from the sector. In mariculture, limited infrastructure for research and development has affected technological development in the sector, while some transport infrastructure still remains inoperable from the civil war. The capacity to monitor and regulate environmental activity has also become problematic, particularly evident in the small-scale fishery. Weak capacity has also negatively affected planning and policy implementation in the tourism sector. However, despite these constraints, numerous advances have been made. For example, the development of public-private partnerships has been crucial for the rapid reconstruction of transport infrastructure, while privatization of some of the country's ports have been vital in increasing efficiency. Increases in tax-revenue from the booming mining sector should also be a positive for capacity and infrastructural development.

The potential effects associated with the 'resource curse' should also be highlighted. Rapid development of the mining sector could place extensive upward pressure on the Metical, which could, in turn, reduce competitiveness and subsequently growth in all other sectors, particularly agriculture. Mining activity is also not likely to see significant slowing, as demand for minerals will remain strong, particularly from emerging markets. Despite this challenge, spillovers from mining activity do have the potential to create opportunities for alternative employment.

Both the over-exploitation of natural resources and environmental degradation also present challenges to sustainable development in the Mozambican coastal zone. For example, a lack of alternative income generating activities and high poverty rates continue to place pressure on coastal resources in the small-scale fisheries, while the destruction of coastal and mangrove

forests remains prevalent in agriculture and forestry. A lack of integrated coastal zone management is also seen as a weakness in the coastal mining sector. Despite these challenges, opportunities to mitigate the over-exploitation of coastal resources are apparent. For example, opportunities for the development of mariculture has the potential to shift employment away from the small-scale fisheries. The same can be seen in tourism, where great potential exists for increased training and entrepreneurship in a sector that is far less resource intensive than other dominant sectors. Likewise, efforts to incentivize the use of secondary species, as well as the promotion of pottery and horticulture, holds much promise in agriculture and forestry, while both mining, energy and the ports and coastal transport sectors have the potential to create spillovers that could shift employment away from sectors experiencing high-degrees of over-exploitation. All of these activities, thus, emphasize the importance of fostering alternative income streams as a means to both reduce the pressure being placed on coastal resources and reduce poverty.

Overall, the benefits of investment and growth in energy, mining and the ports and coastal transport sectors cannot be underestimated. The potential for these sectors to generate spillovers and facilitate the growth of alternative income streams in coastal communities is extensive. The same can be said for growth in substitute sectors such as aquaculture, mariculture, tourism and horticulture, all of which highlight the significance of not only reducing the over-exploitation of coastal resources, but of mitigating poverty in the process. These advances in sustainable socio-economic development will also be strengthened by the government's commitment to decentralization and co-management, particularly in the small-scale fishery and agriculture and forestry. In promoting these participatory management schemes, the government has the opportunity to empower local communities and allow them to become responsible for the resources on which their livelihoods depend. Coastal communities should also continue to see social benefits from tax revenue and community development organizations, both of which have been fostered by growth in the mining sector. Thus, while numerous socioeconomic and environmental challenges remain prevalent in the country, Mozambique clearly has the potential to not only continue to grow economically, but to do so in an inclusive and sustainable manner.

DETAILED SECTOR REPORTS

I. Small-Scale Fisheries – Prepared by Ms. Tania Pereira,
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1. Introduction

Mozambique's long coastline and its fisheries resources support fisheries, which are important to the Mozambicans in terms of food, economic activity and export income. The fishery activity in Mozambique is guided by the Fisheries Law (*Law n.º 3/90*)^[1] which defines the fisheries types, the management general aims, the conservation measures and the license and surveillance systems.

According to its purpose and applied means, the fishery is classified into subsistence, artisanal and semi-industrial fisheries, experimental and research fisheries and, also, recreational and sport fisheries^[1, 2, 3]. Nevertheless, in a general way, three major subsectors are recognized according to boat and gear characteristics: artisanal, semi-industrial and industrial subsector, where a principal line of division is defined by the length and complexity of the boat and its autonomy allied to the fishery zones^[3, 4, 5].

The semi-industrial and artisanal subsectors are currently referred to as small-scale fisheries^[1, 2, 6] with a clear distinction between this and the industrial scale fishery. The small-scale fishery is defined as “the fishery that comprises both artisanal and semi-industrial fisheries”^[1]. The subsistence fishery is defined in the Fisheries Law as “the one that is practiced with or without boat, with basic and artisanal means, constitute a secondary activity for the people, supply feeding and do not produce significant and marketable excesses”^[1]. Although this definition is placed in the list of definitions of the Fisheries Law, there are no practical distinction between subsistence fishing and the artisanal fisheries that exhibit a commercial nature. This is probably due to the lack of a clear distinction on the subsequent articles of this law and on the regulation under the frame¹ of the same (Marine Fisheries Regulation, Decree n.º. 43/2003)^[4]. Annex A presents the small-scale fisheries classification according to the Marine Fisheries Regulation (Box 1) and a classification proposed in the new strategy for the artisanal fisheries development², a planning instrument actually adopted by the Ministry of Fisheries^[7] (Box 2).

The oldest information regarding the number of fishers involved in the small-scale fisheries is dated from the year 1965 (16,131 fishers)^[6]. Since 1995, the National Institute for Small-scale Fishery Development (IDPPE) has performed a national census every five years^[8, 9, 10], but these are directed only for the artisanal fisheries. According to the last performed census^[10], the objectives were to produce socio-economic and technological information on the number of fishing centers, fishers, boats and gears, on the people performing work related to the fishery activities (naval construction, commerce, processing, mechanics and net-makers), as well as on gender, methods of processing, state of the boats, repartition of the production value, socio-economic infrastructures and community-based organizations. The artisanal sub-sector comprises,

¹The Fisheries Law is the diploma-board for the whole fishing legislation. This law was regulated by a diploma named Marine Fisheries Regulation

² Plano Estratégico para o Desenvolvimento do Subsector da Pesca Artesanal (PESPA)

at present (census of 2007), 1227 fishing centers ³, 135529 fishers using boats, 144511 fishers without boat, 39398 boats and 42268 fishing gears⁴. On the other hand, an elevated number of professionals, near 47000, work at the fishing centers on activities related to the artisanal fisheries, of which about 75% are processors and traders, plus about 140000 that are members of the crew ^[10] (Annex B). On the whole, the working force of the artisanal fishery is approximately 350000 people. In relation to the marine semi-industrial fisheries, in 2007 a fleet of about 100 vessels was involved, distributed among the southern Sofala shrimp trawling fishery (46), the Maputo Bay shrimp trawling fishery (22), Limpopo River mouth shrimp trawling fishery (4), the Angoche shrimp trawling fishery (8) and line fishery on coastal rocky beds (20) ^[11]. Considering that in 2004 the number of vessels was 73 involving about 1225 people ^[35], then we can estimate the use of 100 vessels for 1700 fishers.

Currently the fisheries sector contributes at least 3% to the GDP. According to estimates made, the country's marine catch is about 130,000 tonnes, of which about 91% comes from artisanal fisheries and 2% from semi-industrial. In terms of value, the artisanal catch represents not more than 42% and the semi-industrial about 6% ^[11].

Recreational and sport fishing activities are acquiring growing importance especially in the provinces where there are tourism activities linked to the sea, namely Cabo Delgado, Inhambane, Gaza and Maputo ^[11, 12, 13]. Recent approaches to these fisheries allude that there are no protests from the artisanal fishers related with direct effects of the recreational fishery, but this could be a reality, with the increase tourism, mainly because there is little or no control over these type of activities ^[13, 14]. There are reported cases of Southern African "sports" fishermen exporting large quantities of line and reef fish to South Africa ^[13] and if this is not yet a problem to the artisanal sub-sector it is probably indirectly undesirable for the semi-industrial line fisheries ^[15]. South African "recreational" fishing boats also come over the border in the night and fish commercially ^[16].

In a historical context, the Mozambican fishery sector's events can be divided into two phases ^[6, 17, 18], namely:

- Period before independence⁵: characterized by an almost complete absence of politics for the development of fisheries; prohibition of the industrial fishery; fish for the domestic market was imported; fishing activity was basically entirely comprised of the subsistence activity for the coastal communities ^[18].
- Period after independence, 1976 – 1992 (civil war): during this period there was a recognition that the artisanal fishery played a relief action in the economy of the coastal districts but an accentuated fall in production was observed due to the civil war and the consequent migration of population to the coastal zone; an effort to improve the situation was made and for the first time the fishery sector was made a part of the Ministry of Industry and Trade; the Fishery National Directorate and the Unit of Directorate of Small Scale Fisheries was created, which executed the strategies for the artisanal fisheries development - this included the mobilization of the fishers to organize themselves into production co-operatives and the establishment of *Combinados Pesqueiros* (Fishing Groups), which were to supply the fishers with fishing

³ Fishing centers are any permanent or temporary place where the fishing boats are kept and/or where the capture is landed.

⁴ Fishing gears are any artifact or device destined for the fishery.

⁵ Independence was declared on June 25th 1975

materials and equipment, training and dissemination of new technologies, providing services and encouragement for cooperatives; the first census was carried out in all main fishing artisanal centres.

- 1992 – present: the Mozambican Ministry of Fisheries was established as a result of a remodelling of the governmental fishery sector; revision, improvement and adoption of new and more adequate legislation; adoption of new strategies for the fishery sector development; improvement of the monitoring of the fisheries and consequently a better knowledge of potentials and catches; adoption of a co-management approach to fisheries.

In Mozambique, the main types of small-scale fisheries are performed in marine coastal areas, bays and estuaries and include artisanal line fishing, beach seining, seining, gillnets and traps and semi-industrial trawling and line fishing^[2, 3]. Table 1, Annex C, describes these types of fisheries and figures 2 and 3 of Annex D illustrate their geographic occurrence.

As mentioned, there are a number of professionals at the artisanal fishing centers working on fishing-related activities such as boat building, net making, mechanical work, fish processing and trading (Annex B, table 3). Of these, the fishing processors and traders are the most distinguished forming nearly 75% of the total individuals. It is important to note that difficulties are often experienced in locally sourcing the materials that are needed for net making; for this reason, many of these materials are sourced from South Africa or other countries in the region. However, over recent years the IDPPE has facilitated the supply of technical inputs and related extension services to artisanal communities in various regions^[2].

2. Biophysical

The maritime coast of Mozambique extends for about 2,700 km. In ecological terms, three distinct sections (Annex D, fig. 1) may be identified^[7, 11, 20, 21]:

- The *northern coast (coral coast)*, about 770 km long, with a rocky and coral-bearing sea bed, and a narrow continental shelf, and sheltered islands and bays, covering Cabo Delgado province and the northern and central districts of Nampula province (from Rio Rovuma at the north boundary - 10° 32' S, to Arquipélago das Primeiras e Segundas - 17° 20' S);
- The *central coast (swamp coast)*, about 980 km long, facing the Sofala bank, split by the numerous rivers and channels fringed with mangrove forests that provide sheltered estuarine areas, and sandy coasts, sometimes protected by coastal islands, extending from the two most southerly districts of Nampula province to Govuro district, in Inhambane province (from 16° 14' S to 21° 10' S). Includes two prominent delta, i.e., Zambezi and Save delta;
- The *southern coast (parabolic dune coast)*, about 950 km long, facing in its central area the Boa Paz bank, extends from Govuro district, in Inhambane province, to the extreme south of Maputo province. It has beaches in some areas, with sea beds sown with coral and rocks, with some sheltered bays, exposed to strong southerly winds, particularly from Inhambane area to the far south of the territory (Ponta do Ouro - 26° 52' S). Principal features include high parabolic dunes, north-oriented capes, and barrier lakes.

The different physical and ecological conditions in these regions also imply that different fishing operations are undertaken in the different regions (Annex D). Some places, because of their specific geographical conditions, provide a concentration of specific marine species, and the following may be stressed:

- *The mouths of the most important rivers* and the bays and marine areas adjacent to them are, as a rule, important fishing areas. In them, small pelagic and demersal fish predominate as well as crustaceans of estuarine and coastal waters. These include the outlets of the Rovuma river, the Zambezi and its delta, the Pungué and the bay of Sofala, the Save river, the bays of Vilanculo and Inhambane, the Limpopo river and the estuary and bay of Maputo;
- The *islands located near the coast* of Cabo Delgado, Nampula, Zambezia and Inhambane are other areas where fishing activities are concentrated, and fishers normally target rocky seabed demersal species and some large pelagic fish, but also small pelagic fish and coastal lobsters.
- The *rocky coastal seabeds* along the coast of Cabo Delgado, and the north and centre of Nampula province, and of Inhambane, where there are resources of demersal fish, cephalopods, molluscs, small pelagic fish, tuna species, rock lobsters and seaweeds with commercial value.
- Some *banks and ocean peaks* at varying distances from the coast provide areas of concentration of tuna species and, in lesser quantities, of demersal species with a high commercial value. Of all of these, the São Lázaro Bank on the Cabo Delgado coast and the Almirante Leite Bank in Maputo stand out;
- The *Sofala Bank*, extending over about 45,000 km² up to the depth of 200 m (that is, 64% of the Mozambican continental shelf) between parallels 15° 38' and 21°30' South, with a maximum breadth of 60 nautical miles in front of the Pungué river in Sofala province. In this region the largest proportion of the country's marine resources are found, particularly small demersal fish, pelagic fish, mangrove crabs and penaeidean shrimps;
- The *Boa Paz Bank*, between the coordinates 24° 30' South and 35° 30' East to 26° 30' South and 33° 00' East, where resources of small pelagic fish, demersal fish, cephalopods and deep water crustaceans, namely spiny lobsters, shrimp, langoustine and crabs are located.

Some of these geographic places are strategic for the development of artisanal fisheries namely the most important river's mouths and adjacent marine areas and the islands located near the coast of Cabo Delgado, Nampula, Zambézia and Inhambane provinces. For the semi-industrial trawl fishery, the strategic zones include the river's mouths, bays and Sofala Bank, whereas for the semi-industrial line fishery is the coastal rocky zone (Annex C, Table 1). The resources for the small-scale fisheries include bivalves and Mangrove crabs collected in the littoral zone or caught in traps, small demersals and pelagics caught near the shore in beach seines and gill nets, shallow water shrimp mainly caught on the Sofala Bank by semi-industrial trawlers and artisanal fishermen, smaller shrimp species (mundle, tepwe) caught by artisanal fishermen, squid and octopus, and larger demersals caught by long line, hand line and trap fisheries ^[2].

3. Human Environment

The three main sections of Mozambican coastal zone also have well distinguishable socio-economic features. The coasts of the northern region are characterized by cash crop producers, predominantly producing cashews in the coastal areas. This is generally the least developed part of the country in terms of roads and social infrastructure. The predominant social system is, in contrast to the other regions, matrilineal. During colonial times, the coasts of the central region

were structurally developed into a plantation economy and transport corridor functioning as an outlet for inland countries, consequently a substantial part of the population supplied labour for the plantations or the ports and transport sector, whereas another part produced food (fish and crops). The high fish productivity of this region makes fish distribution to the inland areas of Sofala, Manica, Zambézia, Tete and Niassa provinces possible. The coasts of the southern region are characterized by poor soils and a relatively low population density with the exception of the Limpopo valley and Maputo Bay area. Due the installment of the migrant labour system (for South African mines) and consequent absence of men for long periods, women turned to trade, often trade of fish, as a means of survival. The southern region is more developed in terms of road and social infrastructure, communication and electrification. It is also the principal industrial centre and primary focus of the fast developing tourism sector^[2]. However, in general there is great dependence on marine resources for food and employment, with an estimated 50% of the Mozambican population's protein intake comprising of fish^[22]. It is also notorious, in general, that the fishing villages have a great lack of socio-economic infrastructure^[7]. Mozambique is falls into the list of countries that lie below the top 100 level in the United Nations (UN) Human Development Index and that face severe socioeconomic challenges, with an enormous and growing need for employment opportunities and fish protein as food security^[23].

The primary productive contribution and time allocation of women in coastal areas lies in subsistence agriculture rather than in fishery. However, they also fish and collect marine products, representing about 2% of the total of permanent fishers in the country, with some relevance in the provinces of Nampula and Inhambane^[10]. In artisanal fisheries, the role of the women is to produce for direct consumption of their households. In the central and northern regions, the women process barter or market any surplus locally but they are rarely allowed to engage more professionally in marketing of fish by their husbands, as, according to their beliefs/culture, this would bring them in uncontrolled contact with other men. In the southern region, as referred above, the women are engaged in the commercialization however the final decisions on the use of the income are normally taken by the husband or another male authority^[2]. However it is notorious that the women have a more and more important role in the fishing chain and some lines of action, like the Governmental Programme co-financed by Norway and Iceland from 2009 to 2012^[11] has as an expected outcome, of a development objective, a gender policy supported. The effect expected is a greater gender equity in the fishery sector and the indicators that will be used are: (1) a positive evolution in women's representation in fisheries' participatory management bodies and in grass roots community organizations, (2) policy documents and development plans containing references to objectives and strategies seeking greater equity within the fisheries sector.

No overall national level data regarding income and socio-economic aspects of artisanal fisheries is available but some studies have been carried out in different regions of the country over the years^[2, 14]. The studies indicate that on average, artisanal fishermen/households are extremely poor and that there is considerable socio-economic differentiation and a high rate of illiteracy^[16]. Three main groups can be distinguished: (1) the more privileged boat and gear owners, (2) crew (employees) and (3) fishers fishing by foot/collectors^[2]. There are also differences, in terms of incomes, with regard to the markets distances^[14]. Commonly those who own gear and/or boats employ others to do the fishing and, referring to the division of the production value between the members of the fishing unity, the more frequent is the modality of "50/50" in a global context with exception for Sofala province where dominate the modality of "salary"^[10]. Annex E presents a summary regarding socio-economic aspects of artisanal fisheries in Mozambique mentioned in some works including information about incomes but in generally in the artisanal sector the return of revenue is low. Most artisanal households also uphold other economic activities such as farming, trade of fish and even tourism but for the majority, fishing is the most

important source of income and food security^[10, 16, 24]. In terms of savings, in the artisanal fishery these are very low or not available^[17].

According to Lopes et al. (1997)^[27] there are patterns of migration among artisanal fishers due to fluctuations in resources, especially during rainy season. At the north, the fishers migrate following the shoal movements or searching for more abundant catches, the fish traders are also migrants and these factors are a great contribution to the dissemination of HIV/Aids^[7]. At Quirimbas archipelago, Cabo Delgado province, there are Tanzanian migrant traders and fishers attracted by the good productivity of the region; the fishers of the neighbour province, Nampula, also migrate to this region^[28, 14]. Local patterns of migrations also occurred in Inhambane and Sofala provinces. The fishers may move from one fishing camp to another depending on the location of fish in one particular area or another (normally the fishers move to existing fishing camps that are temporary in terms of the fishers' presence). That is a situation much observed in the fishing camps situated north and south of the Save river mouth, where the fishermen from Machanga (Sofala) or Govuro (Inhambane) move between fishing camps situated in the north or in the south following the fish and prawn shoals^[26]. Another reason pointed out for fishers migration is, for example, the restriction in fishing imposed within national parks boundaries, like in Bazaruto Archipelago National Park at Inhambane^[26].

Migration could be, and is in reality in certain areas, a source of conflict in the fishing communities. For example, in the Quirimbas Archipelago, migrants are staying for longer periods of time, leading to an increase in fishing pressure which in turn is creating conflict with the locals^[28]. Santos (2008)^[14] pointed out that there are also conflicts between the artisanal fishers and the company fleets due to allegations (sometimes proved) of invasion by the latter of the exclusive marine zones (see Annex A, Box 1) for the artisanal fleet. According to the same author, in general, local conflicts/disputes are solved at the proper fishing centres and do not necessitate authority intervention, but in the case of disputes with migrants this is sometimes required. The fishers are organized in groups according to the fishing gears that they are using and each group has a chief. Sometimes a chief is appointed for the entire centre, the role of which is to solve problems for that centre. Other conflicts result from the seasonal closure of the shrimp fishery, which also affects the beach seine artisanal fishery; this is a point of protest by the artisanal fishers⁶ who feel socially and economically affected by this closure^[7].

Fresh aquatic products from the artisanal fishery are mainly consumed directly by producers and in nearby communities and urban settlements. Electricity is only available in major urban centres and hence the principal conservation method by artisanal fishermen consists of sun-drying (most common in Nampula province), smoking (most common in Zambézia, Nampula and Cabo Delgado) or salting and drying (most common in Sofala, Nampula and Cabo Delgado)^[2, 10]. However, in regions where there are improved conditions, mainly in certain regions of Maputo and Gaza provinces, a good percentage (between 17 and 32%) of the fishing centers use freezing as a preservation method^[10]. Preserved fish is distributed to rural communities and to urban townships^[2]. The more important circuits of fish distribution are (Annex E, fig.3)^[29]:

- the ones that supply fish to great centers of demand (Beira, Nampula and Maputo);
- the ones that start at Beira and supply the inland zones of Beira Corridor to Tete.

⁶ The artisanal fishers participate on the meetings where the matter is discussed. The decision is supported until now by a very few studies, with data of low quality.

In the artisanal sub-sector, the principal commercial agents are ^[29]:

- the fishers and their families that trade part of the production;
- the small traders using simple means of transport (bicycles, motorcycles) or on foot that buy and sell small quantities, and that influence only the coastal zone;
- more important traders that sell big quantities at great distances; sometimes they do not have their own means of transport and therefore use the public transport; many are also ship owners and some provide the fishers with consumer goods and even fishing material.

At the markets and even in the beaches there are wholesalers selling the product in kilos or in cans and retailers selling it in small quantities especially in small piles ^[30].

At the same time, in a general way there are difficulties posed to the commercialization net due to degradation of the roads which are impassable mainly during the rainy season, which ultimately blocks or impedes the flow of fish to other areas ^[30].

Shrimp and fish of the semi-industrial fisheries are mainly exported frozen and, frozen and fresh, respectively. Shallow water shrimp from the semi-industrial fleet are (except for those vessels which carry freezers) processed (sorted, packed and frozen) in facilities on land. The fish of the line fishery undergo an initial processing on board the vessel on which they were caught, consisting of gutting and cleaning, and later processing on shore (Annex C, table 1). The main markets for frozen products are South Africa, Japan and the EU, the two latter providing the most attractive prices but also the highest requirements in terms of quality certification ^[2, 11].

The private sector catches, process and market fish in accordance with national legislation and commercial possibilities. Inspection and quality control of fishery products are regulated by presidential decree no. 10/98 and procedures issued by the Ministry of Fisheries. There is no specific quality control system in place in relation to the products supplying the Mozambican market. Processing plants supplying the domestic market are poorly developed with respect to hygiene and sanitation conditions, however they do require a permit from the Ministry of Fisheries to operate ^[38]. This part of the production is subject to the general requirements for marketing of food products set by the Ministry of Health ^[2].

According to Degnbol et al. (2002) ^[2], about 70% of the shrimps trawlers are represented by AMAPIC (Associação Moçambicana de Armadores de Pesca Industrial de Camarão), while most of the remaining, mostly smaller vessels, are represented by ASSAPEMO (Associação dos Armadores de Pesca de Moçambique). AMAPIC represents companies owning both industrial and semi-industrial vessels. They are both involved in the process of management discussions with the authorities that take place before management decisions are made, and also in the discussions currently taking place regarding establishing certain general rules on how quota rights should be allocated.

Some factors, which have included the overlapping of authority, the inefficiency in the application of administrative measures for the fisheries resources management, inappropriate fishing practices (mosquito nets, fishing during the closed seasons, catch of protected species and cut of mangrove trees), the increasing population density in the coastal areas, the increase in fishery-related conflicts, the over-fishing of the resources, and the weak control of the fisheries, has lead to the adoption of participative management in Mozambique. This type of management was legally defined in 2003 by the Marine Fisheries Regulation, Decree n°. 43/2003 ^[4, 7]. The participative management approach includes administrative (CAP – Comissão de Administração

Pesqueira / Fisheries Management Commission and CCGs – Comitês de Co-Gestão / Comanagement Committees) and associative forms (CCPs – Conselhos Comunitários de Pesca / Fisheries Community Councils). Formally, the CAP and the CCGs have the same basic functions at the national and local (district and provincial) levels, respectively. The CCPs can only practice support activities as long as they have the necessary authorization from the Fisheries Minister^[7, 31, 32]. The responsibilities of each institution and co-management structure are summarized in Annex E, Table 2. Nampula, Zambézia, Sofala, Cabo Delgado, Inhambane and Maputo are the principal provinces where there is a good promotion and organization of CCPs^[33]. In the central region (Sofala, Nampula and Zambézia) there are 14 CCPS with the statutes legally approved by the Fisheries Minister^[34].

4. Policy and governance

According to Ministério das Pescas (2009)^[11] and Tenreiro de Almeida (2006)^[35], the administration of Mozambican fishing is performed by the Ministry of Fisheries (MF) and the respective local (provincial and district) fisheries bodies, and also the central institutions it supervises and their respective local delegations. The system includes the following integrated sub-systems: *policy making, fisheries management, promotion of development, and production and services* exercised by the state or with state participation (Annex D, fig. 1). The main responsibilities of the MF, as a *political body*, concern the establishment of fisheries development policies and strategies, implementing them through development plans, as well as coordinating implementation through guidance and control of the performance of the various sub-systems and the creation of a business environment favourable to the operators and to new investors.

The *fisheries management* sub-system consists of the following institutions:

- *National Institute of Fisheries Research (IIP)*, whose task is to look after the sustainability of resources;
- *National Directorate of Fisheries Administration (DNAP)* which is still an integral part of the MF and whose objective is to monitor, licence and supervise fishing activity,
- *National Institute of Fish Inspection (INIP)*, the objective of which is to ensure that the quality of fisheries produce, exported or imported for domestic consumption, is in accordance with the health conditions stipulated in Mozambican legislation and in international provisions.

For its part, the *fisheries development promotion sub-system* consists of the following institutions:

- *National Institute for the Development of Small Scale Fisheries (IDPPE⁷)*, which seeks to promote the development of small-scale fishing, with particular attention to reducing levels of poverty and promoting the well-being of communities of artisanal fishermen;
- *National Institute for the Development of Aquaculture (INAQUA)*, which has the objective of promoting aquaculture;
- *Fisheries Promotion Fund (FFP)*, the objective of which is to manage the financial resources intended for public investment in the sector and to grant loans intended for development; and

⁷ IDPPE is responsible for fisheries research in relation to the socio-economics aspects of artisanal fisheries. It was created in the decade of 80 and is now in the provinces of Cabo Delgado, Nampula, Zambézia, Sofala, Tete, Inhambane, Gaza and Maputo.

- *Fisheries School* (EP), which provides basic and mid-level specialist training required for the development of the sector, as well short duration training courses.

Finally, the *production and services sub-system* is gradually disappearing. In the past it consisted of state and mixed companies. Practically all that remains of this sub-system is state holdings in mixed shrimp fishing companies, notably Pescamar.

At the local level, the Fisheries administration has a local presence, in the provinces and districts. The administration of artisanal fishing, with regards to the issuing and charging of fishing licenses, supervision, and collecting fines, has been in the power of the district administrator since October 2006. At levels lower than the district (administrative post and locality) any powers in terms of fisheries administration are exercised by delegation of powers by the district administrator. The administration of semi-industrial and industrial fishing is exercised by the provincial fisheries administration body, currently integrated into the Provincial Fisheries Directorate (DPP). By attribution of the Minister of Fisheries, and in coordination with the administration of the respective districts, the CCPs may exercise some of the attributes that flow from the powers granted to the district administrator. The central fisheries administration institutions, such as the IDPPE, FFP and IIP, possess provincial delegations and the first named is also represented in some districts and even down to a series of some localities.

Concerning to the legislative board of the marine fisheries in Mozambique, the principal diplomas are ^[35]:

- Fisheries Law (1990),
- Marine Fisheries Regulation (2003),
- Recreational and Sport Fisheries Regulation (1999),
- Inspection and Quality Security of Fishing Products Regulation (2001)

The Fisheries Law includes the following questions: fisheries management and ordering (heading II), conservation measures (III), quality of the fisheries products (IV), and control and surveillance of the fisheries activities (V) ^[1].

The questions covered by the Marine Fisheries Regulation are fisheries management and ordering (chapter II), fishing gears (III), fishing vessels and boats (IV), types of fishing (V), conservation of the fisheries resources (VI), fisheries licensing, control of the fishing activities (VIII) and control and surveillance (IX) ^[4].

The recreational and Sport Fisheries Regulation covers the following aspects: areas and periods of recreational and sports fishing (chapter III), fishing products and findings (IV), fishery licensing (V), fishery competitions (VI), fishers duties (VII), surveillance, infractions and penalties (VIII), and final dispositions (IX); also include the lists of protected species ^[37].

The legislation is not small-scale fisheries-specific but includes it among the other fisheries with the exception of the Inspection and Quality Security of Fishing Products Regulation that is directed to the semi- and industrial fisheries and is not adapted for artisanal fisheries. This regulation is comprised of the following issues: fish inspection (chapter II), installation, construction, modification and licensing of vessels and settlements (III), guaranty of the fishing products quality (IV), hygienic and sanity conditions in the operation of the vessels and settlements (V), system of control and quality guaranty of the settlements and vessels (VI), and infractions and penalties (VII) ^[38].

Generally, fisheries laws and maritime fisheries regulations are made at national level. Small resolutions could be for one regional area for example - Sofala Bank or Maputo bay. At the local level, there is no formal legislation^[5] and the fishers feels that each region have particularities that are not yet recognized and respected.

The fisheries development policy in force has its reference points in a series of policy and strategy documents, which express a major part of the national efforts to develop the sector. At a national level the reference instruments include the following^[11]:

(1) The *Government's Five Year Programme for 2005-09* is the reference point for all policy and strategy instruments and national development plans during the current legislature. It considers objectives that are achievable in the short, medium and long terms, which are later enshrined in development plans.

(2) The *Action Plan for the Reduction of Absolute Poverty (PARPA II) for 2006-09* is the national plan laid down by the Government to attain the great national objective of poverty reduction.

(3) The *Food Production Action Plan (2008-2011)*, starting from the finding that the national food balance notes there is a deficit in certain basic foodstuffs, defines objectives and specific actions, so that the food production sectors, such as fisheries, may gradually overcome this deficit.

(4) *Agenda 2025* is a long term vision, approved in 2003, drawn up through an expanded participatory process at national and provincial levels. Its objectives are focused on eradicating poverty and accommodated in the national planning instruments with a view to economic and social development.

Sector instruments for the development of fisheries and aquaculture are^[11]:

(1) The *Fisheries Master Plan 1995-2005*, is the oldest of all the sector reference documents. It is currently being assessed and revised.

(2) The *Strategic Plan for the Artisanal Fishing Sub-sector for 2007-2011 (PESPA)*, comprises a strategic approach having in view the artisanal fishery sub-sector in a perspective that could exceed five years.

(3) The *Strategy for the Development of Aquaculture in Mozambique* seeks to ensure sustainable use of the aquaculture potential, respecting the environment and promoting economic and social development, through the creation of a sustainable, competitive and diversified aquaculture sector.

(4) The *Small Scale Aquaculture Development Plan 2009-13*, under appraisal, seeks the implementation of the above mentioned strategy. The key provinces initially prioritized by for immediate aquaculture development are Manica, Zambezia, Tete and Niassa where good quality water and soil exist.

(5) The *Fisheries Research Development Strategy (2008-2012)* envisages nine strategic objectives that may eventually imply reformulating the current organic structure of the IIP so as better to implement the strategy.

(6) The *MCS Policy* and the *Implementation Strategy* are based on the principle enshrined in the Fisheries law, according to which “fisheries resources are owned by the state, which is responsible for ensuring that fishing activities do not threaten the sustainability of the resources, and that the benefits for the country resulting from these activities are maximized”.

(7) The *National Plan to Combat Illegal, Unreported and Unregulated Fishing*.

(8) The *2009 Economic and Social Plan (PES)* is the annual instrument to implement the government’s Five Year Programme and the national plan (PARPA II).

(9) The *Sofala Bank Shrimp Fisheries Management Plan* is still under appraisal. The initial draft contains a strategic approach in order to achieve the economic and social objectives in each of the three fisheries that exploit the Sofala Bank shrimp resource.

Annex D, tables 1 and 2, resumes the instruments above mentioned, its objectives and strategies.

5. Planning and management

The principal management measures introduced to regulate fisheries in Mozambique are licensing and TAC’s for important crustacean fisheries as well as a seasonal closure and fishing effort limitations (number of vessels) for the most important fishery (shallow water shrimp fisheries), and mesh size regulations (for semi-industrial and artisanal fisheries) ^[2, 5].

The semi-industrial fisheries (shallow water shrimp fishery) are managed on the basis of annual quotas, allocated among license holders (Annex C, table 1). The quotas are set annually by the Ministry of Fisheries on the basis of consultations with IIP and these quotas are then allocated by the DNAP ^[5].

Two types of instruments are used: vessel authorizations (for entry of vessels which have not formerly participated in the fisheries) and licenses to participate in specific fisheries. All Mozambican fisheries and fishing related operations, except non-commercial subsistence activities⁸, are subject to licensing. In the semi-industrial sector (and industrial), the vessel authorization is an access-regulating mechanism while the fishing license is an instrument to collect fishing fees ^[2].

In the artisanal fisheries, management extends to the requirement of annual licenses; however, as the artisanal fisheries are operated generally without adequate management plans (addressed for particularities as places, resources and its dynamics), landings data from this sector are incomplete, and there is not enough control in this sector; some authors have considered the artisanal fisheries as “open-access” fisheries (Annex C, table 1). In the artisanal fishery licenses are only employed to collect fishing fees. Subsistence fisheries are exempt from paying fishing fees ^[2, 5]. The principles of management at the local level are based upon traditional use of resources, such as the closed season for beach seines in Inhassoro (Inhambane). This principle is not legally adopted but is locally implemented through co-management initiatives ^[5].

⁸ According to the Fish Law, the subsistence fishery is exempt of licensing except in cases with the purpose of management of one or more fisheries. The subsistence fishery is a secondary activity for the people who needs to practice this activity and can be practiced by everyone as long as they are not sold any surplus.

At the central level, the Fisheries Management Commission (CAP), with representatives from all three sub-sectors as well as fisheries institutions, meets periodically to discuss management issues and serves as a limited forum for conflict resolution. Another forum, but more at the local level, is a series of local co-management committees. These co-management committees are completely integrated into the formal fisheries management process and have appropriate regulations^[5]. The co-management committees also integrate the local and traditional chiefs of the fishing villages, chiefs of the fishing centers, traders, etc, assuring that the old practices of the traditional systems of management are also considered in this new management perspective (which is based and put in place based on the international best practice).

According to Afonso (2006)^[5], officially, more than 75 percent of all fisheries in the country are managed by the Ministry of Fisheries, but in practice, only a small proportion has effective management. The main causes of less effective management are related with limited resources (human and financial) and the extensive Mozambique coastline. An example of the effect of ineffective management is the common use of small mesh sizes in beach seines within the artisanal fisheries (which are not allowed and not fiscalized), with un-targeted captures (all size classes and virtually every variety of fish). In some ways, it is impossible to determine exactly the amount of resources that are effectively managed because Mozambique has the necessary legal instruments but may not have the ability to implement and enforce them in all fisheries. In areas where the sector is well represented, it is possible to say that the enforcement is made in more than 50 percent of the fisheries, but in remote areas effective enforcement is less than ten percent.

In Mozambique there are about 7 areas of conservation which comprise coastal and maritime zones, namely: Maputo Especial Reserve, (Maputo province), Ponta do Ouro Parcial Marine Reserve (Maputo), Inhaca and Portuguese Island Biological Reserve (Maputo), Bazaruto National Park (Inhambane), Pomene Reserve (Inhambane), Marromeu Reserve (Sofala) and Quirimbas National Park (Cabo Delgado)^[13, 39]. With the exception of the Inhaca and Portuguese Islands Biological Reserve, where the conservation measures are enforced by the Department of Biological Sciences of Eduardo Mondlane University, conservation measures in other areas are typically managed by the Ministry of Tourism^[13, 39]. Recently, some of these areas began to play a role in the management of fisheries^[5] as evidenced by the respective management plans which were approved by the Minister for the Environmental Action Coordination.

In the last revision of the management plan for the Bazaruto National Park, for the 2008-2012 period, areas of integral reserve and zones were considered for common use by the communities and also for multiple use. In the Quirimbas, there are zones of utilitarian use, buffer zones and a big zone of total protection which includes many fishing grounds, however, it seems that now there is a good adhesion⁹ of fishers to the management plan^[14]. The management plan of the Ponta do Ouro Parcial Marine Reserve, currently under scrutiny for future approval, also considered zones of multiple utilization and restricted zones, buffer zones and sanctuaries. At the zones of multiple utilization the following fishing activities could be undertaken: artisanal and sport/recreation fishing, line fishing, harpoon fishing of pelagic species and collection of invertebrates; at restricted zones, only the line and harpoon fishing and collection of invertebrates will be permitted^[40].

⁹ There are two aspects regarding with this adhesion, one is the *Projecto da Pesca Artesanal do Norte de Nampula e Cabo Delgado* (PPANNCD), which is financed by the African Development Bank and that brings new forms of incentives to the fishers as an artisanal fisheries development project, the other aspect is the new introduced co-management arrangements which could be also an opportunity to a better compliance.

The MCS system in Mozambique is the responsibility of the Ministry of Fisheries and is based on land-based control and the possibility of allowing inspectors to participate in trips made on the fishing vessels of the industrial and semi-industrial fisheries. The core of the management system and thus of the MCS is the individual catch quota system based on TAC's. Control of catch volumes is a problem in a situation with a large sea area, where it is beyond the financial capabilities of the Ministry to inspect regularly through physical presence; a coastline with many potential entry points for products and insufficient possibilities for control of the product flow through the market chain ^[2]. According to Lundsør (2007) ^[16], the Mozambican MCS system is not a sufficient up and running system, but the government is currently targeting this issue and is cooperating with the SADC-MSC programme which has already trained 57 inspectors who are distributed along the coast and receive information from licensed vessels that observe and report unlicensed activity. A satellite monitoring system (VMS – vessels monitoring system) is already introduced on semi-industrial and industrial fleets ^[5], providing an overview of fleet operations at a relatively low cost. South Africa, Namibia and Mozambique adopted an interchange automatic system with their stations of VMS, but this is not yet entirely operational ^[41]. The co-management initiatives already implemented also lead to a higher acceptance and compliance with the MCS system.

The problem of illegal fishing is well recognized in Mozambique, but the lack of institutional infrastructure to supervise the coast, investigate reported cases and sue the offenders, leaves the country vulnerable ^[42]. The most common infringements are ^[41, 42]:

- Illegal boat imports;
- Fraudulent licensing;
- Jettisoning of investment projects;
- Violation of licence validity;
- Night fishing in Mozambican territorial waters by foreign vessels, related to migratory species like tuna, in the regions of Cabo Delgado, Inhambane and Nampula;
- Dubious tourist fishing practices undertaken by South African and Zimbabwean tourists under the pretext of sport fishing. The most frequent infraction are the lack of licenses and the illegal exportation of the captures;
- Fishing of sharks on shallow waters by longline fishers not licensed (probably using gillnets) putting away the artisanal fishers;
- Violation of the fishing areas by the shrimp trawlers (industrial and semi-industrial) who fish frequently on the exclusive zone of 3 nm (30 infraction were detected since 2005 for the semi-industrial fleet at Sofala bank and Maputo Bay);
- Illegal transshipment of catches from industrial to semi-industrial vessels to fish more than the quote, and with the same objective, the discarding of part of the production (the less valuable);
- Violation of the closed seasons is common by the artisanal fishers (beach seine fishers) but not common by the industrial and semi-industrial fishers since the fleets stay retained at the harbours during these periods;
- Illegal fishing and commercialization of ornamental fishes, whelks, sea cucumbers and shark's fins by artisanal fishers.

6. Development, Trade and Projects

Access to credit is crucial for the development of the fisheries and fisheries communities as well as increased Mozambican ownership especially in the industrial and semi-industrial sub-sectors ^[2].

⁷⁾ There are pockets of effective demand for credit in coastal communities for fishing-related activities (including investment in fishing equipment and boats, working capital for traders) and non-fishing economic activities, and a substantial demand for safe savings facilities ^[2, 43]. However, the number of financial institutions is low and the outreach limited. Furthermore, these services are focused almost entirely on major cities and towns, while no formal banking services are available in rural districts and practically no services provided to the lower income groups. Over recent years a number of NGO's, associations and other institutions have increasingly become involved in the supply of micro finance services such as savings and credit to the rural and urban poor, including fishermen and fishing communities. Informal financial service and arrangements exist in various forms ^[2]:

- One is the local savings and credit groups known as “Xitique” (simple savings and credit groups in which all members contribute on a daily, weekly or monthly basis and each member receives the whole collected amount on a rotational basis; particularly widespread in the south and popular among women, traders and wage workers);
- The other is a widespread informal credit system in kind that is practiced between e.g. fish traders and fishermen. Under this system, the trader will receive fish and only pay after finalizing the commercial transaction. In a similar way fish traders may advance fishing equipment to fishermen (e.g. nets) who pay off their debt in fish;
- Furthermore local informal money-lenders are established in various parts providing short-term loans at high interest rates.

The fisheries sector is financed through a variety of mechanisms, namely: reinvestment of revenues, informal saving and credit arrangements, formal credit through commercial credit institutions mainly for industrial fisheries, development finance institutions operating in relation to fisheries (Fisheries Development Fund - FFP, Fund for the Development of Small Industry - FFPI and Investment Promotion Organization - GAPI) and Micro finances institutions (NGOs CARE, KULIMA, AMODER, World Relief/FCC, SOCREMO) ^[2].

International cooperation in the fisheries sector includes DANIDA, NORAD, EU, DFID, ICEIDA, ADB, French cooperation, Spanish cooperation, OPEC and Irish cooperation. The activities are mainly in relation to institutional development in the government sector, support to export capacity (through quality control development and infrastructure) and technological development in the artisanal sector. A range of national and international NGOs are also active in the sector, mainly in relation to the artisanal sub-sector with emphasis on micro-credit ^[2], as already mentioned. Accounts of international cooperation projects are held by FFP and the Ministry of Fisheries. Annex E, Box 1, provides a list of international and national NGOs active in Mozambique and that have some relation to fisheries development.

After the Ministry of Fisheries (2009) ^[11], the national efforts undertaken with international assistance to develop the fisheries sector involve fifteen projects until 2009. The total value of these projects is about 83.5 million USD, distributed among artisanal fisheries (five, representing about 71% of that sum), aquaculture (three, almost 1%), inspection and quality control of fisheries produce (three, almost 3%), port infrastructures (two, 24%) and public fisheries administration (two, almost 2%). Annex E, tables 1 and 2, provides information on these projects.

7. SWOT Analysis

The fisheries sector is not contributing as much as it potentially could to the socio-economic development of the country. This result, with regard to small-scale fisheries, is taken from ^[11]:

(A) The artisanal fisheries are not providing the communities of fishermen and other professionals linked to fishing with the living conditions that would be possible, and this allows the persistence of pockets of poverty in the fishing communities and poor food security in the surrounding areas;

(B) The semi-industrial fisheries do not yet occupy the place that would allow them to increase their impact in larger areas of the national territory and contribute locally in a more effective way to poverty reduction and to food security in the surrounding region;

(C) The processing industry has played a limited role in the value chain of fisheries products, particularly those which could be exported with greater value added;

(D) The institutional capacity of the public fisheries administration remains insufficient which is an obstacle for the economic and social development of the sector and for the management of fish resources and of the economic activities around fishing;

(E) Some specific cross-cutting questions such as the low level of funding for the Fisheries sector, the low level of importance granted in general to fishing activities outside the sector, conflicts of interest with other sectors, such as tourism, protected marine areas, the mining industry, oil and gas, etc.;

(F) some general cross-cutting questions such as the high levels of HIV/AIDS infection, situations that are socially disadvantageous for women, corruption in the public administration and society, and interventions that do not adequately safeguard the environment, are not yet satisfactorily treated within the sector.

A detailed analysis of the strengths, weaknesses, opportunities and threats is presented in the Annex F according to the following categories: Fisheries resources, Fishing, Social conditions, Financial services, Trade, Policy and governance and Management. The SWOT analysis was performed also with the help of identical analysis presented in the following works: Plano Estratégico do Subsector da Pesca Artesanal (PESPA) ^[7] and Document of the Programme co-financed by Norway and Iceland ^[11].

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ANNEX A

Fisheries Classification in Mozambique

Box 1: Small-scale fisheries classification according to the Marine Fisheries Regulation and Marine Fisheries Regulation

Artisanal Fishery

1. The artisanal fishery is performed in the area under marine administration jurisdiction where realize the fishing operations, with a local nature, producing excess for commercialization, with or without fishing boats, with oar or sailing propulsion, by outboard motors or by inboard motors of small power, rarely using ice for on board fish conservation.
2. Fishing boats with a maximum length of 10 m and if using motors, the propulsion should not be higher than 100 hp or 74 Kw; if motorized the autonomy in the sea should not be lower than 24 hours.
3. The artisanal boats can operate in marine waters to a distance from the coast or from the anchoring-place of:
 - 3 nm, being of open deck and without motor;
 - 6 nm, being of open deck and with motor or being of closed deck and without motor;
 - 12 nm, being of closed deck and with motor.

Semi-industrial Fishery

1. The semi-industrial fishery is performed in coastal zones, at the coast sight, with motor drive fishing boats and using ice for the on board fish conservation, using or not mechanical means of fish.
 2. Fishing boats with a length above 10 m and inferior to 20 m, motor not exceeding 350 hp or 259 Kw (for the trawlers).
 3. The semi-industrial boats can operate in maritime waters to a distance from the coast of 30 nm
 4. The boats should also have appropriated sanitary plants, isolated fish holds or a freezing system, plants appropriated to food conservation, and all the means requested by the law in terms of lifesaving and emergency and in terms of requisites of hygiene and fish conservation.
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Box 2: Proposed general classification of fisheries types (PESPA)

Parameter	<i>Artisanal</i>			
	Subsistence	Commercial	Semi-industrial	Industrial
Appearing	Traditional, gradually incorporating industrial materials	Associated to intermediary traders or promoted by them	Decade of 50, with base in cities	Decade of 70, with base in cities
Work force	Familiar or involving community fishers	Employment creation: employed or compensated in catch percentage	Employed, generation of local and indirect employments	Employed, generation of indirect employments in a larger extension, more far
Boat	Without boat, canoe, almadia, flatboat, launch	Launches, boats with or without deck, up to 10-14m (indicative)	Boats up to 20m (indicative)	Boats with 20m or more (indicative)
Propulsion	Oars and sail	Sail, outer board motor, internal up to 100 HP (indicative)	Motor of 100 to 300 HP (indicative)	Motor with more than 300 HP (indicative)
Auxiliary equipment	Do not exist	Radio, GPS	Radio, sounder, GPS, winch, hauler, isolated hold for ice	Radio, sounder, GPS, winch, hauler, auxiliary motor, freeze plants
Fishing gears	Beach seine nets, “gamboa”, cage, harpoon, line and angle, casting net, gillnets, seine nets	The same used by the subsistence fishery but used with boats, plus longline, trammel nets and seine nets with a close of rings	The same used by the artisanal commercial fishery and simple trawl nets	The same used by semi-industrial and double trawl nets (mechanized)
Social organization	Individual, familiar	Individual, familiar, neighbours	Shipowner of small dimension	Ship-owners are important enterprises
Fishing campaign	Daily	Daily or up to 3-5 days with base in a fishers camp	Up to 10 days	More than 30 days
Dependence of weather factors	Highly dependent	Very dependent	Dependent	Little dependent, only in case of storms
Fishing days per year	Not more than 100	100 to 200	200 to 250	More than 250

Fishing zone	Local, in estuaries, bays, and up to 3nm	Up to 12 nm or _ hours of distance of the home/landing port	Coastal, up to 30 nm or _ hours of distance of the home/landing port	Coastal, up to 200 nm from the coast
Seasonality	Influenced by the wind and rainy season and by the agricultural period	Influenced by the wind and rainy season, and by the processing/conservation technicians	Resources	Resources, market demand
Target resource	Moluscs, small pelagics and small demersals, small shrimps, demersals of rocky bottoms, gathering of the shrimp by-catch	Small pelagic, small demersals, demersals of rocky bottoms, shrimp, sharks and other large pelagics	Shrimp, rocky bottom demersals, large pelagics	Shrimp, crustaceans of profundity, tuna and other large pelagics
On board conservation	Sun protection	Sun protection, ice	Ice	Freezing
Catch destination	Auto-consumption, dry – smoked processed	Local market, dry-salt processed, interior market, regional market	Local market, processed and frozen on land, regional market	Processed and frozen at board, international market
Licensing conditions	Licensing at the district for registration; symbolic tax	Licensing at the district; more elevated tax	Licensing at the DPP; tax dependent on the fishery type	Licensing at DNAP; tax dependent on the fishery
Source of investment	Dependent of savings or individual work, PCR (Poupança e crédito rotativo – Saving and rotating credit)	Dependent of medium scale credit	Commercial banks	Commercial banks

ANNEX B

Some Results of the Artisanal Census – 2007

Table 1. Number of fishing centers by water mass and by province.

Province	Marine waters	Inland waters	Total
Niassa	-	146	146
Cabo Delgado	135	59	194
Nampula	94	9	103
Zambézia	116	26	142
Tete	-	176	176
Manica	-	32	32
Sofala	122	56	178
Inhambane	79	59	138
Gaza	12	41	53
Maputo (province)	16	28	44
Maputo (city)	21	-	21
Total	595	632	1227

Table 2. Number of fishers without boat per province.

Province	Collectors	Line fishing	“Quinia”	Harpoon	Others	Total
Niassa	2748	3051	90	1942	4521	12352
Cabo Delgado	7260	2765	2957	2878	2839	18699
Nampula	33375	6089	8919	5135	4262	57780
Zambézia	4113	4144	1430	0	4689	14376
Tete	404	1619	320	5	519	2867
Manica	1960	2597	1615	1166	656	7994
Sofala	995	1235	3973	691	2724	9618
Inhambane	4950	2493	654	357	3975	12429
Gaza	59	820	22	16	311	1228
Maputo (province)	640	741	205	38	315	1939
Maputo (city)	2895	1885	101	35	313	5229
Total	59399	27439	20286	12263	25124	144511

Table 3. Number of other professionals working on the fishing centers.

Province	Naval construction (carpenter)	Naval construction (apprentices)	Traders	Processors	Mechanics	Net-makers	Total
Niassa	72	187	1555	1742	37	1481	5074
Cabo Delgado	311	178	1102	1280	52	199	3122
Nampula	580	305	2620	2925	68	1370	7868
Zambézia	645	474	5895	6369	5	968	14356
Tete	949	554	1792	2346	61	700	6402
Manica	118	81	102	183	34	31	549
Sofala	317	85	1314	1399	27	281	3423
Inhambane	317	124	975	1099	44	552	3111
Gaza	50	53	365	418	18	40	944
Maputo (province)	96	86	460	546	4	239	1431
Maputo (city)	76	78	39	117	16	280	606
Total	3531	2205	16219	18424	366	6141	46886

Table 4. Crew numbers.

Province	Permanent crew			Eventual crew			Total
	Men	Women	Total	Men	Women	Total	
Niassa	9481	38	9519	2401	61	2462	11981
Cabo Delgado	12666	34	12700	1543	18	1561	14261
Nampula	33111	616	33727	3348	110	3458	37185
Zambézia	20111	53	20164	1402	45	1447	21611
Tete	8313	14	8327	1578	6	1584	9911
Manica	1521	25	1546	372	14	386	1932
Sofala	17580	245	17825	679	42	721	18546
Inhambane	6424	594	7018	2409	487	2896	9914
Gaza	3189	110	3299	221	39	260	3559
Maputo (province)	3084	49	3133	397	10	407	3540
Maputo (city)	2449	180	2629	457	3	460	3089
Total	117929	1958	119887	14807	835	15642	135529

Table 5. Number of fishing gears

Province	Seine nets	Gillnets	Pots	Handlines	Longlines	Surrounding nets	Others	Total
Niassa	624	1747	126	188	332	382	9	3408
Cabo Delgado	683	1379	312	2115	13	29	233	4764
Nampula	1776	1457	264	3404	232	261	1254	8648
Zambézia	1570	1623	112	1030	263	31	1251	5880
Tete	352	4879	113	44	22	53	105	5568
Manica	139	468	31	129	0	18	9	794
Sofala	1051	2933	375	1797	37	43	1044	7280
Inhambane	596	682	19	577	8	5	276	2163
Gaza	190	1214	24	61	1	1	33	1524
Maputo (province)	205	890	5	202	0	0	158	1460
Maputo (city)	202	363	1	89	1	2	121	779
Total	7388	17635	1382	9636	909	825	4493	42268

Table 6. Number of different types of boats used for fishing

Province	Canoe	Fiber glass	Launch	Flatboat	“Moma” canoe	Jangada	Other	Total
Niassa	2987	4	26	212	2	0	103	3334
Cabo Delgado	3252	1	614	14	47	2	4	3934
Nampula	4699	8	802	12	2028	33	9	7591
Zambézia	4206	7	75	29	1285	17	8	5627
Tete	5500	17	0	0	0	0	3	5520
Manica	700	0	0	0	0	0	0	700
Sofala	6782	40	190	96	2	1	0	7111
Inhambane	1598	70	499	248	4	43	12	2474
Gaza	142	43	182	924	1	31	2	1325
Maputo (province)	163	64	255	597	3	80	44	1206
Maputo (city)	128	106	118	224	0	0	0	576
Total	30157	360	2761	2356	3372	207	185	39398

Table 7. Socio-economic infrastructures and community based organizations found at fishing villages

Province	Fishing markets	Schools	Water founts	Infrastructures	No. of associateds	No. of PCR	No. of other OBC
Niassa	66	43	70	18	20	11	13
Cabo Delgado	4	109	376	39	63	41	87
Nampula	7	53	179	30	139	139	135
Zambézia	13	47	168	18	21	74	81
Tete	2	56	54	20	18	6	4
Manica	2	30	35	9	3	1	2
Sofala	20	96	273	35	30	68	64
Inhambane	12	84	146	29	9	13	16
Gaza	1	34	60	12	4	0	11
Maputo (province)	4	70	110	12	6	0	2
Maputo (city)	3	10	3	2	2	0	0
Total	134	632	1474	224	315	353	415

PCR – Saving and revolving credit; OBC – community based organizations

ANNEX C

Main Types of Small-Scale Fisheries and its Resources

Table 1. Main types of small-scale fisheries performed in Mozambique (adapted [2, 3, 4, 7, 19]). Labor force calculated for the artisanal fisheries taking into account an average of 11 workers by fishing gear to the beach seining, 2 for the gillnets, 2 for handline.

Main Fisheries		Resource	Fishing area	Management measures	Work force	Socioeconomic importance	Processing and commercialization
Sub-sector	Method						
Semi-industrial	trawl	Penaeid shrimp	Angoche district, between Angoche and the Ligonha river's mouth	Licences. Close season defined for the shrimp fishery of Sofala Bank. Not defined quotes.	≈ 125 workers	Local importance involving workers on the fishing and processing and also on the transport, processing and commercialization of by-catch.	Catches processed on shore, at small industrial units licensed for this purpose. The end product is sold locally and exported to South Africa, Spain and Portugal. The by-catch, which is also very abundant and of low commercial value, is all kept on board and later processed in salt/drying in artisanal fishing centres
			South of Sofala; between the parallels of Machaze (19° 47' S), at north of Beira, and Save river's mouth (21°S) and up to the	Licences. Close season specifically defined (2-3 months). Industrial fleet prohibited.			

Main Fisheries		Resource	Fishing area	Management measures	Work force	Socioeconomic importance	Processing and commercialization
Sub-sector	Method						
			meridian of 35° 11'				artisanal fishing centres along the coast, notably at Chiloane
			Maputo Bay (between Inhaca Cape, Macaneta and the channel of Maputo Port) and Limpopo river's mouth (from Quissico lighthouse to the river mouth, from 10m depth to a distance of 20 nm)	Licences. Close season (2-3 months). Industrial fleet prohibited.	≈ 400	Local importance involving workers on the fishing and processing and also on the transport, processing and commercialization of by-catch	Land processing and exportation to South Africa, Spain and Portugal. By-catch is sold at markets in Maputo
	Line fishing	Demersal fishes	The whole coastal zone (between the depths of 10 and 150 m up to a distance of 30 nm from the coast; rocky bottoms)	Licences. Effort limitation for the south zone (maximum of 25 boats using ice).	≈ 350	Have potential for growth. Local importance involving workers on the fishing and processing and also on the transport	Evisceration and cleaning is made on board, the filleting or transformation in slices is made on land. The product is exported to Europe and South Africa but the species of less value are sold at local markets

Main Fisheries		Resource	Fishing area	Management measures	Work force	Socioeconomic importance	Processing and commercialization
Sub-sector	Method						
Artisanal	Beach seining	Small pelagics and penaeid shrimps. Demersals	Centre zone (Sofala Bank) plus south zone North and some zones in the south (like Inhambane)	Licenses, but of open access. Inshore zone up to 1 mile is set aside exclusively for artisanal fishers. Minimum mesh size of 38 mm. Subjected to a close season whose duration and timing varies by area (follows the close season for the shrimp fishery)	≈ 81300	Among the fisheries sub-sectors, generates the largest number of direct and indirect jobs and land the largest volume of catches. Great relevance on food security.	Catch consumed fresh locally or processed for distribution to inland markets. The largest part is processed by sun drying, either with or without salt.
	Line fishing	Demersals	The whole coast	Licenses, but of open access. Inshore zone up to 1 mile is set aside exclusively for artisanal fishers.	≈ 19300		
	Gillnets	Pelagics and demersals		Licences, but of open access. Inshore zone up to 1 mile is set aside exclusively	≈ 34700		

				for artisanal fishers. Minimum mesh size of 50 mm (except Maputo Bay – 60 mm) and 120 mm when sharks are the target resource.			
	Traps	Demersals and benthos		Licences, but of open access.	≈ 9100		

ANNEX D

Coastal Environment and Small-Scale Fisheries Zones in Mozambique

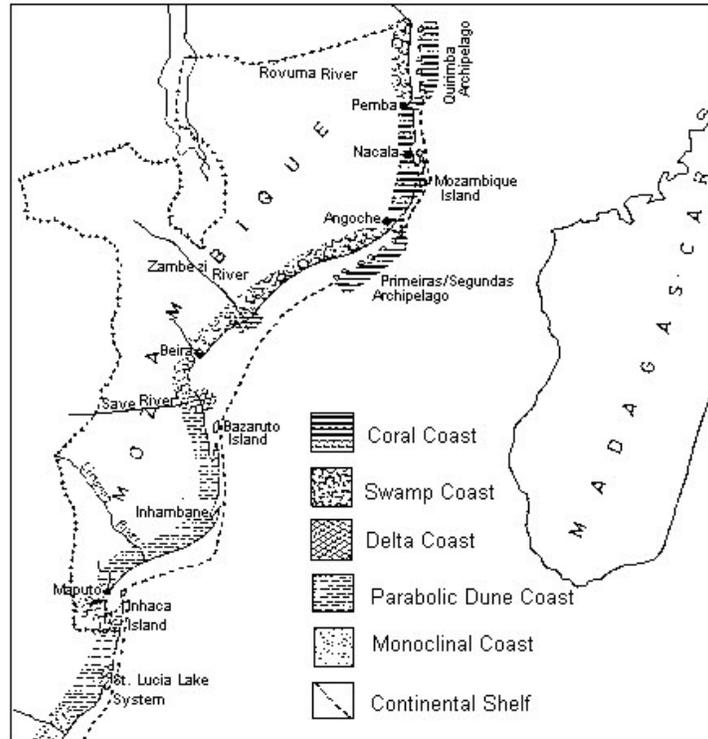


Figure. 1. Coastal environments. Dashed line represents the 200 m depth (Source: Hogueane, *without date*)

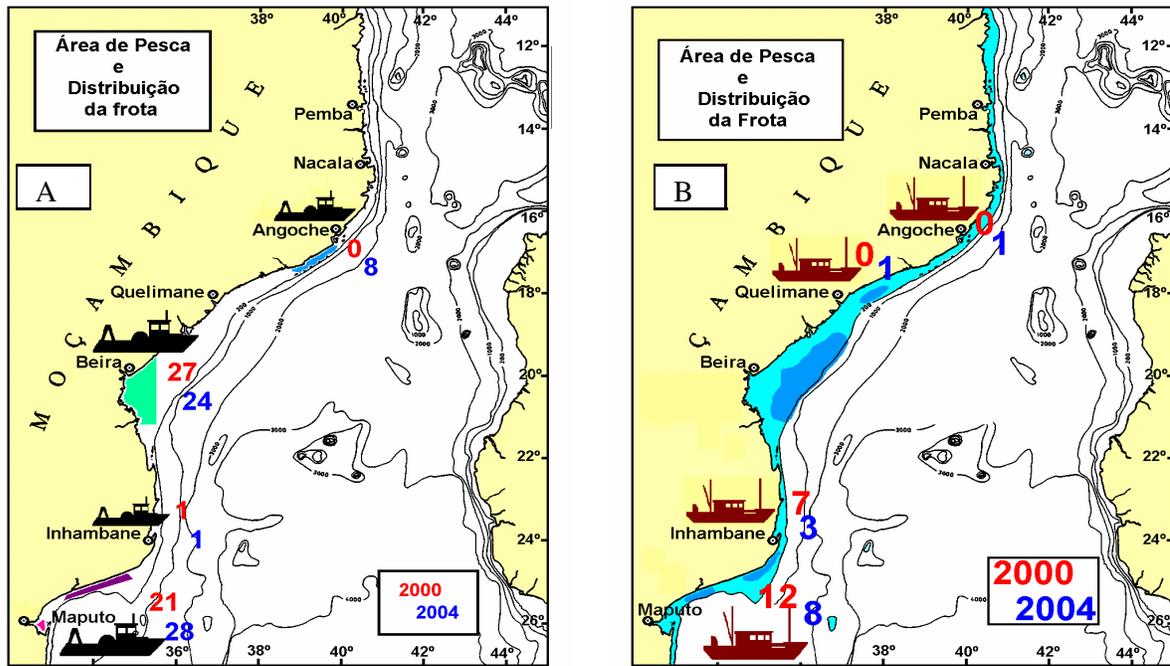


Figure. 2. Semi-industrial fisheries zones in Mozambique. (A) Trawl fisheries: green- shrimp semi-industrial trawl of Sofala South; rose and magenta- shrimp semi-industrial trawl of Limpopo mouth and Maputo Bay. (B) Line fishery: blue- zones of intensive fishing. Numbers in red and blue represents the numbers of boats in 2000 and 2004 respectively. (Source: de Almeida, unpublished).



Figure. 3. Artisanal fishery zones (fishing centres) in Mozambique ^[44].

ANNEX E

Artisanal Fisheries – Socio-Economic Aspects

Table 1. Resume of some socio-economic information related with the fishing communities in some zone of Mozambique, and provided by some studies performed at these areas.

Topic	Nampula, Zambézia and Sofala ^[24]	Nampula ^[2]	Maputo ^[25]	Inhambane and Sofala ^[26]
Incomes from fishing	On average, the annual income from fishing, for the gear/boat owners is 16.350,00MT and for the crew is 3.787,00MT	<p><u>Annual incomes</u></p> <p>Boat and beach seine owners - 3.300 USD (for fishermen living further away</p> <p>from urban centres or in areas where catches are low the incomes are one fifth of the above)</p> <p>Owners of canoes and fishing lines - 1.200-2.700 USD.</p> <p>Boat and gillnet - 700-1.800 USD.</p> <p>Fishing crews working for artisanal boat and gear owners - 120-400 USD.</p>	<p><u>Annual gross incomes per unity in 2006</u></p> <p>Beach seine- 8.800 USD</p> <p>Gillnet- 4.100 USD</p> <p>Fishing line- 1.120 USD</p>	<p><u>Monthly net incomes (USD)</u></p> <p>The incomes depend on the district and status of the fishermen.</p> <p>Boat/gear owners- 1500-5100</p> <p>Independent fishers- 115-2900</p> <p>Divers/collectors- 2.800-6800</p> <p>Crew (employees)- 50-160</p> <p>Informal traders- 380-1380</p>
Other sources of income	Farming and fish trade			<p>Production and sale of beverages</p> <p>Production of charcoal and firewood</p> <p>Production of reed, wood products and stone for construction (for tourist sites)</p>

<p>Poverty levels</p>	<p>64% of the crew/seamen are very poor (with annual incomes below 5.000,00MT), against 51% of the gear/boat owner</p>			
<p>Women and children participation on fishing activities</p>				<p>Inhambane islands: women and children are crew members of rowed fishing boats. On the mainland women and children throughout the area participate in the collection of marine products for subsistence and sometimes for sale, and are also fishers and crew members of fishing boats</p>
<p>Work relationships</p>				<p>Owner of nets have permanent workers paid monthly in cash. The majority of non-permanent/independent workers are paid in 3rd class fish divided between the owner of the net and according to the catch size. Between the line fishers, each earn according to their own catch. There are permanent and non-permanent workers (more widespread and work in an independent relationship paying a rent to the owner of the boat according to each catch; they receive a division of the production instead of a salary). Divers and collectors work as independent and isolated workers.</p>



Figure 1. Fish division among workers “matendeles”, Gatsala area, Inhassoro district in Inhambane ^[26].



Figure 2. Divers sharing the catch with the boat’s owner, Gatsala area, Inhassoro district in Inhambane ^[26].

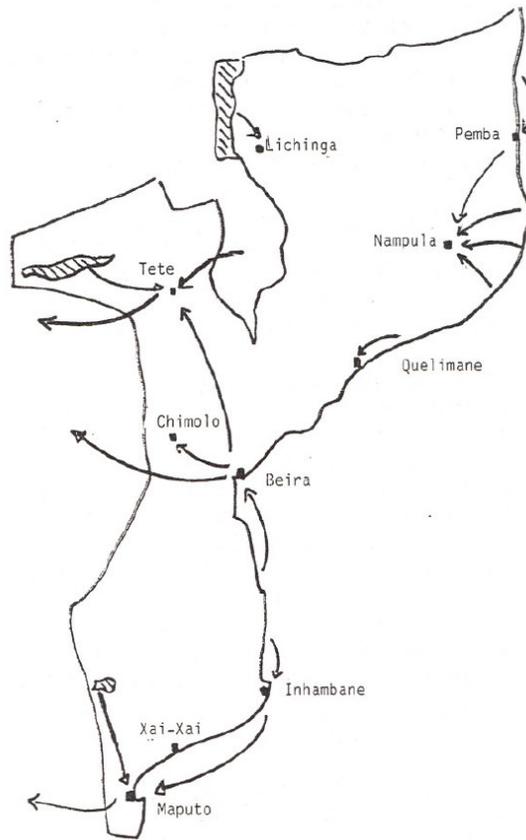


Figure 3. Main internal circuits of supply and demand of fish products in Mozambique ^[29].

Table 2. Responsibilities of the co-management structures in Mozambique (adopted from Gervásio, 2007 and Pereira, 2006).

Co-management structures	Responsibilities
CAP	<ul style="list-style-type: none"> - It's a consultative body of the Fisheries Administration - Opine about fisheries resource preservation and management matters including development plans, TACs, quotas, maximum fishing effort, licenses, close seasons and other management measures
CCGs	<ul style="list-style-type: none"> - Identify questions to be discuss at CAP; - Identify and organize representatives of the artisanal fishers to present pertinent local questions at CAP; - Evaluate the achievement of the management measures; - Analyze the proposed management measures; - Suggest management measures; - Publish relevant matters about the fisheries activities; - Decide about the co-management activities in the province.
District Forum	<ul style="list-style-type: none"> - Organize local information to be conducted to the superior levels; - Make the dissemination of information and decisions of the superior levels on its area of influence; - Make the connection between the CCPs and the Government of the Districts.
CCPs	<ul style="list-style-type: none"> - Implement management measures through sensitizing actions, conflicts resolutions, and support to the activities of fisheries control and surveillance; can also help the licensing activities, the fishery extension and alert about the fisheries resources behaviour; - Suggest local management measures.
Institutions	Responsibilities
Provincial Directorates of Fisheries (DPPs)	<ul style="list-style-type: none"> - Coordinate the application of regulations with the Maritime Administration; - Control the activities of the CCPs and CCGs; - Organize meetings of the CCGs;

	<ul style="list-style-type: none"> - Guide question and problems whose decision and resolution are not of the local competence.
National Institute for the Development of Small-Scale Fisheries (IDPPE)	<ul style="list-style-type: none"> - Promote the CCPs and CCGs; - Enable the CCPs about co-management matters; - Support the CCPs on the management of the fisheries resources; - Make dynamic the District Forums.
National Fisheries Research Institute (IIP)	<ul style="list-style-type: none"> - Make applied research about the fisheries and the results must be used by the all co-management structures; - Publish the results of the research activities at local and national levels.
National Directorate of Fisheries Administration (DNAP)	<ul style="list-style-type: none"> - Control and guide all co-management activities by the DPPs; - Assure that the questions of the CCGs are considered at CAP.

ANNEX D

Policy and Governance

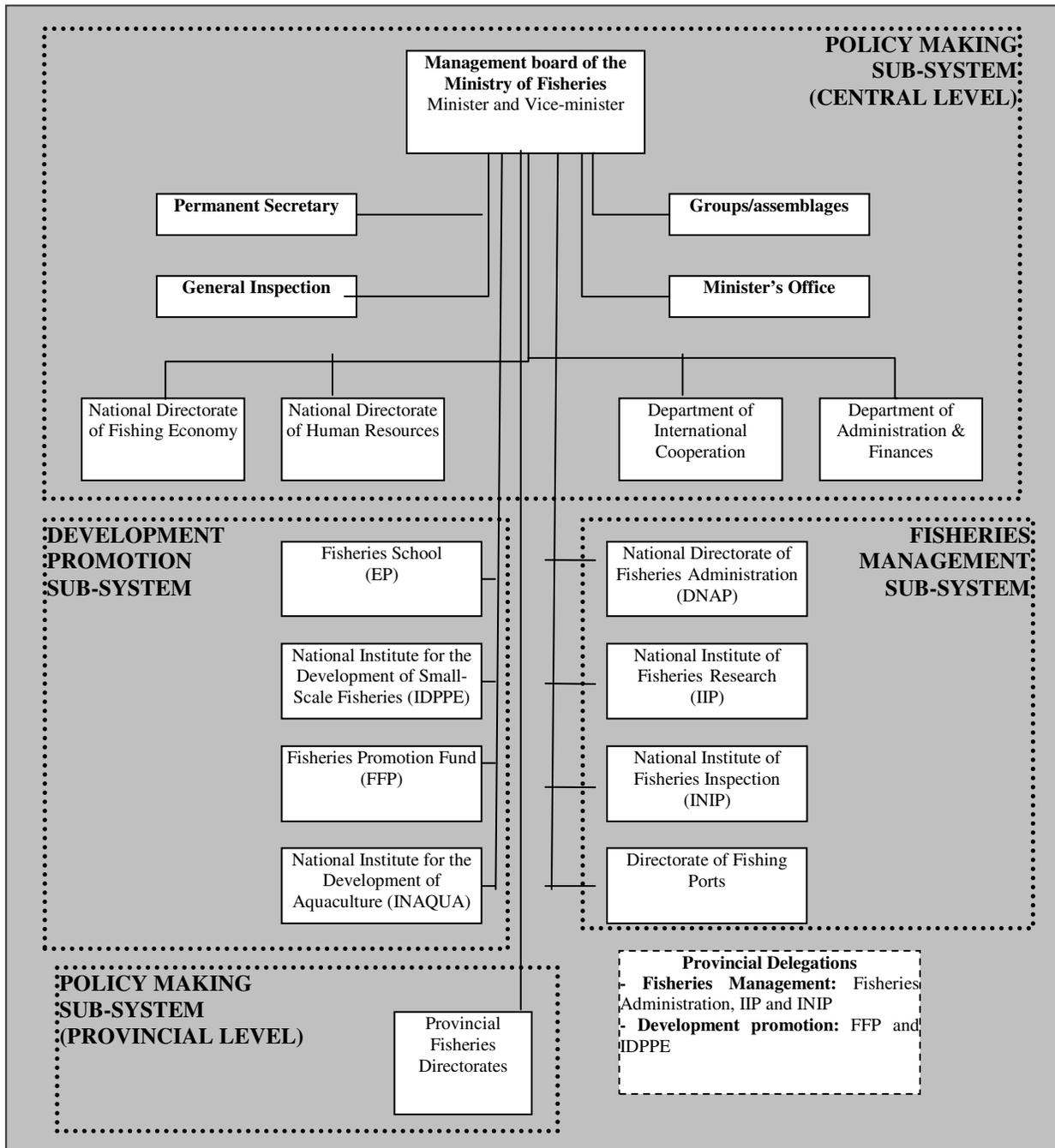


Figure 1. Framework of the fisheries sector in Mozambique (adapted from Ministério das Pescas, 2009^[11] and Ministério das Pescas, without date^[36])

Table 1. National level reference instruments that establishes the fisheries development policy in Mozambique.

Instrument	Overall objectives	Objectives stated to fisheries	Strategies/Actions
Government's Five Year Programme for 2005-09	(i) reducing the levels of poverty, (ii) economic and social development, with priority to reducing regional imbalances, (iii) consolidation of National Unity, Peace, Justice and Democracy, (iv) valuing the culture of rigour at work, (v) fight against corruption, red tape and crime, and (vii) strengthening of sovereignty and international cooperation.	(i) improvement in the domestic supply of fish produce through increasing the amount unloaded and reducing post-harvest losses, (ii) growth of export value by increasing the production of aquaculture and by adding value to artisanal production, (iii) improvements in the living conditions of fishing communities through integrated social development activities, (iv) sustainable exploitation of fish resources, and (v) contribution to improving the balance of payments.	
The Action Plan for the Reduction of Absolute Poverty (PARPA II) for 2006-09	(i) high economic growth, oriented towards improving the well-being of citizens, (ii) peace and democracy consolidated, alongside social stability and security of citizens and their property and the guarantee of individual freedoms, (iii) redistribution of resources promoted by the state through the provision of public services seeking poverty reduction, (iv) human capital developed, practices of good governance and macro-economic stability established, contributing to the development of agriculture and the rural economy, (v) role of savings strengthened, for greater sustainability of the efforts to improve living conditions and the well-being of Mozambicans, (vi) favourable business environment, (vii) tax revenues increased by 15% by 2009, without worsening the tax burden, and (viii)	For Fisheries: (i) continue strategies seeking to ensure permanent access to the international market for national fisheries produce, acting to guarantee quality through consolidating the fisheries produce inspection service, as well as in strengthening competitiveness and in diversifying national fisheries produce for export; (ii) take adequate quality control measures through consolidating the fisheries produce inspection service, as well as in strengthening competitiveness and in diversifying national fisheries produce for export; and (iii) ensure that adequate measures are taken to promote environmental sustainability in this sector through integrated management of the marine and coastal environment and of the fisheries resources, that protects important ecosystems (mangroves, corals and coastal and interior wetlands). <i>For artisanal fishing: (i)</i>	

Instrument	Overall objectives	Objectives stated to fisheries	Strategies/Actions
	<p>strengthened participation by civil society in the fight against poverty, alongside maintaining the support provided by international cooperation.</p>	<p>improving the living standards of fishing communities, and (ii) guaranteeing the sustainable exploitation of fisheries resources and of aquaculture. Also according to this document, government actions in this area seek to: (i) create and/or rehabilitate infrastructures to support artisanal fishing in the main fishing centres, (ii) increase the levels of supply of national fisheries produce to the domestic market, (iii) encourage the distribution and sale of fisheries produce and of fishing inputs, and (iv) increase the levels of production of small scale aquaculture. Also according to PARPA II, these actions take on the following aspects: (i) strengthen the supervision of fishing and of aquaculture, (ii) support the co-management of artisanal fisheries, (iii) build the capacity of the CCPs, (iv) pursue the ordering of artisanal fisheries and of aquaculture, (v) pursue implementation of the fisheries statistical plan, (vi) strengthen institutional coordination of aquatic conservation areas, and (vii) introduce, improve and publicise improved techniques of fishing, conserving and processing artisanal fisheries produce.</p> <p>Commercial (industrial and semi-industrial): (i) improve the competitiveness and sustainability of commercial fishing, so as to (ii) increase its contribution to exports. To attain these goals, the following actions are programmed: (i) improve the commercial fishing support installations, (ii) promote the training of onshore technical staff and managers for the fishing companies, (iii)</p>	

Instrument	Overall objectives	Objectives stated to fisheries	Strategies/Actions
		<p>conclude the reform of the fisheries public administration, (iv) strengthen training in basic specialisms missing in the sector, (v) support the creation and certification of Mozambican brands for shrimp, and (vii) establish a national market information system.</p>	
<p>Food Production Action Plan (2008-2011)</p>		<p>The objective advocated for fisheries is to increase the supply of national fisheries produce, envisaging an increase in the current levels of production from 20,000 to 30,000 tonnes, at overall growth rates of 9% in 2009 and 10% in 2010 and 2011. For each of the ten provinces, the districts have been identified, based on their fisheries potential, where efforts should be oriented towards increasing catches and/or farming of fisheries produce, through identifying the key activities to be undertaken, namely research, catches and farming, processing and marketing of fisheries produce.</p>	<p>(i) eliminating market failures through strengthening linkages between production and consumption centres; (ii) promoting more productive fishing gear that seeks to catch under-exploited or unexploited resources in new fishing areas accessible under existing technical conditions; (iii) encourage initiatives that seek to create activities complementary to fishing, such as processing, conservation of fisheries produce, maintenance and repair of fishing equipment and tackle, and promotion of alternative markets; (iv) make improved fry available to fish farmers; (v) introduce improved feed in fish farming; (vi) strengthen the existing extension services for the promotion of fish farming, and (vii) set up lines of credit at preferential interest rates for the private sector.</p>

Table 2. Fishery sector reference instruments that establishes the fisheries development policy in Mozambique.

Instrument	Objectives	Strategies/Actions
Fisheries Master Plan 1995-2005	(i) improvement in the domestic supply of fisheries produce to cover part of the country's food deficit, (ii) increasing the net foreign exchange revenue generated by the sector, and (iii) improving the living conditions of fishing communities.	
Strategic Plan for the Artisanal Fishing Sub-sector for 2007-2011 (PESPA)	" Improved living conditions in the communities of artisanal fishermen", consisting of: (A) fishing activities based on traditional gear and methods, providing added results, corresponding to their potential, while at the same time, in favourable areas, more advanced forms of fishing, particularly on the open sea, are developed; (B) better health, education and water supply conditions, in a framework of strengthened capacity of the communities to solve their own priority problems; (C) expanded networks for marketing fisheries produce and inputs, providing a greater basis for sustainability and development of artisanal fishing, both in its subsistence and its commercial forms; (D) more developed financial services, aimed not only at fishing, but also helping to diversify the activities undertaken by members of the communities; (E) a framework of greater rigour and effectiveness on the part of the bodies of the fisheries administration who seek to support the development of artisanal fisheries.	<p><i>The subsistence artisanal fishing</i></p> <p>(i) the increase of the results provided by fishing as it is traditionally known and accomplished, so that it can induce increases in the income of fishermen, (ii) the improvement of current techniques of storage, handling and processing, which can offer decreases volumes of post-harvest losses and improved quality of fishery products, and (iii) lower costs or extending the period of fishing and other activities which contribute to mitigating the effects of seasonality, uncertainty and vulnerability of fishing.</p> <p><i>The commercial fishing (in this context also include semi-industrial fishery)</i></p> <p>(iv) the promotion of new gear aimed at little or no resources exploited, the friendliest impacts on resources and environment, promotion of new fishing areas accessible to the conditions or techniques used, (v) on the edge, fishing open sea, with new or improved arts and targeted resources that were not previously targeted by fishers.</p>
Strategy for the Development of Aquaculture	(i) to promote the sustainable development of aquaculture in order to increase the income of fish farmers thus contributing to the objectives of PARPA II; (ii) to increase the current levels of annual production of salt-water shrimp and other aquatic species, intended for export and for domestic consumption; (iii) to establish a legal, normative and institutional management framework for aquaculture that is appropriate and effective for guaranteeing sustainable management, administration and exploitation of aquaculture resources.	
Small Scale Aquaculture Development Plan	Seeks the implementation of the above mentioned strategy.	Linking the small scale sector to larger companies which will act as a driver for the development of small scale aquaculture. The

Instrument	Objectives	Strategies/Actions
2009-13		<p>experience and logistics of the commercial companies and facilitation by government will be crucial for triggering the development of the small scale sector into profitable businesses. The role of the government is: to provide fiscal incentives and credit, to facilitate processing and exporting activities, to conduct applied research activities and extension services.</p> <p>The main activities are: restocking of fresh-water bodies, promotion of fish farming techniques, integration of aquaculture into agriculture activities, extension programmes, training of extensionist agents, preparation and implementation of human resources development programmes, provision to INAQUA of long term international technical assistance and the creation of its provincial delegations, integration of aquaculture in the national <i>Rural Development Plan</i>, formalisation of the collaboration between INAQUA and the Ministry of Agriculture, establishment of basic infrastructure for the promotion of small scale aquaculture, setting up a statistical system for aquaculture, conducting applied research on the existing species, undertaking of local and regional market studies, promotion of credit schemes involving micro credit institutions, promotion of a favourable business environment in aquaculture, coordination at central and local levels with other government institutions, promotion of aquaculture associations and of the dialogue in the aquaculture sub sector as well as of the regional and international cooperation.</p>
Fisheries Research Development Strategy (2008-2012)	<p>(i) to develop ecosystem-based integrated fisheries research, through the strengthening and improvement of the existing working areas and the expansion of their activities to new areas; (ii) to strengthen basic research capacity in aquaculture; (iii) to develop support services in information technologies and modelling of research programmes; (iv) to increase the number of scientific publications in the institution; (v) to increase publicity for research results and management measures in the fisheries sector and in society in general; (vi) to guarantee the material conditions for research at sea; (vii) to increase cooperation within the sector and with research institutions nationally and internationally; (viii) to adopt a code of scientific ethics for fisheries research; and (ix) to reorganise the institution so that that it deals adequately with the Vision and Objectives of the</p>	<p>(i) to improve the technical and scientific capacity of the research staff so that the quality of research and advice for the sector and beyond may be improved, with a view to better management of fisheries resources; (ii) to increase the leadership and management capacity of the IIP's leading bodies; (iii) to improve internal communication in the IIP; and (iv) to develop mechanisms to increase funding projects in order to improve the functioning of the IIP</p>

Instrument	Objectives	Strategies/Actions
	present strategic approach for 2008-2012	
MCS Policy and the Implementation Strategy	The document defines the roles and responsibilities of all the national institutions involved in MCS operations. It also establishes the means for guaranteeing sustainability of its activities, which are an integral or complementary part of the fisheries management system.	The policy is harmonised with regional and international programmes and protocols such as: (i) the SADC Fisheries Protocol; (ii) the FAO International Plan to Prevent, Discourage and Eliminate Illegal, Undeclared and Unregulated Fishing; (iii) The United Nations Convention on the Law of the Sea (UNCLOS).
National Plan to Combat Illegal, Unreported and Unregulated Fishing	The objectives are those laid down in the International Plan of Action (PAI-IUU), and based on which it is attempted to draw up a series of additional measures, indispensable for filling in the gaps and shortcomings in the system. The intention is to reduce to the minimum the incidence of IUU fishing in the national fisheries.	
2009 Economic and Social Plan (PES)	This document contains references to production and export indicators for fisheries produce originating in artisanal, industrial and semi-industrial fisheries and aquaculture, the perspectives in licensing and budgetary implementation and main policy measures.	
Sofala Bank Shrimp Fisheries Management Plan	Define the management measures to the overall maximum effect in the three fisheries (artisanal, semi-industrial and industrial).	

ANNEX E

Development, Trade and Projects

Box 1: List of international and national NGOs active in Mozambique and that have some relation to fisheries development.

International NGO's

- IUCN: major conservation oriented NGO with experience in community based natural resource management with activities in Zambezi and wetlands management. Manages a major environmental training programme financed by the Dutch development agency.
- WWF: major conservation oriented NGO, involved in the management of the Bazaruto Marine National Park in Inhambane province and Qurimbas National Park in Cabo Delgado.
- CARE: implemented part of the IFAD Nampula Artisanal Fisheries Project.
- World Relief /FCC: largest Micro Finance Institution (MFI) in Mozambique, mainly involved in village banking but with an interest in fisheries in areas with fisheries concentration.
- ACORD: has credit and processing in Niassa in cooperation with IDPPE
- Oikos: has administered a credit programme in Niassa in coordination with IDPPE.
- Cooperative League of the USA (CLUSA): promotion of fisheries associations, Nampula.
- ICSF: has contributed to the development of a gender strategy for SBAFP.
- World Vision: US NGO which also implements a major DFID agricultural microfinance project in Zambezia with potential interest for fisheries.

Mozambican NGOs:

- AMODER: fishing gear supply in Cabo Delgado.
- Kulima: primarily oriented towards rural development, has provided credit to fishermen in Zambezia province.
- UMOKHAZI: has carried out surveys in Cabo Delgado.
- Socremo: major effective MFI in Mozambique.

Table 1. Projects related to development of fisheries sector undertaken with international assistance in Mozambique (Ministry of Fisheries, 2009).

Identification of project	Main details of project				Observations
	Partners	Budget (USD)	Duration	Coordination	
Sofala Bank Artisanal Fishing Project (PPABAS),	IFAD, Norway, BSF and the Government	18 million USD	2002-08	IDPPE	Extension to 2011. It covers actions of fishing development (research, fishing gear, processing), development of markets and access route, strengthening of financial services, community development (education, health, water, associations, co-management), and institutional support, policy formulation and legislation.
Cabo Delgado and Northern Nampula Artisanal Fishing Project (PPCDNN)	ADB and the Government	23.3 million USD	2003-09	IDPPE	It covers provision of credit, development of community infrastructures and institutional support
Inhambane and Gaza Coastal Fishing Development Project	Italy and the Government	4.4 million USD	2008-10		It covers the improvement of infrastructures and access to support services, processing and marketing, training and strengthening of community organizations
Poverty Reduction through Fisheries in Mocímboa da Praia	Canada and the Government	600,000 USD	2005-10		It covers the strengthening of local capacity, institutional support, the introduction of sustainable fishing practices, processing, environmental protection and gender equity
IDPPE Support and Institutional Capacity Building Project	Ireland and the Government	600,000 USD	2007-10		
Institutional Support for the Development of Sustainable Aquaculture	Iceland (ICEIDA) and the Government	200,000 USD	2008-2009		It covers training activities, development of a data base, and support for the establishment of INAQUA
Marine Sciences Human Resources Development Projects	Canada (CIDA) and the Government	114,000 USD	2007-2012		It covers training in MSC. and institutional and community capacity building
Developing a Sustainable Model for Small Scale Aquaculture in Tanks and Cages in Niassa	Spain and the Government	204,000 USD	2008-2009		It covers community and institutional capacity building and formulation of management plans

Province					
Support the Fisheries Produce Inspection System in Mozambique	United Kingdom (DFID) and the Government	2 million USD	2007-2010		It covers improvements to laboratories, the building of residences for inspectors in the provinces and training
on Institutional Capacity Building and Acquisition of Laboratory Equipment	UNDP, USAID, EC and the Government	137,000 USD	2008-2009		It covers the supply of laboratory equipment and equipment for monitoring heavy metals
Strengthening Capacities for Improved Quality Control of Fisheries Produce (traceability of products of small scale fishing)	Spain, EC and the Government	210,000 USD	2008-2009		It covers technical assistance for the diagnosis and validation of control procedures, training of inspectors, technical staff and extensions, and training of semi-industrial and artisanal operators
The Beira Fishing Port Rehabilitation Project	BADEA, BID and the Government	19.7 million USD	2004-2009		It cover the rehabilitation of quay number 1 and the processing room, repair of the cold stores, construction of support infrastructures, dredging and the supply of equipment
Rehabilitate the Workshops of the Maputo Fishing Port	Japan (OFCF) and the Government	196,000 USD	2008-2009		It covers maintenance, the supply of spare parts and technical assistance
Cahora Bassa Research, Monitoring and Fisheries Development Project	Iceland (ICEIDA) and the Government	485,000 USD	2007-2010		It covers building the IIP delegation, training (MSc and PhD), research and monitoring of the semi-industrial and artisanal fisheries, and the development of fisheries strategies and management plans
Fisheries of the South-West Indian Ocean (Mozambique)	GEF and the Government	826,000 USD	2008-2012		It covers information surveys, data conservation and information technology, assessment and sustainable use of crustaceans, assessment and sustainable use of demersal fish, assessment and sustainable use of pelagic fish, inclusion of biodiversity in national and regional fisheries management, and the strengthening of national and regional fisheries management
Development of Maputo Coastal Resources Fishing	Japan (JSDF) and the Government				It covers community and institutional capacity building, formulation of resource management plans and adaptation to climate change. Awaiting the <i>approval or signing</i> of the

					respective agreements
Strengthening the Health Conditions of Fisheries Produce in the ACP Countries	EC and the Government				Yet to be approved

Table 2. Projects in different stages of negotiation but which cannot yet be considered as agreed (Ministry of Fisheries, 2009).

Identification of project	Main details of project				Observations
	Partners	Budget (USD)	Duration	Coordination	
Assistance to the Fisheries Sector in Mozambique	Norway, ICEIDA		2009-12 3 years	Office of Minister	Under formulation Finance guaranteed
Support for coastal fishing in southern Mozambique (Maputo, Gaza, I'bane)	WB, Japan		2009-10 1 year	IDPPE	Approved Finance guaranteed
Building of artisanal fishing market and support infrastructures in Maputo	JICA			IDPPE	Under discussion
Building of artisanal fishing infrastructures in C. Delgado, Nampula and Sofala	China			IDPPE	Finance not guaranteed
Establishment of assistance units in Ga-za (Massingir) and Maputo (Mutanhana)	ICEIDA			IDPPE/FFP	Finance not guaranteed
Improved availability of ice for artisanal fishing in inland waters / <i>Concept Note</i>	TCP-FAO Junta Galicia			IDPPE	Finance not guaranteed. Submitted 11.07
Development of fresh water aquaculture in southern Mozambique/ <i>Concept Note</i>	TCP-FAO Junta Galicia			IIP	Finance not guaranteed. Submitted 11.07
Establishment of ecology and water quality laboratory in IIP (Concept Note)	TCP-FAO Junta Galicia			IIP	Finance not guaranteed. Submitted 11.07
Genetic study on marine shrimps in Mozambique (Concept note)	TCP-FAO Junta Galicia			IIP	Finance not guaranteed. Submitted 11.07
Improved production from small scale fish farming	NEPAF			INAQUA	Finance not guaranteed
Technical assistance for establishing regional	FAO-TCP			INIP	Finance not guaranteed

	Main details of project				
network for aquatic bio-security in Africa					
Strengthened food security through improved quality of fisheries and aquaculture produce	DFID & UNDP		2008-2011	INIP	Under discussion
Training, selection and hiring of sailors at origin – FORPEX Project	Spain			EP	Under discussion
Rehabilitation of the industrial quay at the Maputo Fishing Port (Phase III)	JICA			DNAP & PPM	Finance not guaranteed. Submitted in 2003
Reduction of the shrimp by-catch and changes in management of shrimp fish-eries in tropical countries (regional proj.)	GEF, UNEP & FAO			IIP	Approved. Under way (?)
Strengthening fisheries management capacity in ACP countries (Regional proj)	EU/FFED			DNAP	Approved in 12/07
Development of fishing and aquaculture on Lake Niassa (regional project)	WB/GEF				Under discussion
Safety at sea for small scale fishermen (regional project/SWIOFC)	SISA/ Sweden			FAO	Under discussion
Institutional capacity building and training in rural develop. and aquaculture in Africa, through South-South cooperation	FAO, Japan			INAQUA	Finance not guaranteed. Submitted 04/07
Coordination and implementation of agricultural research and training in the SADC region	EU/FFED			INAQUA	Finance not guaranteed. Submitted 03/06
PROFISH – artisanal fisheries – MCS	WB				No information

Annex 4:
SWOT Analysis of Small Scale Fisheries in Mozambique

Strengths	Weaknesses
<p><u>Fisheries Resources</u></p> <ul style="list-style-type: none"> • Fish is largely accepted as an integral part of diet • Legal board for management already defined <p><u>Fishing</u></p> <ul style="list-style-type: none"> • Existence of fishers with tradition on fisheries • Source of income • Existence of a MCS system • Existence of a system of catch and effort monitory • Existence of associations and CCPs (CBOs) • High demand for fish • Existence of fishing material <p><u>Social Aspects</u></p> <ul style="list-style-type: none"> • Existence of associations and CCPs (CBOs) <p><u>Financial Services</u></p> <ul style="list-style-type: none"> • NGO's, associations and other institutions increasingly become involved in the supply of micro finance services such as saving and credit to the rural and urban poor, including fishermen and fishing communities • Existence of development finance institutions operating in relation to fisheries (FFP, etc) <p><u>Processing Industry</u></p> <ul style="list-style-type: none"> • Existence of valuable fishing resources (fish, prawns and shrimps) and good landing volumes <p><u>Trade</u></p> <ul style="list-style-type: none"> • Good knowledge about the necessities of the fisheries in terms of fishing equipment and materials 	<p><u>Fisheries Resources</u></p> <ul style="list-style-type: none"> • Open access exploitation • Resources full or over used in some areas (bays and estuaries) • Deficient management • Illegal fishing • Lack of resources zonation • Incomplete knowledge of some resources • Weak environmental education <p><u>Fishing</u></p> <ul style="list-style-type: none"> • Unadapted fishing ordering/planning • Fishing efforts concentrated in little fishing gears • Artisanal fleet characteristics inadequate to the open sea' offshore fishing • Weak dominance of the processing and fishing modern technologies • Low level of organization of the fishers • Inadequate assistance services (maintenance and naval construction) • High taxes (licensing, inspections) • Credit conditions little accessible especially to artisanal fishers • Inexistence of support infrastructures to the commercialization • Illegal fishing and the use of nocive fishing gears • The monitory of catch and effort do not comprise inland waters in its totality <p><u>Social Aspects</u></p> <ul style="list-style-type: none"> • Social organization continues to be primarily based on family and clan • Incapacity for solving conflicts in connection with new and more aggressive developments • Incapacity to lead with the required conditions to saving and credits • Existence of of pockets of poverty in the fishing communities and poor food security in the surrounding areas <p><u>Financial Services</u></p> <ul style="list-style-type: none"> • Complex and limited access to financial services

- Existence of importers
- Dynamism of the informal operators
- Existence of a vast market for the fish
- Existence of markets, buyers, processors of large scale in connection with the fishing products improvement

Policy and Governance

- Good knowledge of the fisheries sector
- Good cooperation between institutions
- Existence of plan and strategies specifically for the fisheries development, including credit
- Existence of a legal board for the sector

Management

- Management systems in place

- especially on the part of artisanal fishermen
- Low number of financial institutions and outreach limited
 - Financial services focused on major cities and towns

Processing Industry

- Limited knowledge of good processing practices
- Poor quality control measures
- Lack of innovation to develop value added products
- Limited capacity to make investments on equipment
- Limited role in the value chain of fisheries products, particularly those which could be exported with great value added

Trade

- Great diversity of the fishing gears
- Limited area of distribution of equipment and materials
- Existence of unfair competition
- Lack of incentives
- Difficulty of access to credit
- Poor transport and road networks limiting the market access
- Poor landing condition, landing structures and cold storage at landing sites
- Limited knowledge of good processing practices
- Poor quality control measures that have adverse effect to market access
- Low quality fish products in the local and regional markets
- Lack of innovation to develop value added products
- Lack of marketing know how to access global markets

Policy and Governance

- Deficient surveillance
- Lack of sufficiently detailed and timely statistical information to make possible the definition of even more relevant policies, strategies and development plans and regularly accompanying their implementation
- Limited local presence
- Insufficient human resources and means

	<ul style="list-style-type: none"> • Limited surveillance of artisanal fisheries • Weak presence on inland waters • Recuperation of credit is weak • Some regulation do not fit to different zones, resources and situations (especially for the resources for the artisanal fisheries) <p><u>Management</u></p> <ul style="list-style-type: none"> • Insufficient capacity to assess all the fishery resources and all the fisheries with the greatest economic and social importance and, in the cases where this is done, to formulate relevant and timely recommendations in all cases • Insufficient capacity by the fisheries administration to interpret the research recommendations, and add to them relevant information from its own monitoring and convert the result into sound management measures • Lack of capacity to establish an effective presence throughout the Mozambican EEZ and to enforce the fisheries law and regulations • Poor functional coordination in the sector, particularly between the fisheries management and development promotion sub-systems, and between these and the policy body
<p>Opportunities</p> <p><u>Fisheries Resources</u></p> <ul style="list-style-type: none"> • Available resources of good commercial value • Good diversity of resources • Low exploitation of offshore resources • Potential for aquaculture • Management with an ecosystem approach <p><u>Fishing</u></p> <ul style="list-style-type: none"> • Available resources of good commercial value • Existence of market potential for the fish • Favourable policy and legislation to the development of small-scale fisheries • Institutions that work in benefit of the small-scale fisheries (especially of the artisanal fisheries) • Availability of finance services 	<p>Threats</p> <p><u>Fisheries Resources</u></p> <ul style="list-style-type: none"> • Access to the resources subject to other coastal activities (tourism, conservation areas, petroleum) • Environmental degradation • Limited environmental capacity <p><u>Fishing</u></p> <ul style="list-style-type: none"> • High pressure on the resources (poverty and lack of alternatives) • Variability of the fishing activity • Vulnerability to natural adversities • Vulnerability to HIV/AIDS • Environmental degradation (pollution, erosion) <p><u>Social Aspects</u></p> <ul style="list-style-type: none"> • High pressure on the resources (poverty and lack of alternatives)

- Existence of new and better technologies for the artisanal fishery
- Renewable fisheries resources

Social Aspects

- Favourable policy and legislation to the development of small-scale fisheries
- Institutions that work in benefit of the small-scale fisheries (especially of the artisanal fisheries)

Financial Services

- Availability of finance services

Processing Industry

- Demand for fish products particularly for those with value added

Trade

- Existence of a national factory of fishing nets
- Existence of local annual fairs
- Existence of INIP
- Demand for fish by the neighbor countries
- National costume of fish consume
- Progressive development of connections with markets, buyers and processors of large scale
- Reduced international trade barriers and non trade barriers to global markets
- Market access to the regional markets

Policy and Governance

- Favourable policy and legislation to the development of small-scale fisheries
- Integration on the process of decentralized planning
- Strategy for credit concession
- International partners

Management

- Introduction of co-management

- Variability of the fishing activity
- Vulnerability to natural adversities
- Vulnerability to HIV/AIDS

Processing Industry

- Competitiveness with external industries (more developed, qualified and older in the market)

Trade

- High tributary charge over the security and naval construction materials
- Low buying power
- Low commercialization prices of the fishing products
- Difficulty of access to profitable markets
- Post-harvest losses affecting the prices and availability of fish
- Use of prejudicial fishing practices could not allow access to some markets

Policy and Governance

- Incomplete legislation relatively to the artisanal fisheries
- Dependence on external financing
- Limited local presence
- Morosity on the disbursement of finance assistance

Management

- Insufficient control of access to fishing
- Ineffective control of fishing capacity leading to excess fishing effort
- Lack of means to enforce the law

II. Tourism - Prepared by Mr. Jeremy Gottwals, E-mail: jgottwals@gmail.com

1. Introduction

Mozambique is located in south eastern Africa and is bordered on the east by the Indian Ocean along its 2,700km coastline. To the North, West and South, Mozambique is bordered by six southern African countries which are, from north to South: Tanzania, Malawi, Zambia, Zimbabwe, South Africa and Swaziland.(See Annex 1: Map of Mozambique, for a graphic representation.)

Of its total area of 799,380 sq. kms, some 13,000 sq. kms are covered by water resources such as lakes and rivers. Mozambique benefits from 13 river basins within its borders, 6 of which are indigenous river systems, while 7 are international river systems.

Mozambique's terrain varies from north to south and consists broadly of five general types of topography: coastal lowlands or plains, central highlands in the center of the country, mountains along the western borders and high plateaus in the northwest of the country. Generally speaking, the country is broken up into three regions as illustrated in Table 1 below:

Table 1: Regional breakdown of Mozambique by province

Mozambique by Region			
	South	Central	North
Provinces	Maputo	Sofala	Zambezia
	Gaza	Manica	Nampula
	Inhambane	Tete	Cabo Delgado

Mozambique's resource base is quite diverse, including hydrocarbon and mineral resources, such as coal, titanium, natural gas, tantalum and graphite, as well as significant natural resources in the areas of forestry and fisheries. Currently a net electricity exporter, Mozambique is positioning itself to become a major exporter of hydro-electric and coal generated electricity in the next 5 to 10 years.

Mozambique achieved its independence in 1975 after some twelve years of armed struggle against the Portuguese colonial regime. Years of devastating internal conflict during the period from 1977 to 1992 lead to the extensive destruction of public infrastructure, such as roads and bridges, schools and hospitals, and displaced significant portions of the population from their traditional settlements. The country has been working across a range of fronts - economic, social, administrative and human resources - to meet the challenges of the 21st century global economic environment.

2. The Mozambique Tourism Context ⁱ

The principal foci of Mozambican efforts to define its tourism product has been centered around the country's pristine beaches, overall biodiversity and its cultural uniqueness in southern Africa.ⁱⁱ While these three elements form the basis of the country's strengths in terms of tourism potential, there is very little published evidence that Mozambique has proceeded with the effective definition of its tourism product(s) on a regional or national basis. It is clear that the beaches and adventure tourism related to coastal and marine resources play a fundamental role in the overall

development of the country's tourism productⁱⁱⁱ. In the southern region, much has been made of a "bush-beach" product that would allow tourists to enjoy the combination of the regional national parks, as well as some time on Mozambican beaches. While some concrete steps have been taken in this direction, the lack of road infrastructure and willing or capable operators, among a multiplicity of other factors, make this potential product a long term goal for the southern region rather than a ready-to-sell product for the country. In the North, there have been extensive additional efforts made via a USAID-supported regional tourism program^{iv} to further define the tourism product in the north of the country. However, similar constraints make effective exploitation of tourism resources in the north also a long term goal. The central region currently has as its focus the newly rehabilitated Gorongosa National Park in Sofala Province, as well as other potential tourism sites for adventure tourism, such as the Chimanimani National Park in Manica Province. In the centre, however, the bush beach connection is somewhat less viable due to the heavy fluvial sedimentation and mangrove stands which characterize the central coastal region. In fact, the sedimentation and presence of mangroves in this region makes the central coastal areas, historically, the most productive zones for the national and international shrimp fisheries.

Business Environment and Statistics

Mozambique is ranked 141 out of 181 countries for the ease of doing business^v. The improvement of the overall business environment and increasing access to finance were cited as the principal needs for improving the domestic investment climate in the country^{vi}. This has an overall effect on tourism development, as well as investor interest.

Some of the key statistics in relationship to tourism are provided below^{vii}. Tables 2 through 4 illustrate the overall source markets for tourism. On average, each tourist spends five nights in Mozambique, with a daily average spent of 1,136.00 MZN or approximately 45.00 USD^{viii} per day. It is equally important to note that over 76.8% of total tourist expenditure is made by tourists originating in African countries^{ix}.

Table 2: Selected southern African tourist arrivals vis-a-vis European tourist arrivals, top 5 emitters respectively

Top 5 SADC Countries	# of Tourists	Top 5 EU Countries	# of Tourists
Malawi	86,814	United Kingdom	58,450
Swaziland	207,293	Germany	43,525
South Africa	1,288,819	Holland	18,202
Angola	9,720	Italy	16,453
Namibia	2,872	Portugal	85,267
Total	1,595,518	Total	221,892

Source: http://www.ine.gov.mz/sectorias_dir/turismo/et002 N=3,110,272

Table 3: Tourist arrivals from selected countries outside SADC and EU

Top 5 Non EU Countries	# of Tourists
USA	38,702
Australia	8,438
Canada	12,017
Brasil	12,914
China	5,788
Total	77,859

Source: http://www.ine.gov.mz/sectorias_dir/turismo/et002 N=3,110,272

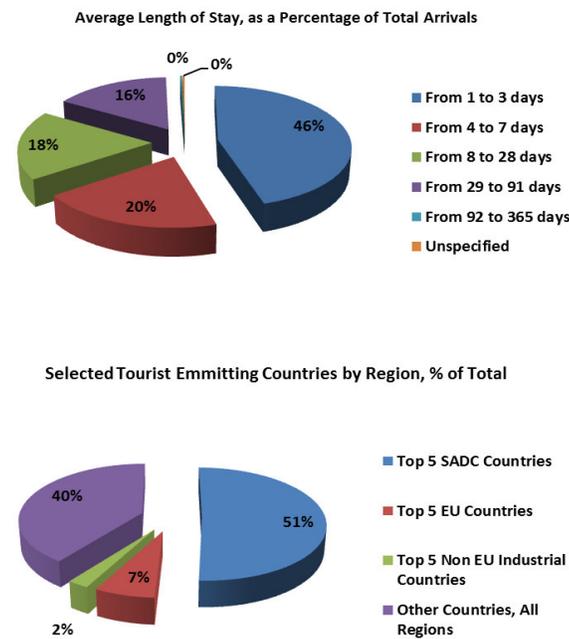


Figure 1: average length of stay and principal source regions by %

Sources: http://www.ine.gov.mz/sectorias_dir/turismo/et003 . Table: *Total Tourists by Duration of Stay* and http://www.ine.gov.mz/sectorias_dir/turismo/et002 Table: *International Arrivals by Means of Transport* respectively.

It is clear from the above information that the European and non-European intercontinental markets are currently contributing significantly less to the tourism economy than the SADC region and African countries as a whole. It seems that while Mozambique is a known destination within its own region, internationally there is less demand for the products it provides. Some of the more probable identifiable constraints to increasing share of European and other international tourist arrivals in the market will be examined in Section 6: Planning and Management.

Given the overall weakness of the statistical data on tourism in Mozambique, it is equally difficult to ascertain the overall contribution that tourism makes to the overall GDP^x. Jones, et al,

estimates that tourism’s contribution to GDP was 3.2% in 2003^{xi}. Recent official figures regarding tourism’s contribution to GDP are hard to come by, however, one source cited tourism’s contribution to GDP as growing from 5.6% in 2010 to 5.8% in 2020.^{xii} No official national statistics could be found to verify these WTTC numbers.

The reasons for the data gaps encountered when looking at national economic data related to tourism are multiple and varied. Many of these relate to the challenges facing both tourism development as a whole, and particularly the livelihoods of local people.

One of the macro and micro level challenges is the concept of *leakage*. Leakage is a significant problem in Mozambique given that “*Most of the inputs required for operating hospitality and tourism businesses are being partly or wholly sourced from outside Mozambique. Local markets for sourcing even fruits, vegetables, meats, poultry, fish, and seafood, are vastly underdeveloped. Over 90% of high skilled labor is sourced from South Africa.*”^{xiii}

Table 4 below summarizes some of the key constraints in both areas.

Table 4: challenges to tourism and livelihoods

Principal Challenges to Tourism	Principal Challenges to Livelihoods
Lack of qualified human resources generally.	Low levels of education and capacity; high proportion of population with subsistence agriculture as primary economic activity.
Increasing the formal capture of tourism revenue	Integrating the informal economic actors into the sector;
Land use planning and tourism management	Low levels of environmental awareness;
Exploiting the tourism value chain at local, regional and national level	Restricted access to the inputs required to exploit potential opportunities in the tourism sector; relatively restricted set of livelihood coping mechanisms;
Low levels of key infrastructure (roads, electricity)	Relative lack of mobility and access to tourism focal areas.
Speculative rather than sustainable investment	Relative ignorance of community rights and potential as formalized in law;
Very low government implementation capacity at local level.	Weak civil society organizations – low levels of implementation and management capacity.

3. Biophysical Aspects of Tourism

Coastal tourism focal points and activities extend along the southern and northern portions of the country’s coastline. The central coastline is less desirable for tourism related activities given the high percentage of mangrove and the fluvial sediment from the river deltas (Save, Buzi, Pungue, Zambezi) that floods into the waters off the central coastline. The national tourism strategy recognizes some 18 priority areas for tourism investment. Ten of these areas are coastal^{xiv}. The heaviest concentration of coastal tourism development can be found in the southern region of the country, particularly in Inhambane Province. However, there are plans for increasing the exploitation of coastal tourism potential in the northern provinces of Nampula and Cabo Delgado via the USAID sponsored initiative.

The focus of tourism activities in the southern portion of Mozambique is clearly in the marine and coastal environment. The principal tourism activities related to the marine and coastal zones in Mozambique are highlighted in Table 5 below. The potential of coastal tourism activities does not

significantly differ from the southern to northern regions. Tourism infrastructure, and the overall evolution of the various market segments for tourism activities, is significantly more developed in the southern region of the country. This is most probably due to the issues of direct access, given the proximity of the southern region to South Africa. The northern provinces of Mozambique are bordered by Malawi and Tanzania.

Table 5: Principal coastal Tourism activities

Principal Coastal Tourism Activities
Sports Fishing, Fishing Competitions
Recreational Diving
Quad Biking
Spear fishing
Luxury Island Lodges – Bazaruto and Quirimbas Archipelagos
Beach Combing/Shelling
Visiting Cultural Heritage Sites

**Increasing
Competition for Coastal
Resources**

In the biophysical context, it is critical to emphasize that the coastal zone in Mozambique is currently

more accessible to a wider range of economic development alternatives than perhaps ever before in its history. Whether the investor interest is in tourism or other potentially lucrative economic sectors such as titanium mining, hydrocarbon exploitation (including natural gas in the north of the southern province of Inhambane and offshore petroleum resources in the Rovuma Basin in the north of the country) and port development (in Nacala City, Nampula Province), the coastal zone is increasingly subject to pressures from a multiplicity of potentially remunerative investment activities. The coastal zone of Mozambique has become, in a very broad sense, a multiple-use zone for a variety of purposes. This has naturally placed, and will continue to place, increased pressure on the same resources that make up the components of local coastal communities' livelihood strategies. This "competition" for coastal resources amongst various actors, each with varying amounts of influence and importance in the overall economic and social context, is perhaps one of the principal challenges facing the government in terms of managing the environmental and social impacts and benefits arising from a multiplicity of development scenarios and alternatives. Given the planning and management challenges resulting from a series of valuable resources based along the coastal zone, the government will be required to make decisions regarding the costs and benefits in relationship to the overall scenarios it adopts for a given area.

Environmental degradation and its consequences for the local communities who are dependant largely upon the integrity of the local natural resources for subsistence is one of the key livelihood challenges facing Mozambican communities and their representatives. The cumulative effects of a series of investments made in a given area are a key factor that must be considered in the decision making process regarding what (and how many) development scenarios (i.e. a mix of economic activities or investments) are feasibly sustainable for a given area. The Government of Mozambique, via its Ministry for the Coordination of Environmental Action (MICOA), has recently launched a tender in October of 2010 for the execution of a Strategic Environmental Assessment of the entire coastline of Mozambique with the objective of providing an environmental baseline and guideline for economic and social development along the coast.^{xv} Tourism developments in the coastal zone are subject to some form of environmental oversight by law. Depending on the scope and size of the development, it will be subject to either an environmental scoping exercise or an EIA.^{xvi}

Climate Change and Cyclone Risk: Aside from the environmental pressures placed on coastal resources from the growing economy in the country, the issues and implications raised by climate change are getting increased attention from the GOM. The vulnerability of the coastal zone to

climate change has been recognized in Mozambique for over ten years. Another factor in relationship to the coastal area and potential environmental impacts is the exposure of the Mozambican coastline to cyclical cyclones. Virtually the entire coastline of Mozambique is exposed to cyclone activity during the months of January and February. The provinces with the highest incidences of cyclone occurrence are Inhambane in the south, Sofala in the centre, and Nampula in the northern region of the country^{xvii}.

Environmental Awareness Building: One of the key challenges for the livelihoods of the local communities is increasing their understanding of the coastal environment, as it is currently being over-exploited. The value of traditional environmental knowledge needs to be complemented by a clear understanding of the current pressures that local environmental resources are being subjected to. The inclusion of locally relevant environmental issues in the primary school curricula is a positive development in the process of raising awareness amongst the very young, however, many local schools struggle to implement the environmental component of the curriculum due to limited capacity in this area.^{xviii} At the macro-level, there are national campaigns to support efforts in reforestation through schools and students^{xix}, however, ministerial support in environmental education, via MICOA, lacks a concrete implementation framework at both the provincial and district levels. Some environmental education efforts are being carried out in the context of local communities within or adjacent to tourism focal points along the coast. The Case Study: Bitonga Divers and Marine Environmental Education presented below highlights a tourism related case study of community based environmental education.

Case Study: Bitonga Divers & Community Based Marine Environmental Education (xx)
<p>Carlos Macuacua, a former artisanal fisherman in the tourist destination of Tofo Beach in Inhambane province, had tried several tourism related alternatives to his life as a fisherman. In partnership with some English partners, he ran cultural visits for tourists to local communities for a sample of local food, language and culture. When his English partners had to leave Mozambique, Carlos looked for additional options. He began training in recreational diving in 2004, achieved the status of PADI Dive Instructor in 2007 with one of the local scuba diving shops on Tofo Beach. Since making a linkage with a US based organization Ocean Revolution in 2007, Carlos has focused effort on educating his fellow Mozambicans both in recreational diving and environmental education via a Civil Society organization called Bitonga Divers. In addition to training Mozambicans in Scuba Diving, Carlos, through Bitonga Divers, spends a portion of his time making presentations to the local communities around the Inhambane Peninsula regarding the value of the marine resources to the tourism industry and to the local environment. His presentations focus on the marine life and the relationship that the local community has with the marine resources. He offers the community his perspective, as a diver and one who has benefited from dive tourism, on the local resources and potential alternatives to the traditional local means of exploiting these resources. Carlos' efforts are an ideal example of the type of Mozambican to Mozambican environmental education that could influence a long term change in the patterns of marine resource exploitation along the coast of Mozambique.</p>

Table 6 below provides a summary of the primary coastal natural resources. Given the overall context of the nature of these resources, an overview of the tourism and livelihood uses from one major tourism zone in Mozambique, the Inhambane Peninsula is provided.

Table 6: Principal Coastal Natural Resources ^{xxi}

Primary Resource	Tourism Uses	Livelihood Uses
Coastal Land	Primary resource for tourism developments, typically within several hundred metres of the high tide mark	Access to the sea, traditionally a major primary source of protein for coastal communities; some coastal areas are used for highly resistant staple crops such as cassava (manioc) and small household gardens.
Parabolic Dunes	Tourist attraction and focal point for tourism activities such as quad biking (most often illegally)	Provide shelter from marine elements such as wind and salt. Often used by artisanal fishermen as a location for fishing shelters for primary processing of catches.
Water	High volume usage for tourist usage and tourism maintenance i.e. : restaurants, bathing, swimming pools, irrigation of landscaping, etc.	Low volume usage for drinking, bathing, cooking and basic irrigation of small holder farms.
Coconut Palm	Shade, Landscaping, Decoration, Condiment, tertiary construction material (temporary fencing, temporary structures)	Nutritional source in many staple dishes, secondary roofing material, primary construction material; Shade; source of income via sale to tourism operators for construction materials
Coral Reefs	Recreational Diving, sports fishing.	Subsistence fishing (spear or Line)
Marine Life:	Attractions for recreational divers and sports fishermen	Multiple sources of protein and a cornerstone of coastal livelihoods
<i>Pelagic Fish</i>	Main source of fresh fish for hotels, resorts and restaurants; attraction for sport fishermen	Source of protein, source of income via sale to restaurants, primary fishing target.
<i>Sharks, Rays and reef fish:</i>	Attraction for divers and snorkelers	Secondary fishing target, alternative sources of protein.
<i>Shellfish and Molluscs: shrimp, crab, mussels</i>	Shrimp and crab are Major sources of tourism revenue for food and beverage industry	Traditional source of protein, currently more a source of income via sales to restaurants

4. Human Environment

In order to contextualize the subsequent discussion around the human environment, some basic information on the population of Mozambique is provided in Table 7 below. Of particular relevance to the human context in Mozambique are the two statistics related to education. Although Mozambique currently spends 5% of its GDP on education^{xxii}, and has made some significant progress in recent years, there are serious gaps in the human resource capacity of the country; both in terms of primary through tertiary *and* technical and professional education. While much has been made of the expansion of education coverage, indicators such as the current pupil to teacher ration of 1:66^{xxiii} highlight just one of the issues related to the *quality* of the education provided. It is fair to say that the vast majority of the Mozambican population is

currently poorly equipped to deal with the economic and social challenges inherent in the 21st century global economy. This overall lack of capacity is reflected in virtually all areas of the economy and government – private sector, civil society as well as government administration and management capacity at provincial and local levels.^{xxiv} This of course has significant implications for the development of the economic and social fabric of the country in the short, medium and long term.

The tourism policy recognizes the private sector as the driving force behind tourism development, however, the level of national investors in the sector is still quite low. One report cited “limited local ownership” as a major issue in the local tourism value chain^{xxv} in the Peninsula of Inhambane, one of Mozambique’s primary tourism destinations.

Table 7: Background information on Mozambique population^{xxvi}

[†]Source: <http://hdrstats.undp.org/en/countries/profiles/MOZ.html>

^{††}Source: <http://www.ine.gov.mz/hiv/ImpactoHIV.pdf>

Indicator	Status
Population	22,416,881
Growth Rate	2.8%
Life Expectancy	51.2 years
Urban Population	30%
Average age	17 years
Illiteracy Rate	50.3%
Net enrollment primary school	66.3
Mean Years of Schooling (adults)	1.2 years [†]
Expected Years of Schooling (children)	8.2 years [†]
Seroprevalency (HIV)	14% of total population ^{††}

Confronting Low Levels of Capacity

Tourism Skills: It is important to recognize that formal education, while an important component for potential long term capacity acquisition, is not the only ingredient

required for effective participation in the tourism sector. The acquisition of practical skills via “on the job” training is also one potential way for members of the local community to take advantage of the benefits offered by the tourism sector in Mozambique. According to one document, the issues related to the lack of skilled human resources are connected to the following elements: “(i) the unavailability of vocational and technical institutions catering for the skills demand of tourism establishments; (ii) lack of language proficiency (English language); (iii) lack of basic academic qualifications (iv) lack of resources on part (sic) of tourism establishments to invest in HRD; and (v) lack of support and policies in developing HR from department of labour.”^{xxvii}

Civil Society Capacity: Civil Society is commonly referred to by Mozambican officials and donors as one potential source of support to local communities and government in relevance to the accomplishment of development goals. However, extensive research conducted around civil society organizations in Mozambique has illustrated that, on the whole, civil society in Mozambique, with respect to the structure, environment and values of the sector, is still quite weak.^{xxviii} The main weaknesses of civil society were cited as the following: (i) low percentages of people belonging to CSOs; (ii) percentage of CSOs in federations or networks; (iii) level of support infrastructure for civil society; (iv) lack of effective response to marginalized groups and (v) state support in the form of resources for civil society^{xxix}. The report also highlights a set of key recommendations for CSOs, including;

- (i) Civil society organizations should try to encourage and challenge citizens to exercise their citizenship more by getting involved in social and political affairs such as, for example, supporting poor and/or vulnerable communities;
- (ii) Organizations that are

large in terms of financial and human capacity as well as geographical coverage should seek ways of providing funds, resources and assistance to less able ones. . . via. . . two complementary ways: i) establishing a coordination mechanism for building capacity in specific areas that improve their social and political interventions: ii) using the same mechanism to coordinate the de-concentration of funds, human resources and knowledge among the organizations; (iii) Given not only the diversification of funds but also the creation of greater corporate accountability for the positive and negative effects of their actions in the areas where they are located, it is recommended that civil society should get actively involved in: i) demanding corporate social responsibility and challenging state policies on tax exemptions and the allocation of spaces for large corporations; ii) making use of the Patronage Law to encourage responsible philanthropy by the private sector.^{xxx}

There are currently no umbrella or network organizations in place (or at least that could be found during the research) that provide support to CBO/CSO initiatives in tourism development. There are individual organizations that are working with specific communities on specific projects, however, there are no organizational supports for increasing local community benefits in the tourism sector.

Informal Economy & Economic Diversification and Tourism Employment: The informal nature of the key components of the tourism value chain in Mozambique is one of the major constraints around revenue generation capacity (and a contributor to internal revenue leakage) in the tourism sector. Some major components of the food and beverage supply chain in provincial Mozambique are almost entirely informal in nature. For example, fruits and vegetables (mostly imported) are typically sold on an informal basis, while seafood is also typically sold to restaurants, hotels and lodges by local fishermen who are not formally registered with the tax authorities.^{xxx1} As the tax on any informal expenses declared by a company is 3% above that of applicable VAT rates, most companies hide these expenses. The incentive to search out formal suppliers (and avoid having to hide expenses) is not as strong as the need for the freshest, most conveniently available seafood and vegetables which is, by and large, available from informal sellers out of local communities. There are very few (if any) mechanisms to support the increasing integration of informal actors into the formal tourism sectors. The government and NGO projects that are designed to bring poorer members of the community into the sector are often not particularly adapted to the needs and constraints of the poorest people,^{xxx2} as the obligations of daily subsistence living often prevent the community members who are looking to formalize their participation in tourism from doing so. The diversification of the tourism economy is also a key to increasing the potential for the local community to include a tourism related activity in their overall lifestyle – the greater the options the greater the probability. However, the increase in options (i.e. diversification) is no guarantee that more local people will participate, as this often depends on the overall structure of the tourism market in the area.^{xxx3} Employment statistics, like all socio-economic and tourism related data for Mozambique, are scarce, while those that do exist are largely unreliable due to the large proportion of employment that is informal. The WTTC estimates that tourism employment in Mozambique is as high as 356,000 people.^{xxx4} In the baseline study undertaken in the Inhambane area, nearly all tourism operators indicated in the interviews conducted in the context of that study that employment was the primary benefit of tourism for the local community.^{xxx5} If, in fact, the primary and only benefit of tourism investment for local populations comes in the form of direct employment (perhaps too narrow a view) then the question becomes how can the participation of local people in the tourism industry increase and become a sustainable component of their respective livelihood strategies?

Pro-Poor Business Linkages and Approaches^{xxxvi}: One potential means to address this problem that is under consideration in the province of Inhambane is the institutionalization of a tourism levy.^{xxxvii} A recent study undertaken on the prospects for such a re-distributional approach identified three principal potential uses for such a fund in the Inhambane context.^{xxxviii} However, the issues to consider in the development and implementation of such a plan are quite complicated and relate to transparency issues between government and tourism investors, non-compliance with social policies inherent in tourism legislation and lack of a concrete representative body for the private sector.^{xxxix} The most comprehensive study on business linkages in a given tourism destination (Inhambane) highlight a reliance on imported rather than domestically produced inputs in food and beverages across all categories. This study on the business linkages in a given tourism value chain is particularly weak in regard to the identification of the impacts of tourism on local communities.^{xl} Thus, its overall recommendations are mostly focused on the overall enabling environment as opposed to concrete actions to be taken with local community stakeholders.^{xli} As shall be illustrated in Section 5 of this report below, there are formal mechanisms for delivering tourism generated benefits to the poorer and more vulnerable elements of the community, although there are specific conditions under which this is possible (i.e. communities adjacent to conservation areas). For communities in areas without these specific conditions, a more isolated approach is often undertaken, as illustrated by the case study below^{xlii}.

Case Study Summary: Barra Resorts Efforts in Community Development

Barra Resorts is one of the major players in Inhambane tourism. The group has interests in at least four medium size resorts in Inhambane province. Barra is characterized as a generally more responsible tourism operator than average in the area with approaches and ideas for supporting local tourism.

“The guiding principle of all Barra’s effort to help the community is based on what the Co-owner and founder of the group says: ‘if you look after the community, the community looks after you’^{xliii}.

Key Points for Livelihoods:

- Locals do not choose the hospitality industry as a primary choice of employment. Tourism employment is perceived by the local population as being like domestic employment. (p.5)
- Barra Group has developed a pilot project with the community of Salela to grow hydroponic gardens that provide abundant and reliable yields to supply its resorts. This fresh products supply chain that would benefit roughly 10 families from Salela failed, because the involved people had no ownership of the project and expected to get regular salaries from Barra Resorts. (p.8-9)
- In the premises of Barra Lodge there is a big craft market that also helps 14 to 20 local families to benefit directly from the tourism business. (p.9)
- Barra Group is constantly involved in internal training courses related to work and social programs. The majority of the staff have never worked in the tourism industry before and all have attended internal training programs to give them the necessary skills.
- Barra Group has been supporting a local traditional band which performs every Wednesday and Saturday evening at Barra Lodge Beach Bar. Band players receive the normal tips from the tourists, while ZAR 10 (US \$1) is saved per dinner guest. The accumulated fund is donated at the end of the month to a local school. (p.7)
- When Barra Lodge was established in 1996, there was absolutely no water source except for one open sky well. Barra Group has since then built five water points and water pumps, transforming the lives of roughly 800 families. Some interviewed beneficiaries say that they used to walk from 4 to 15 km to get water, which was also not safe. (p.7)

The efforts of the Barra group, highlighted in the case study summary above, are commendable. However, they do not represent a systematic, comprehensive approach to the improvement of livelihoods overall. Rather, they are focused on solving localized problems and ensuring good

relationships within the local community. The force of one tourism operator, while a positive contribution, cannot outweigh more systematic approaches to ensuring that tourism benefits reach the local community. As one ODI Briefing Paper puts it “*Developing countries are littered with well-intentioned community-based tourism projects, delivering small benefits to few people*”^{xliv}.

Community Based Tourism: In Mozambique, community based tourism is still in its infancy. The majority of the CBT initiatives are being undertaken in the conservation areas in the interior of the country and are not related to coastal tourism. There may be lessons learned from these experiences that can be of value in the coastal context as they are outside the coastal zone, however, they are not included in this report. While there are some CBT initiatives in the north of the country run by small tourism operators, based on the research conducted in this report, the body of literature on CBT in the country is still relatively slim.

5. Policy and Governance

Background Information: Any discussion of policy and governance must be placed in the context of the on-going decentralization efforts being undertaken in Mozambique. The government has been creating a legal and policy framework which gives the districts (the lowest aggregate level of state administration) greater voice in the social and economic development process. The decentralization of government functions, along with the development of more inclusive decision making/management structures at local level, creates the potential for greater involvement of communities in development decision making. The real challenge facing local government is to utilize these new tools to their maximum benefit.^{xlv}

Tourism Policy, Environmental Legal Framework, Relevant Strategy Documents: Generally, the policy framework in Mozambique for tourism and the environment is a solid one that promotes sustainability. The principal starting point for all policy and legislation is the Constitution of Mozambique, which establishes the requirement that the government develop sustainable policies.^{xlvi}

Table 8: Tourism Policy and livelihood strategies

Key Highlights of Tourism Policy vis-a-vis Livelihood Strategies
<p><u>Principles of Tourism Policy:</u></p> <ul style="list-style-type: none"> • Promotion of partnerships between public and private sector and communities in the development of the sector; • Adoption of sustainable tourism planning principles and effective approaches to implementation; • Promotion of an effective involvement of communities in development programs; • Strengthening of tourism through sustainable development practices and respect for the environment;
<p><u>Objectives of Tourism:</u></p> <ul style="list-style-type: none"> • to contribute to employment creation, economic growth and poverty alleviation; • to alleviate poverty; • to ensure that tourism and the environment are mutually supportive;
<p><u>Priority Areas for Intervention:</u></p> <ul style="list-style-type: none"> • Community Involvement
<p>Source: Tourism Policy and Implementation Strategy, 2003</p>

Walking the Talk: Putting Tourism and Environmental Policy into Practice

Overall, the Government of Mozambique has been effective at putting in place policies, strategies and action plans that meet the constitutional requirements. Livelihood concerns around environmental sustainability, access to natural resources via the preservation of

bio-diversity, as well as government oversight of developments in relationship to environmental impacts, are well represented in the policy and legal framework. Recently, additional measures have been enshrined in policy and legislation to ensure that citizens have an opportunity to participate in processes related to decision making around the exploitation of natural resources and the development of the economy. Unfortunately, an exhaustive discussion of each of the policy and strategy elements related to this point is not feasible in the scope of this work. As such, a summary table of these elements is provided in Annex 2.

The principal challenge facing the government is how to ensure that the policies, strategies and legal frameworks developed for the respective sectors are implemented and/or enforced. The answers lie in the institutional mechanisms, resource levels and human resource capacity at the provincial and district level, all of which are required to effectively implement the policy and strategy guidelines laid out at the central level. Given the relatively low levels of material, financial and human resources available for the implementation of policy and the enforcement of legislation, the government is often unable to meet the practical implementation requirements, which are a reflection of sustainable policy and vigorous legal frameworks. It is not that livelihood concerns are not represented at the policy level, rather, that policy is not effectively carried into practice due to institutional weaknesses.

6. Planning and Management

A Tourism Management Framework can be found in Annex 4^{xlvi}

Management Capacity for Coastal Tourism: The overall management framework for tourism does not distinguish tourism in one particular geographic zone from another. The regulations

apply to all tourism initiatives regardless of location. Neither is there a specific organ or directorate designed to deal with coastal tourism per se. Nor are there specific units that deal with issues, like tourism and poverty reduction, or tourism revenue leakage. The management structures in place for tourism are equipped to deal, often in the most rudimentary way, only with the relevant aspects of the legislation in place for tourism licensing. It should be noted that institutional capacity in this area tends to be stronger in those provinces where tourism is more dynamic. There are, however, other organizations that are focused on coastal zone management issues that tourism authorities can utilize to provide support when needed. One of these is the *Centre for Sustainable Development (CDS): Coastal Zone Management* based in Xai-Xai in Gaza province^{xlviii}. CDS functions under the auspices of the Ministry for the Coordination of Environmental Affairs (MICOA) and the overall reach of CDS is limited, often confined to the southern region. Its coverage of coastal issues in the centre and the north of the country is often conditional on the availability of financial or material resources. A more likely source of support and collaboration at the provincial level are the Provincial Maritime Delegations. Maritime has a role to play in the approval of tourism investments along the coastal strip, however, these too do not have the capacity they require to effectively carry out their mandates. Greater effectiveness in the management of coastal tourism issues requires a multi-sectoral approach that includes not only maritime but fisheries and agriculture as well, particularly when it relates to livelihood issues. Often, this ongoing technical collaboration is not feasible given the responsibilities and priorities of each directorate in the face of limited operational resources at the provincial level. There are, however, structures in place that should, in principal, allow for the access of local populations to the processes related to decision making around coastal resources. Co-Management Committees have been created in a number of coastal districts that allow for communities to come together and make decisions regarding the use of coastal natural resources, particularly fisheries resources. There is also an extensive body of experience that has come out of the fisheries ministry in relation to the utilization of co-management committees, which could be useful to tourism in terms of generating a greater level of participation^{xlix}.

Tourism Planning: Quality tourism planning suffers from a general lack of planning capacity at provincial, district and municipal levels. Tourism planning is usually conducted within an overall land use plan for a given area. New land use planning legislation was introduced in 2007, however, many areas still lack effective land use plans and/or planning capacityⁱ. One indicator of the fact that overall capacity for complex integrated tourism planning is low within MITUR is evident in the need for planning exercises to be outsourced to external consultants.ⁱⁱ Such low-levels of planning capacity has a series of consequences, highlighted in Table 9, below.

Table 9: Some consequences of low tourism planning capacity

Low Levels of Tourism Planning Capacity and Selected Consequences
<ul style="list-style-type: none"> • Delays in the development of large scale tourism developments; • Ad hoc, disjointed and poorly organised and implemented tourism developments; • Investors with a speculative rather than sustainability orientation due to lack of overall structure • Irresponsible tourism development • Conflicts with local communities over land rights due to lack of clarity around appropriate/authorized land use.

Land Tenure: One of the primary inputs to tourism development is land. The overall government approach to land tenure is outlined in the national land policy.ⁱⁱⁱ In the context of the general land reform process undertaken from the mid 1990's and its relationship to poverty alleviation . . . *there is a perception that the family sector does not have the resources to expand production potential and to significantly contribute to the economy, there is also a perception that the strengthening of security of tenure of rural communities will 'scare off' investors and that the*

community consultation for the approval of land concessions, as required by law, causes unnecessary delays in the approval of concessions.^{liii} Overall, the management of land tenure for tourism follows the standard procedures and is subject to the Land Law and its overall regulations^{liv}

Integrated Coastal Zone Management: The utilization of integrated coastal zone management techniques at the national level has not been widespread. There are a very small number of initiatives, including one in Mecufi in Cabo Delgado province.^{lv} While DANIDA, the Danish cooperation agency, has been providing support to the Government for a number of years, Mozambique still has to role out an effective policy and implementation strategy for coastal zone management.

Planning Nature Based Tourism: One of the most vibrant nature based tourism industries in Mozambique is the diving industry^{lvi}. While the concept of recreational diving has been included in the tourism strategic plan as a key activity, very little has been done to effectively plan the development or growth of that industry vis-à-vis sound environmental principles. This most likely has to do with the multiplicity of national authorities involved in the management of Recreational Diving^{lvii}, as well as the relatively little exposure that Mozambicans and government authorities have had to marine activities, such as scuba diving.

“So far there is no management plan from national to local level that takes into account the diving tourism characteristics in Mozambique. . .the flux of benefits from tourist to the local communities is still poor, there is no protected area in the region and there is lack of understanding about marine tourism from individual to institutional level. Such a scenario runs the risk of biodiversity lost and collapse of an industry that is highly based on specialized divers.”^{lviii}

If properly planned and managed, a mid to high volume dive industry based around experienced and specialized divers, with adequate protection of marine resources that permit selective access to local communities and provide benefits directly to communities in the area, could make a long term sustainable contribution to national revenues and local communities.

7. Development, Trade and Projects

Tourism and the PRSP: There is no specific Poverty Reduction Strategy Plan for the tourism sector. Tourism, however, forms a part of the overall PRSP for the country. The core of the Mozambique PRSP is divided into three principal pillars: governance, human capital and economic development. These three main pillars are supported by approaches to cross cutting issues as well. Tourism also forms one part of the economic development pillar. The main references to tourism in the PRSP are summarized in Table 10, below.

Table 10: Summary of Tourism Related contents of the PRSP^{lix}

<p>Main objective: Mozambique has a rich and diversified tourism potential that the government plans to take advantage of during the next several years in order to develop and position this country as a world-class tourist destination, while at the same time ensuring an environmentally healthy exploitation of the natural resources that form the basis of that potential. Implementation of this main objective responds to two specific objectives, each of which includes a set of actions to be taken. (Para 547., p. 137)</p>
<p>Specific objective: Improve marketing and partnerships by segmenting the issuing markets through:</p> <ul style="list-style-type: none"> • Implementation of specific marketing campaigns; formation of a partnership to benefit from the 2010 FIFA World Cup to be hosted by the Republic of South Africa; • Creation of effective partnerships with neighboring countries, moving towards regional integration; • Rehabilitation and reorganization of the country's conservation sites; • Providing incentives for creation of an attractive environment that offers true relaxation for tourists by transmitting an environment of safety and hospitality along the tourist corridors. This role will be played by tourist information posts, as well as by a suitable tourist gateway to be set up shortly; • Institutionalization of festivals designed to appeal to tourists, as a means of diversifying our tourist attractions and lengthening the average stay by visitors in this country; • Promoting the active involvement of local communities in the development of tourism and in its benefits. (Para 548, p.137) <p>Specific objective: Improve the provision of products and services with a view to increasing the number of jobs, hotel beds, raising earnings, and increasing the number of small and medium-scale businesses by incentives directed toward:</p> <ul style="list-style-type: none"> • Promoting local tourist support businesses and local small and medium-scale companies in the tourism sector, including public co-financing of private business initiatives in tourism; • Promoting the participative development of conservation sites by establishing management councils and a growth in the volume of revenues channeled to local communities in the vicinity of those sites; • Facilitating the entry of tourists and those who would invest in this country (simplification of procedures, better coordination among the various government agencies); • Establishing an appropriate institutional framework by designing strategies for various kinds of tourism (hunting, cruises, rural, adventure, etc.); • Assembling a tourism work force, giving priority to local workers; and • Creating a national association of the hotel and tourism industry, and adopting a code of conduct. (Para 549, p. 138)

There are very few projects in tourism that are specifically focused on local economic development and/or sustainable livelihoods in the coastal area. One project that is underway at the moment is a Ministry of Industry and Commerce project supported by the World Bank, which relates to the strengthening of the private sector in Inhambane province. While there are no components of the project that focus specifically on LED or livelihoods, the rationale for supporting tourism-related job creation and income generation within the scope of this project is that there is a large opportunity to develop backward linkages with local entrepreneurs and the growing tourism industry in Mozambique.^{lx} There were, however, no other major projects that focused on tourism specific local economic development and/or livelihoods found during the research conducted.

Unfortunately, there are currently very few NGOs working in the tourism sector from a pro-poor/livelihoods perspective. SNV is the only NGO that has adopted this approach. SNV has chosen to focus on one of the primary tourism destinations in the country, Inhambane. They are working towards an integrated approach to tourism development with a pro-poor perspective. Activities of the program include vocational training, as well as identifying business linkages in the sector with potential for the participation of local people.^{lxi}

8. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Excellent natural attributes for tourism attractions • Relatively high levels of bio-diversity, particularly marine • Good policy, legal and strategic framework • Demonstrated solid growth of the sector • Conditions for bush-beach oriented tourism in southern Mozambique • Rich in traditional culture – music, food, dance • Still largely un-exploited tourism potential in the north of the country 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Scope for quality economic analysis is limited given poor quality data • Low levels of education/capacity among local populations • Low levels of service supply/delivery at all local level; high rates of leakage • Large portion of tourism value added businesses are informal • Low levels of awareness among tourist officials regarding livelihood approaches of local communities • Poor planning capacity • Lack of capacity to implement policy on the ground
<p>Opportunities</p> <ul style="list-style-type: none"> • Technical and Vocational training focused in and around tourism destination • Planning and development of nature based tourism (i.e. diving) • Potential expansion of tourism related activities (cultural/historical tours) • Improving domestic investment/entrepreneurial activity in tourism • Exploiting unique regional position with beach-bush tourism opportunities 	<p>Threats</p> <ul style="list-style-type: none"> • Poor national business/investment environment • Poor communication between investors and government due to language barriers • Low quality/speculative investment projects • Environmental degradation loss of biodiversity • Climate change and sea level rise

Annex 2: Summary of Selected Elements of Policy, Strategy and Legal Frameworks

Type of Framework	Title and Date	Summary Description
Policy	<p><i>Tourism Policy and Implementation Strategy (2003)</i></p>	<ul style="list-style-type: none"> • Strengthening of tourism through sustainable development practices and respect for the environment; • Promotion of an effective involvement of communities in development programs; • Adoption of sustainable tourism planning principles and effective approaches to implementation; • Promotion of partnerships between public and private sector and communities in the development of the sector;
	<p><i>Conservation Policy and its Implementation Strategy (2009)</i></p>	<p>This relatively recent conservation policy is founded on nine principles, a select few are presented below:</p> <p>The principal of ecological heritage –biological diversity to be protected and maintained for future generations; sustainable use of resources compatible with the maintenance of said resources;</p> <p>The Principal of Sovereignty – the sovereign right of the state and its people to exploit their natural resources in conformity with national environmental legislation and ratified international conventions and agreements;</p> <p>The Principle of Citizen Participation in the Management and Benefits of natural resources –right of all citizens to participate in the management of resources, and government to promote and facilitate citizen participation in decision making process related to conservation and management of natural resources.</p>
	<p><i>Land Use Planning Policy (2007)</i></p>	<p>There are also nine founding principals of the land use planning policy, here again are a select few:</p> <p>The Principal of Participation –local communities should be consulted in the process of land use planning; also in relationship to any reservation of areas for the construction of infrastructure or services that assure sustainable growth of their economic base.</p> <p>The Principal of Responsibility – that any actor, public or private who intervenes on the land is responsible for any damage that affects the citizen's quality of life or environmental sustainability and is obliged to repair and compensate for the damages caused.</p> <p>The Principal of Access to Information –the</p>

		<p>population has a right to all information regarding land and this should be open to analyse and study by all interested parties.</p>
<p style="text-align: center;">Strategy</p>	<p style="text-align: center;"><i>Strategy and Action Plan for the Conservation of Biological Diversity in Mozambique (2003)</i></p>	<p>To ensure that the development of the tourism industry is based on respect and the sustainable use of bio diversity;</p> <p>2010 Tourism Related Goals:</p> <ul style="list-style-type: none"> • The revision and adaptation of tourism policy and strategy and other relevant legal instruments to the current context; • Development of mechanisms for sharing benefits derived from tourism; <p>Four principal areas of action:</p> <ul style="list-style-type: none"> • Conservation of biodiversity, the protection of habitats and ex-situ conservation; • The sustainable use of biodiversity emphasizing the use of integrated management plans and the participation of communities in the development process; • The evaluation of impacts of development activities; • Formal and informal capacity building, research and awareness raising as important areas for ensuring implementation;
	<p style="text-align: center;"><i>Environmental Strategy for Sustainable Development in Mozambique</i></p>	<ul style="list-style-type: none"> • National strategy defined as process and not a plan; • Abandons the premise that the government is the only institution responsible for sustainable development; • Abandons a focus on sectoral based planned for integrated planning; • Deemphasizes short term, immediate results for consolidation of those results;

Annex 3: Tourism Management Framework

Administrative Level	Government Organ	Roles and Responsibilities
National	<i>Ministry of Tourism</i>	<ul style="list-style-type: none"> Overall responsibility for the management and development of tourism, policy approval and decision making.
	<i>National Directorate of Tourism</i>	<ul style="list-style-type: none"> Analysis and approval of tourism projects of a specific classification (four and five star). Responsible for the issuance of all tourism licenses and ensuring procedural aspects of licensing process are followed. Interaction with support agencies like the Investment promotion Centre
	<i>Inspectorate General of Tourism</i>	<ul style="list-style-type: none"> Responsible for ensuring that tourism establishments are up to their respective classification standards, and issuing the commensurate penalties if infractions are encountered. Also represented at provincial level.
	<i>National Tourism Institute (INATUR)</i>	<ul style="list-style-type: none"> Promotion of tourism in Mozambique at all levels, international, national and regional. Oversees the ministry's financial interests in the tourism sector (i.e. the concession of selected hotel properties)
Provincial	<i>Provincial Directorate of Tourism</i>	<ul style="list-style-type: none"> Responsible for ensuring the effective licensing of tourism initiatives. Can approve certain types of tourism projects. Promotion of tourism within the province. Main contact for small to mid-size investors in the province. Promotes national level initiatives among the tourism operators in the province.
	<i>Governor's Office</i>	<ul style="list-style-type: none"> The provincial governor's office has approval power over certain types of tourism investment in the province. For these projects, the governor's office provides a support opinion for the approval of a given project or highlights what additional steps must be taken by the investor to meet requirements
	<i>Multi-sectoral Input</i>	<ul style="list-style-type: none"> The tourism licensing process for a given investment is subject to review by a number of provincial directorates who are required to provide their technical opinions on the project proposal. These include: Public Works on Infrastructure; Environmental Affairs on impacts and mitigation; the provincial Maritime Delegation (if the investment is on the coastline). This ensures that each relevant ministry is involved in approving the aspect of the project proposal over which it has authority.
Local	<i>District Economic Activities Services</i>	<ul style="list-style-type: none"> At district level, the District Administrators responsible for the final approval of some types of projects or provides a technical opinion on them. The licensing process is coordinated between the District Economic Activities services and the Provincial Directorate of Tourism.

Bibliography

- ¹ A value chain analysis for Mozambique was conducted in 2006. See, IFC, 2006. *The Tourism Sector in Mozambique, Vols. 1 & 2*. While the volumes focus almost exclusively on tourism in the Southern region of Mozambique, they provide an excellent overview of the tourism context, constraints and recommendations for the sector.
- ii Ministry of Tourism, 2004., *Strategic Plan for the Development of Tourism in Mozambique*, Government of Mozambique.
- iii Council of Ministers, GOM., 2006, *Resolution 45/2006: Approves the Tourism Marketing Strategy 2006 to 2013*, Boletim de Republica N° 51, Series I, 5th Supplement (Portuguese).
- iv Nathan Associates, Agbley, K.A., 2006., *USAID Northern Tourism Project: Progress Report January 17 to April 16, 2006 (First Quarter)*. See also USAID's *Trade and Investment Program*: website in the **Tourism Project Overview** section for more details and updates on the progress of this program www.tipmoz.com.
- ^v IBRD – World Bank, 2008. *Doing Business 2009: Country Profile for Mozambique: Comparing Regulation in 181 Countries*.
- vi World Bank -- Programa Regional Para o Desenvolvimento das Empresas. 2009. *Moçambique: Análise do Clima de Investimentos: Relatório Preliminar: Sumário Executivo*. p. X.
- vii There are significant concerns regarding the overall accuracy of the statistics on tourism in Mozambique. There are various structural and practical reasons for the generally low confidence in the published figures. An explanation of some of these issues is available in Jones, S, 2007., *A Economia de Turismo em Moçambique: Tamanho, Impact e Implicações*, Discussion Papers Series N° 55P; specifically, p.5, Para 10. Direcção Nacional de Estudos e Análise de Políticas, Ministério de Planificação e Desenvolvimento, República de Moçambique.
- viii 1USD=25.5MZN (calculated average exchange rate for 2007).
- xiv Instituto Nacional de Estatística (INE), 2008. *Resultados do inquérito á Despesas de Turista 2007*.
- x See Jones. S. 2007. Op. Cit.
- xi Jones. S. 2007., IBID., p. 3.
- xii See World Travel and Tourism Council (WTTC), 2010., *Travel and Tourism Economic Impact: Mozambique 2010* for this and a great many additional statistics on the status and projected growth of Mozambique tourism economy. http://www.wttc.org/bin/pdf/original_pdf_file/mozambique.pdf
- xiii IFC, 2006., Op.Cit.
- xiv This is illustrated in the Priority Areas for Tourism Investment (PATI) map in Ministry of Tourism, 2004 op. cit. p. 67.
- xv The Government of Mozambique is resorting to hiring consultants to manage and oversee the SEA process, either because they haven't the internal capacity or perhaps it is a requirement of the financing agency of the SEA. See <http://www.unpei.org/PDF/Job-EOI-02-micoa-daf-dpe-c-2010.pdf> for the request of expression of interest from individual consultants for the management unit.
- xvi For an excellent and detailed overview of the legal framework for tourism licensing (including environmental requirements) see, ACIS, ASPS and Republic of Mozambique, Provincial Directorate of Tourism Sofala., 2008. *Legal Framework For Tourism Licensing in Mozambique*, 1st Edition. November.

xvii Ministry for the Coordination of Environmental Affairs, 2007. *National Adaptation Programme of Action*, p.23.

xviii Personal communication, September 2010, President of the Municipal Council of Inhambane City, Lourenco Macule.

xix President Armando E. Guebuza's national campaign "*One Student, One Tree*" announced in 2008, is designed to get school children planting renewable forestry resources.

xx Interview with Carlos Macuacua. There is very little formal documentation on the efforts of Carlos Macuacua and Bitonga Divers. Some information on Carlos and Bitonga Diver's efforts can be found on the Ocean Revolution website: www.oceanrevolution.org

xxi This table presents the coastal resources on which local communities and the tourism industry are mutually dependant, and is base on the author's experience as a resident of seven years in the tourism destination of Inahmabne City. The table does not represent all coastal resources at national level nor does it present resources that have economic applications outside of tourism, e.g. heavy sands, hydrocarbons, etc.

xxii UNDP, 2010. *Mozambique: Country Profile of Human Development Statistics, Education*.
<http://hdrstats.undp.org/en/countries/profiles/MOZ.html>

xxiii See, Agencia de Informacao de Mocambique (AIM) on All África.com, 2010.
<http://allafrica.com/stories/201012170662.html> *Teacher Pupil Ratio Will Not Change Much in 2011*.

xxiv World Bank -- Programa Regional Para o Desenvolvimento das Empresas. 2009. *Moçambique: Analise do Clima de Investimentos: Relatório Preliminar: Sumario Executivo*. p. XIII.

xxv SNV, Sharma, B. with Suurna, K. 2010 *The Programmatic Approach in Tourism – Inhambane Peninsula --The Land of the Good People, Part 2*. p. 3

xxvi Unless otherwise specified the statistics presented below come from the following website:
www.ine.gov.mz click on *Quadro Resumo*, Instituto Nacional de Estatistica., 2010.

xxvii Direccao Provincial de Turismo Inhambane (DPTI), Conselho Municipal da Cidade de Inhambane (CMCI), ACUDES, SNV, 2007. *Baseline Study: Tourism and Sócio – Economic Development in Inhambane, The Status on The Development of Linkages Between the Local Economy and the Tourism Sector*. p. 37.

xxviii Fundação de Desenvolvimento Comunitario (FDC), 2007. *Mozambican Civil Society Within: Evaluation, Challenges, Opportunities and Action*.

xxix FDC, 2007. *IBID.*, p.102.

xxx FDC, 2007. *IBID.*, p.105.

xxxi This assertion is based on the author's experience with running a small hotel on Tofo Beach, Inhambane for two years.

xxxii Author's Experience. A concrete example of this is an SNV/Provincial Tourism Directorate sponsored programme to support local community members in the initiation and development of small scale, entrepreneurial tourism related businesses, required a full week, eight hours a day of training for prospective beneficiaries. While the principle of ensuring that beneficiaries receive basic business training prior to benefiting from support is sound, at least one eligible/approved project could not take advantage of

this support as the organizing members had employment or other income-generating obligations to fulfill during the working week.

xxxiii For a summary of some of the reasons behind this see DPTI, CMCI, ACUDES & SNV, 2007.p. 34 *Issues and Challenges*.

xxxiv World Travel and Tourism Council (WTTC), 2010., *Travel and Tourism Economic Impact: Mozambique 2010* http://www.wttc.org/bin/pdf/original_pdf_file/mozambique.pdf.

xxxv DPTI, CMCI, ACUDES & SNV, 2007.p.32.

xxxvi Aside from the information presented here on linkages relevant to Inhambane, additional work is being done to identify linkages in the Maputo area through the United Nations International Trade Centre (ITC) whose work is focused specifically on the production of fresh produce for the internal tourism market around Maputo and eventually for export. Personal Communication with ITC representative Ema Batey.

xxxvii G:Enesis. King, J. 2010. *A Tourism Levy in Inhambane Mozambique: Investigating the Potential Revenue that Could be Raised From a Levy on Tourism in Inhambane*.

xxxviii See G:Enesis, King, J. Chapter 6: What could the funds be used for? pp. 15-18.

xxxix See G:Enesis, King, J. Chapter 7: Issues to Consider, pp.18-19.

xl DPTI, CMCI, ACUDES, SNV. 2007. Section 4.3.1 pp. 31-32.

xli DPTI, CMCI, ACUDES, SNV. 2007. Section 5: Conclusions and Recommendations

xlii The case study summary presented here is adapted from Mutimucuo, M. 2009. *Barra Group's Initiative's In Community Development*

xliii Mutimucuo, M. 2009. p.5

xliv ODI, 2009. Briefing Paper N° 49: Value Chain Analysis and Poverty Reduction at Scale: Evidence from Tourism is Shifting Mindsets. p.1.

xlv Discussion of the decentralization process is restricted here due to space considerations. However, the two fundamental pieces of legislation are as follows: Assembleia de República, 2003. Lei No 8/2003 Orgaos Locais de Estado, Republica de Mocambique, 2005. Decreto 11/2005 Aprova o Regulamento dos Orgaos Locais de Estado.

xlvi As cited in ACIS, ASPs and Republic of Mozambique, Provincial Directorate of Tourism Sofala., 2008. *Legal Framework For Tourism Licensing in Mozambique*, p.53.

xlvii The framework presented below is by no means to be considered a comprehensive look at the roles and responsibilities of each entity at each level. Rather to provide a broad idea of which institutions operate and which level and their broad responsibilities.

xlviii For an overview of the CDS see www.zonascosteiras.gov.mz

xlix For an excellent overview of fisheries comanagement in Mozambique see, ESA Fish Workshop, 14 to 17 March. 2006. *Fisheries (Co)Management in Mozambique: The Situation, Constraints and Challenges*

l WWF, Hatton, J. Unknown.: Policy Legal and Institutional Framework: Mozambique, Tanzania, Zanzibar and Kenya: Summary, East African Marine Ecosystem Project, p. iv

li Examples of this include the work done since 2006 under the IFC's Anchor Investment Programme for Mozambique see <http://www.tourisminvest.org/mozambique/> for excellent investment oriented documentation and the tourism development plan done in 2009 for the Quirimbas National Park see, Republic of Mozambique, Ministry of Tourism, 2009. *Tourism Development Plan for the Parque Nacional das Quirimbas: A General Overview for Investors*.

lii Republica de Mocambique, Council of Ministers, 2005. Resolucao 10/95: *Aprova A Political Nacional de Terras*, Boletim da Republica, I Serie, Fevereiro 2006. Also see Annex 3 for selected founding principals of the National Land Policy.

liii Norfolk, S. and Liversage, H. 2002(?) *Land Reform and Poverty Alleviation In Mozambique: A Paper For The Southern African Regional Poverty Network*, Human Sciences Research Council. p. 19. Although written in the first half of this decade this is an excellent discussion of some of the structural and attitudinal blocks to effective poverty alleviation through land rights.

liv See, Republic of Mozambique, 2003. Land Law, Law No 19/97. Chapters V to VII (Art. 22 to Art 29); also important is Republica de Mocambique, Conselho de Ministros, 1998. *Decreto 66/98 Regulamento da Lei da Terras*, Boletim da Republica 3 Suplemento. **** Note: there is an error in the translated copy of this legislation which incorrectly denominates the Land Law as being Number 57/2003. Law 57/2003 is, in fact, the Labour Arbitration Law**

lv The author was unable to acquire any information on this particular initiative in the course of the research.

lvi The Mozambique coastline benefits from an incredibly wide range of marine life including Major attractions for international recreational divers such as the Manta Ray and the Whaleshark. Mozambique is considered one of the few places in the world where these species have been seen simultaneously all year round. **For more info, see www.marinemegafauna.org**

lvii Recreational Diving in Mozambique is managed by no less than four national ministries. These are: Ministry of Transport and Communications (see Recreational Diving Regulations) via the Institute for Maritime Administration due to its marine transport component; be the Ministry of Defence due to security issues and by the Ministry of Tourism as a tourism activity. See Tundo Legal, unofficial translation of *Republic of Mozambique, 2006. Decree N° 44/2006 Regulations on Amateur Diving*

lviii Tibirica, Y., et. al 2009. Diving Tourism in Mozambique – An opportunity at risk? Proceedings of CMT 2009, the 6th international congress on Coastal Marine Tourism. , p.10.

lix International Monetary Fund (IMF), 2007. Reproduction/Translation of Republic of Mozambique: Poverty Reduction Strategy Paper, 2006.

lx World Bank. 2009. *Project Appraisal Document on a Proposed Credit in the amount of SDR 16.8 Million (US\$ 25 Million Equivalent) to the Republic of Mozambique for a Competitiveness and Private Sector Development Project*. Annex 4:Detailed Project Description, p.58

lxi See SNV. 2010. *Our Work in Tourism* for an overview of the programme.

III. Mariculture - Prepared by Dr. Thomas Ashley Shipton,
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1. Introduction

Farming Activity	Culture Species	Culture Technology	Production Scale	Annual Production (2008)	Number of Farms	Market / Price		
						Export	Domestic	Household
Prawns	Penaeus monodon Penaeus indicus	Pond culture	Commercial	1000	5, 2 x major farms	X		
Seaweed	Kappaphykus alvarezii Euchema spinosum Euchema cottonii	Stake / raft culture	Commercial	350 tonnes	Community based	X		
Finfish (Milkfish and mullet)	Chanos chanos Mugil cephalus	Pond culture	Subsistence	1200 kg	2		X	
Finfish (Dusky kob and cobia)	Argyrosomus japonicus Rachycentron canadum	Tank and offshore cages	Experimental	0	1	X		
Mud crab	Scylla serrata	Ranching	Experimental					

2. Biophysical

Farming Activity	Geographical Extent	Environmental Issues
Prawns	Beira, Quelimane, Angoche, Pemba	Mozambique experiences favourable environmental conditions for prawn farming with 2700 km of coastline and a climate that allows for 2-3 production cycles per annum. In the Beira region, some 10,200 ha have been identified as suitable for prawn culture, with an additional 6,100 ha in the Quelimane area, and 2,000 ha in the Pebane and Angoche areas. It is estimated that a further 170,000 ha may be suitable for shrimp farming (Ribeiro & de Sousa 2001, Rafael & Ribeiro 2002). The central – north coast has been identified as the most suitable area for shrimp farming. The exploitation of wild post larvae as seed is restricted to artisanal shrimp farming sector, and the construction of ponds in natural mangrove forests is prohibited. The use of mangrove areas is restricted to access to water (rivers, canals), and the construction of related infrastructures. Commercial farms require facilities for wastewater treatment, and an EIA is a mandatory requirement. An environmental licence is required to operate a facility - renewable every 5 years. The overall potential for prawn culture development is estimated to be in excess of 170 000 ha (Sadek et al. 2002).
Seaweed	Capo Delgado (Pemba to Macomia and some islands in the Quirimba archipelago) and Nampula (between Angoche and Nacala)	Large areas of lagoon are suitable for seaweed culture along the coast of Northern Mozambique. Surveys undertaken in Pemba and Nacala districts of Nampula Province suggest that over 830 ha is suitable for off bottom and shallow water culture with a further 700 ha suitable for deep water raft and line culture. Furthermore, comprehensive surveys of potential areas along the coast of Cabo Delgado Province are likely to reveal significant potential culture areas of up to 1,500ha (Ribero, 2005). Concomitant with other countries in the region there have been reports of die off (ice-ice) and epiphytic filamentous algae impacting production.
Finfish	Nampula Province	Milkfish culture is a developmental option that has

(Milkfish and mullet)		been initiated by small scale farmers in Nampula Province. The technology is based on low density pond culture and the production of natural feeds that is currently being promoted in Tanzania and Kenya. Farms are located on mud flats of low biological diversity, and farming inputs use natural pond productivity and / or some supplemental feeding, thus the impact on the environment (construction / operation) is likely to be limited.
Mud crab	Maputo estuary – southern Mozambique	A 10ha farming enterprise based on brackish water tilapia and mudcrab has been proposed for the Maputo estuary. No further information is currently available.
Finfish (e.g, cobia, grouper, seabreams, dusky kob)	Pemba Bay, Cabo Delgado	Pemba Bay provides an ideal location for large scale cage culture of marine finfish such as red drum (<i>Scianops ocellatus</i>), cobia (<i>Rachycentron canadum</i>), seabream (<i>Rhabdosargus sarba</i>) and dusky kob (<i>Argylosomus japonicus</i>).

3. Human Environment

The FAO (2010) estimated that approximately 1,000 people are employed on commercial prawn farms on a full time basis, with a further 2,000 employed in seaweed farming. In the seaweed sub-sector, approximately 80% of the workers are women. In contrast, on the commercial prawn farms approximately 30% of the employees are women and primarily employed in the processing side of the operations (Aquaculture Department, 2004). The finfish farming sub-sector is very small and while employment numbers have not been collated, it is likely that in comparison with the other sub-sectors, they will be negligible.

Farming Activity	Developmental Paradigm and Livelihood Issues
Prawns	<p>Prawn farming is a relatively new activity in Mozambique with the first industrial farm being established in the mid-1990s. All industrial scale prawn farms (c. 500 – 1,000 ha facilities) are semi-intensive private operations (stocking densities c. 10-15 Post larvae m²) and are at various stages of development and production. In 2007, there were 3 small scale operators (two in Beira and one in Angoche), operating between 4 and 6 ha of ponds using low stocking densities c. 1-5 post larvae m² and extensive farming technology. The high investment costs associated with prawn farming and the relatively complex technology required suggest that the commercial scale operations that are better resourced than their small scale counterparts represent the more successful development model. The small scale developments tend to suffer in terms of resource constraints, poor technology transfer or lack thereof, training and skills development and poor logistics.</p>
Seaweed	<p>In 2007, the sector provided employment opportunities for approximately 2100 farmers in Cabo Delgado and Nampula provinces (Ribero, 2007). Between 70 and 80% of the farmers are women. The sector is being promoted by two NGOs (Aga Khan foundation in Cabo Delgado and Kulima in Nampula) with the NGOs providing both technical and marketing assistance. Production is expected to increase as additional farmers from local communities join the operations. In 2007, farmers were receiving a monthly income of approximately US\$60 (Ribero, 2007). Once increases in production of product have been achieved, it is anticipated that the farmers will be organised into an association of producers and local buyers, and that a local non-profit company will take over market and export operations.</p>
Finfish (Milkfish and mullet)	<p>In contrast to the development paradigm used in other countries in the region which is primarily based on donor supported programmes to promote community based demonstration farms, the development of the sector in Mozambique is being driven by private sector investors. While private sector developments are unlikely to provide the employment opportunities that group or village based</p>

	<p>activities provide, they are often more sustainable, and have the potential to provide long term employment to small numbers of individuals (e.g. a 1 ha farm typically employs the farmer and one assistant).</p>
<p>Finfish (Dusky Kob, Cobia)</p>	<p>In 2009, a South African Mariculture Company (HIK abalone) initiated a pilot finfish culture operation in Pemba Bay. The company has developed a small land based facility that can be used as a hatchery / larval rearing facility and a pilot tank culture facility. To date the facilities have successfully grown out dusky kob at the shore based facility, and are now experimenting with Cobia. It is anticipated that the farm will ultimately develop a cage culture facility in the bay to produce in the region of 2,000 tons of Cobia per annum.</p>

4. Policy and Governance

4.1 Policy

Legislation	Present	Comment
Fisheries Act	Yes	Fisheries Law (Law 3/90 of 26 September 1990)
Aquaculture Act	Yes	There is no specific Aquaculture Act. However, the Decree 35/2001 of 13th November 2001 provides the general aquaculture regulations that defines the rights and obligations of all stakeholders in the industry. The regulations include bio-physical parameters for farming systems such as stocking densities for the prawn culture sub-sector, and establishes licensing procedures.
Aquaculture Policy	No	-
Sub-sector development plans	No	-
Aquaculture Masterplan	No	-
Aquaculture zoning	Yes	All land belongs to the state as approved in the Land Law of 1997. Government institutions have been instrumental in identifying and zoning 30, 000 ha for shrimp farming. Detailed information on potential areas, physical and chemical quality of soil and water, availability of penaeid species, and existing infrastructure has been gathered in the reports to assist investors in site selection for development of prawn aquaculture operations.
Environmental Management Acts	Yes	Environmental Law (Law 20/1997 of 1st October 1997) establishes the regime for environmental licensing.
EIA Requirements	Yes	Decree no. 45/2004 of 29th December 2004 provides the regulatory and procedural framework for Environmental Impact Assessments. There are legal requirements for environment impact assessments for aquaculture developments larger than 5 ha and with an annual output above 100 tonnes. The Environmental Impact Assessment Regulation (Decree no. 45/2004) includes small-scale aquaculture in a category of activities that due to their minimal impact on the environment, do not require an environmental assessment.

4.2 Governance

The Ministry of Fisheries has the overall responsibility for the aquaculture sector, and has developed environmentally responsible but investor-friendly legislation to assist the development of the sector in Mozambique. The responsible executive departments within the Ministry responsible for governance, administration and regulation are the Department of Aquaculture, and the Fish Inspection Department. In terms of research and technology development, the Aquaculture Division within the Fisheries Research Institute (IIP) is the responsible agent. The Department of Aquaculture has put facilities in place to monitor prawn processing, quality control, and certification. All prawn farms are legally obliged to comply with the monitoring programmes. The Fish Inspection Department and the Department of Aquaculture is responsible for controlling the use of chemicals in the aquaculture sector. In this regard, a national plan for the control of residues of veterinary drugs, heavy metals, pesticides and other environmental contaminants is drawn up and implemented on an annual basis. The Fish Inspection Department is responsible for product quality standards.

5. Planning and Management

With respect to mariculture planning and development, the Department of Aquaculture (Ministry of Fisheries) and the Department of Aquaculture (IIP) works in close collaboration with the National Directorate of Geography and Cartography, the Ministry for the Coordination of Environmental Action, the Directorate for Environmental Impact Assessments, the Centre for Sustainable Development and the Investment Promotion Centre. The Centre for Sustainable Development co-ordinates multi-sectoral planning and the management of the coastal zone, and in this regard, Government institutions have been instrumental in identifying and zoning areas for shrimp farming free from conflicting uses and protected resources, revising the legislation, and developing of a one-stop shop for applications.

Mozambique has put in place an elegant, investor-friendly suite of investment legislation. Several permits are required to develop a mariculture facility, and comprise a land concession permit (Dept. of Agriculture), water use permit (Dept. of Public Works and Housing), EIA approval permit (Dept of Environment), and an aquaculture permit (Department of Aquaculture, Ministry of Fisheries). The Investment Promotion Centre in Maputo acts as a one-stop-shop for investors, and provides facilitation services to streamline applications through the various Ministries and Departments.

6. Development, Trade and Projects

Development project	NGO / Donor / Private Sector / Donor	Project details
Pilot Project for Coastal Shrimp Aquaculture (MOZ/86/033)	UNDP FAO Government of Mozambique	The objectives of the project were to assess the viability of shrimp farming in the country, to identify the most suitable technology, and to train local staff. As a component of the project, an experimental 10 ha farm outside Maputo was developed. In the early 1990s the farm was privatised and continues to operate as a hatchery facility rearing <i>P. indicus</i> (FAO, 2010). The project represented the first attempt at commercial scale shrimp farming in the country and laid the foundation for the expansion of the sector.
Environmental / oceanographic study of Pemba Bay	IIP University of Montpellier IFREMER	An assessment of suitable areas for prawn farming around Pemba and an environmental / oceanographic study of Pemba Bay was undertaken. Aquaculture investment opportunities in Pemba were identified (e.g. fish cage culture in Pemba Bay). The area identified as having potential for coastal mariculture was estimated to be in excess of 33,000 ha. In terms of aquaculture development at Pemba, Indian Ocean Aquaculture Ltd developed a prawn farm in 2005 – 6; this development was unsuccessful and the farm is currently not operational.
Coastal Rural Support Programme-seaweed operation	AGA KHAN Foundation	The project was initially started by GENU, CP – KELKO, a Danish seaweed processor. Production under this company reached 500 tonnes (2003), before dropping to 140 tonnes (2004). The precipitous drop in production was as a combination of poor market prices, poor product quality, and disease. The current intervention by Aga Khan Foundation is designed to revitalise the sector.
Kissimajulo seaweed project	KULIMA (NGO)	This project consists of a pilot project for seaweed production in Kissimajulo, Nacala. 70% of the 100+ farmers are women. The project is funded by three Italian NGOs represented in Mozambique by Kulima. The NGO has agreed to purchase all of the farms potential production, up to 3, 000 tonnes.

7. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Large areas identified as suitable for mariculture development with minimal conflicts with other resource users • Investor friendly regulatory environment • Well organised national departments willing to promote sector development and a one-stop shop for applications / investors • High quality seawater 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of research and development capacity at government and tertiary education establishments • Lack of trained human resources at all levels • Lack of availability of hatchery facilities and seed for small-scale farmers • Lack of aquafeed manufacturing capacity • Lack of training and extension services • Poor marketing experience with regards to aquaculture products • Extension capacity at the Department of Aquaculture (Ministry of Fisheries)
<p>Opportunities</p> <ul style="list-style-type: none"> • Development of an industrialised prawn and marine finfish culture sub-sector • Development of species specific guidelines • Development of demonstration projects and improved extension networks (seaweed, mud crab and milkfish sub-sectors) • Potential diversification into novel species • Providing support to develop a sector development plan 	<p>Threats</p> <ul style="list-style-type: none"> • Corruption at the provincial level • Competition on the international markets for tropical prawns resulting in depressed prices • Theft and vandalism

8. Recommendations to Support Sectoral Development

Mozambique has been successful in developing appropriate instruments to promote large scale industrialised investments in the sector, and demonstrably this has yielded results in terms of the development of the prawn culture industry and more recently, the development of the nascent cage culture industry in Pemba Bay. However, there remain significant constraints to development of medium to small scale farming operations, and to the artisanal sector. Ribero (1997) characterises the major constraints as:

- 1. Training and extension** - a lack of training and extension services at National / Provincial Government levels and NGOs, resulting in inadequate support to farmers and poor levels of technology transfer.
- 2. Hatchery Facilities** - a lack of hatchery facilities resulting in seed supply problems to the nascent industry. Currently, and with the exception of the prawn industry that supplies some seed to small scale producers, there are no hatchery facilities to supply seed stock to farmers.

3. Limited mariculture infrastructure - infrastructure for research, extension and development is virtually non-existent resulting in limited assistance to the farmers in terms of technology development, oversight, and transfer. Governmental resources to the sector are extremely limited, and thus most developmental initiatives are non-governmental in nature.

4. Limited resource information - in terms of resources, there is limited information pertaining to resource availability, development options, and the development potential for the various sub-sectors. In the absence of such information, interventions by NGOs / community developers to introduce mariculture as a livelihood option will remain limited.

5. Markets - market access to these producers is problematic, and with the exception of the seaweed industry that supplies the international markets, product is generally sold into the local markets. Amongst others, product quality, transport costs and availability remain problematic.

6. Poor institutional coordination - in terms of maximising the limited resources that are available for sectoral development, improvement in coordination between government and NGOs is required. Notably, the role of NGOs in developing the sector needs to be promoted.

Currently, the country lacks an overarching strategy to promote the sector, and in this regard, it would be appropriate for the Department of Aquaculture to develop a Mariculture Sector Development Plan. The plan should focus on outlining strategies to overcome constraints, and outline a developmental pathway that can be used by all stakeholders to develop and promote the sector. To be successful, the plan must be based on a realistic assessment of opportunities for mariculture and the resources available for its development, and should include a specific, realistic and achievable set of outcomes.

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IV. Agriculture and Forestry - Prepared by Dr. Elizabeth Ann Daley, E-mail: lizdaley@mafinga.demon.co.uk

1. Introduction

The population in Mozambique now exceeds 19.4 million people, of which 32 percent live in coastal districts. This is the highest percentage of any country's population living in the coastal zone among all mainland African nations adjoining the West Indian Ocean. Mozambique's coast features many excellent natural and cultural resources, giving it the potential to serve as a world class tourist attraction, characterized by beautiful sandy beaches and extensive coral reefs. The tourist sector is now one of the fastest growing sectors in the country with 550,000 tourists visiting in 1998, from just 136,000 in 1994 (Wio-Lab 2008).

Agriculture contributed 26.1 percent and 22.3 percent of Mozambique's GDP in 2000 and 2005, respectively, if forestry and fisheries are included alongside crops and livestock, and this is the lowest sector share of GDP according to the Institute of Agricultural Research of Mozambique (2006); they note that this is unusual for a low-income country and that the fisheries sector, though important in terms of exports and national diet, contributes only 2 to 3 percent of GDP. Moreover, agriculture and fisheries have lost their once dominant position in exports due to the emergence of aluminium and other mega-project exports since 2000, with the latter now accounting for some 60 per cent of total exports. Fisheries exports (and prawns in particular) used to account for 25 to 30 per cent of exports but the current level of 2 to 3 percent corresponds to the contribution of sugar exports. Agricultural commodities only contribute 10 to 15 per cent of exports in total. Tobacco and sugar have emerged as the most important agricultural export commodities together with cotton, while the once important export of cashew nuts is recovering from a major decline. With regard to forestry, timber exports are increasing. There are probably also considerable unrecorded exports and a significant informal cross-border trade in basic food crops (IFAD 2010b).

Cassava and maize are the two staple food crops in Mozambique, representing about 50 percent of the value of production and 55 percent of the potential to alleviate income poverty in the smallholder sector. The Institute of Agricultural Research of Mozambique (2006) calculates that a 20 percent increase in productivity of either maize or cassava translates into a reduction in the severity of income poverty by as much as 19 percent, and leads to a poverty reduction that exceeds 5 percent in 34 of its 80 survey districts. The mean national reduction in poverty is 6 to 7 percent for a 20 percent increase in each of these two staples. The estimated scale of poverty reduction for maize and cassava is four to five times greater than that for groundnuts, the third most important commodity in terms of poverty reduction (Ibid). See Annex 1 for the Institute's table showing the values of a whole range of agricultural commodities.

While cash crops and market participation are important determinants of household income, it appears that wage income and income from non-farm enterprises are becoming important factors in determining rural household income in Mozambique. The non-poor and better off households attribute a major part of the changes in their income to these two factors. According to data from a Rural Household Income Survey (TIA), in 2002 some 42 percent of all households had some income from a non-farm enterprise. Furthermore, livestock has become an important source of income; only 14 percent of all households obtained income from livestock in 1996, but some 31 percent did so in 2002.

Concerning forestry, all Mozambican coastal forests have globally unique biodiversity values that are gaining increasing recognition. Shifting cultivation for cropping, firewood and charcoal production to supply urban centres and big cities within the coastal region, along with hunting for trade and subsistence, have been flagged as the main problems for the conservation of these sensitive forests. Currently, excessive dependence on wood fuels as a source of domestic energy, coupled with the increasing scarcity of natural resources in rural areas, is causing numerous problems for the sustainability of the coastal zones (WWF EARPO 2007).

2. Biophysical

Mozambique has the third longest maritime coast on the African continent extending for about 2,700 square kilometres in a straight line, characterized by a vast variety of eco-systems such as estuaries, dunes, mangrove forests, coastal lakes, banks and coral reefs, marine weed and swamps (NAPA no date). The total area of coastal forests in Mozambique is estimated to be 4,778km², with 55 forests blocks containing vegetation that is a mixture of several floristic elements and communities, including tropical (particularly in the north and along the coast) and afro-montana (at relatively low altitude owing to the compensating effect of increasing latitude on temperatures). The vegetation cover including forests classified as high forest, low forest, thicket, wooded grassland and mangroves extends over a much larger area of 618,274km², or 78 percent of the national land territory including inland waters. Of this, the mangrove forests in Mozambique are estimated to cover 396,080ha, while the total area of potential timber productive forests for the whole country is estimated at 197,354 km², or 24.83 percent of the total Mozambican land. In terms of production, the timber productive forest types have the capacity of yielding 8,828M.c.m of timber per year, of which about 1,195M.c.m. has commercial value. Without even considering wildlife, Mozambique's forestry resources have the potential to continue providing the local population and national economy with most of their forest product needs, provided that these resources are put under proper management and forestry legislation is reinforced and respected (WWF EARPO 2007).

As a consequence of increasing population pressure and economic development in the coastal zone, there has been a tendency to over-exploit mangroves and to convert original mangroves into other land uses to generate higher monetary profits (e.g. salt pans, fish ponds, garbage dumps, and luxury real estate). Table 1 below shows the provinces which have suffered from the degradation of mangrove areas, impairing their environmental and protective functions with adverse social, economic and environmental impacts on the local farmers, fishermen and oyster collectors (WWF EARPO 2007).

Table 1: Mangrove Coverage in 1992 and 2000 and the Scale of Deforestation in Mozambique

Provinces	Mangrove area 1992 (HA)	Mangrove area 2000 (HA)	Degraded area (HA)	New Mangrove area (HA)	Change (%)
Maputo	14,605	12,599	2,217	211	15.2
Gaza	387	387	0	0	0
Inhambane	20,094	19,848	246	0	1.2
Sofala	129,997	125,317	6,334	1,654	4.9

Zambezia	159,417	155,757	3,766	106	2.4
Nampula	55,849	54,336	2,006	493	3.6
Cabo Delgado	27,739	27,836	0	106	0
Total	408,079	396,080	14,569	2,570	3.9

Source: WWF EARPO 2007

Table 2 (overleaf) shows the relative areas and valuations of various natural resources on the Mozambican coast. Following in importance to mangroves and coastal forests, sea grass beds are estimated to cover a total surface area of 439km². The largest sea grass beds occur at Fernão Veloso, Quirimbas and Inhaca-Ponta do Ouro. Pioneer species observed in Mozambique include *Halophila wrightii*, *H. ovalis* and *Cymodocea serrulata*. Sea grasses abound in the sandy and limestone areas of Mozambique with the three dominant mixed-sea grass communities on the sandy substrates of southern Mozambique comprised of *Thalassia hemprichii*, *Halodule wrightii*, *Zostera capensis*, *Thalassodendron ciliatum* and *C. serrulata* (Wio-Lab 2008).

Table 2: Valuation of Ecosystem Goods and Services in Mozambique

Coral Reefs		Mangroves		Coastal Forests		Sea Grass Beds		Total
Area (km2)	Value (Million US\$)	Area (km2)	Value (Million US\$)	Area (km2)	Value (Million US\$)	Area (km2)	Value (Million US\$)	Value (Million US\$)
1,860	1,130	3,902	3,898	1,790	359	439	834	6,222

Source: Wio-Lab 2008

3. Human Environment

UNEP (2009) has made a concerted effort to demonstrate that it is possible to reverse degradation of the coastal and marine environment by initiating demonstration projects within Mozambique, focusing on the demonstration of community-based approaches for mangrove reforestation and the development of alternative livelihoods in order to ease pressure on the exploitation of coastal natural resources. As a result of the awareness raised on the dangers of degrading or polluting activities based on land, UNEP claims success in that governments in the Western Indian Ocean are increasingly integrating coastal and marine issues into their planning and national development processes (Ibid).

Rural households in Mozambique are very poor and their livelihoods are very vulnerable to shocks. Natural disasters including extreme droughts and severe floods constitute a major and widespread factor in vulnerability, particularly in the southern and central areas. In 2002, 66 percent of rural households reported that they had lost their crops to natural calamities. High vulnerability to such shocks also stems from a lack of income-generating activities to

complement agriculture and assets. With high dependency ratios and low agricultural productivity, the most vulnerable need off-farm income opportunities, but there are not many options for this in rural Mozambique. Poor households have few assets to sell and their consumption is already low, so in times of scarcity they do not have much of a buffer against food insecurity (IFAD 2004).

In three study communities within the coastal zone of Mozambique (as reported in IFAD 2004) it was found that the majority of households in all three communities engage in some exploitation of the accessible intertidal resources, ranging from 95 percent of households in Maueia and Darumba to 70 percent of households in Messano. For a small number of households (2 percent) in Darumba, shell collection was identified as the primary activity. Involvement in fishing is more varied, with 59 percent, 47 percent and 9 percent of households engaged in fishing as their primary occupation in Darumba, Messano and Maueia, respectively, with additional households also involved in fishing as a secondary activity (18 percent, 11 percent and 10 percent in Darumba, Messano and Maueia, respectively). The perceived contribution of fisheries resources to overall household benefit varied from 58 percent in Messano and 57 percent in Darumba to 25 percent in Maueia. Table 3 (overleaf) shows the natural resource access and livelihood opportunities of households in these three study villages, with forestry activities noticeably negligible (apart from charcoal production in Maueia) while Table 4 (also overleaf) shows the perceived contribution to overall household well-being from the different livelihood activities.

Table 4 notably shows that at Messano seaweed cultivation has begun; this is due to the shallow sand flats adjacent to the village as a result of reef protection. This started in 1999 and has currently produced 78 tons of dry seaweed for export and thus offers an important livelihood opportunity for the people in Messano, where 68 percent of all households are engaged in seaweed cultivation and 17 percent of households consider it their primary or secondary activity. The role of seaweed cultivation on cash earnings is becoming progressively more important, offering an apparently secure and constant source of income; notably the cash earned from this activity is also partially controlled by women (Whittingham et al 2003).

Table 3: Study Village Comparison Table

	Mauela	Darumba	Messano
Natural Resource Access	<p><i>Aquatic Resources:</i> Exposed rock/coralline based resources, intertidal molluscs</p> <p><i>Land:</i> Reasonable accessible land for cultivation</p>	<p><i>Aquatic Resources:</i> Sheltered sand coralline banks, intertidal resources, river</p> <p><i>Land:</i> Poor local land</p>	<p><i>Aquatic resources:</i> sheltered sand coralline banks, intertidal resources, zone suitable for seaweed culture</p> <p><i>Land:</i> Poor local land</p>
Livelihood Opportunities	<p>Agriculture 65%</p> <p>Charcoal 14%</p> <p>Fish 9%</p> <p>Employment (External) 5%</p> <p>None (dependent) 3%</p> <p>Artisan 3%</p> <p>Trader 1%</p>	<p>Fishing 59%</p> <p>Agriculture 24%</p> <p>Trading 10%</p> <p>Transport 10%</p> <p>Employee (in village) 2%</p> <p>Shell collector 2%</p> <p>None (dependent) 2%</p>	<p>Fishing 47%</p> <p>Agriculture 28%</p> <p>Trader 17%</p> <p>Artisan 4%</p> <p>None (dependent) 2%</p> <p>Seaweed culture 2%</p>

Source: IFAD 2004

Table 4: Perceived Contribution of Different Livelihood Activities to Overall Household Well-Being

Contribution to overall household well-being and income (%)	Maueia		Darumba		Messano	
	Well being contribution (%)	Income contribution (%)	Well being contribution (%)	Income contribution (%)	Well being contribution (%)	Income contribution (%)
Fish	15	10	30/38	38	30	34
Shells and octopus	10	6	14/7	7	9	6
Sea cucumber and deep water shells	0	0	3	6	3	4
Seaweed	0	0	0	0	16	25

Shrimp	0	0	10	18	0	0
Agriculture	39	18	26	0	26	0
Charcoal	13	29	0	0	0	0
Trading	2	5	0	0	8	12
Extended family	13	14	10	15	1	1
Artisan	8	19	0	0	6	9
Thatch cutting	0	0	8	16	4	6
Livestock	0	0	0	0	3	4

Source: Whittingham et al 2003

Annex 2 gives a more detailed analysis of livelihoods in these three study communities in Mozambique.

4. Policy and Governance

There is significant activity in Mozambique towards ensuring the sustainable use and management of marine and coastal resources. The government is leading reform process which acknowledges the importance of the environment and the coast for sustainable development and poverty reduction. Community development planning is now seen as a major new tool by government to ensure its policies are effectively implemented on the ground, there is a move towards greater harmonisation and reduction of transaction costs in government processes through inter-ministerial committees, and a decentralisation policy aims to ensure resources are delivered to the districts (Ireland 2004).

The principle legislation controlling the forest sector in Mozambique is the Forest Regulation of 1965 (WWF EARPO 2007). This defines three main functional land use categories for the conservation and utilization of the country's forest resources:

- Conservation Areas (group I): parks and reserves in which harvesting is not permitted;
- Production Forest Areas (group II): set aside exclusively for management on a sustained basis; and
- Alienated Forest Areas (group III): forest may be removed from these areas after authorization.

The current forest policy is integrated into the priorities for the agricultural sector and rural development, which promotes rational and sustainable utilization of the resources in order to contribute to the economy and to the rural communities in particular. The main issues in Mozambican forest policy are to:

- Encourage participation of communities and the private sector in reforestation programs;
- Promote the processing of wood products;
- Reduce the exportation of logs, and ensure value added from the wood products;
- Incentivise the use of secondary species aiming to reduce the current pressure on only a few primary species;
- Promote the rehabilitation and effective occupation of conservation and protected areas;
- Educate the population about the importance of wildlife and reduce poaching; and
- Implement measures for protection of endangered species.

The policy defines four main objectives which are economic, social, ecological and institutional, as described in Table 5 below. However, the sustainability of the forestry and wildlife policy will depend on its implementation (WWF EARPO 2007).

Table 5: Objectives of the Forestry Policy

Economic	Encourages sustainable management and contribution to the GDP by the private sector
Social	Participation of the community in integrated management of natural resources and fire which represents a paradigm shift from the emphasis on participatory reforestation to the participatory management of the natural resources
Ecological	To protect, manage and use areas of conservation in order to achieve the sustainability of land use and maintain the biodiversity
Institutional	Improve the organization of the sector as a whole, training of personnel, and reinforce the technical and administrative capacity at provincial, district and local levels.

Source: WWF EARPO 2007

Reforestation was once a government policy to support the supply of wood products to the major cities. But with the current policy for forestry development, a new approach has been adopted which consists of participatory reforestation, involving resource users and communities in the replacement of the resources. Community forestry, social forestry and agro-forestry systems have been introduced but in many cases have not brought about the expected outcomes, requiring further analysis of the technical and market issues as well as the implementation planning (WWF EARPO 2007).

5. Planning and Management

Within Mozambique, a number of NGOs are actively engaged in supporting the development of coastal management plans and alternative livelihoods for coastal communities; there is also a revival of investment by the private sector along the coast which is creating new employment opportunities for the coastal poor. However, the vision of sustainable use and management of coastal resources has not yet been achieved. Many lessons from experience are currently not being learnt and shared (as evidenced by the fact that all the projects highlighted in Ireland (2004) involved stakeholder consultations which could not be shared in hard format i.e. reports). The failure of some policies and processes to deliver the objectives intended, along with government institutions such as the Council for Sustainable Development (CONDES) not having sufficient powers and a lack of clear direction from many of NGOs working in the coastal resource management sector, also serve to reduce the achievements to date.

In Ireland's study (2004), stakeholder discussions focused around the need to ensure the sustainable use and management of the marine and coastal environment and around the implementation of alternative livelihood projects. However only seven projects were identified in total and while stakeholders had clear views on why alternatives were working (or not), there were very few examples to draw from to validate these perceptions. Out of the seven projects discussed all but one were agricultural based, thus showing a common perception in Mozambique that to alleviate pressure on coastal resources one has to remove people from the use of coastal resources. The seven examples of alternative income-generating activities taken forward in Mozambique include:

- Development of coastal agriculture
- Horticulture production along the coast
- Pottery
- Private sector development of cashew nut processing in factories
- Coconut collection and selling
- Growing and selling cassava
- Small scale cashew nut collection

Ireland (2004) also reports that factors that had led to perceived successful alternative livelihood projects being implemented in Mozambique were the following:

- Participation of all stakeholders in the identification and design of the intervention
- Taking account of the bigger picture. For example access to assets by the stakeholders, markets (both access and demand) being in place to sell the product
- Having a clear vision of what the intervention was aiming to deliver
- Recognising that more than one intervention may be necessary to achieve your goal
- Recognising and addressing the fact that change may be needed at many different levels. For example it was noted that there may need to be a change in policy (at the macro level) whilst building skills of the community (at the microlevel)
- Taking an integrated approach
- Using business models and approaches to plan and take forward the alternative livelihood activity

6. Development, Trade and Projects

This section highlights two relevant historical projects (both in WWF EARPO 2007) and then reviews IFAD's work of relevance to coastal agriculture-based livelihoods in Table 6 (overleaf).

Mecufi Coastal Zone Management – December 1992 to September 1996

This project was conceived as a 'support project' for the government and active NGOs, with the executing agency of this project being the Ministry for the Coordination of Environmental Affairs (MICOA). The objectives were to reduce pressure on the natural resources base of the coastal zone, by encouraging improved management and conservation practices. The project aimed to contribute to the conservation of the natural resources in the overall district and general improvement of the living conditions of the rural population. This goal was expected to be achieved through environmental education, direct community participation and inter-sectoral coordination. The expected results were:

- Secured coordination among the institutions and organisations working in the field of resource conservation in the Mecufi district
- Strengthened ability of the rural population to practice self-help in connection with measures to conserve natural resources
- Improvement of the socio-economic situation for women
- Introduction or establishment of village management nuclei
- Establishing a training mechanism to raise awareness among the villagers, schoolteachers, official administration and extension workers
- Establishing a strategy for coastal zone management in Cabo Delgado

Zambezi basin wetlands conservation and resource utilization project (Mozambique, Namibia, Malawi, Zambia and Botswana)

- Budget (first year) \$1,456,300 – Mozambique \$352,100
- Donor Agency: CIDA
- Implementing Agency: IUCN country offices
- Duration: 5 years beginning 1996

The major activities identified were awareness raising, information and communication, community well-being, inventory, monitoring and evaluation and management of wetland resources. The critical assumption identified for the success of this programme was the concept of the ecosystem approach which includes not only cooperation and coordination between nations, but also at numerous lower levels such as between water or agriculture departments.

Table 6: IFAD's Ongoing Operations in Mozambique

Project	Description	Aims	Budget	Beneficiaries
Rural Markets Promotion programme 2009-2016	Helping small scale farmers by improving terms of trade and helps them make the transition from subsistence to market-oriented agriculture achieving higher productivity and better market integration	Enable small scale farmers to increase income. Specific aims are to: <ul style="list-style-type: none"> • Improve access to and participation in agricultural markets and value chains • Develop more efficient market intermediaries and more effective partnerships to stimulate increased agricultural production and added value • Favour a more conducive environment for agricultural market operations 	Total Cost: US\$ 40.6 million IFAD Loan: US\$31.1 million Cofinancing: Alliance for a Green Revolution in Africa (US\$ 3.5 million)	Directly benefiting 20,000 households
Agriculture Support Programme 2007-2015	Under the overall framework of the government's National Programme for Agriculture Development (PROAGRI), the programme has the objective of helping to reduce severe poverty and improving the quality of poor rural people's lives	Aims to boost incomes and improve household security for subsistence farmers, particularly households headed by women. Programme activities include: <ul style="list-style-type: none"> • Introducing low-cost techniques that will help raise productivity for crop and livestock farmers • Broadening access to technical support services • Helping establish farmers' organizations • Building capacity within the agricultural sector 	Total Cost: US\$ 50.8 million IFAD Loan: US\$20 million Cofinancing: several partners under the government Pro Agri framework	Directly benefiting 140,000 households
Rural Finance Support Programme 2005-2013	To stimulate economic growth and contribute to poverty reduction by improving the livelihoods of rural households and boosting the viability of enterprises in rural areas. Organises smallholders,	The programme aims to improve sustainable access to appropriate financial services for individuals, groups and enterprises while funds and technical assistance are made available to help financial institutions penetrate rural	Total Cost: US\$ 34.3 million IFAD Loan: US\$9.5 million Cofinancing:	Directly benefiting 124,000 households nationwide

	artisanal fishers and other poor people in remote rural communities into self-managed financial associations to facilitate improved management of their own economic resources	areas and extend financial services to these remote parts.	African development bank (US\$ 16.4 million) and African Development Fund (US\$5.4 million)	
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Source: IFAD 2010a

7. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Agriculture important for subsistence and export (especially crop production), and coastal forests and mangroves also extensive and relevant to local livelihoods, seemingly more so than fisheries • Solid acknowledgement in the literature of importance of agriculture and forestry to coastal livelihoods 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Highest percentage of any country's population living in the coastal zone among all mainland African nations adjoining the West Indian Ocean, over 6 million people, puts relatively high levels of pressure on coastal resources • Lack of information on local community resource management structures and strength of local communities to sustainably manage their own resources when projects (including those of NGOs) pull out
<p>Opportunities</p> <ul style="list-style-type: none"> • Government policy supported by NGOs in an active civil society has potential to work together to achieve sustainable coastal resource management and poverty reduction • Policy on participatory afforestation promises potential for community involvement in conservation, leading to better understanding of the importance of protecting the forests at the same time as creating livelihood opportunities in such projects 	<p>Threats</p> <ul style="list-style-type: none"> • Tourism development potential could leave livelihoods overly-dependent on tourism at expense of other activities, and thus create new vulnerabilities should international political-economic situation reduce tourism (from terrorism or natural disaster shocks, including disruption to foreign travel as a result of volcanic ash from Iceland in the coming years) • Strong South African economy and investment moves into Mozambique could potentially limit scope for indigenous Mozambican-led economic development, while large-scale investments e.g. in tourism, commercial agriculture or real estate, could threaten resource access for the rural poor if not well managed

8. Bibliography

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List of Datasets

None found.

List of Sector-Related Projects

Millenium Challenge Corporation, Farmer Income Support Project

This project involves the managed removal of diseased trees in areas affected by Coconut Lethal Yellowing Disease, planting disease tolerant seedlings and providing technical support to farmers in crop diversification.

<http://www.mcc.gov/mcc/bm.doc/qsr-imp-mozambique.pdf>

NAPA Project

This Mozambican project involving lots of different governmental implementing partners includes a component for strengthening the capacities of agricultural producers to deal with the impacts of climate change.

http://unfccc.int/files/adaptation/napas/application/pdf/26_moz_pp.pdf

Annex 1: Commodities with Value of Production Greater than \$0.5 million in 2002 and 2003

Table 1. Commodities with Value of Production Greater than \$ 0.5 Million in 2002 and 2003

RANK	Crop	Crop Value (million \$)		Percent Crop Value		Production ('1000 tons/ '1000 heads)		Mean Price (\$/kg or unit)	
		TIA 2002	TIA 2003	TIA 2002	TIA 2003	TIA 2002	TIA 2003	TIA 2002	TIA 2003
1	Cassava ¹	128.00	244.00	26.44	40.99	3,450.00	4,180.00	0.04	0.06
2	Maize	113.00	101.40	23.41	17.03	1,110.00	1,180.00	0.10	0.09
3	Sweetpotato ¹	30.80	38.10	6.38	6.40	456.00	561.00	0.07	0.07
4	Groundnut	26.59	21.30	5.52	3.58	102.10	87.40	0.26	0.24
5	Chicken ²	18.80	14.72	3.89	2.47	8,165.74	7,320.17	0.93	1.07
6	Rice	18.30	20.80	3.80	3.49	93.40	117.00	0.20	0.18
7	Tobacco	16.90	22.30	3.49	3.75	42.60	51.10	0.39	0.44
8	Sorghum	15.20	17.80	3.14	2.99	138.00	191.00	0.11	0.09
9	Cashew ³	13.20	9.51	2.74	1.60	61.00	20.60	0.22	0.46
10	Cotton	12.70	11.50	2.57	1.93	102.00	75.10	0.13	0.15
11	Goats ²	12.30	9.55	2.54	1.60	1,305.40	1100.06	6.37	9.63
12	Cattle ²	9.80	15.36	2.03	2.58	60.78	88.85	161.24	161.38
13	Coconut ³	8.60	4.95	1.78	0.83	271.00	13.40	0.03	0.37
14	Cowpea	8.18	8.20	1.69	1.38	53.70	63.20	0.15	0.13
15	Butter beans	8.15	15.10	1.69	2.54	35.70	38.90	0.23	0.39
16	Tomato ⁴	5.20	5.20	1.08	0.87	N/A	N/A	N/A	N/A
17	Sugar cane ⁴	5.20	5.20	1.08	0.87	N/A	N/A	N/A	N/A
18	Pigs ²	4.50	3.83	0.93	0.64	586.04	398.35	7.68	9.61
19	Bananas ⁴	4.48	4.48	0.93	0.75	N/A	N/A	N/A	N/A
20	Bambaranut	3.70	2.00	0.77	0.34	22.50	18.20	0.16	0.11
21	Pigeonpea	3.16	2.80	0.70	0.47	31.80	48.50	0.11	0.06
22	Sesame	3.00	3.00	0.62	0.50	13.90	13.60	0.22	0.22
23	Potato	2.75	2.75	0.57	0.46	15.20	N/A	0.17	N/A
24	Cabbage ⁴	1.30	1.30	0.27	0.22	-	-	-	-
25	Onion ⁴	0.90	0.90	0.18	0.15	N/A	N/A	N/A	N/A
26	Lettuce ⁴	0.87	0.87	0.17	0.15	N/A	N/A	N/A	N/A
27	Mango ⁴	0.81	0.81	0.17	0.14	N/A	N/A	N/A	N/A
28	Tangerine ⁴	0.79	0.79	0.16	0.13	N/A	N/A	N/A	N/A
29	Millet	0.78	1.60	0.16	0.27	12.20	21.60	0.07	0.07
30	Sheep ²	0.67	0.67	0.14	0.11	45.07	-	14.87	-
31	Orange ⁴	0.63	0.63	0.13	0.11	N/A	N/A	N/A	N/A
32	Others ⁵	5.40	3.90	0.81	0.66	-	-	-	-
Total		484.66	595.32	100	100				

Source: Computed from the TIA 2002 and 2003

¹ For cassava and sweetpotato production, we capped the yield data at 20 t/ha and consumption at 2 kg/person/day for cassava and 1 kg/person/day for sweetpotato to compensate for data problems caused by multiple harvests.

² For livestock, we refer to total number of animals sold.

³ For cashew and coconut, the value in 2003 was imputed from the unit value in 2002 and the number of trees in 2003.

⁴ In 2002, only information on sales was available for fruits and vegetables. For these cases, the value of production is the same as sales value. We use the same values in 2002 as in 2003 to calculate percent crop value for 2003.

⁵ Total for all crops and livestock species below \$0.5 million.

Source: (Institute of Agricultural Research of Mozambique 2006)

Annex 2: Detailed Comparison and Characterization of Study Village Livelihoods

	<i>Maueia</i>		<i>Darumba</i>		<i>Messano</i>				
Livelihood strategies (% figures show households with these primary and secondary activities)	Agriculture		Fishing		Fishing				
	+Charcoal	13%	+Agriculture	20%	+Agriculture	40%			
	+Employment (external)	8%	+Shell collection	14%	+Seaweed culture	4%			
	+Fishing	5%	+Trading	10%	+Trading	2%			
	+Artisan	3%	+No secondary activity	16%	Agriculture				
	+Trading	2%	Agriculture		+Fishing	9%			
	+No secondary activity	33%	+Fishing	14%	+Seaweed culture	9%			
	Charcoal		+Trading	4%	+No secondary activity	6%			
	+Agriculture	8%	+No secondary activity	6%	+Octopus collection	2%			
	+Fishing	6%	Trading		Trading				
	Fish		+Agriculture	2%	+Agriculture	15%			
	+Agriculture	8%	+Fishing	4%	+Fishing	2%			
	+Charcoal	2%	+No secondary activity	4%	Artisan				
	External Employment		Transport		+Agriculture	2%			
	+Agriculture	3%	+Trading	2%	+Seaweed culture	2%			
	+No secondary activity	3%	None	2%	None (dependant)	2%			
	None	3%	Shell collector		Seaweed culture				
	Artisan		+Agriculture	2%	+Agriculture	2%			
	+Agriculture	1%	Employee (in village)						
	+No secondary activity	2%	+No secondary activity	2%					
Trader									
+No secondary activity	1%								
				Note: 68% of households involved with seaweed culture (as primary, secondary or lesser activity)					
Gender roles Key: M/F Male/Female ✓ Common ○ Rare ✗ Never	Principle occupation	M	F	Principle occupation	M	F	Principle occupation	M	F
	Fishing	✓	✗	Fishing	✓	✗	Fishing (vessel)	✓	✗
	Agriculture	○	✓	Agriculture	○	✓	Fishing (dragnet)	○	✓
	Charcoal	✓	✗	Trade	✓	○	Agriculture	○	✓
	Firewood cutting	✓	○	Transport	✓	✗	Trade	✓	○
	External employment	✓	✗	Mollusc collection	○	✓	Artisan	✓	✗
	Artisan	✓	✗	Employee	✓	✗	Mollusc collection	○	✓
	Trade	✓	✗	Thatch cutting	○	✓	Employee	✓	✗
	Mollusc collection	○	✓				Thatch cutting	○	✓
							Seaweed culture	○	✓
	Principle decisions	M	F	Principle decisions	M	F	Principle decisions	M	F
	What to plant	✗	✗	What to plant	✓	○	What to plant	✗	✓
	When to plant ¹	✓	✓	Use of stored product	✓	✗	Selling of agricultural product	✓	✗
	Size of plot	✓	✗	How any cash spent	✓	○	Giving away of stocks (to family)	✓	○
	Other agricultural issues	✗	✓	Other agricultural issues	✓	✓	Children's schooling	✓	✗
	Giving away of stocks (to family)	✓	○	Schooling materials	✓	✓	Schooling materials	✓	✗
	Selling of agricultural produce	✓	✓	Repairs to house	✓	✓	Repairs to house	✓	✓
	Schooling materials	✗	✓	Animal husbandry	✓	✗			
	Repairs to house	✓	✓	Children's schooling	✓	✗			
	Demography ^{2,3}	Population	est. 624 (837)	Population	510 (437)	Population	est. 903 (1154)		
No. households		130 (213)	No. households	186 (126)	No. households	210 (370)			
No. households with fishers		32 (53)	No. part-time fishers	54	No. part-time fishers	n/a			
			No. full-time fishers	124	No. full-time fishers	63			

	<i>Maueia</i>		<i>Darumba</i>		<i>Messano</i>	
Household human assets	Average household	4.8	Average household	4.6	Average household	4.3
	Dependency ratio	2.6	Dependency Ratio	1.9	Dependency Ratio	2.4
	% Houses with no economically active person	2%	% Houses with no economically active person	0%	% Houses with no economically active person	6%
	Female ⁴ (no male)	18%	Female ⁴ (no male)	6%	Female ⁴ (no male)	23%
	Male (no female)	5%	Male (no female)	10%	Male (no female)	11%
Household productive assets	Canoes	9%	Canoes	49%	Canoes	0%
	Sail canoes	1%	Sail canoes	8%	Sail canoes	28%
	Nets	5%	Nets	18%	Large sail boat	13%
	Hooks	3%	Hooks	25%	Nets	30%
	Traps	9%	Spear	4%	Hooks	34%
	Cycle	2%	Traps	10%	Spear	0%
	Agricultural tools ⁵	77%	Mask/fins	18%	Traps	6%
			Cycle	10%	Mask/fins	0%
			Agricultural tools ⁵	49%	Cycle	13%
					Agricultural tools	91%
Vulnerabilities and risks	War		War		Animal incursion in village	
	Drought		Animal incursion in agricultural plots		Health	
	Over-exploitation of intertidal resources		Health		Outsiders	
		Major market is a single fish buyer		Weather		
				Export dependence (seaweed), with single buyer		
				'Lethal yellowing' of coconut plants		
<p>1 Described as 'a community decision'.</p> <p>2 1997 census data in parenthesis, other data are primarily from this study.</p> <p>3 Fisher data from IDPPE survey 9/01 (did not cover Maueia). Maueia data have been estimated by this study.</p> <p>4 Data severely compromised by polygamy. Some households appear female-headed, when they are in reality supported by a man. Others appear to have a male head when the man is in reality split between 2–4 households.</p> <p>5 Considered to be an underestimate. In the absence of latrines it would be very unusual to find a household without a simple agricultural 'enxada' (hand hoe used to bury faeces).</p>						

Source: (Whittingham et al 2003)

Annex 3 – All References and Web-Links Identified and Reviewed in Report Preparation

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1. Introduction

The Republic of Mozambique is located on the east coast of southern Africa, covering an area of 799,380 km². Its coastline is approximately 2,700 km long, containing 42 out of 110 of the country's Districts. The Mozambican population is close to 20 million, nearly a third of which lives in coastal districts.

After almost five centuries as a Portuguese colony, Mozambique gained independence from Portugal on 25th June 1975, when the Marxist Frente de Libertação de Moçambique (Frelimo) took control after a ten year guerrilla war. Civil war with the anti-Communist Resistencia de Moçambique (Renamo) followed almost immediately, concluding only in 1992.

Mozambique is a multilingual country, but Portuguese, inherited from the colonial period, is the official language.

Mozambique is a presidential democracy, whereby, the President is both the Head of State and the Head of Government. The 2004 Mozambican Constitution provides for the separation of the legislative, executive and judicial powers, while the country's legal system is based on the Romano-Germanic tradition of civil law, which is directly inherited from Portugal. At independence, all Portuguese laws consistent with the new constitution were retained and remain in force.

In 1990, Mozambique was the poorest country in the world, however, following the restoration of peace two years later, it has made huge strides. Over the past decade, the economy has grown by an average of 8% annually and significant advances have been made in human and social development. Agriculture and fisheries, once major economic sectors, have lost their export dominance due to the emergence of aluminium and other mega-project exports since 2000, with the latter now accounting for some 60 per cent of total exports. The tourist sector is now one of the fastest growing sectors in the country, with 550,000 tourists visiting in 1998, a substantial increase from just 136,000 in 1994 (Wio-Lab 2008).

1.1 Oil and Gas Sector overview

Oil & Gas sector is a capital-intensive sector usually divided in two sub-sectors:

- Upstream activities with exploration and production. The Prospecting phase, the drilling and operating the well are capital-intensive and specialized activities, executed by specialized corporations. The decision to exploit a field mainly depends on a number of factors, including the calculated exploitation costs, the price of oil, the political stability of the concerned country, and vulnerability to natural hazards. There can be delays between the Exploring and Operating phases, as the owner of the exploitation rights may wait for more favourable conditions.
- Downstream activities include all the steps from refining to distribution and marketing. A refinery, or a processing plant, is also built by specialized corporations, however, it can use labour from the local workforce. In accordance to a country's legislation, distribution is implemented and managed by the State or private firms, but relies more widely on the local workforce.

Exploration activities for oil and gas in Mozambique started around 1900. As a result, gas discoveries were made in Pande, Buzi, Temane, Temane East and Inhassoro in 1961, 1962, 1967 and the latter two in 2003. The first offshore gas discovery was made in 2008.

Between 1972 and 1980, gas and oil exploration activities were suspended due to the liberation war. Following this period, different government structures were put in place and research started again. Since the middle of the 1990's, a number of Production Sharing Agreements (PSA) and Exploration and Production Agreements (EPC) have been signed with international oil companies.

The INP (National Petroleum Institute, an autonomous government body in charge of oil and gas licensing) launched its First Offshore Licensing Round on 31 March 2000. This bidding round offered 14 blocks, mainly concentrated in the Mozambique Basin, which covers the shallow and deep Zambezi delta area. In 2010, a new license round for 7 areas (inland, but 3 of which are located on the southern coast of Mozambique) of about 150,000 square kilometres (within the Mozambique Basin, Zambezi Graben and Maniamba Basin) was launched.

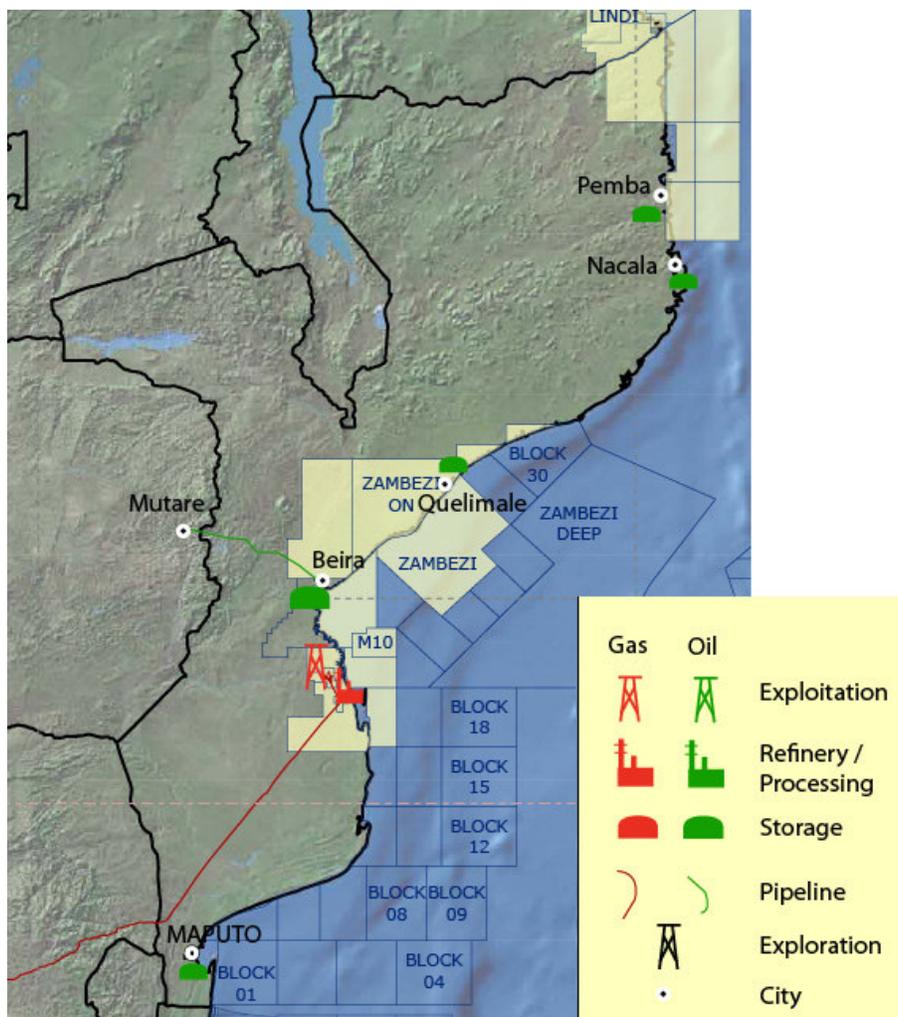


Figure 1: Map of the Oil & Gas activities in Mozambique (*adapted from Deloitte 2009*)

Mozambique's upstream potential appears to lie in natural gas rather than oil. Today's gas potential is estimated at 25 TCF -trillion cubic feet, with proven gas reserves of about 5 TCF. Development of the country's gas exploitation, however, largely depends on the establishment of a south-east African gas-gathering network capable of serving developing markets in the region.

The downstream oil industry relies on imports, mostly through the three ports in Maputo, Beira, and Nacala, all of which offer an economic supply corridor to neighbouring landlocked countries. A 287 km oil pipeline from Beira port to Zimbabwe was built in the 1960's, however, it is presently under utilized due to economic crisis in Zimbabwe. This pipeline could be more widely used in the near future, particularly when considering the improvement in the Zimbabwean economy, as well as the interest of Botswana to extend this pipeline in order to reach that country.

Development of the Pande/Temane gas fields is coordinated through a Petroleum Production Agreement (PPA) signed in 2000 with the consortium Sasol Petroleum Temane (from Sasol, South Africa) and the national oil company ENH. The Natural gas produced in the Pande/Temane area is transported through an 865 km pipeline to the Secunda area in the Gauteng Province in South Africa. Its present capacity is 120 Mill GJ/year (3 billion cu.m/yr).

Five percent of the natural gas produced is paid in kind to the Mozambique Government. A 75 km pipeline brings it from the Mozambique / South Africa pipeline to Matola (industrial zone of Maputo), where it is used mainly by local industries (including the aluminium smelter Mozal).

The “key players” in the Mozambican oil sector (see Annexe 1) are a mix of state owned companies (ENH - Empresa Nacional de Hidrocarbonetos de Mocambique; CPMZ - Companhiado Pipeline Mozambique-Zimbabwe; CFM - Portos e Caminhos de Ferro de Mocambique; Petromoc etc) and foreign private companies (first being the South African company Sasol, with some “major” companies, including BP, Anadarko, Petronas etc) building joint ventures in different sub-sectors (exploration, exploitation, transport etc).

1.2 Biofuels sub sector

Based on its agro-ecological characteristics and relatively low population density, Mozambique is considered to have one of the largest biofuels production potentials in Africa (1). Development of biofuels is also viewed by the government as a major opportunity to decrease the country's energy dependency.

Table 1 Potential availability of land (all areas in 1,000 Ha) From World Bank, 2010, “Rising Global Interest in Farmland : can it be sustainable and provide equitable benefits?”

Total area	Forest area	Cultivated area	Suitable non cropped, non protected			
			Forest	Non-forest with pop. Density of		
			< 25/km ²	< 25/km ²	< 10/km ²	< 5/km ²
78,373	24,447	5,714	8,247	16,256	9,160	4,428

Significant efforts have recently been made to build a consistent national framework for biofuels and attract potential investors. The main results have been a national biofuel strategy approved in 2009, along with an agro-ecological zoning exercise.

Many investors have also been attracted to the potential development of large scale plantations, mainly with sugar cane (for bioethanol) and jatropha (for biodiesel). Recent figures put the land demand for biofuels at more than 2,000,000 Ha (2).

Table 2 : Land demand for biofuel projects

Provinces	Bioethanol		Biodiesel		Feedstock	Investors/Projects
	Number	Area (ha)	Number	Area (ha)		
Maputo	1	29,000	2	21,000	Coconut oil, jatropha, palm oil, sugarcane	JATROPHA, SABIOL-Sabie, Petromoc, Maragra
Gaza	2	634,346			Sugarcane, jatropha, sweet sorghum	ProCana, Agrihold, Grynberg Petroleum
Inhambane			1	11,000	Jatropha, coconut oil	Geralco, SOMOIL, Afreco-Jetro, Agrihold, C3, Deulco
Sofala	1	10,000	1	1,001,000	Jatropha, sugarcane, palm oil	ECOMOZ, MOPAC, Elaion Africa, Petro-Buzi, Principle Energy
Manica	1	18,600	2	112,000	Sugarcane, jatropha	Principle Energy, SUNBIOFUELS, ADAMA, Odeveza
Zambezia	1	160,000	1	160,450	Jatropha, coconut oil, sweet sorghum	Grown Energy Zambezia, MADAL, MOPAC
Tete	1					N'zou Project Ltd
Niassa						
Nampula	1		1	50,000	Soja oil, jatropha, palm oil, sugarcane	Mj3 Lagoas, C.I. Monapo
Cabo Delgado	1	120,000			Sweet sorghum, sugarcane, jatropha	Haha Project, SEKAB or Ecoenergia
Total	9	971,946	8	1,355,450		

Source: data from CEPAGRI, DNTF, Ministry of Energy and CPI., in Nhantumbo I. and Salomão A. (2010)

Serious doubts have, however, been raised concerning the economic interest and social benefits for local populations in such projects (2), (3), (4), (5). Recent studies point out that the competition for arable lands, along with a lack of proper implementation of social commitments, are typical features of large scale agrofuels projects. Generally speaking, private investors seek to acquire lands with good soils, available manpower and proper infrastructure networks, which often does not correspond to the areas identified as being suitable for biofuels development in national planning, including areas with marginal lands and areas with low population density.

1.3 Trends and prospects

Many industrial projects are presently being developed in Mozambique, with strong prospects for oil shipping and processing increases in the coastal zone.

Oil refineries

Two oil refineries are presently planned, following a formal agreement with the Mozambican government:

- One at the port of Nacala (northern Nampula province), with an expected output capacity of 300,000 barrels per day. U.S. firm Ayr Logistics will be developing this \$5 billion

- project under the regime of the Industrial Free Zone. The project is set to create about 450 jobs
- One in southern Maputo province, which will have a capacity of 350,000 barrels of refined fuel per day. The company OILMOZ will be developing the \$8 billion project

Ports development and storage facilities

- A \$550 million port is expected to be developed in partnership with British-based Porto de Dobela (PDD). It will be built in the district of Matutuine, on the coast of the southern province of Maputo. It will be used to distribute fuel from the 350,000 barrels-per-day refinery to be built in the same area. It is expected to harbour vessels with a cargo capacity of up to 300,000 tonnes each, and handle at least 50 million tonnes of heavy cargo per year.
- Fuel storage tanks are being built in the port of Beira by the company PetroBeira. The tanks, with a capacity of 80,000 cubic metres, will store natural gas condensate, as well as products derived from oil or biofuels. The project's cost is estimated at \$45 million.

Pipelines

- A 500 Km oil pipeline from Matola Harbour in Mozambique to Kendal in, South Africa, is in its final stages of appraisal. The 12 inch diameter pipeline will carry 6 MMcm/a of petrol and diesel fuel and is expected to take the same route as the southern portion of Sasol's gas pipelines. This project is developed by Petroline with the participation of Gigajoule
- An agreement for building a 650 kilometre oil pipeline between Matola (Mozambique) and South Africa, for about 803 million US dollars, has been signed between Petromoc, the African Investment Fund (US), and the Romanian state company Transgaz. The same project will also assure the rehabilitation of the Petromoc storage tanks in the ports of Maputo, Beira and Nacala.
- The government of Malawi has begun talks with Mozambique to build an oil pipeline from the port of Beira to Nsanje, in southern Malawi. The planned pipeline would handle 900 million litres of fuel a year.

Biofuels projects

- An agreement was signed in July 2010 to set up 10,000 Ha of Jatropha, with possible extension to 50,000 Ha. in Manica province. The investment for this "Mocamgalp" is of 19 m\$. The shareholders are Galp (50%), Ecomoz (49%), and Petromoc (1%).
- Mozambique approved a \$510 million deal with London-listed Central African Mining & Exploration Company Plc (CAMEC) CFM.L in 2007 to build a plant to produce 120 million litres of ethanol a year. The government has said the raw material for the ethanol will be sugar cane planted over an area of 30,000 hectares in the southern province of Gaza.

2. Biophysical

The long coastline of Mozambique is characterized by a vast variety of ecosystems such as estuaries, dunes, mangrove forests, coastal lakes, banks and coral reefs, marine weed and swamps, all of which are under extensive pressure due to population increases and economic development.

Out of the 10 provinces of Mozambique, only 3 are inland, the other 7 being coastal (Maputo, Gaza, Inhambane, Sofala, Zambezia, Nampula and Cabo Delgado). About one third of the population lives in coastal districts.

Table 3. National data on energy consumption and impacts of climate change

Energy use (kt of oil equivalent)	Combustible renewables and waste (% of total energy)	Fossil fuel energy consumption (% of total)	CO2 emissions (kt)	CO2 emissions (metric tons per capita)
9,150	80.25	7.95	2,037.18	0.09

Source : World Bank, year 2007

Like most African countries, oil and gas are not the main sources of energy for the Mozambican population. Biomass and mainly wood is the most widely used source of fuel. Greenhouse gas emissions are low, especially when considered from a per capita perspective.

Table 4. Environmental and social issues of oil, gas and biofuel activities in the coastal zone

Coastal Oil & Gas Activity	Environmental issues	Social issues
Offshore exploration	<ul style="list-style-type: none"> Oil spills, accidents 	<ul style="list-style-type: none"> Restrictions for fishing zones Opportunities for employment
Oil & Gas transport	<ul style="list-style-type: none"> Oil spills, accidents Water and soil contamination Invasive species in ballast waters 	<ul style="list-style-type: none"> Risks of accidents (fire, collision etc) Improvement of transportation network
Gas station and retail	<ul style="list-style-type: none"> Oil spills, accidents Water and soil contamination 	<ul style="list-style-type: none"> Opportunities for employment Opportunities for new services Fuel availability
Biofuels development	<ul style="list-style-type: none"> Swamp drainage Monoculture and biodiversity loss Pollution 	<ul style="list-style-type: none"> Opportunities for employment Opportunities for new services Competition for arable land

No major oil spills have been recorded in Mozambique in recent years. The most noticeable pollution incident involved 500 tonnes of HFO being spilt from KATINA in Maputo bay in 1992(6).

The huge flow of oil transport along Africa's South East coast (it is estimated that at any given time there are about 9 oil tankers with capacities ranging from 50,000-250,000 tons off Kenya's coast, and probably much more off Mozambique's coast, which is three times longer) does, however, remain a significant threat.

3. Human Environment

The Mozambican population is mostly rural, with very low income levels (close to 75% of the population was living on less than \$ 1.25 a day in 2003).

According to 2007 figures (Instituto Nacional de Estatística Moçambique), 14 cities have more than 100,000 inhabitants, 7 of which are on the coastline (Maputo-Matola - 1,760,000; Beira - 430,000; Nacala - 206,000; Pemba - 138,000; Quelimane - 193,000; Xai-xai - 115,000).

As noted above, upstream activities in the oil and gas sector are highly specialized. Experts and builders are not locally hired, and only few non-specialized jobs are available for the local population.

Downstream activities are more likely to bring job opportunities locally. Refineries, processing plants and transports use skilled and “semi skilled” workers and proper training can be given with more permanent activities. Trading and retail gas stations create opportunities for SMEs but create very few jobs.

Like other big mining or industrial projects, oil and gas activities may generate local immigration flows with negative consequences: spreading of HIV and STDs, inflation from increases in demand and competition with the local population for job opportunities

Revenue leakages are generally very high since local complementary sectors are not developed, and governments are often unable to help the private sector benefit from this demand.

The main threats pertaining to Medium and Large Foreign Direct Investment that can be addressed by the government is the eviction effect and the Dutch disease

No consistent figures on employment and wages in the sector have been found by this study. Nevertheless, the available data does show a rather marginal impact of the sector at the national level. The national company Petromoc has 616 permanent staff, while the major gas infrastructure in the country, including the gas pipeline to South Africa with the processing center in Telemane, employed at most 1,000 Mozambican nationals during its building. Only about 300 permanent jobs remain.

3.1 Socio-economic indicators

Table 5. National economic indicators

GDP (million current US\$)	GDP growth (annual %)	GDP per capita (current US\$)	GDP per capita growth (annual %)	GINI Index (2007)
9,845.62	6.78	439.88	4.34	47.1

Source : World Bank, year 2008, and HDI

Table 6. National social indicators

Population, total (million)	Population growth (annual %)	Poverty headcount ratio at \$1.25 a day (PPP) (% of population)	Human poverty index (HPI-1)	Human development index
22.38	2.32	74.69 (2003)	46.8	0.402

Source : World Bank, year 2008, and HDI, year 2005

Table 7. National gender indicators

Life expectancy at birth, female (years)	Life expectancy at birth, male (years)	Literacy rate, adult female (% of females ages 15 and above)	Literacy rate, adult male (% of males ages 15 and above)	Gender-related development index (GDI)
48.71	47.11	40.1	69.5	0.395

Source : World Bank, year 2008, and HDI, year 2005

3.2 Details of corporate and social responsibility programmes of the oil and gas companies

Coastal Oil & Gas Activity	Corporate and social responsibility (CSR) – or Social benefits
SASOL (exploitation of Pande Temane gas fields)	<ul style="list-style-type: none"> • Building of various community clinics in the Pande Temane region • Educational facilities, such as schools, have been built at SPI's cost, in addition to the SPI funded refurbishing and upgrading of existing educational facilities. • Establishment of water, health and education facilities, as well as farming and small-business projects in rural areas. • As a part of the Mozambique natural gasline project, Sasol invested R22,9 million in community development projects along the Mozambique-to-Secunda pipeline route in 2009. Sponsorships include sports, arts and culture, science and technology, conferences and exhibitions and environmental projects
Petromoc	<ul style="list-style-type: none"> • Awareness campaigns about malaria, HIV and poliomyelitis • Rehabilitation of Bagamoyo Primary school, support to needy pupils • Support to regional strategy for HIV prevention

No commitment to “biodiversity offsetting” has been found in the environmental commitments of private companies in Mozambique.

4. Policy and Governance

The general policy of Mozambique is to promote foreign investment and build public-private partnerships, however, strong concerns surrounding environmental and social impacts also exist. The oil and gas sector is under the responsibility of the Ministry of Mineral Resources, with the National Petroleum Institute (INP) acting as the technical body responsible for licensing. Empresa Nacional de Hidrocarbonetos de Moçambique (ENH) is also directly involved in oil prospection, production and trading with its two daughter companies; Companhia Moçambicana de Hidrocarbonetos and Companhia Moçambicana de Gasoducto.

With regard to rural development, the general policy is to promote the sustainable use of resources to contribute to the economy and rural communities. Sustainable use and management of marine and coastal resources is a specific focus of the government, relying mostly on community development planning.

4.1 Policy and Legislation

Strategies / Regulations	Description – Comments
Agriculture and land planning	<ul style="list-style-type: none"> • The Resolution n.º 10/95 of 17 October related to the “National Land Policy “ • The Resolution n.º 11/95 of 17 October related to the “National Agriculture Policy” • The Law n.º 19/97 of 1 October the related to the “Land Law” • Land act (Article 31) recognises the rights of local communities over land and natural resources, and promotes the involvement of rural communities fully in the management and conservation of natural resources • The Decree n.º 66/98 of 15 July related to the “Land Regulations • The “right to use the land” (DUAT) relies on the approval of provincial authorities for areas of less than 1,000 Ha, the Ministry of Agriculture for areas between 1,000 and 10,000 Ha, and Minister’s council for larger areas.
Oil and Energy	<ul style="list-style-type: none"> • Law nº 3/2001 of February, approving the Oil Act and repealing Law No. 3/81. • Decree nº 24/2004 of 30 June relates to the regulation of oil operations • Decree no. 4/2008 of 9 April relates to the regulation of the Petroleum Production Tax • March 2009 Regulation for licensing of petroleum installations
Environmental regulations	<ul style="list-style-type: none"> • National Environmental Management Programme (NEMP), approved in 1995 • Law no 20/97 of 1 October related to the environmental Law • Decree 76/98 for Environmental Impact Assessment Process • Decree no 32/2003 of 12 August related to the regulation on the process of environmental Audit. • Decree no 18/2004 of 2 June related to the environmental quality and effluent emission norms • Decree no 45/2004 of 29 September, as amended by Decree n.º 42/2008, of 4th November related to the Environmental Impact Evaluation Process regulation • Decree no 11/2006 of 15 June related to the regulation for Environmental Inspection • Decree no 42/2008 which modifies the environmental regulation; • Ministerial Diploma no 129/2006 of 19 July related to the “General Directive for Studies of Environmental Impact” • Ministerial Diploma no 130/2006 of 19 July related to the “General Directive for the Process of Public Participation in the Process of Evaluation of the Environmental Impact” • Ministerial Diploma no 189/2006 of 14 December related to the “Basic Norms for Environment Management”

Mozambique is an Extractive Industries Transparency Initiative (EITI) candidate country and has until 14 May 2011 to complete the validation process. Funds from the African Development Bank (jointly with World Bank and DFID support) have been made available to help the country complete this process.

4.2 Governance

Entity	Responsibility/ Description
Ministry of Mineral Resources	According to the principles, objectives and tasks set by government, the MIREM directs and implements the policies concerning geological research, as well as inventory and exploitation of mineral resources, including coal and hydrocarbons.
National Petroleum Institute (INP)	The National Petroleum Institute (INP) is an autonomous government body set up in 2004 from the National Directorate for coal and hydrocarbon. It manages the upstream petroleum sector in Mozambique, including the licensing and administration of petroleum operations, as well as production. It also performs petroleum resource assessments, takes care of the national petroleum data and provides information on activities of the sector.
Ministry of Coordination of Environmental Affairs (MICOA)	MICOA is responsible for ensuring the preservation and responsible use of natural resources, the coordination of environmental activities and environmental licensing. Provincial Directorates for Coordination of Environmental Action (<i>Direcções Provinciais para Coordenação da Acção Ambiental - DPCA</i>) and, in some cases, District Directorates for Coordination of Environmental Action (<i>Direcções Distritais para Coordenação da Acção Ambiental - DDCA</i>) are the local representatives of MICOA.
Council for Sustainable Development (CONDES)	Conselho Nacional para Desenvolvimento Sustentável created in 2000 (Decree 40/2000). Inter-ministerial structure in charge of the assessment of sector policies related to the environment.
Secretariat for Eastern African Coastal Area Management (SEACAM)	SEACAM was launched in Maputo, Mozambique, to assist countries in the East African Region to coordinate and implement Integrated Coastal Management (ICM) activities. Capacity building and the need for enhanced information sharing were seen as critical issues.
Marine Administration and Safety Authority SAFMAR	Under the authority of the Ministry of Transports and Communications, SAFMAR is the designated national agency charged with responding to oil pollution at sea in the country's 12 nm territorial limits (ITOPF 2006)

5. Planning and Management

The Mozambican government is obviously committed to supporting the rapid growth of the country through foreign investment and the improvement of national planning tools and strategies. This includes:

- The energy strategy (resolution 24/2000)
- The rural development strategy of 2007
- The Action Plan for Poverty Reduction (PARPA II : 2006-2009), along with annual economic and social plans

Policy Planning Initiative	Objective
Poverty Reduction Strategy Paper	<p>The government of Mozambique has a Poverty Reduction Strategy Paper called “Plan of Action for the Reduction of Absolute Poverty (PARPA)”. Its objectives are:</p> <ul style="list-style-type: none"> • Reducing the levels of absolute poverty, which will be pursued through activities in education, health and rural development; • Rapid and sustainable economic growth, focusing on the creation of an economic environment that favours private sector activity; • The economic development of the country, aimed at rural areas with the intent of reducing regional imbalances; • The consolidation of peace, national unity, justice, democracy and national awareness as indispensable conditions for the harmonious development of the country; • The fight against corruption, crime and red tape; and • The strengthening of sovereignty and international cooperation
Investment facilitation	<p>The <i>Investment Promotion Center of Mozambique “Centro de Promoção de Investimentos (CPI)”</i> offers a package of services to assist national and foreign investors access incentives offered by the government to support the establishment of their businesses. It is a one stop centre which acts as a facilitator to attract national and foreign direct investment</p>
Environment Management	<p>EIAs must be undertaken by an environmental specialist licensed by MICOA (Ministry of Coordination of Environmental Affairs). It is to be carried out during the feasibility stage of the</p>

	<p>project The EIA process is meant to generate a project-specific environmental license to carry out a project involving natural resource exploitation. As is generally the case with EIAs, the project proponent first submits to MICOA the so-called terms of reference (“ToRs”) for the EIA.</p> <p>The EIA report must include an environmental management plan. An environmental management plan must be produced, covering a period of at least five years, at the end of which a new plan must be submitted for approval. It should also include a risk and emergency management plan.</p>
<p>Sustainable development strategy (2007)</p>	<p>Relies on an extensive analysis of the different pillars of sustainable development (environmental, economic, and social), with different scenarios of evolution considered.</p> <p>One strong point of existing legislation is the need for big projects to undertake an EIA.</p> <p>MICOA has the formal responsibility of integrating environmental concerns in the individual sectoral policies.</p>
<p>Integrated Coastal zone Management (ICM)</p>	<p>Integrated coastal zone management is being promoted by the Ministry for the Co-ordination of Environmental in Mozambique. Danish International Development Assistance (DANIDA) is providing assistance to MICOA to develop a national coastal policy. At the local level, ICM activities are underway in the Xai-Xai area, where a coastal zone policy called “Xai-Xai ICAM Management strategy” has been produced. A Mecufi Coastal Zone Management Project has also been established.</p>

6. Development, Trade and Projects

Development project	NGO / Donor / Private Sector	Project details
Extractive Industries Transparency Initiative (EITI)	African Development Bank / World Bank / DFID	Transparency Initiative (EITI) aims to strengthen governance by improving transparency and accountability in the extractives sector. Mozambique is a candidate country and the government established an 'ad-hoc' multi-stakeholder group of named representatives from the Government, companies, and civil society to work together to implement the EITI in Mozambique.
Oil for Development (OfD)	NORAD	<ul style="list-style-type: none"> • Upstream petroleum legal and contractual framework • Policy and strategy • Monitoring and control • Promotion of exploration acreage • Negotiations and licensing • Assessment of petroleum resources • Management of petroleum data • Administration, human resources and financing
Biofuels Technical Support to the Ministry of Energy	DFID	Implementation : 10/2008 to 09/2011 £450,000 To Support the Mozambican Government (GoM) in implementing its National Biofuels Strategy
National Decentralized Planning and Finance Program	World Bank	The objective of the Project is to improve the capacity of local governments to manage public financial resources for district development in a participatory and transparent manner.
Spatial Development Planning Technical Assistance Project	World Bank	The objective of the project is to improve national social and economic development planning through the introduction, institutionalization and mainstreaming of multi-sectorial spatial development planning methodologies and practices
Beira Railways Project	World Bank	The project mainly aims to: (a) make cost effective and efficient transport available for the freight and passenger traffic in the Zambezi Valley to accelerate economic growth and reduce poverty in the sub-region; (b) increase international traffic through the Beira Railway system; and (c) ensure the operational, managerial and financial sustainability of the Beira Railway system,
MZ-Southern Africa Regional Gas Project	World Bank	The objective of the Southern Africa Regional Gas Project between Mozambique and South Africa is to initiate the development and export of Mozambique's substantial natural gas resources in an environmentally sustainable manner, thereby contributing to economic growth and poverty reduction.

Western Indian Ocean Marine Highway Development and Coastal and Marine Contamination Prevention Project	GEF	<p>Concerned countries : South Africa, Mozambique, Tanzania, Comoros, Madagascar, Mauritius, Seychelles and the Reunion Island.</p> <p>All countries are required to have a NOSRCP to provide a national framework for responding to oil spills and protecting the coastal resources</p>
Regional Coastal Management (ReCoMap)	European Union	<p>ReCoMap is a regional programme for the sustainable management of the coastal zones of the countries of the Indian Ocean. It is an initiative of the Indian Ocean Commission which is centred on seven countries of the region, including Mauritius, the Seychelles, Madagascar, the Comoros Islands, Kenya, Tanzania and Somalia. The programme started in August 2006 and will end in 2011. The Programme aims to improve the valorisation and sustainable management of coastal resources in the seven countries of the region.</p>
Coastal Rural Support Programme CRSP(M)	Aga Khan Development Network	<p>CRSP(M) tackles rural poverty with a coordinated approach that focuses on economic development (including agriculture), education, health and habitat. It includes key cross-cutting themes such as civil society strengthening, gender, the environment and HIV/AIDS. The programme also actively encourages the participation and leadership of women's organisations.</p>
COFAMOSA Sugar Cane Project (project)	ADB (African Development Bank)	<p>Project under appraisal after pre-feasibility study in 2003 Intends to develop an area of 29,000 ha for irrigated land under sugar cane for sugar and ethanol production. The project area is located in Moamba and Magude Districts of the Province of Maputo Mozambique.</p> <ul style="list-style-type: none"> • establish 580 farmers on 50 ha units; • make use of already existing investment- Corumana Dam and available good irrigation soils; • create 18,000 jobs (70% of economically active people in the area) <p>It is estimated that approximately 400,000 tons of sugar will be produced, and processed by two private Sugar mills and a refinery. Since the production system for Ethanol and sugar is basically the same, the project will follow the Brazilian model in which the mills may produce both sugar and Ethanol. They switch from one product to another depending on the market</p>

7. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Dynamic development of Mozambique, backed by the government's willingness to promote private investment • National potential for gas production (possibly oil as well) • Strategic geographic position as a gateway for the oil supply of landlocked countries • Social and environmental issues among government priorities. • Presence of established NGOs and organisations with experience in coastal zone management • Land availability 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Limited capacity of Mozambique to exploit and use its own natural resources (e.g. gaz production : 95% for South Africa, 5% for Mozambique) • Private companies are often in a strong position, and agreements with the government often mainly benefit business, rather than local populations or the environment. • Incomplete planning for Integrated Coastal Zone Management. • Poor knowledge of legal framework and official population rights at the local level • High percentage of the population living in coastal areas, which facilitates competition for land resources • Difficult access to remote parts of the country due to poor infrastructure network
<p>Opportunities</p> <ul style="list-style-type: none"> • Oil and gas development could generate employment and facilitate the development of infrastructure and services • Oil and gas activities are implemented by large companies, which are generally engaged in corporate social responsibility • Greater NGO involvement. • Implementation of EITI activities and improvement of civil society's involvement in the activities of extractive industries. • Biofuels development in Mozambique is under international scrutiny and could benefit from "best practices" support 	<p>Threats</p> <ul style="list-style-type: none"> • The economic importance of numerous large projects (refineries, ports, pipelines, etc) with foreign investors could decrease environmental and social considerations • Increases in oil operations (drilling, exploitation, transport, processing, storage etc) will increase oil spill risks. • Private companies from emerging countries are not always respectful of environmental and social regulations • Biofuels investors, often associated with state owned companies, have such an economic power that they could overstep the guidance of national strategies to develop their projects only on marginal lands

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Annex 1.

Activities and “key players” in the Mozambican Oil and Gas sector

Activity / infrastructure	Company name	Company structure	Location	Production (per year) / storage capacity	Status / programmed development	Comments
Production						
Pande and Temane gas fields	Sasol Petroleum Temane Limitada (70% equity and operator) <u>Empresa Nacional de Hidrocarbonetos de Mocambique (ENH)</u> (25% equity) International Finance Corporation (5% equity).	Subsidiary of Sasol Petroleum International Ltd (South African) Parastatal (Mozambican) World Bank	Pande and Temane gas fields (close to Beira town, Sofala province)	Current yearly production rate of 120 million GJ	Full scale production started in 2004 with 12 wells Expansion of the central processing facility (CPF) in Temane for US\$300 million will increase yearly rate to 183 million GJ (Completion expected in 2011)	
Refinery / processing facility						
Central Processing Facility (CPF)	Sasol Petroleum Temane Limitada	Subsidiary of Sasol Petroleum International Ltd (South African)	Temane	Process / clean the gas before transport Processes 120 million GJ / year	Forecasted capacity 183 million GJ /year	Processing plant capacity is the limiting factor for expansion of gas extraction and exportation through pipeline
Storage and Handling						
Port infrastructures	Portos e Caminhos de Ferro de Mocambique (CFM)	State owned	Maputo, Beira, Nacala, Quelimane and Pemba ports			Maputo and Beira terminals have been partly privatized,

						CFM conserving an important share in the management consortium
Oil storage facilities	Petromoc	State owned (created in 1999)	Matola port Other locations in the country	19 storage facilities for 500,000 m3		
Oil storage facilities	INPETRO – Independent Petroleum Terminal SARL	Joint venture Petromoc, NOCZIM (National Oil Company of Zimbabwe) IPG 40% (Kuwait).	Beira port	9 tanks for clean fuel 95,300 m3		Most of the product is destined for Zimbabwe via the CPMZ (Companhia Do Pipeline Mozambique -Zimbabwe Limitada) pipeline
Oil storage facilities	BP Mobil Total Imopetro					
Transport						
Gas pipeline Mozambique / South Africa	Republic of Mozambique Pipeline Investments Company (ROMPCO)	50% Sasol Gas, 25%, iGas, (South Africa's state-owned) 25% Companhia Moçambicana de Gasoduto (Mozambique's state-owned)	Pipeline of 865 Km between Temane (Mozambique) and Secunda (South Africa)	26'' pipeline	Upgrade of CPF and new compressor stations planned to increase gas production and supply. Planned to reach 183 M GJ of gas a year	
Oil pipeline Mozambique / Zimbabwe	Companhiado Pipeline Mozambique-	State owned (Mozambi	Pipeline of 287 Km between the	10'' pipeline for liquid products		Built in the 60's, largely under utilised

	Zimbabwe (CPMZ)	que)	port of Beira and Feruka (Zimbabwe)			due to economic crisis in Zimbabwe
Gas pipeline for Mozambican distribution	Matola Gás Company		Pipeline of 75 Km between Ressano Garcia (junction with the main pipeline) and Matola (industrial suburb of Maputo)	10'' pipeline		Carry and distribute the 5 % "royalties in kind" production of Pande and Temane gas fields
Retail						
Gas	ELGAS	ENH, Eskom, African Legend Investment Holdings Limited				Distributes and sells natural gas from the Pande gas field to neighbouring customers in Mozambique
Distribution and marketing of fuels products	Petromoc	State owned (created in 1999)	48 % of the national retail market	Major company for distribution of oil products	250.000 m3 of oil products sold in 2008 (40.000 m3 for external market) (represents 96% of the company's turnover)	Former monopoly in the importation of oil products (before 1987) Also supplies neighbouring countries (Zambia, Zimbabwe, Malawi, DRC)
Distribution and marketing of fuels products	British Petroleum (BP)	Private	35 % of the national retail market			
Distribution and marketing of fuels products	Mobil Caltex	Private	17 % of the national market			
Offshore exploration						
	Anadarko	Private,	Area 1			

		US	Ovuma block (offshore), jointly with ENH			
	<u>Empresa Nacional de Hidrocarbonetos de Mocambique (ENH)</u>	Parastatal				
	Sasol Petroleum Sofala Limitada	Subsidiary of Sasol Petroleum International Ltd (South African)		M-10 Block with Petronas (Malaysia), and ENH Sofala block with ENH	Responsible for SPI's offshore exploration activities in Mozambique, including the recently acquired Blocks 16 and 19	
	Artumas (Canada/Norway), Andarko (États-Unis), Petronas (Malaysia), ENI (Italy) and Norsk Hydro		Rovuma basin			

Annex 2
Ongoing exploration and exploitation oil & gas activities

http://www.inp.gov.mz/en/events/mozambique_basin

(access on 04/11/2010)

Concession Area	Present ownership	Recent activities
MOZAMBIQUE BASIN		
Pande/Temane PPA (1741)km2 onshore)	SASOL 70% (operator), ENH 25%, IFC 5%	In 2008, Sasol formally finished the drilling campaign which resulted in the drilling of 11 production wells, 5 exploration wells, 10 appraisal wells as well as the abandonment of 14 old wells at the Pande/Temane PSA/PPA Area. Three new discoveries were made during the exploration drilling in the Pande, Temane and Inhassoro area.
Pande/Temane PSA (8049 km2 onshore)	Sasol 100% (Operator)	
Area 16 & 19 (10548 km2 offshore)	Sasol Petroleum Sofala 50% (Operator), Petronas Carigali Moçambique 35%, ENH 15%	In the period between October 2008 and February 2009, the Operator drilled two exploration wells (Njika-1 & Njika-2), which resulted in the discovery of gas at several stratigraphic levels. Further work on the evaluation of the discoveries will be performed by the operator. The wells were drilled at a water depth of 460 m and 350 m respectively, and to a TD of 1615 m and 1925 m below sea level.
Buzi (10195 km2 onshore)	Empresa Nacional de Hidrocarbonetos de Moçambique (ENH) 100%	The National Oil Company (ENH) signed the EPC for the Buzi concession area in October 2008. The signed contract is valid for a period of 8 years and a minimum of 36 million USD is due to be invested in exploration activities. As part of its commitments, ENH will have to acquire 600 km of 2D data and drill two exploration wells. ENH managed to farm out to a new partner, Kallila PT, from Indonesia that will act as operator. The new participation structure provides 70% for the new partner and 30% for ENH.
M-10 (4120 km2 offshore)	Terralliance 100% (Operator)	In 2008, the US company Terralliance, acquired a total of 2,300 km of 2D seismic survey over the M-10 and Sofala Areas, of which 1,000 km are within the M-10 concession area.
Sofala (11639 km2 offshore)	Terralliance 60% (Operator),	In 2008, the US company Terralliance, acquired a total of 2,300 km of 2D seismic survey, of which 1,300 km are within the

	Bang (40%)	Sofala concession area.
Inhaminga (12037 km2 onshore)	DNO 100% (operator)	Following the drilling in 2008 of the Sangussi-1 well Northeast of Beira, which had some gas shows at the Domo Formation, as well as an acquisition of 200 km of 2D seismic in 2007, the Norwegian company DNO has entered the 4th exploration Phase. DNO has recently entered the 4th exploration period and will have to shoot 400 km of 2D seismic and drill 1 well.
Onshore Zambezi Delta (27710 km2)	Terralliance 60% (Operator), British American Natural Gas 40%	In 2008 Terralliance finalized the drilling of Chipondene 1 well as part of their commitment to the 1st exploration phase. The well was drilled to a TD of 1590 m and registered some gas shows at different stratigraphic levels.
Offshore Zambezi Delta (34 934 km2)	Petronas 42.5% (operator), PetroSA 25.5%, Petrobras 17%, ENH 15%	In 2008, the Malaysian oil company Petronas finished the acquisition of 5,000 km 2D seismic. In 2007 Petronas drilled one dry exploration well, ZD-E-1. The well was drilled at a water depth of 95 m and to a TD of 3600m. Petronas is in its second exploration phase due to end soon.
Concession Area	Present ownership	Recent activities
ROVUMA BASIN		
Onshore Rovuma Basin (15122km2)	Anadarko Moçambique Area 1 35.7% (Operator), Artumas Moçambique Petroleum 49.3%, ENH 15%	In 2008, the Canadian oil company Artumas finished the acquisition of 648 km of 2D seismic. Anadarko (from USA) took over as operator from January 2009. A minimum of one exploration well will be drilled in the concession area in 2009.
Offshore Area 1 (10683km2)	Anadarko 56.5% (operator), Mitsui 20%, ENH 15%, Artumas 8.5%	In 2008, the US oil company Anadarko acquired the second 3D seismic survey in Mozambique in their concession area, offshore of the northern part of Cabo Delgado. A total of 3,370 sq. km of 3D seismic was acquired, in addition to 1000 km of 2D seismic in 2008. In 2009, Anadarko acquired a total of 5000 km of 2D seismic. Two exploration wells are planned to be drilled in 2009 or early 2010.
Offshore Area 2 & 5 (13648 km2)	StatoilHydro (operator) 90%, ENH 10%	In 2007, the Norwegian company StatoilHydro acquired 3,000 kilometers of 2D seismic data within the offshore concession area, northeast of Pemba. StatoilHydro entered the second exploration phase, and

		have a firm commitment to 3D seismic acquisition. Statoil hydro has entered the second exploration phase in December 2008 and they are committed to acquiring over 1000 km2 and drill one exploration well.
Offshore Area 3 & 6 (15259km2)	Petronas Carigali Moçambique 90% (Operator), ENH 10%	The EPC was signed in October 2008. The contract is valid for a period of 8 years and a minimum of 40.6 million USD is due to be invested in exploration activities. As a part of their commitment they are going to acquire 7000 km of 2D seismic.
Offshore Area 4 (17646 km2)	Eni 70% (operator), ENH 10%, Galp Energia 10%, Kogas 10%	In 2008, the Italian oil company ENI acquired a total of 1,047 sq. km of 3D seismic and 2,300 km of 2D seismic within the deep water concession area offshore the northernmost part of Cabo Delgado.

Annex 3

Map of the biofuels project reviewed by Nhantumbo I. and Salomão A. (2010)



VI. Ports and Coastal Transport - Prepared by Professor Gavin Maasdorp, E-mail: gmaasdorp@imanidevelopment.com

1. Introduction

Mozambique has a wide, low-lying coastal plain, and most of the ports have tended to develop in shallow bays and estuaries, giving problems for further development to handle large deepsea vessels.

Maputo (population 1.0 million (2007), the main port, is approximately 100 km north of the border with South Africa, approximately 625 nautical miles north of the port of Durban, and 92 km by high-class tarred road from the Lebombo/Ressano Garcia frontier with South Africa. The port is also about 555 km by road and rail (approximately the same distance as Durban) from the Johannesburg area, the industrial heartland of South Africa.

North of Maputo the coastal belt is relatively undeveloped apart from a growing number of tourist holiday lodges and housing developments. About 350 km north, the small town of Inhambane has a port which is used by 100-150 ton coasters to supply the area with fuel and materials. The port of Beira at the mouth of the Pungue River is the second largest in Mozambique. The dredged Macuti channel that gives entrance to the port has a draft of about 9.6 metres. The port is connected by road and rail to the hinterland, and construction is in progress to rehabilitate the Sena rail line linking Beira to the coal and gas mining developments in Tete Province of Mozambique with later plans to reconnect the line to Malawi. Approximately 300 km north of Beira, the port of Quelimane provides facilities for small coasters and is used for delivery of fuel, cement and other supplies for the region.

The port of Nacala is located 450km further north. It is a large natural deepwater port, open to traffic at all times with a general cargo-handling capacity of about 2.5 to 3 million tons per year. The port is well developed and serves the provincial capital of Nampula, 200 km inland, to which it is linked by road and rail. The rail connection from Nacala to Nampula runs inland to Cuamba junction, from which one line extends through Malawi to Zambia and a northern line runs to Lichinga near Lake Niassa.

About 200 km north of Nacala, the port of Pemba lies in a deepwater bay which is one of the best natural harbours on the East African coast. The port currently handles approximately 100,000 tons of cargo per annum. Weekly coaster services from Maputo ensure that local shops are kept supplied with basic requirements.

1.2 Extent of ports and transport activities

Maputo

The port of Maputo is located at Latitude 25° 59 S and Longitude 32° 36 E on the northern shore of a large, shallow estuary, and it is necessary for vessels approaching the port to negotiate channels between mud banks that shift and silt up.

The south and north channels have drafts of 8 and 10.1 metres respectively from Chart Datum, and both have a tidal range of 0.2-3.9 metres. The North Channel has the potential to be increased in depth to 17 metres with limited amounts of dredging. Both channels merge at the entrance to

the Polana Channel which has a dredged depth of 9.4 metres from Chart Datum and a similar rise and fall of tide as described above. This channel silts rapidly, and the shallow draft has been the port's main limitation as it restricts the size of vessels that can enter. Continual dredging is necessary to maintain the channel depths. The south channel could theoretically be dredged to match the intended North Channel draft.

The port area itself has the ability to be dredged to 17 metres as well, but the seaward end of the Maputo wharves has a permitted draft of only 8 metres which deepens towards the inland end of the line of berths where the draft reaches 11 metres.

Ship calls include MACS and GAL mainline vessels as well as Macs African Coastal Services (MACS ACS) feeders. The port is divided into separate areas designated "Port of Maputo" and "Matola Terminal. The terminals are described in the box.

Citrus Terminal - has an annual throughput capacity of 185,000 tons per annum. The berth is 380m long with 11m draft from Chart Datum. The pre-cooling sheds are set back from the wharf edge and are capable of feeding as many as three vessels simultaneously. The fruit comes by road from Swaziland and South Africa.

Sugar Terminal - handles 625,000 tons per annum of sugar from South Africa and Mozambique. The berth is 370m long and has a 10.5 metre draft from Chart Datum. A bulk storage facility is set back from the wharf edge, and a shipping gallery with a bulk ship loader that services 180 metres of wharf. It is also possible to ship bagged sugar and molasses from shoreside tanks.

General Coaster Terminal - 300 metres of wharf is available with general cargo sheds and a draft of 8 metres. This is situated at the seaward end of the line of berths, and is a conventional general cargo wharf with sheds.

Minerals Terminal - has 600 metres of wharf with drafts of 11 metres from chart datum. Ferro-alloys are delivered by rail and road, stored in parcel-sized bins, and moved by road to vessels alongside the wharf. In a separate area of the port a bulk storage area exists for imported sulphur.

Matola Bulk Terminals

Coal Terminal - can handle 2.5 million tons per annum as currently configured, has a berth length of 205 metres, and a draft to Chart Datum of 10.5 metres. The stack area has a ship loader which handles coal and magnetite and is also capable of delivering skips of sized coal alongside ships for loading with the ships' gear.

Bauxite (Alumina) Terminal - berth is 210 metres long with a draft of 12.6 metres from Chart Datum. Alumina is received mainly from Richards Bay. The terminal can handle 1 million tons per annum, all destined for the nearby Mozal aluminium plant. It is equipped with a ship unloader and shoreside silos.

Petroleum Wharf - berth can take vessels of 230 metres in length and 10.5 metres draft. Annual capacity is 350,000 tons per annum. This is a conventional liquid berth for the receipt of petrol and diesel.

Grain Terminal - can take vessels 210 metres long, and has a draft of 9.5 metres from Chart Datum.

Because of the tidal rise and fall, it is necessary to berth, load and unload with due consideration of deadweight, draft and handling speed. The Matola section of the port has not been under pressure from a berth occupancy point of view, but is experiencing congestion of the storage areas due to reduced offtake. The throughput of the Matola Terminal has been restricted by the inadequate rail system connecting the port to South Africa, but this has recently been improved and is capable of moving approximately 5.0 million tons per annum. Further expansion is possible if demand makes it economically viable, subject to an increased supply of rail wagons by the CFM/TFR.

Table 2.1: Port Maputo Annual Tons and Port Calls 2000-2006

	Import or Export	2000	2001	2002	2003	2004	2005	2006
Maputo (tons)								
Citrus	Export	75189	60678	61469	89519	105248	97460	68003
Bulk Sugar	Export	545138	423198	404186	452174	378668	352369	427688
Containers (TEU) (*)	Import and Export	31876	32425	35010	39486	44349	54088	62516
Containers (tonne)	Import and Export	337659	404352	452456	448984	475128	572311	595044
Ferroalloys	Export	34338	48565	178797	249515	402899	403430	504713
Steel Products	Export	6775	155	133097	20503	48928	71587	88409
Matola (tons)								
Bulk Coal	Export	976641	1348077	1097590	1314764	1316325	1720997	1504475
Bulk Grain	Import	175380	168356	295763	290708	259725	272247	296259
MIPS Container Terminal (tons)								
Container (Tonnage)		51544	45777	33334	35851	45735	39922	39643
Totals								
Total tonnage exports		1886100	2464100	2376700	2741556	3067999	3722474	3699194
Total tonnage imports		1663200	1923600	1804400	2222618	2443491	2599014	2859644
Total tonnage		3035980	4001463	4430063	5036586	5567784	6381722	6608761
Port Calls (no. vessels)								
Port Calls Maputo		371	348	386	361	370		461
Port Calls Matola		97	155	156	176	205		209
Total Vessels		468	503	542	537	575	640	670

*Mostly Durban feeder service to 2005. Now more direct service is available.

Source: MPDCTable

Table 2.2: Import-Export Trade by Country, Port of Maputo, 2006

Imports/Exports	Tons
Exports	
Transit	2,605,442
National	1,093,752
South Africa	2,009,045
Zimbabwe	332,611
Swaziland	263,786
Zambia	0
Total Exports	3,699,194
Imports	
Transit	105,080
National	2,754,564
Botswana	6,558
Malawi	10,024
South Africa	8,177
Zimbabwe	59,321
Swaziland	12,000
Zambia	9,000
Total Imports	2,859,644
National Trade (Coastal)	49,817
International Trade	6,558,838
Total	6,608,655

Source: MPDC

Inhambane

The port of Inhambane is currently closed to navigation as the pier is unsafe and requires major structural work. When the port is open there is generally a small amount of local general cargo and fuel traffic.

Vilanculos

The activities at this port are mainly fishing and leisure vessels launched from the beach. Cargo delivery requires a landing craft. There is no jetty, and vessels stay at anchorage about 7 miles out in the open sea. There are no regular services.

Sofala

As with Vilanculos, the port serves mainly fishing and leisure vessels launched from the beach.

Beira

The port of Beira is located 20 kilometres from the open sea on the north bank of the Pungue River estuary. The approach is obstructed by numerous banks and shoals which are constantly changing. Access to the port is through the Macuti Channel which, under normal conditions, is properly dredged and marked, allowing navigability 24 hours a day. The port is tidal with a spring tide range of 6.2-7.4 metres. Vessels awaiting berths anchor at the bar, clear of the main channel. Vessels with a draft of 4.88 metres or less may enter the port at any state of the tide. But those drawing more than 4.88 metres are required to wait for a suitable height of tide before entry.

The port has 11 quays which are located 17km from the mouth of the Pungue estuary and stretch over a length of 1,994 metres, excluding berth No 1. (reserved as a fishing harbour). Draft alongside the quays varies from 8-12 metres. Shipping services to the port are limited, with calls by African coastal services on all sailings and GAL mainline vessels on inducement only. There are no bulk loading or storage facilities, but there are developments in progress to receive coal from Moatize once the Sena rail line is back in operation. A major dredging contract is under way and has been awarded to Van Oort of Holland which apparently still is waiting for the designated dredger to arrive.

The port is connected to the central system of the CFM which covers a distance of 319 km to Machipanda on the border with Zimbabwe. The port terminals are described in the box.

Oil Terminal - Berth 11 is the official tanker berth, but mooring is not always possible due to strong tidal currents. Designed for handling heavy oils only, Berth 11 can accommodate tankers up to 20,000 DWT, and is fitted with a pipeline for refined products. The berth has a pipeline system with a capacity of 400 tons per hour with the following pipes: 4 x 12" for unloading, 6 x 8" for loading.

Fuel Terminal - has the capacity to load and unload tankers of 500-2,500 SWT and from 500-50,000 DWT. The terminal system consists essentially of four pipelines for refined products such as diesel, petrol, Jet Avgas and fuel oil. This terminal handles 1,200 kl per hour and has an installed capacity of 2.5 million tons per year.

Cold Storage Terminal - the cold stores have a capacity for 1,100 tons at temperatures of 1.5-4.5 degrees centigrade, and for 490 tons at temperatures of -9 to -20 degrees centigrade. The terminal is equipped with electrical forklifts for handling the cargo.

Cornelder De Mocambique Terminals

Multi-Purpose and Container Terminal - one of the most modern multi-purpose and container terminals in Southern Africa. The terminal covers 645 metres berth length. (Berths nos 2-5). The terminal design capacity is 100,000 TEU's per year. The designed depth alongside the quays is about 12 metres. The container storage and stacking facilities consist of a 200,000 square metre, well-illuminated yard accommodating 3,117 TEUs including 144 electrical reefer points and a dedicated IMDG dangerous goods storage area; a bonded transit warehouse of 8,400 square metres for stuffing and stripping containers, fully secured; 3,650 square metre covered storage area; and a dedicated granite storage area.

General Cargo Terminal - covers 670 metres quay length (Berths 6, 7, 9 and 10). The terminal design capacity is 2,300,000 tons per year. The designed depth alongside of the quays is 10 metres.

Chinde

At present the only transport on the Zambezi River is the ferry boat near Caia and some travel and fishing in canoes. There are, however, shipments of 90,000 tons of sugar from the Marromeu refinery to Chinde which is on the coast, 105 km downstream at the river mouth. The sugar is

mainly for domestic consumption, and is shipped in containers to Beira and Quelimane for further distribution by truck or coaster. Provisions for the refinery, such as fuel, are transported on the barges in the opposite direction.

The sugar containers are carried on the deck of barges of 1,200 and 1,500 tons capacity. The draft of the barges is 1.4-1.8 metres, and they usually load to only 50% of their carrying capacity. At Chinde the riverine tugboat exchanges the tow with a stronger seagoing tug.

Ships to load the sugar containers can only enter the river in daytime at high tide in good weather, and therefore the transfer time-window is very limited. In planning the river operations, the discharges of the Cahora Bassa dam are monitored as these affect the river levels at Marromeu about four days later. Occasionally, the convoys still run aground due to shallows, and the sugar company has acquired a small dredger to tackle problem spots.

Costs of transport are high, and in 2007 were reportedly USD 34 per ton for Marromeu-Beira and USD 19 per ton for Marromeu-Quelimane. The company also uses road transport to Beira at a reported cost of \$60 per ton (2009). When the Sena railway line and the branch line to Marromeu are reconstructed, it is likely that the cargo will revert to transport by rail to Beira if tariffs are acceptable.

Quelimane

With an estimated population of 193,000 in 2007, has a very shallow and tidal port. Small vessels can lie safely aground during low tide (down to 1.5 metre draft) and can sail with maximum 4.8 metre draft on high tide. Very rudimentary facilities necessitate the use of ships' gear, but the port has a 100-ton heavy-lift crane (unit brought in by MACS). There are no covered storage facilities. African Coastal Services calls twice monthly and also carries Mozambique cabotage cargoes to and from Maputo and Nacala.

Angoche

The old port is very shallow, and landing cargo requires a barge. There is a small jetty used by fishing boats. Vessels stay at anchorage about 7 miles out in the channel/open seas, but there are no regular services.

Nacala

Nacala is located at 40° 40' E and 14° 27' S on the south side of Baía de Bengo, a large and sheltered bay 60 metres deep and 800 metres wide at the entrance. These characteristics make Nacala one of the largest natural deepwater ports on the East African coast. The port has a 12 metre draft and can handle ships up to 160 metres LOA. The back-of-berth area is nearly always overcrowded and regularly experiences 72-hour congestion.

The General Cargo Terminal is able to handle 2,400,000 tons of cargo annually, with eight warehouses covering a total surface area of 21,000 square metres. The container terminal is 372 metres in length. The port also has a terminal for bulk petroleum liquids, linked by a 3.5 km pipeline to fuel tanks, as well as tanks for palm oil and cooking oil.

Import products handled include fuel, cement, foodstuffs, vehicles, containers, and machinery for both Mozambique and Malawi. Exports include Malawi tea, sugar and tobacco as well as local cotton, timber, and cashew products. There are monthly calls by African coastal services, or more frequently on inducement and in the Malawi tobacco export season.

The town has air and naval bases and some industrial development, including two cement factories. Sisal, copra and cotton are produced in the surrounding region. The port is the terminus of the Nacala Transport and Development Corridor, a SADC initiative linking landlocked countries (Malawi and Zambia) to the coast.

Pemba

Pemba has a quay of 183 metres and a width of 17 metres, covering an area of 3,103 square metres. Possui duas frentes de acostagem, uma com 15 metros de comprimento e uma profundidade entre 7 e 8 metros, e outra com 25 metros e uma profundidade de 2 à 5 metros. Este porto tem uma área de armazenagem de 20.000 metros quadrados com um único armazém de 1.800 metros quadrados. There is a storage area of 20,000 square metres with a single warehouse of 1,800 square metres. The port currently handles approximately 100,000 tons of cargo per annum, mainly logs. There is no rail connection. Berths are open to sea, and subject to large swells when there are storms offshore.

African Coastal Services calls twice monthly and carries Mozambique cabotage cargoes from Maputo and Nacala. Additional calls by African Coastal Services can be arranged with inducement of USD 20,000 freight.

2. Policy and Governance of Ports and Transport

Ports were traditionally managed by Caminhos do Ferro de Mozambique (CFM), the national ports and railway parastatal. The railways were extensively damaged during the civil war, leading to the underutilisation of the three main ports, but funding was limited for restoration. However, the policy to introduce joint ventures into the transport system, adopted in the 1990s, has made rapid reconstruction and development possible over the past 15 years, with the ports of Maputo, Beira and Nacala all effectively operated by private-sector port operators.

3. Planning and Management of Ports

At the port of Maputo, a joint venture between CFM and Mersey Docks company was signed in 2005, and the new port management started to rehabilitate the general cargo section. Later investments by Dubai Port World, Grindrod, and others in the Matola Terminal has accelerated the rate of recovery, and the port of Maputo is now capable of handling more cargo than is on offer.

The port of Beira has been extensively redeveloped by a joint venture between CFM and Cornelder, a cargo-handling company. The port of Nacala and the associated Nacala Corridor railway system is concessioned to a consortium headed by the American RDC group and including Manica (SA), Edlow Resources (Bermuda), Tertir (Portugal) and CFM (Mozambique).

The other Mozambique ports are still managed by CFM.

4. Development and Trade

Since the end of hostilities, Mozambique has maintained a high rate of real GDP growth which reached 9.2% in 2008 (CIA). The import of bauxite through Matola (via Richards Bay) and the availability of electricity from the Cahora Bassa hydroelectric scheme facilitated the construction of the Mozal Aluminium plant near Maputo.

Construction of the Maputo Corridor freeway from South Africa to Maputo has attracted about 4 million tons per annum of export cargo on road, and rehabilitation of the railway has promoted the export of about 4 million tons per annum of coal and bulk minerals from South Africa.

The current project to develop the Moatize coal-fields in Tete Province include the rebuilding of the Sena railway to Beira, and then a possible further rail link to Nacala, as the potential output will exceed the capability of Beira. Possible development of mineral sands mining at Moma may result in building a new port or expanding Nacala. If the Sena line and the adjacent road corridor are rehabilitated, this should result in an increasing tonnage of export cargoes from DRC, Zambia, Zimbabwe and Malawi through Beira.

The intended redevelopment of agriculture in Mozambique will benefit from the improvement in the road and rail services. Coastal communities have already been greatly assisted by the reconstruction and improvements to the main coastal road corridor from Maputo to Beira that runs via the ferry at Caiaa, and along the coast to the north of Beira. The barrier of the Zambezi

delta poses a major problem for creating an effective thoroughfare along the coast. There is still a very large agricultural potential in sugar, timber, tropical fruits and cashews along the Mozambique coast. The potential areas for sugar, citrus, rice and cotton production and forestry are extensive.

5. Ports Impact and Benefits to Coastal Communities

Between the South African border and Maputo, there is very limited economic activity and a low population, much of the area being a game reserve. Some small tourist resorts have sprung up along the coast. North of Maputo there are scattered coastal tourist developments such as Xai-Xai, Vilanculos and Inhambane. The local inhabitants tend to be subsistence farmers and fishers. Several large sugar plantations and mills have been rehabilitated with investments from South Africa and elsewhere. The sea is used by small numbers of fishermen with sailing dugouts and there is some fishing from the shore. Commercial fishing boats are mainly based at Maputo, Inhambane and Vilanculos.

To the north of Beira, the coastal area is primarily populated by small-scale subsistence farming and a limited amount of inshore fishing. Small fishing companies operate vessels in the Mozambique Channel, mainly for prawns and crayfish.

Maputo, Beira and Nacala and some of the smaller ports are critical resources for the development of the Mozambique coastal region as they provide the base for the local fishing industry and the linkage for fuel supplies to most of the region because roads are mainly sub-standard gravel and subject to flooding in the rainy season. These ports of course handle most of the import and export trade of the country, both for the coastal belt, and interior and also service Malawi and Zimbabwe.

The smaller ports and launching points such as Angoche, Vilanculos, Inhambane and Sofala are mainly used by local fishermen and sport fishing boats, and are an essential part of the tourist attractions of the Mozambique coast.

At Quelimane fishing and tourism are important industries. The town serves as the terminus of a railway line extending northward to Mocuba, and the port exports tea, sugar, sisal, maize, cotton, tobacco, copra and coir. In the area inland from Pemba, Lonrho had extensive cotton estates, the replacement of which by peasant plots has seen production decline. Indigenous hardwood timber is exported as logs via Pemba and Nacala. Prawn and crayfish vessels as well as long-line fishing boats operate from most of the Mozambique ports.

The use of coastal resources appears to be hampered by the lack of local capital and the limited market for goods due to high poverty levels. The national average income was \$900 per capita per annum in 2008 (Google estimate), but the income in coastal rural areas is much lower. The World Bank estimated that in 2001 about 70% of the population had incomes below the poverty line.

The main entrepreneurial forces in rural areas are from local Muslim businessmen and a small amount of foreign investment in property, tourism and agriculture. Some large South African companies have entered into joint ventures with local officials and businessmen to develop sugar-cane plantations and mills, which benefit local populations by providing employment and income.

6. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Government policy of promoting FDI in mining, power generation, ports, plantation agriculture and heavy industrial development. • Extensive natural resources, land, minerals, tropical climate and good rainfall. • Transformation of ports into competing companies is promoting efficiency. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Excessive official corruption and interference with business. • Poverty and lack of local capital for business development. • Arbitrary application of legislation.
<p>Opportunities</p> <ul style="list-style-type: none"> • Development of mining, gas, and agriculture will promote development of ports, transport and coastal economic activities between Beira and Nacala. • Opening up road and rail connections to Zimbabwe, Zambia, Malawi and other landlocked countries will boost coastal economies. • Transformation of customs procedures could attract increasing volumes of transit cargo. 	<p>Threats</p> <ul style="list-style-type: none"> • Dependence on foreign capital and expertise will need to be managed to advantage of country. • Transport access to the largest industrial conurbation (Gauteng) could be obstructed by South African interests. • Lack of training institutions and skills deficiencies for sustainability of port and transport operations. • Failure of manufacturing economy to compete with imports from the East. • Developing labour unions could lead to future industrial unrest.

VII. Coastal Mining - Prepared by Mr. Thomas Cushman, E-mail: tom@tomcushman.com

1. Introduction

Mozambique, officially the Republic of Mozambique, is located on the east coast of southern Africa. It covers an area of 799,380 km², with a coastline approximately 2,515 km long. Mozambique shares extensive borders, on the west with South Africa, Swaziland, Zimbabwe, Zambia and Malawi, and on the north with Tanzania. The coastline is about 2,700 km long, with 42 coastal Districts out of 110 Districts in the country. About 40% of the Mozambican population lives in coastal Districts.

After almost five centuries as a Portuguese colony, Mozambique gained independence from Portugal in 25th June 1975, when the Marxist Frente de Libertação de Moçambique (Frelimo) took control after a ten year guerrilla war. Civil war broke out almost immediately in 1992, as the British, American, and apartheid South African governments rushed to support the anti-Communist Resistencia de Moçambique (Renamo) in its challenge of Frelimo legitimacy. Mozambique is a multilingual country. A number of Bantu languages are indigenous to Mozambique. Portuguese, inherited from the colonial period, is the official language, and Mozambique is a full member of the Community of Portuguese Language Countries.

Mozambique is a presidential democracy: the President is both the Head of State and the Head of Government. The 2004 Mozambican Constitution provides for the separation of the legislative, executive and judicial powers. Two hundred and fifty members of parliament are elected at five-yearly intervals by universal adult suffrage. Note that the Mozambican State is unitary. The legal system in the country is based on the Romano-Germanic tradition of the civil law. It is directly inherited from Portugal. At independence, all Portuguese laws not inconsistent with the new constitution were retained and remain in force.



Map of Coastal Mining in Mozambique

2. Mining Sector Overview

There are large mineral deposits in Mozambique, but exploration has been constrained by the civil war (1977-1992) and poor infrastructure. Since 2003, the mining industry of Mozambique has attracted increased attention from the private sector. Gold and particularly coal mines in Western Mozambique, especially in the Tete province, have been attracting serious international investment. Capital inflows have surged and a number of companies from different countries are prospecting new mines or buying stakes in mines throughout the country, signifying the emerging importance of Mozambique's mining industry in its economy. Direct investments in mining increased from US\$101mn in 2004 to US\$804mn in 2008. These new mining projects are in the feasibility study or construction phase and none are producing.

2.1 Coastal Mining Characteristics

Of coastal mines only the Moma mine is operational. The Moma mine in Nampula province on the North East coast is producing ilmenite (titanium oxide from heavy sands with some ancillary zircon and rutile production). Another coastal heavy sands mine has been on the drawing board for a decade but the mining license for the Corridor Sands Project near Chibuto in Gaza Province was recalled by the Mozambique government in 2009 before construction started. In July 2010, the government of Mozambique announced that it will launch an international tender for the Chibuto minerals sands.

In addition to mining, the processing of alumina in the Mozal aluminium smelter near Maputo on the East coast accounts for over half of Mozambique's export earnings. The alumina raw stock is imported from Western Australia. The Mozal smelter was economical when built in the 1990 as abundant electricity was available at low cost from near by South Africa. Lack of investment by Eskom (the South African electricity monopoly) led to shortages of electricity and recently a very large increase in electricity prices for the Mozal smelter.

Coastal Mining Activity	Company Name and Owner	Production	Mining Method	Production	Stage of the Project / Status	Market
Moma Mine	Kenmare Resources PLC	Ilmenite (Titanium oxide), Zircon, Rutile	Dredging	The production of Moma mine in 2009 was : 800,000 tons/year (Ilmenite) 56,000 tons/year (Zircon) 21,000 tons/year (rutile)	Production (started in 2007)	Export
Mozal Smelter Production	BHP Billiton, Mitsubishi Corporation, Industrial Development Corporation of South Africa Limited, and the Government of Mozambique	Aluminium	Not mining but transformation of mined product. Worsley refinery in Western Australia is the supplier of alumina to Mozal.	506,000 tons/year	Production (started in 2000)	Export
Artisanal coastal mining	-	Sand from dune	Artisanal	-	-	Domestic

2.2. Coastal Mining Project Benefits

Name of Mine	Location	Economic Effect in %	Employment	Economic Benefits	
				National level	Micro-level
Moma Mine	Nampula - Moma	4% of exports in first half 2010, \$42Mn	<p><u>Construction phase:</u> 600 temporary jobs for local residents.</p> <p><u>Operation phase:</u></p> <p>400 permanent direct jobs and 1,200 additional indirect jobs.</p>	<ul style="list-style-type: none"> Investment of \$450 million with 20 years life span. Royalties and taxes 	<ul style="list-style-type: none"> Employment Training for local employees CSR projects undertaken by Kenmare Resources at Moma site (see below)
Mozal smelter production	Beluluane in the Boane district, with a construction of the Matola harbour terminal and access road to it.	56% of exports first half 2010 \$561Mn	<p><u>Construction phase:</u></p> <p>4,500 direct employment (98% local)</p> <p><u>Operation phase:</u></p> <p>The smelter is employing 740 people of whom 650 are Moçambicans.</p> <p>Mozal has 1600 local contractors.</p> <p>Another 2,500 jobs created via contractors providing support services such as security, catering, and sanitation.</p>	<ul style="list-style-type: none"> \$35 million payroll for local companies \$21 million for domestic services Mozal's Matola harbour terminal Installation of Motraco electrical power generator (435MW) Corporate and income taxes 	<ul style="list-style-type: none"> Employment Training for labourers Corporate and social responsibility by Mozal
Informal artisanal Coastal Mining	Xai-Xai	-	-	-	<ul style="list-style-type: none"> For domestic construction use

3. Environment

Coastal Mining Activity	Environmental Issues
Moma Mine	<ul style="list-style-type: none"> • The highest remaining environmental risk is potential ship wreckage offshore in the transshipment area, which has been relocated in order to protect a coral island (now some 5 km away). • Impacts of non-compliance to environmental regulations (e.g. increased dust and noise emission) • Other issues as the resettlement of a village (some 1000 people in total), mine closure and preservation of a sensitive coastal forest exist also. • Sand dune degradation and rehabilitation
Mozal smelter production	<ul style="list-style-type: none"> • Existence of greenhouse gas emissions emitted as a result of a large scale power consumption for electrolysis processes • Solid waste emanating from the smelter. • Treatment/disposal of Spent Pot Liners (SPLs) and other waste. • Concerns that the SO₂ Mozal atmospheric emissions of 26kg/tonne of aluminium are high when compared to some smelters reported in the literature to have SO₂ atmospheric emissions as low as 1kg SO₂ /tonne aluminium. • There are vehicle emissions from Mozal's trucks
Informal artisanal Coastal Mining	<p>The coastal dunes that lie adjacent to the beach are smaller in height and width, but the grain size is more or less similar to that of the inland dunes. Because of the proximity to the beach, they are subject to an excessive trampling and even mining of sand for construction. People remove sand from the dune with the help of a lorry. Also, the dune surface has been levelled down for the construction of residences.</p>

4. Human Environment

4.1 Socioeconomic Indicators

Social indicator	Mozambique
<i>Social indicators</i>	
Total population (2010)	22.1 million
Population growth rate	1.797%
Rate of urbanization	4.1% annual rate of change
HIV/AIDS Adult prevalence rate	12.5%
Literacy	47.1% of total population
<i>Economical indicators</i>	
GDP (2009)	\$9.831 billion
GDP – Per Capita (2009)	\$465
Mining Contribution to GDP (2006)	1.6 % eiti
Population below poverty line	70%

4.2 Corporate and Social Responsibility of the Coastal Mining Project Company

Coastal Mining Activity	Corporate and Social Responsibility (CSR) – or Social Benefits from the Coastal Mining Activity
Moma Mine	<p><u>Moma Development Association (KMAD)</u>: maximize the benefits of the Mine to create secondary economic opportunities within the local communities, to generate long term sustainable economic opportunities in the local communities that are independent of the Mine and to mitigate any possible negative impacts of the Mine such as the transmission of HIV. Kenmare has identified Non Governmental Organisations (NGOs) and other qualified organizations to partner with KMAD to implement projects in the area.</p> <p><u>Savings and Credit</u>: help to access to financial services in rural areas through a simplified approach that is easier to create, manage and sustain than a microfinance institution. In May 2009, a total of 85 saving and credit groups were established and trained, with a total of 1,550 members, of whom 46% are women.</p> <p><u>Agriculture</u>: Production reached 13,500 kg (2008: 12,000 kg) of diverse vegetables during the year, much of which was sold to the Mine.</p> <p><u>Poultry</u>: Establishment of an egg production project in Mtitikoma. Over the year approximately 300,000 eggs were produced by the farmers generating revenue of around US\$54,000.</p> <p><u>Fish</u>: The project is located in Nahaloco and Larde, two villages located near the river Larde, 10 km from the Mine. The project aims to educate local fisherman on keeping fish fresh from the catch until delivery to the customer (the Mine canteen and other markets) using ice. The key step is the production of ice in Nahaloco and distribution to the fishing villages. In partnership with IDPPE (Institute for the Development of Small Scale Fisheries).</p> <p><u>Sewing</u>: The first agreement was to deliver 800 sample bags which increased gradually to 2,000 bags per month generating revenue of US\$1,900 per month for this group. By the end of the year the loans incurred by the group had been paid off in their entirety. Increased demand from the mine allowed for an expansion of the project.</p> <p><u>Diesel</u>: A diesel project was started during the first quarter of 2009 with a total of 18 members. A loan of US\$5,200 was given to the group to start up the project. The group organised the building of a fuel station in Tupuito village.</p> <p><u>Local school</u>: In July 2006, KMAD signed an agreement with IDPPE, the Department of Education and the local population for construction of three additional classrooms in the primary school, which currently provides up to 5th level education. The school can now provide up to 7th level education with KMAD support, which greatly reduces the travel time for young students who previously had to walk up to 12 kilometres and cross a river to attend classes. KMAD also worked on reconstructing the old block at Tupuito village school and a new block at Tebane village school. In 2008, Cyclone Jokwe damaged all the schools in the area.</p> <p><u>Health care</u>: The project established the Mobile Clinic Team (“MCT”), consisting of a medical doctor and a dentist, who have visited the target area every fortnight. The MCT visits eight different clinics/health posts on each visit to the area.</p> <p><u>HIV/AIDS Awareness Programmes</u>: Internal HIV/AIDS awareness initiatives have been conducted through a range of communication media including toolbox talks, newsletter articles, posters etc.</p>

<p>Mozal smelter production</p>	<p><i>The Mozal Community Development Trust (MCDT)</i>, created as part of the financing package, spends \$2 million annually on social and community initiatives. It undertook a groundbreaking HIV/AIDS awareness program for which IFC provided matching funds through through its “IFC Against Aids” pilot program to ensure continuation among Mozal’s target population.</p> <p><i>SMEs development</i>: is building partnerships between Mozal and local businesses to maximize subcontracting opportunities for SMEs with the help of a Maputo-based SME coordinator. This initiative builds on an existing program that links local small businesses to the Mozal Smelter, particularly businesses participating in the Mozal linkages program, Mozlink, which is supported by a capacity building program that will train consultants in quality, safety, and production.</p> <p><i>Training and sewing</i>: Vulnerable members of the local community have been sponsored to attend training courses in manufacturing treated mosquito bed-nets. Sewing machines, insecticides, netting material and consumables were provided by the MCDT, which also bought the initial batch of 1000 bed-nets.</p> <p><i>Malaria Program</i>: The MCDT has also supported performances about malaria awareness by youth theatre groups and films on awareness and prevention by the National Institute of Communication. At local medical clinics, stocks of malaria treatment drugs have been supplemented through MCDT support programs. After three years of intensive effort, the infection rate in the Beluluane area has been reduced from 85 per cent to 18.6 per cent.</p> <p><i>Education</i>: To overcome the lack of secondary education facilities in the region, the Nelson Mandela Secondary School was built, the first in the vicinity of Mozal. The school is in its second year of operation and accommodates 1800 students, with plans to expand the capacity to 2400 students. The total investment by Mozal will be around US\$1 million.</p> <p>The MCDT is also funding new facilities at the Bilibiza Agricultural School in the northern province of Cabo Delgado, which has a population of over one million. As more than 80 per cent of the populations depend on subsistence agriculture, the school can play a key role in helping to reduce poverty in the region.</p> <p><i>Health care</i>: The local public health clinic, operated by the District/Provincial Health Directorate of the Mozambican Ministry of Health, serves a community of about 18 000 people within a ten-kilometre radius of the smelter. The MCDT provided the clinic with doctors’ facilities, a laboratory and three residences for staff, and constructed a maternity centre within the facility. More than 300 babies have been born since January 2003, with no fatalities.</p> <p><i>HIV/AIDS Awareness Programmes</i>: The MCDT sponsored the Total Control of Epidemic program, through which approximately 200 000 people in the local communities of Boane, Matola and Maputo were educated by a group of 100 field officers about the dangers of HIV/AIDS and how to prevent it. Pivotal to the prevention of the disease are knowledge of status and the management of behaviour and health. Since 2001, Mozal has provided assistance for a Voluntary Counselling and Testing Centre (VCT) in Boane, managed on behalf of the Ministry of Health by a Danish NGO, Ajuda De Povos Para Povos (ADPP). Eleven satellite units of the VCT have been opened in Boane and Matola. Community leaders have been trained to manage the facilities and provide counselling services.</p> <p><i>Housing project</i>: Under the Beluluane Land Use Management Plan established by Mozal, a site was selected and 96 houses constructed. In the second stage, now in progress, another 96 houses are being built. Mozal manages the construction process, the procurement of materials and the training of local enterprises to provide services.</p>
<p>Informal artisanal Coastal Mining</p>	<p>-</p>

5. Policy and Governance

5.1 Policy and Legislation

Coastal Mining Regulations	Description - Comments
Mining activities laws and regulations	<ul style="list-style-type: none"> • Law no 14/2002 of 26 June related to Mining Act • Law no 11/2007 of 27 June related to the Tax Regime for Mining • Decree no 16/2005 of 24 June related to the Regulation on Trade of Mineral Products • Decree no 61/2006 of 26 December related to the Regulation on Mine Work Safety • Decree no 62/2006 of 26 December related to the application of the mining Act • Decree no 5/2008 of 9 April related the application of the law on the Regulation of Tax Regime for Mining; and • Resolution no 4/98 of 24 February related to the Geological and Mining Policy
Environmental regulations	<ul style="list-style-type: none"> • National Environmental Management Programme (NEMP), approved in 1995 • Law no 20/97 of 1 October related to the environmental Law • Decree no 32/2003 of 12 August related to the regulation on the process of environmental Audit. • Decree no 26/2004 of 20 August related to the environmental regulations for mining activities • Decree no 18/2004 of 2 June related to the environmental quality and effluent emission norms • Decree no 45/2004 of 29 September, as amended by Decree n.º 42/2008, of 4th November related to the Environmental Impact Evaluation Process regulation • Decree no 11/2006 of 15 June related to the regulation for Environmental Inspection • Decree no 42/2008 which modifies the environmental regulation; • Ministerial Diploma no 129/2006 of 19 July related to the “General Directive for Studies of Environmental Impact” • Ministerial Diploma no 130/2006 of 19 July related to the “General Directive for the Process of Public Participation in the Process of Evaluation of the Environmental Impact” • Ministerial Diploma no 189/2006 of 14 December related to the “Basic Norms for Environment Management”
Coastal Mining specific regulation	<ul style="list-style-type: none"> • Decree no 495/73 of 20 September 1973, on the protection against pollution of waters, beaches and coastline in Mozambique. • Portaria no 418 891 of 27 September 1965, establishing the regulation on the transportation, handling and transportation of dangerous cargo in the ports of Mozambique.

5.2 Governance

Entity	Responsibility
Minister of Mineral Resources	MIREM is a central body of the apparatus of state that, according to the principles, objectives and tasks set by government, directs and implements the policies within the geological research, inventory and exploitation of mineral resources.
National Direction of Mine (DNM)	DNM acts as a regulator of the mining activity in Mozambique. It grants the mining licenses in Mozambique
Ministry of Coordination of Environmental Affairs (MICOA)	<p>MICOA is responsible is the Government institution responsible for ensuring the preservation and responsible use of natural resources, the coordination of environmental activities and environmental licensing.</p> <p>Provincial Directorates for Coordination of Environmental Action (<i>Direcções Provinciais para Coordenação da Acção Ambiental</i> - DPCA) and in some cases District Directorates for Coordination of Environmental Action (<i>Direcções Distritais para Coordenação da Acção Ambiental</i> - DDCA) are the local representatives of MICOA.</p>
Secretariat for Eastern African Coastal Area Management (SEACAM)	SEACAM was launched in Maputo, Mozambique, to assist countries in the East African Region to coordinate and implement Integrated Coastal Management (ICM) activities. Capacity building and the need for enhanced information sharing were seen as critical issues.

5.3 Planning and management

Investment facilitator

The *Investment Promotion Center of Mozambique* “*Centro de Promoção de Investimentos (CPI)*” offers a package of services to assist national and foreign investors facilitating access to the incentives offered by the Government and the establishment of their businesses. It is a one stop centre which acts as a facilitator to attract national and foreign direct investment.

Land tenure management

The land tenure related regulations for mining activity are set out in:

- The Constitution;
- The Resolution n.º 10/95 of 17 October related to the “*National Land Policy Resolution*”
- The Law n.º 19/97 of 1 October the related to the “*Land Law*”
- The Decree n.º 66/98 of 15 July related to the “*Land Regulations*”

Environment Management

EIAs must be undertaken by an environmental specialist licensed by MICOA (Ministry of Coordination of Environmental Affairs) carried out during the feasibility stage of the project. The EIA process is meant to generate a project-specific environmental license to carry out a mining project. As in EIAs generally, the project proponent first submits to MICOA the so-called terms of reference (“ToRs”) for the EIA. The ToRs for mining-related EIAs are required to state the timing and procedures for the related public consultation process.

The EIA report must include an environmental management plan. This plan shall include environmental, biophysical, social, economic, and cultural aspects as well as an environmental monitoring and a mine closure plan. The environmental management plan must cover a period of at least five years, at the end of which period a new plan must be submitted for approval. The environmental management plan must also include a risk and emergency management plan. The EIA, including the environmental management plan, is scrutinized by MICOA and MIREM. Having approved the EIA, MICOA issues an environmental license within 10 days thereof the approval. The license is valid for the same period as the mining title but must be reviewed every five years.

Integrated Coastal zone Management (ICM)

Integrated coastal zone management is being promoted by the Ministry for the Co-ordination of Environmental in Mozambique. Danish International Development Assistance (DANIDA) is providing assistance to MICOA to develop a national coastal policy. Note that, local level ICM activities are underway such as in Xai-Xai area has already its coastal zone policy called “Xai-Xai ICAM Management strategy” and Mecufi Coastal Zone Management Project.

5.4. Development, Trade and Projects

The government of Mozambique has a Poverty Reduction Strategy Paper called “Plan of Action for the Reduction of Absolute Poverty (PARPA)”, which objectives are: (i) Reducing the levels of absolute poverty, which will be pursued through activities in education, health and rural development; (ii) Rapid and sustainable economic growth, focusing attention on the creation of an economic environment that favours private sector activity; (iii) The economic development of the country, aimed in the first place at the rural areas, and having in mind the reduction of regional imbalances; (iv) The consolidation of peace, national unity, justice, democracy and national awareness, as indispensable conditions for the harmonious development of the country; (v) The fight against corruption, crime and red tape; and (vi) The strengthening of sovereignty and international cooperation.

Policy Planning Initiative	Objective
Action plan for the reduction of absolute poverty (2006 – 2009) – PARPA II	Parpa II is a 5years development program intending to reduce the incidence of poverty from 54 percent in 2003 to 45 percent in 2009.
XAI-XAI ICAM MANAGEMENT STRATEGY	ICAM a plan which focuses on linkages between sectoral activities to achieve more comprehensive goals
2 nd Generation of Poverty Strategy Paper (PRSPsII)	The document presents the link between Poverty Reduction Growth Facility (PRGF) and PARPA II to evaluate the extent of their similarities and/or the existence of conditionality and mutual commitments

Development project	NGO / Donor / Private Sector	Project details
Coastal Rural Support Programme CRSP(M)	Aga Khan Development Network	CRSP (M) tackles rural poverty with a coordinated approach that focuses on economic development (including agriculture), education, health and habitat, and includes key cross-cutting themes including civil society strengthening, gender, the environment, and HIV/AIDS. The programme also actively encourages the participation and leadership of women's organisations.
Coastal Tourism Project in Mozambique	UNIDO	The overall objective of the project is to promote the conservation, management and monitoring of this coastal biodiversity. The project will also aim at enhancing and diversifying sustainable local livelihoods through ecotourism as a means of alleviating poverty. Priority will be given to identifying the integrated roles of sustainable tourism and the designation and management of Marine Protected Areas
Roads and Coastal Shipping Project	World Bank	The primary objectives of the project are: (i) to support Mozambique's economic recovery program through rehabilitation and maintenance of priority roads; and (ii) to further strengthen the management capacity of road sector institutions. (In collaboration with mining companies)

8. SWOT Analysis

<p>Strengths</p> <ul style="list-style-type: none"> • Considerable natural resources • Government supports the development of the mining sector. • Presence of established NGOs and organisations with coastal zone management experiences. • Public-Private-Partnership has positive effects such as: infrastructure constructions, employment for local workers, tax income for the government, health support for the coastal populations. • Strong environmental regulations 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Lack of Integrated Coastal Zone Management for the zones concerned with the industrial coastal mining activity. • Shortage of available information from MICOA, i.e. no website dealing with environmental regulations. • No management of the “informal artisanal coastal mining” nationally.
<p>Opportunities</p> <ul style="list-style-type: none"> • Future development of the Corridor Sands Project in Chibuto and other projects not as yet prospected. • SADC Trade Protocol • Technology transfer • Employment for local workers and businesses • Greater NGO involvement. • Good investment incentives • Providing support to develop a sector plan. • The government is prioritising the provinces with the most mining activity (such as Manica, Tete, Zambezia and Nampula) 	<p>Threats</p> <ul style="list-style-type: none"> • The increase in foreign exchange earnings due to the existing and proposed mega-projects can cause the real exchange rate to appreciate, which would leave the rest of the economy suffering a loss of competitiveness and reduced growth, thus offsetting the gains enumerated above. “Resource Curse” • The provinces not prioritized by the government would not benefit sufficiently from the impact of the mining sector and especially the good governance of it.

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