

# **COASTAL LIVELIHOODS IN THE UNITED REPUBLIC OF TANZANIA**

## **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 Tanzania, 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 Tanzania 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 TANZANIA**

### **I. Small-Scale Fisheries**

The small-scale fisheries in Tanzania accounts for 98% of total fish production, 1.3% of GDP and makes up 9.9% of fish exports worth an estimated \$12.4 million USD. While its contribution to GDP may appear marginal, the sector is a vital source of food security, employment and income for coastal communities, which subsequently stabilizes the five coastal regions which, when including all sectors, make up 32% of Tanzania's GDP.

Infrastructure, including processing, storage and transportation facilities, remains highly constrained in the sector, most evident in the post-harvest sector where losses are estimated at an immense 20%. This coincides with the use of deleterious fishing techniques, such as dynamite, which has led to the degradation of habitats in the coastal zone. A lack of institutional infrastructure required to monitor and regulate such activities has also weakened the ability of authorities to prevent such practices. Despite these obstacles, some oversight and planning has been decentralized to the community level through Beach Management Units (BMUs) and Collaborative Fisheries Management Areas (CFMAs), which empower local fishers to monitor and become responsible for the resources and habitats they depend on. Likewise, as micro-finance continues to be made available by international organizations to the sector, sustainable practices should be strengthened.

Relatively high taxes on exports and financial services tend to constrain development of the commercial sector, and credit remains scarce in the coastal zone. However increasing global demand for fish products could incentivize investment in the sector. This could subsequently allow the sector to gradually move away from its over-dependence on external finance. In general, the potential for mariculture, the wide range of available fisheries species, the presence of supporting development institutions and good government legislation also highlight the positives existent in the sector. Improved implementation of existing policies, legislation and guidelines, and strengthening the role of BMUs in co-management initiatives are key areas for improvement, while the role of Marine Protected Areas as a viable management option needs to be investigated and promoted where appropriate.

## **II. Tourism**

Tourism is a massive component of the Tanzanian economy, accounting for 17.2% of GDP, making up 25% of foreign exchange earnings and employing 288,700 people. The sector also continues to grow, with foreign exchange receipts from tourism increasing from US\$259.44 million in 1995 to \$1,269.68 million in 2008 and total arrivals increasing from 295,312 to 770,376 over the same period. While much of this activity is concentrated around wildlife-based tourism in the hinterland, coastal tourism is witnessing some growth, evident on Mafia Island where arrivals increased from 484 in 2000 to 3,107 in 2007. Coastal tourism is not, however, growing as rapidly as inland tourism, which has been partly attributed to the lack of a national strategy in regards to diversifying the sector into the country's coastal regions.

Numerous constraints have been documented in the sector, despite the aforementioned growth rates. For example, it is estimated that between 75% and 90% of funds paid for vacations in Tanzania are actually collected by outbound operators, source country airlines and other imports from the visitor's country of origin, which also corresponds to the leakages in the sector experienced by other least developed countries in Africa. Similarly, a lack of appropriate facilities for international clients, low-levels of entrepreneurship and a lack of confidence in the private-sector all highlight the weaknesses that continue to constrain the sector. Numerous environmental threats have also been identified, with large-scale erosion, strip development, over-fishing and deterioration of coastal ecosystems due to climate change and pollution all being highlighted, which is problematic considering the sector's dependence on the country's natural landscape and wildlife.

There are however strengths and opportunities prevalent in the sector which could be utilized to mitigate some of the aforementioned constraints. For example, improvements in electricity infrastructure in the coastal towns around Lindi and Mtwara should be encouraging for private-investors, while upgrades in the port and airport at Mtwara should increase accessibility. The country's long coastline and attractive offshore islands, world renowned attractions and traditional cultures could also be utilized as pillars for further growth in the sector, while the presence of regulations around marine parks, eco-tourism development, as well as conservation support from international donors such as the World Bank and WWF, should be helpful in reducing environmental degradation of the coast. Nevertheless, despite the presence of a Tourism Master Plan, tourism growth in the coastal zone continues to lag behind activity in the hinterland, which is expected to continue without a proper strategy to grow the sector around coastal communities.

## **III. Mariculture**

Mariculture is clearly a vibrant sector in the Tanzanian economy, with finfish, seaweed and mudcrab being farmed in all coastal regions, and pearls and prawns also being farmed in Mafia and Tanga,. Regulation and infrastructure development has lagged behind in this sector, however, high quality

seawater, large numbers of candidate species and existing research and support capacity highlight the untapped potential in the sector.

The government has also committed to developing the sector, evident in the Seaweed Development Strategic Plan and the Aquaculture Development Strategy proposed in 2005 and 2008 respectively. Despite constraints in governance, several experimental farms are currently operational and the strategies have been applauded for their credibility. The private-sector has also been established in the seaweed and prawn industries, while NGO's and international organizations with expertise in mariculture continue to provide support. Many mariculture projects are, however, largely dependent on the knowledge and finance provided by international donor organizations, which has magnified the need for greater private-sector involvement and local capacity building in the sector.

Despite the potential for over-exploitation of certain species due to the requirement of wild-caught seed, and high levels of theft and vandalism, the opportunities for diversification into new markets are immense. With greater NGO participation, expansion into undeveloped intertidal lagoon and mud flats, as well as improved production of aquafeeds, mariculture has the potential to become a mainstay in the Tanzanian economy.

#### **IV. Agriculture and Forestry**

Agriculture and forestry is the country's leading sector, employing 82% of the population, contributing 45% of GDP and 60% of total export earnings. The sector employs three million people, with forestry alone accounting for 4% of GDP, making up 10% of foreign exchange earnings equal to 14 million USD annually. Subsistence farming is, however, the most dominant form of income generation in the coastal zone, thus, any increases in unemployment are expected to place further strain on the region's natural resources. Fuelwood also accounts for more than 92% of the country's energy use, also placing extensive strain on the country's coastal forests.

Forest depletion, a lack of information on sustainable agriculture and limited export opportunities have all been highlighted as major obstacles in the sector, however, current projects and planning being implemented by coastal residents, the government and the international community are very promising. The promotion of participatory forest management by the government, as well as the sustainable development projects being promoted by the World Bank and WWF, have all focused on the empowerment of local communities to manage their own resources. Likewise, alternative sources of income generation, such as beekeeping, honey production, and tree nursery management have highlighted potential substitutes present in the sector. The government has also recognized coastal forests, particularly mangrove areas, as a key resource under threat, which is a significant step from a conservation perspective.

Despite the high pressures on coastal land from population increases, as well as the conflicts between coastal residents and commercial companies, the government has begun to recognize that the fishery is not the only sector of importance in the coastal region. The Poverty Reduction Strategy Paper produced by the state is evidence of this, as it aims to facilitate partnerships between the public sector, private sector and civil society with the aim of reducing poverty and subsequently reducing the strain on the country's natural resources. However, almost half of the country's forests are severely threatened, hence, more aggressive action will be required to sustain the sector.

## **V. Energy**

Activities in oil, gas and biofuels in Tanzania are highly promising, with current natural gas production at Songo Songo reaching 70mcf in 2008, and production at Mnazi Bay reaching 1mcf in 2008. The country also has strong hydrocarbon potential and numerous companies are currently exploring for oil, with 13 offshore blocks expected to be conceded in the near future. Only about a quarter of potential arable land is currently cultivated, providing opportunities for biofuel production and it is estimated that between 20 and 24 companies have requested land for commercial biofuel production. Although the refinery in Dar es Salaam was closed in 1999, the region still remains a center for downstream activity, as it handles imports of LPG, stores oil products, receives gas from the 230 km pipeline connected to Songo Songo, supplies Burundi, Uganda, Rwanda and Eastern DRC, and transports crude oil through a pipeline to the Indeni refinery in Zambia. Despite all this activity, it is estimated that only 0.1% of the population is employed in the electricity and gas sectors.

Numerous constraints have been identified in the sector. For example, unclear petroleum regulations, as well as an inconsistent EIA framework, have both been highlighted as weaknesses. Similarly, a lack financial, operational and human resources capacity has constrained management and law enforcement in the sector, particularly prevalent at lower-levels of government. Many large-scale biofuels projects have also been implemented without a clear and consistent framework, which could lead to unsound development in agrofuels and threaten food security, small-scale food crop producers and local livelihoods. It is also likely that any increases in oil operations, both upstream and downstream, will intensify the risk of spills and accidents, which could negatively impact local livelihoods.

A number of strengths and opportunities have, however, been identified, which could be utilized to alleviate some of the aforementioned constraints. For example, there is clearly interest from foreign investors, particularly in biofuels, which could mitigate some of the financial strains in the public sector, while the availability of land is highly supportive of biofuels development. The government is also committed to developing domestic energy resources, which is very positive considering the current domestic and regional demand for energy. Oil and gas development also has the potential to benefit livelihoods through employment, while companies in the sector, such as Songas, are likely to further engage in the community and support local development. There are also plans for a new refinery in Dar es Salaam, as well as upgrades in storage capacity in Dar es Salaam and increases in capacity at the Songo Songo gas field, all of which should be conducive to growth in the sector. Numerous international organizations, such as the World Bank and USAID, are also involved in coastal zone management projects, which could again be beneficial in terms of community development in the coastal regions. Thus, while it is not likely that the current upstream activities will provide significant employment to coastal communities, the prospects inherent throughout the sector highlights the great potential in the Tanzanian energy sector.

## **VI. Ports and Coastal Transport**

Tanzania clearly has an established ports and coastal transport sector, with ports in Mtwara, Lindi, Kilwa, Dar Es Salaam and Tanga, as well as an extensive rail and road network. While the ports are managed by the Tanzania Ports Authority (TPA), the rail network is jointly managed by the Zambian government and the Tanzania Railway Corporation. Some concessions have been proposed, however, the transport sector is largely funded and managed by the public sector, which does constrain capacity and service delivery in the sector.

There are numerous opportunities in the transport sector despite the presence of corruption and a lack of training and skills in ports and coastal transport. The introduction of new navigational aids in Mtwara

could make the port operational twenty-four hours a day. In Dar Es Salaam, modernization of the road and rail corridor could greatly expand business opportunities on the coast. Likewise, there are also opportunities to expand the Tanga port into a deepwater port. The discovery of an offshore gas field near Songo Songo Island could also provide power for industrial development near Kilwa and make a difference to the future of the port.

Inadequate infrastructure and a poor manufacturing sector have constrained growth in the sector, however, the physical location of the ports, as well as the proposed development of Mtwara and Central Development Corridors, which will effectively link the Tanzanian coast to the interior of the continent, highlight the prospects for further growth in the sector. If further concessions can be negotiated with the private-sector, as seen in the container sub-sector, capacity and service delivery both have the potential to dramatically improve.

## **VII. Coastal Mining**

Being Africa's third largest gold producer, the world's sole producer of the gemstone tanzanite, and a producer of cement, diamonds, sapphire and garnet, Tanzania clearly has an extensive and diverse mining sector. The sector contributes nearly 4% to GDP, it formally employs 8,000 people and also makes up an extensive 42.9% of total foreign exchange earnings. An estimated 500,000 artisanal miners are also active throughout the sector.

The majority of precious metal mining takes place inland, however, the coastal zone does have mining operations focused on cement, coral and lime, with both lime and cement being produced for export throughout East Africa. Companies controlling these operations, such as Tanga cement, have also invested in community development, a testament to the social benefits provided by coastal mining activities. The Twiga and Tanga cement projects have also produced over 200 billion TZS in tax revenue, which could potentially be reinvested into the coastal communities with the construction of housing, schools and clinics. Likewise, recent investments in the Twiga and Tanga mines are expected to generate more employment and training for employees in the coastal region.

While financial resources are limited and environmental management remains uncoordinated, strong mining regulations, NGO involvement in coastal zone management and the development of new cement projects on the coast all highlight the potential for further sustainable growth in the sector. Despite some of the environmental issues surrounding the mining sector on the coast, the incentive to invest in the region also remains high. Poverty and unemployment does, however, remain a constraint across coastal communities, which could facilitate the over-exploitation of resources in the future.

## **Conclusions**

Each sector has had, and will continue to have, a distinct impact on the socioeconomic and environmental status of the coastal communities concerned. There are many constraints that remain constant across sectors, such as political stability, the over-exploitation of natural resources and infrastructure, all of which have had a widespread impact on all of the sector's considered in the coastal livelihoods study. There are also many strengths and opportunities apparent, such as potential alternative income generating activities, the provision of microfinance and opportunities for business and investment. In this respect, 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 clear link between the sectors is the constraint of governance and capacity. In the small-scale fisheries, the lack of institutional infrastructure to monitor the sector has led to destructive fishing

techniques going unchecked. In mariculture, the responsible government agencies lack resources and funding to meet their proposed objectives. In agriculture and forestry, community capacity is too weak to sustainably manage their resources, while government ownership in the ports and shipping sector continues to weaken capacity and service delivery. Likewise, in the energy sector, capacity to manage and enforce laws has been highlighted as a weakness, particularly at the lower-levels of government. Despite these constrictions, progress is being seen. For example, decentralization and microfinance has the potential to further empower local communities in the small-scale fisheries, while NGO's continue to provide technical support in the development of the mariculture sector. Likewise, concessions to the private sector in the ports and shipping sector, as well as strong regulation in the mining sector, highlight the development of governance capacity in the coastal zone.

Across many sectors, environmental degradation also remains a threat. The destruction of marine habitats, forest depletion, pollution and the potential for over-exploitation all highlight the environmental challenges confronting coastal communities in Tanzania. While the government has promoted sustainable development practices across most sectors, the lack of capacity has made it difficult moving forward. Despite this, positives can be seen. For example, substitutes in the agriculture and forestry sector, such as beekeeping, honey production and tree nursery management, have the potential to reduce the strain on forests and land. Likewise, various NGO projects continue to promote sustainable practices in the small-scale fishery and coastal zone management in the mining sector.

Business and investment opportunities are also evident across the sectors. In coastal mining, the cement and lime industries continue to attract investment, while upgrades in the road and rail corridors linking the coast to inland areas could present new opportunities in the ports and shipping sector. Similarly, the private sector has been promoted with the Poverty Reduction Strategy Paper, while the demand for fishery products should highlight the commercial opportunities existing in the small-scale fishery. In the energy sector, there is also great interest from foreign investors, particularly in biofuels, which could be very promising for both government and coastal communities. Despite this potential, private-sector involvement does remain weak in the mariculture sector, while high taxes continue to limit the competitiveness of the country's fishery products. Likewise, conflicts between coastal communities and commercial companies have become a threat in the agriculture and forestry sector, while biofuels investors have shown an inclination to target rich land that is occupied by small-scale food crop producers in the energy sector.

Overall, weak infrastructure, a lack of capacity and the over-exploitation of natural resources present many challenges to the Tanzanian coastal zone. However, a commitment to sustainable social and economic development by government, NGO's and communities is apparent. Opportunities for private-sector investment are also evident, particularly in the mining and ports and coastal transport sectors, which demonstrates the potential for growth and development moving forward. Investment in these sectors also make evident the significance of spillovers, whereby, the private-sector could stimulate the coastal economy and potentially reduce the affects of rapid urban migration. These opportunities also magnify the utility and importance of creating employment and alternative streams of income to reduce poverty and, in turn, reduce the strain being placed on coastal resources. By promoting private-sector investment, international support and community management in new sectors, the government has the opportunity to facilitate the growth of a sustainable economy in the coastal zone while simultaneously empowering the coastal population.

# DETAILED SECTOR REPORTS

## I. Small-Scale Fisheries – Prepared by Mrs. Fatma Sobo, E-mail: [fsoboster@gmail.com](mailto:fsoboster@gmail.com)

### 1. Introduction

Tanzania is a coastal state bordering on the Western Indian Ocean (WIO) region. The country has a total surface area of 945,040 km<sup>2</sup> whereby 881,000 km<sup>2</sup> is in the mainland and 2,000 km<sup>2</sup> is in Zanzibar. The country is well endowed with water resources, with 62,000km<sup>2</sup> being covered by various water bodies, diverse river systems, numerous wetlands and an ocean coast line of 1,450 km long. This makes the country reasonably rich in inland and marine fishery resources, which subsequently supports the country's fishery sector. On the marine side, there are internal and territorial waters which are estimated to be 64,000 square kilometers, while the Exclusive Economic Zone (EEZ) is estimated to be 223,000 square kilometers.

The fishery in Tanzania is categorized into artisanal and commercial fisheries, a difference due to modern mechanized fishing vessels for the former and gears for the latter. With the exception of the Exclusive Economic Zone where a few foreign industrial fishing vessels operate, the majority of activity<sup>1</sup> takes place in inshore waters. Inshore fisheries refer to all fishing activities carried out within inner sea or internal waters within the 12 nautical miles (Fig. 1), while Fisheries Act No. 22 of 2003 defines the artisanal fisheries as activity that is traditional and not commercially oriented, which uses relatively small amounts of capital and the fishing is limited to inshore waters only. FAO<sup>2</sup> defines the artisanal fisheries as traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amounts of capital, energy, and relatively small fishing vessels (if any), which make short trips close to shore mainly for local consumption. In practice, the definition varies between countries, e.g. from a one-man canoe in poor developing countries, to more than 20 m. trawlers, seiners, or long-liners in developed ones. However, the fishery in Tanzania is entirely artisanal and consists of boats of 3m to 9m long (Fisheries<sup>3</sup> 2010). Commercial fisheries operated in the territorial waters only from 1988 by making use of trawlers aimed at prawns and shrimp, however, the fishery has been closed since 2007 due to a decline in prawn resources.

The artisanal fisheries is one sub-sector in Tanzania that makes a valuable economic contribution to coastal communities. In terms of output volume, output value and employment, the sector is much more important than the commercial fisheries (Sobo<sup>4</sup> 2004). It also provides protein-rich food, employment and income, thus making a significant contribution to livelihoods along the coast. The fishery does not, however, make a significant contribution to foreign exchange earnings and revenue in the country. According to the Annual Fisheries Statistical Report<sup>5</sup> 2008, inshore fisheries accounted for 13% of the total country fish production and contributed to 5.04% of the total fish export, while fisheries, as a whole, contributed 1.3% to total GDP (Planning Commission<sup>6</sup> 2008). This small contribution is largely due to the closure of the commercial fishery in 2007. Nevertheless, the number of people involved in trawlers as crews, working in fish processing factories, and engine and boat maintenance before the closure was estimated to be 1.3% of total coastal communities (compared to those involved in agriculture and livestock husbandry).

---

<sup>1</sup> Artisanal, subsistence and small-scale commercial fisheries are taking place in inshore waters

## 1.1 Fisheries Categories in Tanzania

Fisheries Act, No. 22 of 2003, defines artisanal fisheries as small scale and not commercially oriented, using relatively small amounts of capital with traditional involvement. The Fisheries Policy and Fisheries Regulations do not, however, define the sector separately. Practically, researchers and resource groups define small-scale fisheries as a category of fisheries operating in shallow waters within the continental shelf, which extends 4 km offshore (Wiljkstrom et al.<sup>7</sup> 1988), using small sized vessels and gears including small boats, dhows, outrigger-canoes, dinghies and sometimes canoes, which in most cases are mechanized but employ less technology compared to commercial and industrial vessels. Artisanal refers to small-scale fisheries, although the two sometimes have different meanings. Most scientists and researchers within and outside the country do, however, categorize them together (SEAFDEC<sup>8</sup> 1999). Subsistence fisheries refers to the type of fishing which uses low cost vessels and gears, eg foot fishers and those using dug out canoes for household consumption and the sale of surplus catch (SADC<sup>9</sup>), where the fishing is meant for food, survival, and a small surplus, but is nevertheless not meant for economic purposes. A traditional fishery is a type of fishing in which fishers carry out their fishing activities by making use of traditional fishing crafts and gears, such as dugout canoes or foot fishers. In actual fact, artisanal, traditional and subsistence fisheries are almost equal and are very difficult to define separately since all of them are limited to inshore activity due to small sized, un-mechanized fishing vessels and gears. They also all normally fish for subsistence with the surplus sold at the landing beaches. In this respect, artisanal, traditional and subsistence fisheries are pooled together in Tanzania to refer to as small-scale fisheries (Box 1).

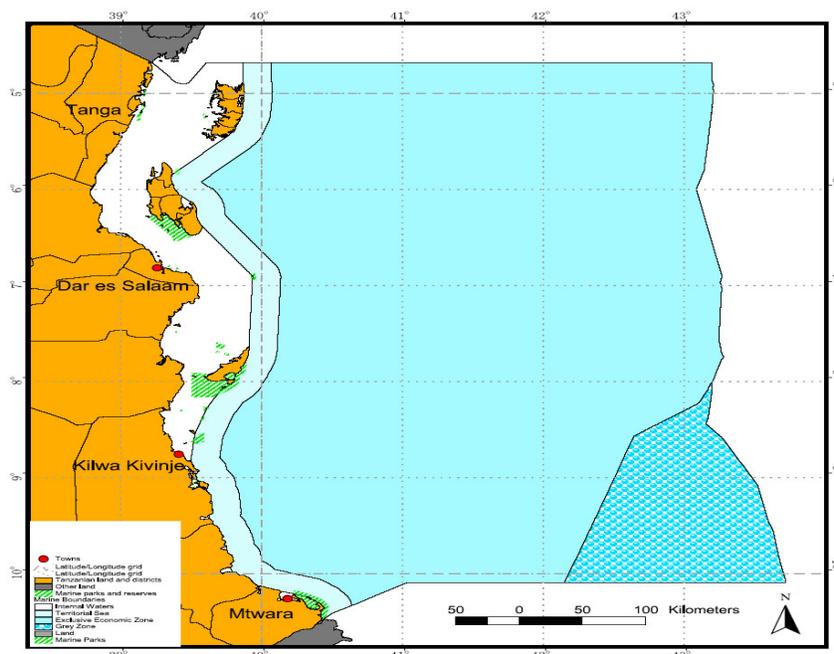


Figure 1: Tanzania fisheries areas, Source: Fisheries Division

### Box 1

Artisanal fisheries can be subsistence or commercial fisheries, providing fish for local consumption or export. The category is sometimes referred to as small-scale fisheries (as is used in Tanzania)

## 1.2 Main types of small scale fisheries

Different types of fish are caught by different gears operating in different habitats. These gears can be passive or active and this can categorize a different fishery. The following table lists the different small-scale fisheries in Tanzania:

**Table 1: Small-scale fisheries categories in Tanzania**

S/N	Type of fishery	Gear used	Type of species caught	Habitat
1	Hook and line fishery	Hand lines, Long lines making use of baits	Sharks, Rays, Scavengers, snappers and carangids	Coral reef areas,
2	Bottom gill net fishery	Gill nets	Scavengers and snappers	Open low water sea grasses areas
3	Trap fishery	Traps, weir/staked (uzio/wando), basket traps, fish fences	Scavengers, Indian mackerels, snappers	Intertidal mud flats, sand flats and intertidal zones
4	Surface gill nets	Gill nets	Tuna and tuna like spp, mackerels, marlins, sail fishes, carangids	Surface inshore area
5	Shore gathering intertidal, octopus fishery	Hand gathering and spears or “mchokoo” in swahili	Octopus	Coral reef areas, rocky shores and intertidal zone
6	Diving for lobster fishery	No specific gear used	All types of lobster	Coral reef plat forms
7	Boat drag and seine net	Small seine nets	Squids and seer fish (surface)	General inshore area
8	Cast net fishery	Small seine nets, cast nets	Squids, mullets, catfishes, small mackerels (dagaa)	General inshore area
9	Scoop net fishery	Small seine nets, scoop nets (light fishing)	Indian mackerels	Inshore waters

### **1.3 The Fisheries Chain, “From Hook to Cook”**

The most important fisheries in inshore Tanzania is the small scale fisheries, which is mainly comprised of local communities who engage in fisheries as their primary occupation<sup>2</sup> (Bryceson<sup>10</sup> et. al. 2006). Practically all catches are landed at fish landing sites selected by fishers, however, they are sometimes selected by the government. The fishery provides 98% of the domestic fish supply, while the small scale fisheries accounts for over 98% of the total fish production. In 2008, the small scale fisheries provided 43,130 tons worth 51.7 millions TShs. The industry also produces for export, earning the country nearly 12.4 million USD. This contributes 9.9% of the total fish export (Fisheries<sup>11</sup> 2008).

Fish distribution and marketing is still constrained by inadequate infrastructure, including fish markets and landing sites, as well as poor communication and transportation attributed to poor and unreliable feeder roads. Given this situation, fish cannot reach most of the consumers, particularly in rural areas, in good condition. Poor fish handling and processing, as well as poor storage, also limit the amount and quality of fish reaching consumers in distant markets.

Fish being processed for the internal market is mostly sun dried, smoked, and deep fried with a short shelf life, making it difficult to reach distant markets in acceptable condition. Fresh fish is being supplied mostly to urban areas and surrounding landing beaches.

Post harvest loss is estimated at 20% because of this weak infrastructure and poor storage facilities, which results in a loss in quality. Loss in quality and price occurs when the volume of fish produced exceeds the local consumption and, therefore, there is no means of transporting the excess to other areas and/or no means of preservation. This situation predominantly occurs during the rainy seasons when fish catches are higher than demand, and cannot be processed, evident in the sardine fishery in the Mtwara region. Currently, post harvest loss is a serious issue impacting on income generation for fishers and processors, and on continuous national food supply for food security.

### **1.4 Fisheries Statistics**

The National Fisheries Policy and Strategy statements (1997) highlight the need to improve the knowledge of fisheries resources and facilitate proper information management in the sector. Proper, accurate and up to date information on the fishery resources is of vital importance. The policy also placed emphasis on information collection and processing for fisheries management purposes. It is essential for the management agency that the most appropriate and accurate information for management of the fishery be continuously collected, processed and provided in a timely fashion. In fisheries, reliable and accurate information is crucial as only well informed decision makers can make good decisions on fisheries resource exploitation and management.

Previously, all fisheries information and statistics were collected at the landing beaches by total enumerations. Currently, the fisheries data collection and processing is based on sampling in time and space. The system is updated from time to time depending on necessity and the availability of funds.

The collected information is divided into catch assessment and frame surveys. Catch assessment is the landing survey conducted on sampling bases in sampled landing beaches to obtain fish catches in metric tons, while a frame survey is the inventory of fish producing factors collected on a biannual basis depending on the available financial resources. The collected information in frame surveys include the

---

<sup>2</sup> These fishers are almost wholly dependent on fishing for their livelihoods judging from their daily time use.

number of fishers, the number of fishing crafts by type, the number of fishing gears by type and size and services available at the landing sites. This data is calculated through total enumeration. Table 1 gives an overview of small scale fisheries statistics for 1995, 1998, 2001, 2007 and 2009 when frame surveys were conducted in marine waters. Fish catches decreased from 2001 to 2008, however, the trend increases by 2009 (Fig 1). Export data obtained by total enumeration of fish and fishery products in terms of weight exported from every point of exportation, with an oscillating trend of up and down. With population increases, fish consumption seems to increase as well. According to Fisheries Statistics of 2009, a total of 41,148.26 tons of fish and fishery products were exported to various countries outside the country, while 527.12 tons of fish were imported within the country.

**Table 1: Fisheries statistics of inshore waters**

Details	Results					
	1995	1998	2001	2005	2007	2009
Years						
Number of landing sites	NA	210	212	259	232	257
Number of Seaweed farmers	NA	NA	NA	NA	5,423	5,579
Number of Fishing vessels	3,768	5,157	4,927	7,190	7,342	7,664
<b>Number of Fishers</b>						
Foot fishers	NA	NA	NA	NA	8,237	7,009
Fishers using vessels	13,822	20,625	19,071	29,754	28,010	29,312
Total number of fishers including foot fishers	13,822	20,625	19,071	29,754	36,247	36,321
<b>Number of Fishing gears</b>						
Handlines	7,839	9,383	13,382	14,980	13,990	13,955
Longlines	1,575	11,734	5,272	53,549	2,267	9,437
Gillnets	4,120	9,125	5,136	18,802	31,210	22,666
Cast nets	49	0	173	73	169	229
Ringnets	221	128	224	370	1,076	1,241
Traps	3,390	254	5,557	5,907	4,185	4,674
Purse seine		15	68	0	363	0
Sharknets	3,357	3,463	2,852	8,820	4,299	3,733
Beach seine	350	319	485	453	615	768

Spears	134	805	496	350	1,764	1,315
Scoopnets	75	256	252	710	306	40
Weirs	25	254	72	14	544	0
Angling	0	0	0	0	20	0
Trawl net	2	7	7	10	9	3
Industrial Trawlers	0	17	20	20	0	0
<b>Engines</b>						
Number of outboard engines	272	463	336	507	672	737
Number of inboard engines	4	55	51	53	71	94
<b>Weight in metric tons</b>						
Estimated weight of fish in m.tons	48,762	48,003	52,935	54,968.6	43,498.50	52,231.97
Export (fish & fishery products) m.tons	1,557	4,057	2,142	2,250	2,820.83	1,710.24
Import of fresh fish	0	0	0	0	0	527.12

### 1.5 Recreation/sport fisheries

Recreation fishing sometimes refers to sport fishing, which is the fishing activity for pleasure, conducted neither for profit or survival. Recreation fishing is mostly done by making use of line, hooks or rods with baits, which is normally referred to as angling. In recreation fishing, the fish caught are often released in the water while it is still alive. Sport fishing is dominated by foreigners and mainly practiced by tourists who stay in 3 to 5 star hotels that are situated along the beach. Examples include the White Sand Hotel, Kunduchi Beach Hotel, Bahari Beach Hotel, Oceanic Hotel and Paradise Hotel. Most of these hotels are in Dar es Salaam, Bagamoyo (north of DSM) and Zanzibar. There is also a specific company based in Dar es Salaam (Yatch Club) dealing with sport fishing. Tourists mainly use hooks and lines to catch large open water species such as tuna, sharks and marlin. Small scale fishers in the Mtwara region are also involved in angling.

Sport fishing does not make a significant contribution to coastal livelihoods, as only hoteliers, private companies (Yatch club) and those living close to or in the Marine Parks and Reserve areas like Mafia Island Marine Park (MIMP) are involved in the sub-sector. According to existing policy, whether the fishing is conducted in coral reef, open waters or inside marine parks, it has to contribute to coastal communities living close to the area, where 20% of the funds obtained from sport fishing is supposed to be distributed to coastal communities for their livelihood, and 10% to the Municipality and the remaining 70% to operators - MIMP (Marine Parks 1999<sup>12</sup>). Meanwhile, there are no conflicts of interest between

sport fishing and small scale fisheries as the former are very few in number or absent in most rural areas<sup>3</sup>. The management of sport fishing has been allocated to the Marine Park and Reserve Unit (Act No. 29 of 1994), which governs all sport fishing activities, whether conducted by citizen or tourists. This involves the collection of levies, catch data and relevant information which could be used for many purposes to the benefit of the country.

## 2. Biophysical

The marine coast of Tanzania is characterised by a wide diversity of biotopes and species, typical of the tropical Indo – west Pacific oceans. The continental shelf is narrow with the 200 km contour depth about 4 km offshore, except in the Zanzibar and Mafia Channels where the shelf extends for up to 80 km (Julius<sup>13</sup> 2000). The resources of the shelf area are predominantly utilized by small scale fishers. Despite the fact that different habitats support different fish species, small scale fishers concentrated in productive areas which include estuaries, mangrove forests, coral reefs flats, sandy beaches, cliffs, sea grass-beds and muddy tidal flats. These areas are subjected to heavy fishing pressures from small scale fishers (Jiddawi and Ohman<sup>14</sup> 2002) due to their high fisheries potential. Fishing in these areas takes place mainly using traditional small boats, small outrigger canoes, dhows, dugout canoes and dinghies and a variety of fishing techniques (Mgaya<sup>15</sup> *et al.* 1999). Due to this limitation (use of small crafts), the small scale fishery is confined to shallow waters of less than 30 m and sheltered bays (Jiddawi and Ohman 2002). The number of marine fish species in the country is not known, however, estimates of more than 1,000 have been made, about half of which may be utilized as food or for commercial purpose.

The fisheries in the marine waters of Tanzania are highly diverse with different boat types and sizes using a variety of fishing gear types and sizes with different modes of propulsion from paddling, sailing to engines. These boats access different fishing grounds inhabited by different species and sizes of fish, and with differing production potentials resulting from varied historic levels of fishing intensity, and environmental conditions (Table 2).

**Table 2: Fish species with their locations**

Habitat	Species
Intertidal area and sandy beaches	herring, mackerel, and sardines, crabs, cuttle fish, octopus, squid, and a variety of bivalves, barracuda, sharks and rays
Coral reef	Groupers, snappers, mullet, long fin fishes, butterfly fish, parrotfish, surgeonfish, rabbit fish, groupers, and goatfish
Mangrove forests	Crabs, shrimps, milk fish, Shark, ray, skate, catfish
Seagrass beds	Parrot fish, Octopus,
Estuaries	Cat fish, milk fish, needle fish, groupers

Destructive fishing methods, such as drag nets and dynamite fishing, pose a serious problem as they destroy important habitats for fish and other organisms. There is a long-term trend of over harvested fishery resources in the country.

<sup>3</sup> Recreation/sport fishing data are not captured in the fisheries statistics bulletin of Tanzania.

### 3. Human environment

Inshore fisheries have existed since the dawn of humanity and still continue to be an important coastal occupation, especially for fishers between 26 and 35 years old (Fisheries<sup>16</sup> 2010). Coastal communities depend on fishery resources for both protein and as a source of income. More than 500 fish species are utilized for food, with reef fishes being the most desired edible to coastal people. These include snappers, parrot fish, surgeonfish, rabbit fish, groupers and goatfish. All fish catches are landed at the specific landing sites and the catches are auctioned as a marketing strategy undertaken by the small-scale fishers.

The small scale fishery is the main occupation and the main source of income for the majority of coastal inhabitants (Rattanaporn Anatasuk<sup>17</sup>). Habitat destruction, the use of illegal fishing practices, the overexploitation of resources and the establishment of Marine Protected Areas (MPA's) have been common issues that have a socio-economic impact in the coastal communities. Unfortunately, there are many gaps in terms of socio-economic data. Hard information and available data are limited on economic values and contributions of fisheries to household income. These information gaps include data on fish consumption, distribution patterns, marketing, poverty levels and food security among fisherfolk. What is known is that, on average, the five coastal regions have contributed about 32 percent of the national GDP.

Many of the coastal communities live in poverty and depend on coastal resources such as coral reef fishing for their livelihood, sustenance, and cultural traditions (Christy Loper<sup>18</sup>). Although there is no overall national level data regarding income and socio-economic characteristics of small scale fishers, some studies have been carried out in different regions of Tanzania. For example, the dependence of the communities in general on marine resources for their livelihood was found to be up to 60% at the village level in Mtwara region, with fishing being the most important source of income (Sobo<sup>19</sup>, 2008). Most coastal communities are poor and have high rates of illiteracy rate. In addition, women participation in fisheries in coastal areas is very weak, with the majority only involved in post harvest activities such as buying fish, deep frying and distribution to remote areas as informal trade. Coastal communities are also vulnerable to HIV/AIDS due to the migratory nature of fishers, who travel substantial distances looking for more catches.

#### **Box 2**

There is a significant pattern of rural-urban migration, particularly to the city of Dar Es Salaam. Over 33% of the country's population live in urban areas, compared to 18% in 1988 (World Bank, 1996). This is due to a lack of communication and transportation infrastructure in rural coastal areas, a lack of livelihood opportunities and social services, and poor performance of agriculture and fishing.

#### 3.1 Fisher's Organisation

Small scale fishers were not organised in previous years. Since 2008, the idea of establishing Beach Management Units (BMUs) has been introduced in every fishing community in order to organise fishers for the purpose of involving them in fisheries resource management. In light of this, fishers are empowered to participate and involve themselves in fisheries resource management planning for the purpose of sustainable fisheries. Among their roles and responsibilities is to participate in the decision making process with the government, the issuing of licenses to new fishers, the cleaning of beaches,

fisheries patrol, provision of fisheries data and information, and general decision making regarding fisheries management in their areas. A network of BMUs sharing the same fishing grounds were further organised to form Collaborative Fisheries Management Areas (CFMAs), which can decide on the types of gear to be used, the size of fish to be caught and the closing and opening of fishing grounds. Currently, there are 136 BMUs and 4 CFMAs established. Plans are underway to establish the BMUs at every landing site. The establishment of BMUs and CFMAs is the result of government efforts to move towards co-management of the fishery. The assistance of NGOs, such as WWF, has been important during the implementation of this system in pilot districts<sup>4</sup>.

Organisations found in the fisheries sector in Tanzania include the Tanzania Fish Processors Association (TIFPA), which was established to look after the interests of fish processors and factory owners with regards to their export investments in fish and fishery products, the Dar es Salaam Fishers Union (UWAWADA), and Crews Associations for commercial fishing vessel workers in Tanzania (WAMEUTA).

## **4. Policy and Governance**

### **4.1 National Fisheries Policy**

The National Fisheries Policy was developed in 1997 and is currently being reviewed in order to keep pace with emerging challenges and opportunities. The policy provides strategies and statements which focus on promoting sustainable exploitation, utilization, and marketing of fish resources to provide food, income, employment and foreign exchange earnings, as well as effective protection of the aquatic environment to sustain development. The policy emphasises the need for a change in attitude towards fisheries resources, as well as setting the vision for the nation as far as fisheries resources are concerned.

The overall objective of the National Fisheries Policy is to promote conservation, development and sustainable management of the fisheries resources for present and future generations. The Policy recognizes other relevant policies at both regional and international levels, including the SADC Protocol on Fisheries (2001). It emphasizes collaborative fisheries resource management, whereby, the user communities, who are in contact with the fisheries resources daily, are empowered to become aware of their own situation and become responsible for their own destiny.

### **4.2 Fisheries Policy Instruments**

#### **4.2.1 Fisheries Act**

Fisheries management in Tanzania is guided by the Fisheries Act No. 6 of 1970, as amended in Act No. 22 of 2003, and its Principal Regulations of 2005, as amended in 2009. The Act covers fisheries administration, development of the industry, aquaculture development, and management and control of the fishing industry. It also addresses issues of fish quality management and standards, financial provisions, enforcement, and penalties, as well as general provisions.

---

<sup>4</sup> WWF pilot districts for RUMAKI projects are Rufiji, Mafia and Kilwa districts

#### **4.2.2 Fisheries Regulations**

The Fisheries Principal Regulations of 2005 were amended in 2009 in order to have common principles with the Fisheries Act No. 22 of 2003. The regulations were developed to control fishers and other stakeholders regarding the use of fishery resources. The main objective of these regulations is to ensure sustainable fishing and utilization of fishery resources for present and future generations.

#### **4.2.3 Marine Parks and Reserves Act**

Establishment of marine protected areas is another management approach being used. To date, three marine parks have been established under the Marine Parks and Reserves Act (No. 29, 1994). These are Mafia Island Marine Park, Mnazi Bay and Ruvuma Estuary Marine Park, and the Tanga Coelecanth Marine Park. In Zanzibar Menai, Mnemba, Chwaka Bay; and Pemba Channel Conservation areas have been established. In addition, more than 16 small islands south of Dar es Salaam, Mafia and Zanzibar have been declared as marine reserves. The practical intention of this Act is to promote the sustainable management of critical marine resources and habitats through community participation. The public is continuously being sensitized and empowered to participate in planning and implementation of marine resources management plans through various public awareness and capacity building exercises. In most cases, local fishers are willing to participate and are involved in the decision making process.

#### **4.2.4 Other important supporting policy instruments**

The Deep Sea Fishing Authority (DSFA) Act No. 3 of 1989 was amended as Act No. 17 of 2007 and passed by the Parliament in 2007. The main objective of this act is to establish an institutional framework for the proper management of fisheries resources in the Exclusive Economic Zone of the country. Given the fact that fisheries is not governed by the Union, these initiatives are being undertaken jointly between the Tanzanian Mainland and Zanzibar islands. The DSFA Regulations have been developed to operationalize the Act.

#### **4.2.5 Tanzania Fisheries Research Institute (TAFIRI)**

The Tanzania Fisheries Research Institute (TAFIRI) was established through Act No. 6 of 1980. The objective of establishing TAFIRI was to ensure that management decisions on fisheries resources are based on the best available scientific findings. TAFIRI is also empowered to carry out all fisheries research activities in the country and provide advice to the government accordingly.

#### **4.2.6 Guidelines**

Various guidelines have been developed to facilitate the operationalisation of existing fisheries regulations in terms of guiding management, development and investments in the industry. Existing guidelines include Mariculture Guidelines and Guidelines and Procedures for development of Investments in Marine Parks, Reserves and Small islands. Beach Management Unit Guidelines were also developed to safeguard the establishment of Beach Management Units in all water bodies so as to involve fishing communities in the management of fish resources in their respective areas.

Several other management plans have been developed, including the Dar-es-Salaam Marine Reserves System, Mafia Island Marine Park, and Mnazi Bay and Ruvuma Estuary Marine Park. Other guiding documents include the Marine Parks and Reserves Unit (MPRU) Strategic Plan 2006-2010, and Guidelines and Procedures for Undertaking Environmental Impact Assessment in Marine Parks and

Reserves. The guidelines constitute an important tool that provides the basis for selecting sound investment proposals in accordance with the objectives of the Marine Parks and Reserves Act (1994).

As a whole, the Fisheries policy, Fisheries Act and its Principal Regulations, as well as the guidelines, will all be used as tools and instruments towards achieving the fisheries sector vision that aims at having a progressive fisheries sector which is economically, socially and environmentally sustainable. The long term objectives are aimed at achieving food security, poverty reduction, increased national income and a greater contribution to Gross Domestic Product.

## **5. Planning and Management**

The fisheries sector is managed under the Fisheries Development Division of the Ministry of Livestock Development and Fisheries. The Division has its own management plans based on the Fisheries Master Plan (2002), facilitated by the Japanese Government. There are also specific Management plans, such as District Integrated Coastal Zone Management Plans (Pangani, Mkuranga and Bagamoyo districts) under the Tanzania Coastal Management Partnership funded by USAID. Other initiatives include the Collaborative Fisheries Management Areas (CFMAs), which have been established to deal with the conservation of shared fishing grounds among neighboring fishing villages, Marine Parks and Reserves. A draft Prawn Management Plan has also been developed to manage the prawn fishery for commercial purposes, while an Aquaculture Management plan has been developed to manage aquaculture development within the country. Beach Management Units are assisted by government to develop their own resource Management Plans for their areas according to their capacity. The implementation of all these plans does, however, depend on the available human and financial resources.

The concept of Integrated Coastal Zone Management was adopted to facilitate a participatory and transparent process to unite government, the community, science, management, sectoral and public interests to wisely conserve and develop coastal ecosystems and resources, particularly with regards to artisanal fisheries. The main goal of this approach is to improve the well-being of coastal residents and their environment through the implementation and strengthening of the National Integrated Coastal Environment Management Strategy (1997).

Fisheries in Tanzania is open access. Licenses are, however, issued to monitor entrance into the fishery due to that fact there are no rights, permits or quotas issued. Beach Management Units are the only institutions on the ground at the local level which have the responsibility to share the management process with Fisheries Development Division. Open access is not allowed in areas such as MPRUs, CFMAs, and MPAs.

Monitoring, control and surveillance capacity in the Fisheries Development Division concentrates mainly on small scale fisheries. The Division and District Authorities are equipped with patrol boats distributed in most of the coastal districts for the purpose of curbing illegal fishing practices. The Division is also assisted by the MACEMP project to enhance surveillance and patrols within coastal districts.

**Table 3 List of international and national NGOs related to fisheries development that provide supplementary livelihood programmes to coastal communities**

S/N	Project name/ NGO's	Location	Project Objectives	Project life time
1	Marine and Coastal Environment Management Project (MACEMP)	Coastal areas  (all 16 districts)	Empowering coastal communities to access opportunities so that they can request, implement and monitor sub projects that contribute to improved livelihoods and sustainable marine ecosystem management; eg. Aquaculture.	December 2005 – December 2011
2	Regional Integrated Coastal Zone Management Program (ReCoMap)	Coastal areas (all 16 districts plus island of Zanzibar)	Promote sustainable use of marine and coastal resources by giving the opportunity to local communities to be directly involved in the conservation and efficient use of their marine and coastal resources.	
3	Tanzania Coastal Management Partnership (TCMP)	Bagamoyo, Pangani and Mkuranga districts only.	Conserve coastal and marine biodiversity while improving the well being of coastal residents through implementation of the Tanzania ICEMS and related ICM policies and strategies.	1998 – 2014 (depends on the availability of funds)
4	RUMAKI - WWF (NGO)	Rufiji, Mafia and Kilwa districts only.	Improved socio-economic well-being of coastal communities in Rufiji, Mafia & Kilwa districts through sustainable, participatory and equitable use and protection of their marine and coastal natural resources.	2006 – depends on the availability of funds

## 5. SWOT Analysis

The contribution of the small-scale fisheries to GDP is minimal (1.6%) and the socio-economic status of coastal communities is poor, even though the fisheries resources are thought to be abundant. Proper use and management of these resources is also constrained by the lack of stock assessment research.

Inadequate, unreliable and out of date data/information contributes significantly to poor planning and decision making. This also contributes to high poverty levels, as fishing is the prominent activity in the coastal zone. Most fishermen depend entirely on fishing activities, however, their activities are limited to shallow inshore areas due to the equipment and technology used.

Value chain analysis reveals that (as the case in fresh water fisheries) fishers are at a great disadvantage in comparison to middle men and exporters to whom most benefits accrue. Even though fisheries are thought to contribute to poverty reduction and food security in coastal communities, many challenges exist, including:

- Too much fishing effort in the fishery while the stock size is not exactly known;
- Presence of illegal fishing practices which destroys fishing environment including nursery and breeding grounds;
- Low level technology on fishing vessels and gears that govern poor accessibility;
- Free access nature of the fishery;
- Inadequate and unreliable fisheries data;
- Lack of capacity or adequate knowledge dissemination to fishers;
- Lack of good infrastructure to access reliable markets (interior part of the country and processing facilities);
- High infection rate of HIV/AIDS in the coastal areas contributes to a loss of good manpower in fishing communities
- Many under age boys are working in the sector
- Low level of funding from outside donors
- Low level of investment opportunities

A detailed analysis of the strengths, weaknesses, opportunities and threats is presented in the Annex 1.

## **6. Development, Trade and Projects**

In order to realistically achieve development in the fisheries, strategies need to take into consideration all aspects of the fishery ranging from production, processing, distribution, and consumption, to facilities and infrastructure involved in the actual marketing and export of fish and fisheries products.

To prevent post harvest losses, development of the fish trade in the country requires improved hygienic handling and processing of fishery products at both the small scale and commercial level. Trade in fish and fisheries products is generally constrained by poor infrastructure and fish preservation technologies, as well as inadequate storage facilities. At the industrial level, the emphasis is to export value added fishery products which meet quality standards and conditions. The objective that needs to be strived for is to improve and maintain quality, quantity and distribution of fish and fishery products to facilitate efficient utilization and market competitiveness.

Small scale fishers contribute to all export fish and fishery products outside the country. The law prohibits industrial fishing in inshore waters and the processing companies and fish factories have to collect fish from artisanal fishers and process them accordingly for export to various destinations. There are six (6) fish factories and more than 40 entrepreneurs involved in fish export in small quantities.

The only fisheries development projects associated with the marine coast is the Marine and Coastal Environment Management Project (MACEMP). The project aims to contribute to sustainable management and development of fisheries and coastal resources resulting in enhanced socio-economic

growth and better livelihoods for participating coastal communities, revenue collection and reduced threats to the environment.

## 7. Conclusion

The small - scale fisheries in Tanzania supports coastal communities and contributes to the country's economy. Fisheries falls within the priority sectors of the national poverty reduction strategies, the framework for fisheries development, the code of conduct for a responsible fishing and the strategic plan of action for the sustainable management of the fishery resources. The sector is now given the highest priority and falls under the “KILIMO KWANZA” slogan, meaning “Agriculture first”.

## Bibliography

1. The Fisheries Act<sup>1</sup> No. 22 of 2003; Ministry of Natural Resources and Tourism, Tanzania Government Printers, Dar es Salaam - Tanzania.
2. FAO<sup>2</sup>: Definition: artisanal fisheries (2007); FAO Fisheries Glossary: [www.fao.org/f/glossary/default.asp](http://www.fao.org/f/glossary/default.asp)
3. Fisheries<sup>3, 15, 16</sup> 2010, Marine Fisheries Frame survey Results for 2009, Fisheries Division 2010
4. Sobo<sup>4</sup>, F.A.S. 2004; Strengthening of Artisanal Fisheries data collection and management in Tanzania, United Nations niversity – Fisheries Training Program, Reykjavik, Iceland
5. Annual Statistics Report<sup>5, 11</sup> 2008; Ministry of Livestock Development and Fisheries.
6. Tanzania Planning Commission<sup>6</sup>, 2008: Government Printers, Dar es Salaam - Tanzania
7. Wiljkstrom<sup>7</sup>, et al. (1988): A plan for the fishery sector of Zanzibar. A report prepared for the project mission to fisheries in planning, management (Legislation) and development. (FAO: TCP/URT/5755 (F)) FAO Document. 94p
8. Dr. Relicardo M. Coloso (1999): From research to field verification to technology adoption. SEAFDEC<sup>8</sup> (1999)
9. SADC<sup>9</sup> Protocol; (2001) Southern African Development Community, Towards a common future, Associated Printers
10. Bryceson<sup>10</sup> et. al. 2006: Fisheries Study in Tanzania Coastal waters: the effects of trial export of finfish from Mafia Island on ecological-social resilience and vulnerability.
11. Government Notice<sup>12</sup> No. 92 of the Marine Parks and Reserves Act, (Cap 146) Subsidiary Legislation; User fee Regulations United Republic of Tanzania: Government Printer, Dar es Salaam, Tanzania.
12. Julius<sup>13</sup> F. and Bryceson I. (2007): Tanzania Coastal and Marine Resources, IUCN.
13. Jiddawi N. S and Ohman<sup>14</sup>, M. (2002); Marine Fisheries in Tanzania 2002.. Ambio Vol 31 No 7-8 December 2002. 518-536. Jiddawi, N.S, Stanley
14. Mgaya<sup>15</sup> et al. 1999 WIOFISH 2008; Western Indian Ocean Fisheries Database: A Catalogue of small scale fisheries
15. Rattanaporn Anatasuk<sup>17</sup> (2006): Socio-economic analysis of a small-scale coastal fishery toward coastal fishery management: a case study in Chumphon Province, Thailand. [www.library.ait.ac](http://www.library.ait.ac)
16. Christy Loper<sup>18</sup> et al., (2008): Socioeconomic conditions along the world's tropical coasts. US National Oceanic and Atmospheric Administration. [www.icriforum.org](http://www.icriforum.org).
17. Sobo<sup>19</sup>, 2008: Extracts from Fisheries frame survey reports in Tanzania 2008- a report presented to TCMP Workshop.
18. Fikret Berkes et. al. (2001), Managing Fisheries: Alternative Directions and Methods: International Development Research Centre Ottawa, ON, Canada.
19. The Fisheries Regulations, 2009; Ministry of Livestock Development and Fisheries, The Government Printer, Dar es Salaam – Tanzania.

20. The national Fisheries Policy and Strategy Statement (1997): Ministry of Natural Resources and Tourism, Tanzania Government Printers, Dar es Salaam - Tanzania.

**Appendix 1:**  
SWOT Analysis of Small-Scale Fisheries in Tanzania

<b>Strengths</b>	<b>Weaknesses</b>
<p><b><u>Fisheries Resources</u></b></p> <ul style="list-style-type: none"> <li>• Fish as a source of food</li> <li>• Managed by co-management</li> </ul>	<p><b><u>Fisheries Resources</u></b></p> <ul style="list-style-type: none"> <li>• Open access fishery</li> <li>• Illegal fishing practices and lack of knowledge on their effects</li> <li>• Poor involvement in planning and implementation of issues related to fisheries management at local levels</li> </ul>
<p><b><u>Fishing</u></b></p> <ul style="list-style-type: none"> <li>• Presence of resident fishers</li> <li>• High demand for fish</li> <li>• Catch Assessment survey (monitoring)</li> </ul>	<p><b><u>Fishing</u></b></p> <ul style="list-style-type: none"> <li>• Lack of reliable credit facilities</li> <li>• Fishing efforts concentrated in critical habitats</li> <li>• Artisanal fleet characteristics inadequate to the open sea/offshore fishing (EEZ)</li> <li>• Weak fishing and processing modern technologies</li> <li>• Lack of fishers organization/association</li> <li>• Inadequate assistance from the government</li> <li>• High taxes (export license, royalty)</li> </ul>
<p><b><u>Social Aspects</u></b></p> <ul style="list-style-type: none"> <li>• Introduction of Beach Management Units</li> <li>• Infrastructure development – construction of modern landing sites</li> </ul>	<ul style="list-style-type: none"> <li>• Inexistence of support infrastructures to the commercialization</li> <li>• Illegal fishing and the use of dynamite fishing</li> </ul>
<p><b><u>Financial Services</u></b></p> <ul style="list-style-type: none"> <li>• Only MACEMP and WWF involved in the supply of micro finance services such as saving and credit to the fishing communities</li> <li>• Existence of development finance institutions operating in relation to fisheries (TASAF, etc)</li> </ul>	<p><b><u>Social Aspects</u></b></p> <ul style="list-style-type: none"> <li>• Strengthening of BMU's in fishing communities</li> <li>• Fishing is heritage by family level</li> <li>• In capacity for solving conflicts in connection with new and more aggressive developments</li> <li>• Inaccessible /Incapacity to lead with the required conditions to saving and credits</li> <li>• Existence of poverty in the fishing communities and poor food security in the surrounding areas</li> </ul>
<p><b><u>Processing Industry</u></b></p> <ul style="list-style-type: none"> <li>• Existence of valuable fishing resources (fin fish, prawns, lobsters, crabs and shrimps)</li> </ul>	<p><b><u>Financial Services</u></b></p> <ul style="list-style-type: none"> <li>• Low number of financial institutions and outreach limited</li> </ul>
<p><b><u>Policy and Governance</u></b></p> <ul style="list-style-type: none"> <li>• Good knowledge of the fisheries sector</li> <li>• Good cooperation between institutions</li> <li>• Existence of plan and strategies for the fisheries development</li> </ul>	

<ul style="list-style-type: none"> <li>• Existence of Fisheries policy and its Regulations</li> </ul> <p><b><u>Management</u></b></p> <ul style="list-style-type: none"> <li>• Management systems in place</li> </ul>	<ul style="list-style-type: none"> <li>• Financial services focused on fish factories, companies etc</li> <li>• Complex and limited access to credit facility institutions especially on the artisanal fisheries</li> </ul> <p><b><u>Processing Industry</u></b></p> <ul style="list-style-type: none"> <li>• Limited knowledge of good processing practices</li> <li>• Lack of innovation to develop value added products</li> <li>• Limited capacity to make investments on equipment</li> <li>• Limited role in the value chain of fisheries products, particularly those which could be exported with great value added</li> </ul> <p><b><u>Policy and Governance</u></b></p> <ul style="list-style-type: none"> <li>• Deficient surveillance</li> <li>• Lack of sufficiently detailed and timely statistical information to make possible the definition of even more relevant development plans</li> <li>• Insufficient human resources and means</li> <li>• Limited surveillance of artisanal fisheries</li> </ul> <p><b><u>Management</u></b></p> <ul style="list-style-type: none"> <li>• Insufficient capacity to assess the fisheries resources base and all the fisheries with the greatest economic and social importance</li> <li>• Poor functional coordination in the sector, particularly between the fisheries management and development promotion sub-systems, and between these and the policy body</li> </ul>
<p><b>Opportunities</b></p> <p><b><u>Fisheries Resources</u></b></p> <ul style="list-style-type: none"> <li>• Availability of biodiversity resources with high commercial value</li> <li>• Aquaculture potential</li> </ul> <p><b><u>Fishing</u></b></p>	<p><b>Threats</b></p> <p><b><u>Fisheries Resources</u></b></p> <ul style="list-style-type: none"> <li>• Environmental degradation</li> <li>• Habitat destruction</li> </ul> <p><b><u>Fishing</u></b></p> <ul style="list-style-type: none"> <li>• Use of dynamite in fishing activities</li> </ul>

<ul style="list-style-type: none"> <li>• Renewable fisheries resources</li> <li>• Existence of potential market</li> </ul> <ul style="list-style-type: none"> <li>• Favourable policy and legislation to the development of small-scale fisheries</li> <li>• Institutions that work in benefit of the small-scale fisheries (especially of the artisanal fisheries)</li> </ul> <p><b><u>Social Aspects</u></b></p> <ul style="list-style-type: none"> <li>• Favourable policy and legislation to the development of small-scale fisheries</li> </ul> <p><b><u>Processing Industry</u></b></p> <ul style="list-style-type: none"> <li>• Demand for fish products particularly for those with value added</li> </ul> <p><b><u>Policy and Governance</u></b></p> <ul style="list-style-type: none"> <li>• Favourable policy and legislation to the development of small-scale fisheries</li> <li>• Integration on the process of decentralized planning</li> <li>• International partners</li> </ul> <p><b><u>Management</u></b></p> <ul style="list-style-type: none"> <li>• Introduction of co-management</li> </ul>	<ul style="list-style-type: none"> <li>• High fishing pressure</li> <li>• Increase of fishing effort</li> <li>• HIV/AIDS prevalence.</li> </ul> <ul style="list-style-type: none"> <li>• Lack of alternative income generating strategies</li> </ul> <p><b><u>Social Aspects</u></b></p> <ul style="list-style-type: none"> <li>• High pressure on the resources (poverty and lack of alternatives)</li> <li>• Variability of the fishing activity</li> <li>• Vulnerability to natural adversities</li> <li>• Vulnerability and high levels of HIV/AIDS</li> </ul> <p><b><u>Processing Industry</u></b></p> <ul style="list-style-type: none"> <li>• Competitiveness with external industries</li> </ul> <p><b><u>Policy and Governance</u></b></p> <ul style="list-style-type: none"> <li>• Dependence on external financing aids</li> </ul> <p><b><u>Management</u></b></p> <ul style="list-style-type: none"> <li>• Insufficient control of access to fishing</li> <li>• Ineffective control of fishing capacity leading to excess fishing effort</li> <li>• Insufficient enforcement</li> </ul>
--	--

**Table 1 : Type and number of fishing vessels for artisanal fisheries in inshore waters for 2009**

Region	District	Type of Fishing Vessels					Total
		BT	DC	DH	NG	CATAMARAN	
Coast / PWANI	Mafia	88	578	130	168	1	965
	Mkuranga	17	221	72	74	-	384
	Rufiji	34	1,205	79	50	1	1,369
	Bagamoyo	54	119	38	201	-	412
<b>Sub Total</b>		<b>193</b>	<b>2,123</b>	<b>319</b>	<b>493</b>	<b>2</b>	<b>3,130</b>
Dar Es Salam	Temeke	202	170	19	98	-	489
	Ilala	108	88	6	20	-	222
	Kinondoni	112	190	27	144	-	473
<b>Sub Total</b>		<b>422</b>	<b>448</b>	<b>52</b>	<b>262</b>	<b>-</b>	<b>1,184</b>
Lindi	Lindi Rural	3	200	8	75	-	286
	Lindi Urban	26	107	9	-	-	142
	Kilwa	82	342	104	91	-	619
<b>Sub Total</b>		<b>111</b>	<b>649</b>	<b>121</b>	<b>166</b>	<b>-</b>	<b>1,047</b>
Mtwara	Mtwara Rural	4	677	197	3	-	881
	Mtwara Urban	31	178	21	-	-	230
<b>Sub Total</b>		<b>35</b>	<b>855</b>	<b>218</b>	<b>3</b>	<b>-</b>	<b>1,111</b>
Tanga	Tanga City	-	167	153	182	2	504
	Mkinga	63	99	61	103	-	326
	Muheza	8	4	21	58	-	91
	Pangani	7	56	59	149	-	271
<b>Sub Total</b>		<b>78</b>	<b>326</b>	<b>294</b>	<b>492</b>	<b>2</b>	<b>1,192</b>
<b>Grand Total</b>		<b>839</b>	<b>4,401</b>	<b>1,004</b>	<b>1,416</b>	<b>4</b>	<b>7,664</b>

**Table 2 : Number of artisanal fishers in marine waters for 2009**

Region	District	Fishers with Vessels	Foot Fishers	Total fishers	Seaweed farmers	Totals
Coast/PWANI	Mafia	3,502	698	4,200	189	4,389
	Mkuranga	1,434	845	2,279	-	2,279
	Rufiji	3,614	633	4,247	-	4,247
	Bagamoyo	1,462	229	1,691	60	1,751
<b>Sub Total</b>		<b>10,012</b>	<b>2,405</b>	<b>12,417</b>	<b>249</b>	<b>12,666</b>
DAR ES SALAAM	Temeke	3,351	235	3,586	15	3,601
	Ilala	1,331	-	1,331	-	1,331
	Kinondoni	2,490	23	2,513	-	2,513
<b>Sub Total</b>		<b>7,172</b>	<b>258</b>	<b>7,430</b>	<b>15</b>	<b>7,445</b>
Lindi	Lindi Rural	865	511	1,376	1,001	2,377
	Lindi Urban	376	20	396	971	1,367
	Kilwa	2,920	580	3,500	2,649	6,149
<b>Sub Total</b>		<b>4,161</b>	<b>1,111</b>	<b>5,272</b>	<b>4,621</b>	<b>9,893</b>
Mtwara	Mtwara Rural	2,278	2,461	4,739	80	4,819
	Mtwara Urban	821	232	1,053	70	1,123
<b>Sub Total</b>		<b>3,099</b>	<b>2,693</b>	<b>5,792</b>	<b>150</b>	<b>5,942</b>
Tanga	Tanga City	2,301	202	2,503	191	2,694
	Mkinga	1,652	60	1,712	210	1,922
	Muheza	233	32	265	-	265
	Pangani	740	190	930	143	1,073
<b>Sub Total</b>		<b>4,926</b>	<b>484</b>	<b>5,410</b>	<b>544</b>	<b>5,954</b>
<b>Grand Total</b>		<b>29,370</b>	<b>6,951</b>	<b>36,321</b>	<b>5,579</b>	<b>41,900</b>

**Table 3: Migrant fishers**

Region	District	Strange Vessels	Total	% of strange vessel
Coast / Pwani	Bagamayo	24	412	5.8
	Mafia	16	965	1.7
	Mkuranga	3	384	0.8
	Rufiji	18	1369	1.3
		61	<b>3130</b>	<b>1.9</b>
Dar Es Salam	Ilala	155	222	69.8
	Kinondoni	471	473	99.6
	Temeke	68	489	13.9
		694	<b>1184</b>	<b>58.6</b>
Lindi	Kilwa	21	619	3.4
	Lindi Rural	1	286	0.3
	Lindi Urban	3	142	2.1
		25	<b>1047</b>	<b>2.4</b>
Mtwara	Mtwara Rural	70	881	7.9
	Mtwara Urban	17	230	7.4
		87	<b>1111</b>	<b>7.8</b>
Tanga	Mkinga	36	326	11.0
	Muheza	13	91	14.3
	Pangani	20	271	7.4
	Tanga City	26	504	5.2
		95	<b>1192</b>	<b>8.0</b>
<b>TOTAL</b>		<b>962</b>	<b>7664</b>	<b>12.6</b>

## **II. Tourism – Prepared by Mr. Ildefons Alfons Masekesa, E-mail: [masekesa@hotmail.com](mailto:masekesa@hotmail.com)**

### **1. Introduction**

Tanzania has a coastline of about 800 km which is blessed with a large expanse of suitable sites for coastal tourism development. Fringing coral reefs line the coast from north to south, hosting large fish populations and offering excellent sites for snorkeling and SCUBA diving. Despite this potential most rural coastal communities are very poor and their economy depends mainly on smallholder farming, subsistence forestry, artisanal fishing, lime and salt production, seaweed farming, livestock husbandry and small-scale trade in handicrafts. To a smaller extent some communities have started tourism related business activities such as guiding tourists to the Whale Shark sites in Mafia Island, guiding tourists to the Ruins of Kilwa Kisiwani (the World heritage site) and selling of food and souvenirs to tourists. However coastal tourism development in Tanzania has not progressed as rapidly as that of wildlife based tourism in the hinterland.

The government has however started to attract tourism related investments along the coast to diversify from wildlife based tourism to beach holiday resort type tourism. The efforts include attracting large scale donor support and improving infrastructure development. The construction of the Mkapa Bridge across central Tanzania's Rufiji River has greatly improved accessibility to the southern coast from Dar es Salaam. The long-planned bridge across the Ruvuma River linking southern Tanzania and Mozambique is likely to become a reality over the next few years<sup>i</sup>. The Mnazi bay power project and Songosongo gas have solved the power problems in the south. Mafia Island is an upcoming tourist destination with spectacular marine, cultural and historical heritage resources. Access to and from Mafia is either by sea or air. Currently the existing airport and harbour make either of these options reliable.<sup>ii</sup>. Under the Millennium Challenge Account, Mafia Airport is being upgraded and refurbished.

#### **1.1 Overview of Tourism Sector in Tanzania**

Tourism in Tanzania plays a vital role in the country's economic development. It is one of the major sources of foreign exchange. The sector accounts for 17.2% of the GDP and nearly 25% of total export earnings. It directly supports an estimated 288,700 jobs<sup>iii</sup> (TTB, 2008). Foreign exchange receipts from tourism grew from US\$259.44 million in 1995 to \$1,269.68 million in 2008. Tourist arrivals have shown a steady increase from 295,312 in 1995 to 770,376 in 2008 (MNRT, 2008). USA, UK, Italy, Canada, Australia, Netherlands, Sweden, France, South Africa, India and China, remain to be the major tourist source markets for Tanzania.

At a macro level tourism has been consistently contributing to employment and GDP and hence positively affecting the macroeconomic conditions of the country. The GDP contribution averaged an impressive 15 percent a year from an average growth of international tourism arrivals of 6.8 percent during this period. At the same period for every 1 percent increase in tourist arrivals the GDP grew by an average of 2.2 percent. (Scott, 2009)<sup>iv</sup>. At the micro level the importance of tourism to the Tanzanian tourism industry is reflected within various planning and policy documents. The Rural Development Strategy identifies tourism as a key tool in rural poverty alleviation, advocating that "the rural economy is linked to the new engines of economic growth, particularly tourism," in order to stimulate "pro-poor growth". Tanzania Tourism Policy and Integrated Tourism Master Plan advocate developing Community Based Tourism in the northern part of the country on village lands. The Wildlife Policy of Tanzania supports Community Based Tourism by advocating the placement of "future major tourist developments outside protected areas (PAs) in order to reduce negative impacts and enhance benefit sharing with local communities".

## 1.2 Tourism Revenue Leakage

Tanzania believes in sustainable tourism that strives to put a larger portion of tourism revenues into the host country and its communities through strengthening the capacity of locals to own tourism businesses. However, since the 1980s the tourism industry has been affected by economic globalization and the promotion of free trade. The issue of revenue leakage at both macro and micro level is not an issue to be avoided. Given the realities of overseas travel, “much of the trip cost, and thus the economic benefit,” writes ecotourism expert Kreg Lindberg, “remains with outbound operators and source country airlines. To some extent this simply is due to the nature of the tourism industry; substantial funds are spent on marketing, commissions and transport before tourists even reach the destination.”<sup>v</sup>

The general trend in integration in international tourism is that firms from industrialized countries tend to dominate the market through control of knowledge about the market, control of the means of distribution (travel agents, banks, department stores, business travel centers, etc.) and control over the advertising industry which, to a large extent, shapes and determines demand. This entails a division of labor according to which less developed countries, with few exceptions, merely provide the social infrastructure and facilities with little or no control over the process of production and distribution of the tourist-related services at an international level.<sup>5</sup> “Leakages in the tourism sector total up to 85 per cent in some of Africa’s least developed countries (LDCs)”<sup>vi</sup>.

This reality has impacted on the Tanzanian tourism industry. Tourism has a leakage factor in Tanzania due to the fact that substantial amounts of money earned from the sector leaves the country to pay for the imports consumed by the sector or in terms of repatriation. This is because the economies are not diversified so as to allow the tourism facilities to be constructed, equipped and supplied largely from local resources; and tourists expect to be treated in such a way that they are “at home, away from home”. The set up and the links that exist between ‘local’ tour operators and foreign ones in Tanzania; and the fact that vertical integration in the industry, to the extent that even EuropCar and other European ground transport companies are well established in the country, makes one conclude that between 75 and 90 percent of money paid for a holiday in Tanzania is either paid in the country of origin of the tourists or leaks out of the country<sup>vii</sup>

## 1.3 Main Environmental Issues and Challenges with Respect to Tourism

Unplanned development of tourist-related facilities and infrastructure has adversely affected the natural resource base that local populations depend on for their livelihoods. It is not uncommon to find critical ecosystems, such as mangroves, estuaries and reefs damaged by coastal tourism activities along the coast of Tanzania. The most pronounced threat to biodiversity posed by tourism is land clearance and degradation resulting from tourism development<sup>viii</sup>. The biggest concerns here are centered on water pollution which tends to result from poor waste water treatment, solid waste disposal and toxic chemical management. Poor run-off control during and post construction can lead to high sediment concentrations and nitrification in fresh waterways, sea grass beds, and eventually on coral reefs.

UNEP proposed some estimates of resource consumption from tourism and calculated that if the global tourism industry were represented as a country, it would consume resources at the scale of a northern developed country. Each year international and national tourists use 80% as much primary energy as Japan produces and creates the same amount of solid waste as France (35 million tons per year), and

---

<sup>5</sup> Truong, *Sex, Money, and Morality*: pp. 110–111.

consumes three times the amount of fresh water contained in Lake Superior<sup>6</sup>. While tourism facilities such as hotels often consume large amounts of fresh water in most of the coastal areas freshwater resources are limited hence creating conflict between tourism activities and other users such as farmers and households.

Similarly as tourists flock to coastal areas for their holidays they tend to demand that local seafood be present on the menu and this is leading to over fishing of already-strained fisheries in Tanzanian coastal areas. There is also a loss of by-catch species that are not usually consumed, and reduced numbers of coral grazers can result in algal invasion and lowered coral productivity, as well as increased vulnerability to disease. Local governments are often poorly equipped to monitor and enforce fishing guidelines – especially when demand by tourists for prized varieties of fin fish and shellfish can generate relatively high amounts of foreign currency. Persistent demand makes regulator's jobs even more challenging – and seasonal bans even harder to enforce. (See Annex A)

The coastal population in Tanzania is mostly concentrated in Tanga, Zanzibar, Dar es Salaam and Mtwara. Rapid population growth along the coasts combined with poverty and poor management and understanding of coastal resources, has led to the rapid and extreme degradation of coral reefs and other coastal communities along large sectors of the coast. Fishing is a critical activity providing a major protein source for much of the coastal population. Over fishing is a problem on most reefs, and has been exacerbated by destructive fishing practices. These practices ultimately degrade the coastal environment dramatically reducing this fundamental resource base for tourism.

## **2. Biophysical environment**

Tanzania is renowned for the attractiveness of its coastal and marine environments, high marine biodiversity and rich marine and coastal resources. The coastal and marine environments include amongst others: Major estuaries, mangrove forests, coral reefs, sandy beaches, cliffs, sea grass beds and muddy tidal flats. Sandy muddy flats or rocky reef platforms are found in the intertidal zone, while the sub littoral zone consists of extensive sea grass beds and coral reefs. Rivers including Pangani, Wami, Ruvu, Rufiji, Matandu, Mbemkuru, Lukuledi and Ruvuma all flow to the Indian Ocean and influence the coastal environment through the creation of productive brackish water environments in estuaries; maintenance of deltas, tidal flats and shorelines; and nourishment of mangroves and sea grass beds. These coastal ecosystems interact with each other and together sustain a tremendous diversity of marine life, which is an important source of sustenance for coastal communities.

The appeal of the coastal tourism potential in Tanzania lies on the long coastline of about 800 km blessed with a large expanse of unspoiled coastal habitats suitable sites for coastal tourism development. The North to South Coast encompasses palm fringed beaches from Pangani in the upper northern part via the beaches of Bagamoyo, the islands off shore and south of Dar es Salaam to Mafia Island, Kilwa, Lindi and finally to Msimbati in Mtwara. Pangani has arguably the best beaches on the stretch between Bagamoyo and Tanga. Recently, several small scale resorts have been established south of Pangani supplementing the existing properties to the north foremost catering to residents of the Arusha area.

Bagamoyo has been viewed by the Integrated Tourism Master Plan (MNRT, 2002) as an upcoming tourism area for leisure purposes, in conjunction with Saadani National Park. The opportunity to run excursions from Bagamoyo to Saadani with its unique coastal frontage is one of the many options to exploit Bagamoyo. To date Bagamoyo remains to be a bad example for coastal tourism development in

---

<sup>6</sup> Conservation International, *Tourism and Biodiversity*, p.7

Tanzania because of the ribbon tourism development and lack of substantial support to the local communities in the area. There are opportunities in this area such as the old slave departure and holding sites which have yet to have tourism infrastructure built around them. Currently tourists do visit this site but because of inadequate commoditization of the ruin site, and any form of local ownership, communities in the area only benefit from this by the sale of fruit and craft items. Creating a visitor charge would mean the ruins could be better conserved and other avenues for further income generating opportunities could be pursued by this local community living on its fringe.

Mafia Island presents an attractive proposition for the development of special interest tourism. The Marine Park area in particular is known to have excellent diving and snorkeling with 12 dive sites already identified. Deep-sea fishing in the waters surrounding Mafia is considered to be of world-class status, though hardly tapped. Attractive beaches are found on the northwest and south coast. The true potential of the island lies in exploiting the island's 'off the beaten track' character and developing small scale, inexpensive but stylish accommodation, thereby presenting a model of 'low impact – high value' tourism.

The World Heritage site in Kilwa has long been regarded as the most important town on the Swahili coast as the ruins of the building suggest it is geared towards special interest tourism, history and archaeology. In addition, it has some fine beaches, which could be used as a starting point for establishing some medium scale resorts of high quality to cater for an up market clientele that combines a Selous/Ruaha safari with an add on beach product of similar quality.

Further to the south are some excellent beaches near Lindi and Mtwara. The Lindi beaches bear the potential to be developed for resort tourism though access from the main tourism areas is cumbersome by road and expensive by air. However in conjunction with the historical/archaeological splendor of Kilwa, the woodcarvers of the Makonde plateau, the charming village of Mikindani and the best beach of Tanzania, Msimbati the South could be opened to international tourism in due course in particular if gas exploration activities don't continue.

## **2.1 Geographical Distribution of Coastal Tourism Accommodation Facilities**

The majority of accommodation facilities along the coast are located in and around the larger urban areas, particularly Dar es Salaam, Tanga, Bagamoyo, and Mtwara. Dar es Salaam leads other areas in the southern circuit, with well established tourism establishments both accommodation and other tourist agents. Because of the distance from Dar es Salaam to other destinations in the southern circuit, accommodation facilities available in Dar es Salaam only cater for business travelers and other visitors who wish to conduct day excursions to near by attractions such as Bagamoyo and Mikumi. With improved accessibility to Bagamoyo, investments in accommodation facilities have been at an increasing rate. Investment in beach resorts has taken a lead with more conference tourism attracting a good number of conferences in Bagamoyo. See **Annex 5**. In Mafia Island, four lodges exist in Mafia Island Marine Parks. All of the lodges are privately owned. Similarly, Kilwa and Mtwara have been attracting a good number of visitors, mostly historians and beach and water sport tourism lovers.

List of standard accommodation facilities attached as **Annex 5**. In addition to these clusters of hotels and guesthouses in urban areas, a number of smaller hotels and guesthouses are scattered along the coast, primarily in and around Pangani, Kilwa and on Mafia Island. Local guesthouses are scattered throughout the rest of the coast, including Muheza, Mkuranga, Rufiji and Lindi. At Lindi one luxury beach hotel is operational.

Table 1: Distribution of Coastal Accommodation Facilities

Region	Number of Rooms		Number of Beds		Number of Staff		No. of Establishments	
	2006	2009	2006	2009	2006	2009	2006	2009
Dar es Salaam	4,412	6,123	5,873	9,230	3,852	5,282	107	170
Coast	568	1,341	866	1,446	687	970	18	40
Tanga	449		730		300		39	39
<b>TOTAL</b>	<b>5,429</b>	<b>7,464</b>	<b>7,469</b>	<b>10,676</b>	<b>4,839</b>	<b>6,252</b>	<b>164</b>	<b>249</b>

### 3. Human Environment

The reciprocal cause-and-effect relationship between poverty and environmental degradation or environmental state change on the coast has negative affects on the human environment. That is poverty engenders destructive or inappropriate resource use patterns, which lead to environmental degradation and in turn, environmental degradation generates further poverty (Moffat, 1998). This is particularly true because people have a strong dependence on marine and coastal resources, such as the fishing communities of Dar es Salaam (Wagner, 1999). It is a vicious cycle that is difficult to break unless there are strong and appropriate responses. Indeed, the relationship between poverty and environmental degradation is complex and often external factors, such as poor management and lack of community involvement exacerbate both. According to Moffat *et al.* (1998), about 50% of the estimated 100,000 full-time fishermen and several hundred thousand part-time fishermen in East Africa risk losing their livelihood unless the current trend is arrested. Wagner *et al.* (1999) reported that, according to villagers in the coastal communities in Tanzania, environmental degradation, particularly of the marine ecosystems, is one of the main reasons for their poor economic status, since it has seriously affected fisheries, one of their main sources of livelihood.

#### 3.1 Benefits of Tourism to Communities and Livelihood Challenges

In Tanzania, many lodge owners from the traditional wildlife circuit in the northern part of the country increasingly horizontally integrate by obtaining properties on the coast (mostly Zanzibar) so that they can offer this entire package themselves. This may be helping to spread the more high-priced, low volume ecotourism models to coastal destinations in Tanzania. The strongest examples of ecotourism in coastal Tanzania, in terms of supporting biodiversity conservation, are areas such as Chumbe Island Lodge and Mnemba Island Lodge which function as privately owned and managed marine parks. These areas have however involved some conflict with local communities as a result of excluding local fishermen from the designated areas<sup>ix</sup>. These tenuous relationships have made community-based tourism ventures in the coastal areas inactive due to the following reasons:

- Coastal tourism is heavily dependent on high value lands located on fairly small and often concentrated areas- i.e. beachfront property.
- Coastal tourism utilizes marine natural resources such as reefs and fisheries which are generally not subject to any recognized property rights on the part of local communities.
- While wildlife throughout Tanzania remains, statutorily, the property of the state, for tour operators to access wildlife on community lands where local land rights are defined requires them to negotiate with the communities, the different ecological and spatial circumstances in coastal areas makes it more difficult for operators to contract exclusively with the local community as the

basis for their operations as is done in many inland safari destinations except in the marine parks and reserve areas.

Since 2007, the Tourism Division in the Ministry of Natural Resources and Tourism, with support from Marine and Coastal Environment Management Project (MACEMP) has been providing tailor made training to selected groups of local communities in the coastal areas of Kilwa, Mafia and Pangani Districts. Training was based on souvenir making, tour guiding and cookery. The training was in response to the issues raised by tourism business operators during the meetings organized by the Tourism Division to find out how local communities can be integrated into the tourism business system. The training aimed at enabling communities to participate in selling of souvenirs to tourists, providing guiding services, provision of quality food and beverage services and selling of other products such as vegetables to hotels in the area<sup>x</sup>. The groups trained are now the main suppliers of various products and services to tourists and hotels in the respective areas.

The Marine Parks and Reserves Unit has empowered communities to offer tourism services to tourists visiting Bongoyo, Sinda and Mbudya Islands in Dar es Salaam. The communities which formerly were dynamite fishers have been transformed into conservation activities. Marine Parks and Reserves Unit has empowered the communities to offer food and refreshments to the tourists visiting the Islands. The community in this regard earns income through selling food and refreshments as well as offering activities such as tour guiding. Incomes generated are managed by themselves.

### **3.2 Relationships with Local Communities**

The relationship between a hotel investor and the nearby coastal community begins once the investor identifies a site for hotel construction and starts negotiating with the land titleholder. How this relationship develops over time can have enormous impacts not only on the success of the hotel but also on the lives of the local communities. Indeed, local communities in tourist areas can receive numerous benefits if the relationship with the hotels is strong<sup>xi</sup>.

In Mafia Island, Chole Village has developed a strong relationship with the owners of small eco-tourism hotels whereby in exchange for permission to build and operate the hotel the owners agreed to contribute financial resources to prioritized village development projects. To date, the village has been able to construct a new market, health clinic and primary school. Other initiatives developed include English classes, a library, and an oral history project to research on the archaeological ruins of the island. The community has also developed a fee scheme to collect money from visitors who visit the island. The revenues from these initiatives are channeled into a community development fund under the auspices of two annually elected committees. Indeed, both the hotel and local community benefit from this strong relationship that has been growing over the past eight years.

In Ushongo, Pangani District, the beach hotels have entered into an agreement with the local village. The hotels agreed to channel a percentage of their revenue to the village for priority projects e.g. supporting patrol against illegal fishing in Maziwe Island Marine Reserve. It was agreed between the village and hotels that the money would be used for the improvement of school facilities in the village. However, the hotels and local fishers have formed a group known as “the friends of Maziwe Marine Reserve”.

From these two mini-case studies it can be concluded that the growth of tourism along the coast creates opportunities for local communities to fully engage in tourism related activities in order for them to reap tourism benefits. This is true because, the trend of arrivals in the coastal destinations such as Mafia is on the rise. Mafia has about 78 rooms in all the existing lodges, hotels, and guesthouses. By 2007, about 40 passengers were arriving in Mafia daily (or 13,240 per annum). The number of arrivals has increased from 484 in 2000 to 3,107 in 2007<sup>xii</sup>. The increase in number of visitors to the Island is an untapped

opportunity for local communities in the island to produce products needed by either tourists or operators of the tourism services.

Tourism development has too brought negative impacts on the human environment. Different efforts have come up to support community development. The Tanzania Coastal Management Partnership (TCMP) promotes low-impact, high-benefit micro enterprise growth in eco-tourism, aquaculture and beekeeping, applying small-scale culture practices for shellfish, seaweed and finfish – generating products that can be marketed locally as well as internationally. TCMP's advantage is in identifying and nurturing the national and local level NGO partners who have this capability, not in trying to create this capability on its own. Very small scale, pilot based projects face a variety of sometimes overwhelming difficulties in comparison to investments to improve or expand an existing industry or enterprise. On the positive side, jewellery making and pearl growing enterprises in Fumba Peninsula, Zanzibar have increased income and in particular half of the pearl production provides incentives to these enterprises to engage in natural resource management to protect their source of raw materials..

#### **4. Policy and Governance**

The Tourism industry in Tanzania is guided by the National Tourism Policy (NTP) of 1999, the Tourism Master Plan and the Tourism Act of 2008. The Tourism Policy shows the direction, where tourism development should be going. Its objective advocates for development of quality tourism i.e. *Low Volume High Value tourism*. The Master Plan identified the coastal belt as important zone in view of developing the Southern Tourist Circuit.

However, the efforts to implement the Plan are always hindered by different reasons including

- (i) Inadequate capacity to implement the Plan
- (ii) The Plan itself failed to address the critical/fundamental questions such as “who”, will do what and with what resources and when it will be done.
- (iii) The Government did not dedicate enough of its own resources for the ITMP implementation in terms of funding and manpower and,
- (iv) A comprehensive monitoring and evaluation plan for the ITMP was not prepared and instituted.
- (v) The above factors may be important in contributing to the failure of the Master Plan which also aimed at developing coastal tourism in the country.

As coastal tourism is a complex industry affecting many sectors a number of government institutions have important roles to play. In Tanzania a lead agency in the management of the Tourism sector is the Ministry of Natural Resources and Tourism (MNRT) which is organized into four divisions:

- a. Tourism,
- b. Wildlife, Forestry
- c. Bee-Keeping and
- d. Antiquities

Each division is headed by a director. Within MNRT the lead department for tourism is the Tourism Division. Other divisions within MNRT are mandated with managing specific resources, most of which can also be considered tourist attractions.

Other institutions/agencies outside MNRT having roles to play in the development of Tourism sector include, the Fisheries Division, established by the Fisheries Act of 1970, under the Ministry of Fisheries and Livestock development , Human Settlements Development Department (HSDD) under the *Ministry*

*of Lands and Human Settlements Development*, the National Land Use Planning Commission (NLUPC) is responsible for harmonizing and coordinating all land-related policies and legislation in order to promote sustainable land use, the Ministry of infrastructure development, the Tanzania Investment Center (TIC) is the One Stop Agency of the Government of Tanzania established to promote, coordinate and facilitate investment, the Environment Division is responsible for environmental policy formulation, environmental coordination and monitoring, and environmental planning and Local Government Authorities. The private sector is expanding steadily and is largely geared to the international tourist. The government through the Tourism Master Plan Project assisted in the establishment of the Tourism Confederation of Tanzania (TCT) – the apex body that represents the interests of the tourism private sector in the country.

## **5. Planning and Management**

### **The Gap**

The tourism Division works closely with all key stakeholders including other government agencies, private sector bodies, local Government, NGO's and CBO's. However, much of the government has recognized that Tourism development depends on a number of functions and services in other related sectors such as transport and communication, agricultural production, livestock development, wildlife management, forest management, water management, health, energy banking, cities developments, gender and the overall land development, the synergies among these sectors are yet to be established. This may be a major reason for the difficulties in implementing the Master Plan and therefore the situation calls for the need for formal cross-sectoral coordination and harmonization of respective policies and instruments to ensure sustainable management of tourism resources. The emphasis is in the spirit of ensuring a sustainable and equitable use of resources for meeting the basic needs of the present and future generations.<sup>xiii</sup>

Lack of synergies among the important players in the tourism sector in the country make Planning and Management of coastal tourism become complex and difficult. Resources in the country are owned and managed by different institutions or organizations. For example the Tourism Division manages the tourism sector in the country but coastal resources are owned by other organizations such as Marine parks and Reserves Unit, District Councils, private people who own land, Ministry of Lands and Human Settlement, Forestry and Bee Keeping Division etc. These all have their own policies and plans which are not necessarily tourism related.

## **6. Development, Trade and Projects**

### **Current Initiatives and Activities**

A number of initiatives related to coastal tourism development are currently being undertaken by various agencies. Summaries of the primary initiatives are presented below.

#### **6.1 Cultural Tourism Program**

In 1994, the government of Tanzania in collaboration with SNV, the non- Governmental Organization based in Netherlands initiated the Cultural Tourism Programme whose aim was to build-up the framework that can facilitate the development and promotion of cultural forms of tourism from which the local people benefit. Today the situation is that there are direct incomes provided to many people/households. The village development fund has demonstrably stimulated initialization of various village projects such as schools, dispensaries, roads rehabilitation all of which benefit entire local communities.

## ***6.2 UNWTO STEP Initiatives***

Tanzania has to some extent benefitted from the UNWTO STEP initiative whereby projects for *Cultural Tourism Enhancement and Diversification Programme* and *Pangani – Saadani Coastal Protection* is being implemented. The initiative provides technical assistance to product development, marketing, strategic planning and skill enhancement for business and national and local government relevant to tourism. Local Communities manage tourist's information centre in Pangani and Guide Tourists to various tourist attractions. The project also offers soft loans to local communities to run poultry keeping and vegetable growing activities and therefore helped to alleviate poverty among the local communities in the area.

## ***6.3 Marine and Coastal Environmental Management Project (MACEMP)***

The Marine and Coastal Environment Management Project (MACEMP), focuses on strengthening sustainable management and use of the Exclusive Economic Zone ((EEZ), territorial seas and coastal resources resulting in enhanced revenue collection, reduced threats to the environment, and better livelihoods for participating coastal communities living in the coastal districts and improved institutional arrangements.

## ***6.4 Rufiji, Mafia and Kilwa (RUMAKI) and JSDF***

Rufiji, Mafia and Kilwa Seascape Project implemented by WWF with the objective to conserve the fragile and sensitive marine and coastal areas of high significance as well as focusing on livelihood issues for coastal communities.

## ***6.5 Rufiji, Mafia and Kilwa Ramsar site program***

The Freshwater and seascape of Rufiji delta, Mafia and Kilwa have been designated as a wetland area of international significance that have been recognized and included as a Ramsar Site. The Wildlife division of the Ministry of Natural Resources and Tourism is the leading institution in conserving and ensuring the sustainable development of this Ramsar site. Sustainable coastal tourism activities are normally ranked high as activities that need to be promoted within the Ramsar site.

## ***6.6 Tanga Coastal Zone Development Program***

The Tanga Coastal Zone Conservation and Development Programme was Tanzania's largest local ICM programme. Supported by the Tanga Regional Fisheries Office the programme works at the district and village levels to address critical coastal management issues like dynamite fishing, mangrove conservation, and the development of alternative livelihoods.

## ***6.7 Rehabilitation of German BOMA at Mikindani***

A UK-based NGO, TradeAid, has worked with the local communities in Mikindani, Mtwara Region to renovate the German BOMA building into a small luxury hotel. The hotel has been operating for about 18 months and there are plans in place to expand operations to other old buildings in the area. All staff are from the local community and have been trained under this initiative.

## 7. SWOT Analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• The coast is near to or within attractive and vibrant cities/towns and villages allowing the areas to benefit from hard and soft infrastructure.</li> <li>• Presence of long coastline of about 800 km, in addition to offshore islands with a myriad of ecosystems ranging from natural sand beaches to flora and fauna.</li> <li>• Presence of Laws and Regulations such as Marine Parks and Reserves Act 29 of 1994, Fisheries Act 7 of 2003 which involve local communities to protect the coastal resources.</li> <li>• Indigenous communities proudly maintain their traditional cultures, contributing to the tourism product</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Low levels of local entrepreneurship and investment in tourism products and services</li> <li>• Low level of tourists due to inadequate and appealing visitor attractions.</li> <li>• Lack of appropriate hotel and restaurant facilities for international clientele</li> <li>• Relatively weak national plans and strategies to diversify tourism products from wildlife based to coastal tourism based</li> <li>• Lack of confidence by the private sector to invest in the area due to poor infrastructure such as access roads to the coastal areas</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Presence of world renowned attractions such as Kilwa Kisiwani and Songo Mnara declared under UNESCO as World Heritage Sites</li> <li>• Infrastructure improvement such as the newly completed power project; in the Lindi and Mtwara coastal towns and the Dar es Salaam – Mtwara Road</li> <li>• Major port and airport development in the pipeline in Mafia which is likely to have tremendous improvement on accessibility</li> <li>• Increasing conservation support from Donors such as World Bank, NORAD, and WWF etc.</li> <li>• Availability of policy documents such as the Integrated Tourism Master Plan supporting the development of coastal tourism in Tanzania</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• The impacts of climate change threatening region's low-lying coastal areas and marine ecosystems, water resources, terrestrial ecosystems and human settlements and coastal infrastructure<sup>xiv</sup></li> <li>• Urbanization pressures - Increasing populations (human demands often conflict with conservation measures, putting pressure on government conservation efforts</li> <li>• Increased land rush and unplanned tourism development leading to ribbon development and denying local people access to the beach resources</li> <li>• Large-scale erosion, oil pollution, damaged coral reefs, and ruined mangrove swamps, pollution from fertilizers and threats to precious marine animals as the major environmental problems in the region (UNEP, 1981)</li> <li>• Over fishing (pressure from commercial fishing)</li> </ul>

## 8. Bibliography

- <sup>i</sup> Fred Nelson, M.A. (2007), East Africa: Trends in Coastal Tourism & Strategies for Promoting Sustainable Development: Paper Prepared for Center on Ecotourism and Sustainable Development A Nonprofit Research Organization Stanford University and Washington, DC
- <sup>ii</sup> Strategic Environmental Assessment of Mafia Island, Policy Brief No. 2
- <sup>iii</sup> Employment figures Reported by Tanzania Tourist Board
- <sup>iv</sup> (Scott, 2009), Strategic Review of the Policies and Strategies for Tanzania
- <sup>v</sup> Kreg Lindberg, “Economic Aspects of Ecotourism” (draft of article obtained from author, November 1997), p. 12.
- <sup>vi</sup> Source: Does tourism benefit the third world? A. Pleumarom, third world network, at [www.twinside.org.sg/title2/resurgence/207-208/cover1.doc](http://www.twinside.org.sg/title2/resurgence/207-208/cover1.doc).
- <sup>vii</sup> Chambua (2005), Tourism and Development in Tanzania: Myths and Realities
- <sup>viii</sup> Philip A. Kramer and Patricia Richards Kramer, *Ecoregional Conservation Planning for the Mesoamerican Caribbean Reef*, World Wildlife Fund, 2002.
- <sup>ix</sup> Martha Honey, Ph.D. and David Krantz, M.A” Global Trends in Coastal Tourism”, 2007
- <sup>x</sup> MNRT, Implementation of MACEMP Project Kilwa and Mafia, 2009
- <sup>xi</sup> J. M. Daffa (2007) Paper on Coastal Tourism Development in Tanzania: Situation Analysis, Potentials and Recommended Actions. *A Contribution to the Development of the 10 Years National Tourism Development Program (2006-2016)*
- <sup>xii</sup> International Resource Group, Washington and Institute of Resource Assessment, University of Dar es Salaam, 2007
- <sup>xiii</sup> MNRT, “ Draft Tourism Development Programme, Phase two, 2007
- <sup>xiv</sup> The UNEP Regional Seas Reports and Studies No.140 (UNEP, 1992.)

**Annex A: Matrix of coastal tourism environmental impacts**

<b>Impacting activity</b>	<b>Impacting factors</b>	<b>Impacted ecosystems</b>
Sunbathing, picnicking etc.	Litter, fecal matter	Sandy beaches, dunes: changes in plant community through eutrophication, fire hazard, threat to animals
	Trampling and breaking plants	Soil erosion, damage to vegetation
	Physical presences noise	Stressing small animal species (sea turtles laying eggs)
Swimming	Water contamination from sun-tan oil, soap	Coastal waters, lagoons: eutrophication
Non-motorized water sports: surfing, sailing, paddling	Physical presence, movement	Coastal waters, sea, beaches: stressing animal species (seals water birds)
Skin diving	Damage to corals	Coral reefs: damage to reefs, shifts in species makeup
	Underwater hunting	Decimation of fish species, shifts in species makeup
	Stirring up of sediment	Decreased photosynthesis due to clouding of water
	Touching and feeding fish	Shifts in species makeup, stressing shy fish species
	Littering	Eutrophication, threat to animals (turtles, dolphins)
Sightseeing (with underwater or glass bottomed boats)	Wake waves, stirring up of sediment, propeller effects, chemical contamination	Coral reefs: <i>see motor boats</i>
Nature observation (on foot or in boats)	Physical presence, noise	Sand banks, rock cliffs, wetlands, mangroves: stressing animal species
Walking, bicycling	See sunbathing, picnicking Dunes, rocky cliff, hinterland	Sports (motor-boating, horseback riding, golf)
See also motorized sports	Mechanical damage	See also motorized sports
Buildings	Overbuilding, sealing off of ground	Beaches, dunes, rocky coasts: destruction of habitats, disruption of land-sea connections (sea turtle nesting areas)
	Extraction of building materials (sand, limestone, wood), extraction activity	Sand and pebble beaches, coral reefs, mangroves, forests in hinterland: destruction of habitats, increasing erosion, deforestation
Energy supply	Electric conduits	Dunes, hinterland: threat to birds

	Diesel generators: noise, exhaust fumes, oil pollution	Beaches, dunes, hinterland: disruptive effect on animals, water and soil contamination
Water supply	High water consumption by tourist and for parks	Small oceanic islands, freshwater wetlands: habitat destruction by aridity or influx of salt water
Garbage disposal	Unregulated garbage removal	Open sea, seafloor, dunes, wetlands
Sewage disposal	Inadequate sewage-treatment facilities	Seafloor, coastal waters, coral reefs, eelgrass meadows, beaches, open sea: clouding of water, algae bloom, oxygen deficit, death of large numbers of organisms

Source: Extracted from M.B. Orams, *Biodiversity and Tourism: Conflicts on the World's Seacoasts and Strategies for their Solution* (Bonn: German Federal Agency for Nature Conservation, 1997)

## Annex B

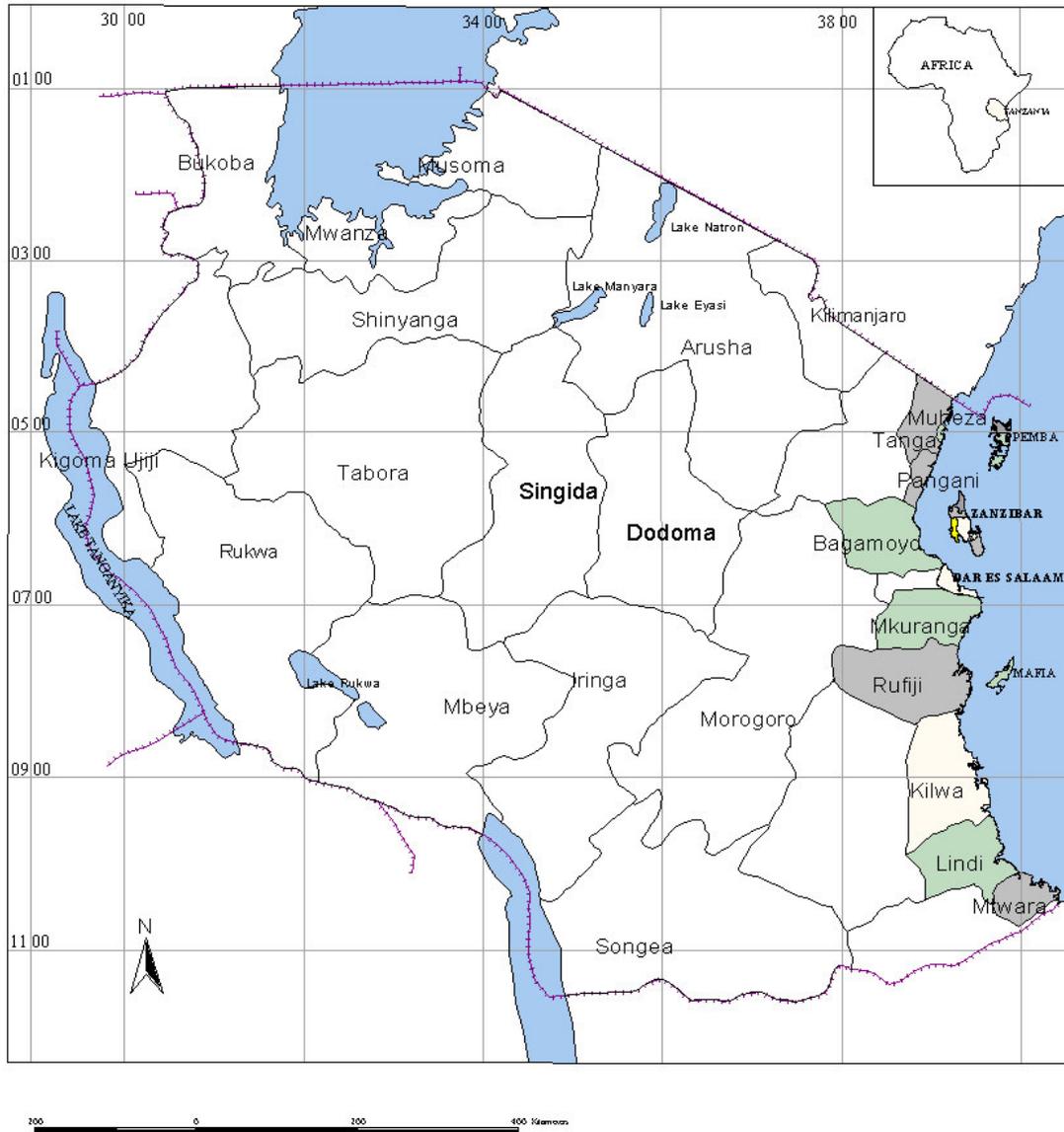
### Mto wa Mbu Cultural tourism Programme Statistics

Fees in TZS (1300 TZS = 1 USD in 2007)	2002	2003	2004	2005	2006	2007
Number of tourists	1,116 Pax	1,207 Pax	2,624 Pax	3,177 Pax	3,852 Pax	4,094 Pax
Village Development Fund	1,673,000	1,810,500	3,936,000	4,765,500	5,450,500	8,138,000
Guide fees	2,150,000	2,938,000	6,100,000	9,135,500	9,130,000	10,980,000
Administration Fee	2,232,000	2,413,000	5,248,000	6,354,000	7,268,000	12,229,000
Contact person fee (Warriors, Farmers)	2,330,000	4,752,500	6,865,500	8,574,000	11,380,000	11,084,000
Traditional food	1,292,000	2,950,195	4,034,000	3,102,000	5,022,000	7,164,000
Biking (MTB, local)	781,000	856,000	1,769,000	2,878,000	4,264,000	4,920,000
Souvenirs		1,675,000	1,851,000	4,086,500	6,550,000	7,706,000
<b>Total amount of money income</b>	<b>10,458,000</b>	<b>17,396,195</b>	<b>29,803,500</b>	<b>38,895,500</b>	<b>49,064,500</b>	<b>63,648,000</b>

Source: TTB

# Annex C

## Biophysical of Coastal Tourism Potential in Tanzania



**Annex D**  
Accommodation Establishments in Mafia, Kilwa and Mtwara

**ACCOMMODATION IN MAFIA ISLAND**

**Kinasi Lodge**

P.O Box 18033  
DAR ES SALAAM, TANZANIA  
Tel: 255-713-242977  
Fax: 255-22  
E-mail: [kinasi@intafrika.com](mailto:kinasi@intafrika.com)  
Contact: Peter Byrne, Kevin Byrne

**Pole Pole Bungalow Resort**

P.O Box  
DAR ES SALAAM, TANZANIA  
Tel: 255-22-2601530  
Fax: 255-22-2601530  
E-mail: [contact@polepole.com](mailto:contact@polepole.com)  
Contact: Massimo Lancellotti, Katia Palazzo

**Mafia Island Lodge**

P. O. Box  
Tel:+ 255-22-2117955-60  
Tel: +255-(0)754-324044  
Fax:+255 22 2118647  
Email:safari@coastal.cc  
Website:www.mafialodge.com

**ACCOMMODATION IN KILWA (MORE INFORMATION AT [WWW.KILWA.NET](http://WWW.KILWA.NET))**

**Kilwa sea view Lodge**

P.O. Box 23443,  
Tel: +255 22 2650250, Fax/Tel: +255 22 2650251  
Dar es Salaam, Tanzania.  
P.O. Box 100 Kilwa Masoko, Tanzania  
Mobile: +255 (0)78 4624 664, +255 (0)78 4748888  
Email: info@kilwa.net or baobabvillage@raha.com

**Kilwa Ruins lodge**

James Taylor at Kilwa Lodge:  
[kilwalodge@iwayafrica.com](mailto:kilwalodge@iwayafrica.com)  
**cell: +255 784 637 026**  
[sue@kilwaruinslodge.com](mailto:sue@kilwaruinslodge.com)  
[www.kilwalodge.co.za](http://www.kilwalodge.co.za)

## **ACCOMMODATION IN MTWARA**

### **The Old Boma At Mikindani**

P. O. Box 993,

Tel: +255 (0)784 360110 Duty Manager (reservations)

Tel: +255 (0)757 622000 Duty Manager

Tel: +255 (0)786 861750 Hotel Manager

e-mail: [oldboma@mikindani.com](mailto:oldboma@mikindani.com)

Mtwara- TANZANIA

<http://www.mikindani.com>

### **Uk Contact**

Burgate Court, Burgate

Fordingbridge, Hants, Sp6 1lx, Uk

Tel: +44 (0)1425 657774

Fax: +44 (0)1425 656684

e-mail: [ukres@mikindani.com](mailto:ukres@mikindani.com)

### **Ruvula Sea Safaris**

P.O. Box 282

Tel: + 255 784 367439

Tel: + 255 784 484184

Mtwara- TANZANIA

### **Belgium Contact**

Tel: + 32 25 344737

<http://www.ruvula.be>

### **VETA Hostel**

P.O. Box 58

Tel: +255 23 2333808/2333485

Mtwara- TANZANIA

**III. Mariculture** - Prepared by Dr. Thomas Ashley Shipton,  
E-mail: [t.shipton@envirofishafrica.co.za](mailto:t.shipton@envirofishafrica.co.za)

**1. Introduction**

**Characterisation of the Sector**

Farming Activity	Culture Species	Culture Technology	Production Scale <sup>1</sup>	Annual Production	Market / Price		
					Export	Domestic	Household
Seaweed	Euchema spinosum  Euchema cottonii	Stake / raft culture	Small scale commercial	8000 tons <sup>4</sup>	X <sup>2</sup>		
Finfish	Chanos chanos  Mugulis spp.  Tilapia spp.	Pond culture	Experimental / small scale commercial / farmer groups	5 tons <sup>4</sup>		X  milkfish  1.75 - 2.5US\$ / kg <sup>3</sup>	X
Mudcrab	Scylla serrata	Crab fattening	Experimental / farmer groups	Less than 5 tons <sup>4</sup>	X  4 – 8 US\$ / kg <sup>3</sup>	X  2-3 US\$ / kg <sup>3</sup>	
Pearl farming	Pinctada margaritifera  Pinctada penguin	Longline basket	Experimental / farmer groups	Unknown		X  (local tourist market)	
Sea cucumber	Holothuria scabra	Ranching	Experimental	None	X		
Sponges			Experimental	None	X		
Prawns	Penaeus monodon	Pond culture	Commercial	60 tons <sup>4</sup>	X	X	

<sup>1</sup> commercial, single farmer small scale commercial, farmer groups, subsistence, experimental

<sup>2</sup> US\$0.11 for *E. spinosum* and 0.18 / kg for *E. cottoni* to village producers. FOB export price US\$400-500 ton : 2007 prices (Shipton et al. 2008)

<sup>3</sup> Shipton et al. (2008)

<sup>4</sup> Shipton and Hecht (2007)

## 2. Biophysical

Farming Activity	Geographical Extent	Environmental Issues
Seaweed	All coastal regions	There is a need to promote raft culture technologies, and moving the farms into deeper waters to increase production efficiencies. More productive strains of seaweed / new species need to be identified to promote production efficiencies.
Finfish – Milkfish	All coastal regions	Fingerlings are wild caught and while their capture is unlikely to affect the fishery in the short term, there is insufficient information pertaining to the geographic distribution and seasonality of fingerling production along the coast. 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.
Mudcrab	All coastal regions	Crablets are wild harvested, and both the availability and sustainability of crablet supply is problematical. While some stock assessments have been undertaken to establish levels of sustainable harvesting in some areas, further assessment work / monitoring needs to be undertaken at sites where crablets are harvested. Stock assessments should be undertaken as a component of the development process. Feed supply and the sustainability of feed sources need to be established.
Pearls	Zanzibar, Mafia, Tanga	Spat is harvested from the wild, and spat availability is often problematic resulting in inconsistent spat supplies. The development of hatchery production facilities would resolve this issue. No significant environmental impacts accrue to pearl production.
Prawns	Mafia, Tanga	The recent launch of small scale prawn culture operations in Tanga have resulted in limited success due to pond water quality problems. In addition to problems associated with pond management and production technology transfers, issues of bio-security will likely need to be addressed in the future.

### 3. Human Environment

Farming Activity	Developmental Paradigm and Livelihood Issues
Seaweed farming	Historically, the seaweed sector has been promoted by the private sector. The “developer” (private sector investor) signs up villages for long term production contracts, and in return for the exclusive rights to purchase the villages’ production, provides the input costs (e.g ropes, lines, seed) and technology transfer / extension services. In many areas the sector is characterised by low producer prices, product marketing, poor product quality and a lack of incentives for individual producers to increase production. Some recent work has been undertaken to develop semi-processed products / value addition, but more needs to be done in this regard. Conflicts often arise with other coastal zone users around the use of sea-space (e.g. fishermen), and in some cases farming areas need to be zoned.
Finfish (milkfish)	Many milkfish farms have been developed as group enterprises that have experienced production problems as a result of group governance and ownership issues, theft, and poor husbandry often resulting in low productivity. Poor pond construction, siting, and access to markets have also resulted in failures. Individual farmer models appear to be more successful and should be encouraged.
Mud crab	Marketing and attaining sufficient numbers of animals for bulk marketing are a constraint to expanding operations. Production volumes need to be increased to make many operations economically viable. Theft, and escapes from culture systems is often reported as an issue.
Pearl Oyster	The potential size of the local tourist market is likely to be limited, and alternative markets may need to be developed to support the future expansion of the sector.

## 4. Policy and Governance

### 4.1 Policy and Legislation

Legislation	Present	Comment
Fisheries Act	Yes	The Fisheries Act 2003 / Fisheries Regulations 2005
Aquaculture Act	No	
Aquaculture Policy	Yes	In 2008, a new Aquaculture Development Strategy was developed. The strategy focuses on the basic requirements for the promotion of commercial aquaculture in both the freshwater and marine environments. The strategy is an ambitious document focusing on both the government's commitment to sector development, and the role that the private sector can play in developing the sector. Major developmental issues such as governance, finance, sustainability, outreach, zoning and research are addressed.
Sub-sector development plans	Yes	The Seaweed Development Strategic Plan was developed in 2005 and provides a suitable blueprint for the development of the sector. It would be advantageous to develop similar plans for other sub-sectors that show promise, such as milkfish, mud crabs, and prawns.
Aquaculture Master plan	No	
Aquaculture zoning	No	Zoning is included in the new aquaculture policy; however, zones have yet to be established.
Environmental Management Acts	Yes	Relevant legislation is the Tanzanian Environmental Impact Assessment procedure and guidelines, Volume 1 - 5 (NEMC, 2002), and The Environmental Management Act (2004). The aquaculture division of the Ministry of Livestock and Fisheries Development needs to develop appropriate operational guidelines for aquaculture.
EIA Requirements	Yes	Tanzanian Environmental Impact Assessment procedure and guidelines, Volume 1 - 5 (NEMC, 2002). The guidelines outline the procedures and regulatory framework within which EIAs are undertaken. The guidelines address issues pertaining to project screening and scoping, and provide an indication of those activities that require an EIA. Issues of EIA preparation are addressed, and EIA review criteria and monitoring guidelines are included. Note: the development of commercial aquaculture projects are listed as requiring mandatory EIAs.

## **4.2 Governance**

Aquaculture development in Tanzania falls under the jurisdiction of the Ministry of Livestock and Fisheries Development (MLFD) - Aquaculture Division. The Aquaculture Division is the responsible agency for implementing the new aquaculture development strategy, however, the division is under-resourced and realistically, donor support will be required to develop the strategy into the meaningful interventions that are required to promote sector development. While the MLFD – Aquaculture Division is responsible for permitting, other government agencies have some jurisdiction over the activity. Principally these include the Department of Land and the Department of Forestry which are responsible for land tenure and mangrove forestry respectively. The Tanzanian Fisheries Research Institute (TAFIRI) is the responsible government agency for aquaculture research, and while it is involved in technology demonstration projects and production trials, it is also under-resourced and requires donor support.

## **5. Planning and Management**

While the Aquaculture Development Strategy (2008) outlines the government's programme for sectoral development, there is currently limited capacity and funding within the Aquaculture Division (MLFD) to realise the strategy and effectively plan and manage the development of the sector. Under the current management dispensation, private sector investors are limited, and while a few large scale aquaculture projects have been or are currently being proposed by the private sector, few if any have been realised. The exception to this would be the seaweed culture sub-sector that has ostensibly been driven by private sector interventions at the village level. In many respects, current developments are being driven by the donor community, and the international and local research institutions that are trialling and developing appropriate culture technologies. In terms of planning, it is evident that the sector is developing in an ad hoc manner with developments primarily being driven by the various mandates of the donor organisations. In terms of sustainable development frameworks, in 2001 the Tanzanian Coastal Management Partnership published a comprehensive mariculture guideline source book. The document provides a basic framework for sustainable mariculture development, and if applied correctly can significantly contribute to the sustainable development of the sector.

## 6. Development, Trade and Projects

Development Project	NGO / Donor / Private Sector	Project Details
WWF – RuMaKi Programme	WWF Japanese Social Development fund	The programme focuses on Rufigi, Mtwara and Kilwa provinces. Developments focus on crab fattening, milkfish farming, pearl oysters, and in the past, rabbit fish (operations ceased due to theft and un-profitability).
TCMP		Provision of assistance to seaweed farms
VSO	UK	Seaweed extension services on Zanzibar
IMS	ReCoMaP	Finfish and pearl farming projects
ACDI-VOCA SEMMA Programme	USAid	Based in Tanga, the programme is promoting crab fattening and milkfish production and providing support for seaweed extension. They have developed extensive extension capabilities that have been used to train government extension officers and other NGOs.
MACEMP	World Bank / GEF	The programme has identified mariculture as one of the coastal zone activities that the programme can support. To date most interventions appear to have focused on supporting seaweed and milkfish culture.

## 7. SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• High quality seawater</li> <li>• Research support capacity at TAFIRI, IMS and FAST</li> <li>• Aquaculture Division (MLFD) are keen to support the development of the sector</li> <li>• Large areas of intertidal lagoon and mud flats that are suitable for seaweed farming and pond culture respectively</li> <li>• High number of potential candidate species</li> <li>• Presence of established NGOs with mariculture experience</li> <li>• Credible aquaculture development strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Extension capacity at the Aquaculture Division</li> <li>• Absence of fin-fish culture capacity and hatchery facilities</li> <li>• Lack of private sector involvement in the sector (the exception being the prawn and seaweed industries)</li> <li>• Lack of environmental monitoring facilities and procedures</li> <li>• Lack of culture technologies for some potential culture species</li> <li>• Lack of aquafeed production capacity / poor quality farm-made feeds</li> </ul>

Opportunities	Threats
<ul style="list-style-type: none"> <li>• Development of species specific guidelines</li> <li>• Development of demonstration projects and improved extension networks</li> <li>• Potential diversification into novel species</li> <li>• Greater NGO involvement</li> <li>• Providing support to develop a sector plan</li> </ul>	<ul style="list-style-type: none"> <li>• Poor environmental management oversight</li> <li>• Potential overexploitation and unsustainable harvesting of juveniles for culture</li> <li>• Governance constraints</li> <li>• Theft and vandalism</li> </ul>

## 8. Recommendations to support sectoral development

The Aquaculture Development Strategy (2008) represents the government's proposed framework for promoting aquaculture development; it outlines the government's commitment to sector development, and the role that the private sector can play in developing the sector. As would be anticipated in such a document, the major developmental issues such as governance, finance, sustainability, outreach, zoning and research are addressed. The major issue for the Aquaculture Division (MLFD) is how to implement and resource the strategy. The strategy places significant emphasis on the role of the private sector in supporting sectoral development, however, with the exception of the seaweed industry, there is currently minimal private sector involvement. Realistically, private sector involvement in the sector is likely to remain minimal until a more enabling investor environment is created. Most current initiatives are being developed by donor and research organisations, and are largely focused on small scale production systems / models at the single farmer or village levels. If the development strategy is to be realised, significant financial and technical assistance will need to be provided to the Aquaculture Division (MLFD) to promote the plan.

## 9. Bibliography

ACDI-VOCA (2005) Sub sector and value chain analysis for mud crabs on the Tanga Coastal Belt. ACDI-VOCA SEEGAD Programme report. p.50

Allen G, Fielder D (2004) Mud crab aquaculture in Australia and South East Asia. In (Allen G, Fielder D Eds). Proceedings of the ACIAR crab aquaculture scoping study and workshop 28-29 April 2003, Joondoburri Conference Centre, Bribie Island. ACIAR working paper No.54.

Anderson A, Mather P, Richardson N (2004) Nutrition of the mud crab, *Scylla serrata* (Forsk.) In (Allen G, Fielder D Eds). Proceedings of the ACIAR crab aquaculture scoping study and workshop 28-29 April 2003, Joondoburri Conference Centre, Bribie Island. ACIAR working paper No.54.

Catacutan MR (2002) Growth and body composition of juvenile mud crab, *Scylla serrata*. Fed different dietary protein and lipid levels and protein to energy ratios. *Aquaculture*, 208, 253-261

Dubi AM, Mmochi AJ, Kyewalyanga MS, Jiddawi NS, Msuya FE, Ngazy Z (2004) Advances in mariculture of finfish, shellfish and seaweed in Tanzania. Report of stakeholders meeting held at Mazson's Hotel. 25-27th October, 2004.

Foscarini R and Prakash J (1990) Handbook on *Euचेuma* seaweed cultivation in Fiji. Food and Agriculture Organisation of the United Nations.

Ikhwanuddin AM, Oakley S Culture of mud crabs in mangrove areas: the Sarawak experience. Proceedings of the regional workshop on the integrated management of mangroves/ coastal ecosystems for sustainable aquaculture development. (ed: Mackintosh, E.D.) 23rd – 25th March 1999 Kuching, Sarawak, Malasia.

Kywolyanga MS (2003) Assessment of the types and abundance of live food for fishfarming in Makoba earthen ponds, Zanzibar, Tanzania. *Western Indian Ocean Journal of Marine Science*, 2:45-56

Mahika C, Mhily H, Kuboja B, Savoie R (2005) Rapid Assessment of abundance and biomass of the mud crab (*Scylla serrata* and its mariculture development on the Tanga coast. ACDI-VOCA SEEDGAD Programme report. 44p

Mann D, Paterson B (2004) Status of crab seed production and grow-out in Queensland. In: Mud crab aquaculture in Australia and South East Asia. (Allen, G., Fielder, D Eds). Proceedings of the ACIAR crab aquaculture scoping study and workshop 28-29 April 2003, Joondoburri Conference Centre, Bribie Island. ACIAR working paper No.54.

Mmochi AJ, Dubi NS, Jiddawi NS, Kyewalyanga MS, Msuya FE (2005) Ten years of active mariculture research in the Institute of Marine Sciences, University of Hawaii, Hilo and Coastal Resources Centre, University of Rhode Island. 49p.

Msuya FE, Shalli MS, Sullivan K, Crawford B, Tobey J, Mmochi AJ (2007) A comparative economic analysis of two seaweed farming methods in Tanzania. Sustainable Coastal Communities and Ecosystems Programme Coastal Resources Centre, University of Rhode Island and the Western Indian Ocean Marine Science Association. 27p.

Mwangamilo JJ, Jiddawi NS (2003) Nutritional studies on milkfish (*Chanos chanos*) and the development of a practical feed for its culture in Zanzibar, Tanzania. *Western Indian Ocean Journal of Marine Science*, 2: 137-146.

SDSP (2005) Seaweed Development Strategic Plan. Ministry of Natural Resources and Tourism, The United Republic of Tanzania, Dar es Salaam, Tanzania. 47p.

Sheen S, Wu SW (1999) The effects of dietary lipid levels on the growth response of juvenile mud crab *Scylla serrata*. *Aquaculture*, 175, 143-153.

Sheen SS (2002) Dietary cholesterol requirement of juvenile mud crab *Scylla serrata*. *Aquaculture* 189, 277-285.

Shelley C (2004) Development of commercial production systems for mud crab aquaculture in Australia: Part 1 Hatchery and Nursery. In: Mud crab aquaculture in Australia and South East Asia. (Allen G, Fielder D Eds). Proceedings of the ACIAR crab aquaculture scoping study and workshop 28-29 April 2003, Joondoburri Conference Centre, Bribie Island. ACIAR working paper No.54.

Shipton TA, Mahika C, Hecht T (2008) Mariculture state of play report. District Economic & Social Empowerment Programme (DESEMP-PP). Enviro-Fish Africa (Pty) Ltd, Grahamstown, South Africa. Internal report #DESEMP 2008/05.

Shipton TA, Hecht T (2007) Coastal Mariculture assessment mission. Regional Programme for the Sustainable Management of the Coastal Zones of the Indian Ocean Countries (ReCoMaP) [www.recomap-io.org](http://www.recomap-io.org)

Sullivan KA, Mmochi AJ, Crawford B (2007) An economic analysis of Milkfish farming in Tanzania: Potential for economic development and policy Issues. Sustainable Coastal Communities and Ecosystem Program. Coastal Resources Centre, University of Rhode Island and the Western Indian Ocean Marine Science Association. 23p.

TCMP (2001) Mariculture investor's guidelines. Tanzania Coastal Management Partnership. p78.

### **Legislation**

Fisheries Act, 2003 (No. 22 of 2003)

<http://faolex.fao.org/docs/pdf/tan53024.pdf>

Fisheries (General Amendment) Regulations, 1991 (G.N. No. 362 of 1991)

<http://faolex.fao.org/docs/pdf/tan8217.pdf>

Environmental Management Act, 2004 (No. 20 of 2004)

<http://faolex.fao.org/docs/pdf/tan61491.pdf>

Environmental (Registration of Environmental Experts) Regulations, 2005 (G.N. No. 348 of 2005)  
Official publication, pp. 1-28

<http://faolex.fao.org/docs/pdf/tan71739.pdf>

Environmental Impact Assessment and Audit Regulations, 2005 (G.N. No. 349 of 2005). Official publication, pp. 29-99

<http://faolex.fao.org/docs/pdf/tan71704.pdf>

Tanzanian Environmental Impact Assessment procedure and guidelines, Volume 1 - 5 (NEMC, 2002).

### **Sector Development Plans**

Aquaculture Development Strategy

<http://www.mifugo.go.tz/index.php>

Seaweed Development Strategic Plan (2005)

[http://www.crc.uri.edu/download/Seaweed\\_Development\\_Strategic\\_Plan.pdf](http://www.crc.uri.edu/download/Seaweed_Development_Strategic_Plan.pdf)

## **IV. Agriculture and Forestry - Prepared by Dr. Elizabeth Ann Daley, E-mail: [lizdaley@mafinga.demon.co.uk](mailto:lizdaley@mafinga.demon.co.uk)**

### **1. Introduction**

Agriculture is the lead economic sector in Tanzania, accounting for 45 percent of GDP and about 60 percent of export earnings in recent years. As well as being a key national source of food and raw materials it also provides livelihoods for 82 percent of the population. The overall constraints to growth in this sector, which include livestock and beekeeping, are related to low land productivity, underdeveloped irrigation potential, limited capital, as well as environmental degradation (MNRT no date).

Coastal agriculture in Tanzania is similar to agriculture in other areas of the country. It is rain-fed and dominated by smallholder farmers typically cultivating farms with an average size of between 1 and 3 ha. The main food crops produced include cassava and maize; rice is also cultivated in river valleys and flood plains. Cash crops include sisal, coconut, cashew, cardamom, cotton, fruits and horticulture. Women constitute the bulk of the agricultural labour force, while practices such as slash and burn have resulted in soil erosion and subsequent sedimentation of coastal waters (Wio-Lab 2008).

The natural resource sector, including both forestry and fisheries, accounts for an average of about 5.7 percent of GDP (United Republic of Tanzania 2005). The Tanzanian forestry sector overall contributes an estimated 3.0 to 3.4 percent of total GDP; coastal forests play a major part in this but data on their specific quantitative contributions are not available. The forestry sector in general also accounts for about 10 percent of foreign exchange earnings, derived from exports of both timber and non-timber forest products. Average annual export earnings from forest products stand around USD 14 million, with exports going to major markets in Japan, Singapore, Hong Kong, India and Taiwan. Honey and beeswax exports average 4,860 tonnes and 324 tonnes per year respectively. The forestry sector accounts for about 3 percent of paid (formal) employment in Tanzania and also employs over 3 million people in the informal sector, selling charcoal, fuelwood, timber, honey and other non-timber forest products. Fuelwood accounts for at least 92 percent of the country's energy use and around 95 percent of the total wood products consumed in the country. Per capita consumption of fuelwood is estimated at 1m<sup>3</sup> per year (MNRT no date, 9).

According to the Integrated Labour Force Survey, the rate of unemployment in Tanzania increased from 4.3 percent in 1990/91 to 11.2 percent in 2000/01; this situation has since become worse in rural areas and contributes to unsustainable natural resource exploitation. Furthermore extreme weather conditions such as flooding and droughts along the coastal zones of Tanzania make it more difficult to achieve sustainable livelihoods, as does the stress placed on the land from the gradual degradation of the forests, soils, fisheries and pastures (United Republic of Tanzania 2005, 10).

The Tanzanian coast is home to a quarter of the country's population and fishing and farming are primary means of subsistence for coastal communities. However, coastal forests are also a source of valuable timber and non-timber products, which are vital to the livelihood of local communities. They provide timber for boat building, fuelwood for dry processing of fish, charcoal, building poles and woodcarvings. The value of non-marketed forest products is immense, while non-timber products from coastal forests which are traded by local communities include bee products, food, fruits, medicines, and natural dyes and fibres, among others. Due to their low cost and wide availability, plant-based traditional medicines are more popular than western alternatives in many areas of the coastal region and it has been estimated that about 70 percent of Tanzanians use medicinal plants for curing illness (MNRT 2001a, cited in MNRT no date).

Coastal forests can broadly be defined as areas subject to the monsoon climatic cycle from the Indian Ocean. Tanzanian coastal forests are recognized globally as major centres of species diversity and endemism, although overexploitation and clearing for other uses has led to a reduction of these important forests. In many areas forests have been cleared for agricultural production and large areas of the coastal forests have been replaced with coconut trees, cashew and fruit trees. Indirectly the clearing of coastal forests poses a threat to the mangroves as the local communities shift to these for fuelwood, timber and charcoal making (MRAG 2003).

Coastal mangrove forests cover a total area of about 115,500 ha. The mangrove ecosystem is rich in molluscs, several species of which are gathered by women and provide an important source of protein in the local diet, while commercial fisheries are also directly dependent on the mangrove ecosystem. It is estimated that over 150,000 people in Tanzania earn their living directly from mangrove resources. Mangrove exploitation for poles for construction and bark (for tannin extraction), both for export, was common in Tanzania up to the mid 1990s (Wio-Lab 2008).

Generally in Tanzania, although income from agriculture is dominant, 40 percent of rural income originates from farm and off-farm employment, and the proportion of rural households who derive income from more than three sources is 65 percent. Opportunities for expanding and diversifying rural incomes from natural resources are not always realised due to bureaucratic and legal hurdles (United Republic of Tanzania 2005). Meanwhile, the importance of agriculture to coastal livelihoods is clear. In a study of local livelihoods in Ruvuma Estuary Marine Park, although marine resources were found to be key to livelihoods in Msimbati and Tangazo, agriculture was found to be the most important core livelihood activity in Tangazo, with cashews being the most significant cash crop; rice production was also significant in Mahurunga (see Table 1 below).

**Table 1: Cash Crops in Selected Tanzanian Villages (percentage of farming households growing each one)**

Village	Cashews	Rice	Groundnuts	Fruit	Coconuts	Pigeon Peas	Cassava/Sesame
Mahurunga	37.6	79.4	0.0	9.7	0.0	0.0	0.0
Msimbati	95.3	0.9	3.8	2.6	8.2	2.3	0.0
Tangazo	71.4	38.6	2.0	0.6	0.6	0.2	0.0

Source: Harrison 2005

Harrison's (2005) extensive listing of coastal livelihood activities currently practised or deemed viable for future development is provided at Annex 1; the high number of activities gives an indication of the diversification opportunities available to communities.

## 2. Biophysical

Tanzania's coastal zone contains a wealth of coastal and marine habitats that include the ocean, coastal and mangrove forests, coral reefs, sea grass beds, inter-tidal areas, estuaries, coastal plains and sandy beaches which support a diverse range of resources. Map 1 (Annex 2) shows the distribution of the most important resources that are used by the coastal communities for their livelihoods.

Coastal forests extend from east of the Islands of Pemba, Unguja and Mafia to the base of the Eastern Arc Mountains. Besides being of biological importance these forests are subjected to many and varied uses, as

noted above, such as for people to collect medicinal plants, fuel wood, building materials and food. However, some of the forest uses are non sustainable, including charcoal production, logging, grazing and expansion of agricultural land. Table 2 (overleaf) presents an attempt to valuation both coastal forests and mangroves to Tanzania.

Tanzania has about 33.5 million ha of forests in total yet the area covered by coastal forests is just 70,000 ha. Coastal forests are unusually rich in endemic tree species, but only scattered remnants are now left of the original forests. Examples include the evergreen tree cover type of *Newtonia buchananii*, *Allanblakia stuhmannii* and *Parinari excelsa*, occurring in Kwamkoro area, East Usambara Mountains, Tanga, which also occur inland on the foot slopes of Uluguru Mountains and the lower slopes of the Udzungwa escarpment in Morogoro region (MNRT no date).

**Table 2 Valuation of Ecosystem Goods and Services in Tanzania**

Coral Reefs		Mangroves		Coastal Forests		Total
Area (km <sup>2</sup> )	Value (Million US\$)	Area (km <sup>2</sup> )	Value (Million US\$)	Area (km <sup>2</sup> )	Value (Million US\$)	Value (Million US\$)
3,580	2,175	1,250	1,249	700	141	3,565

Source: Wio-Lab 2008

### 3. Human Environment

In a study of Comoros Islands, Mauritius, Mozambique and Tanzania, Ireland (2004) identified over 100 different coastal livelihood income generating activities, with a large proportion relying on the use of surrounding natural resources. Many of these activities were found to co-exist within the same community, highlighting their diversity and complementarity. More specifically on Tanzania, as described in Ireland (2004), Andersson and Ngazi (1998) found that 89 percent of their study respondents in Mafia and Unguja islands engaged in individual production strategies based on two or more activities, most of which relied on combined use of marine (for fishing mainly, but also seaweed farming and collection of aquatic organisms) and terrestrial (for agriculture) ecosystems.

Ireland's study (2004) included a series of coastal livelihoods assessments in Tanzania to better understand how coastal communities survive and thrive and what the impact of alternative income generating activities is on their livelihood. One such assessment was carried out in Mkubiru, a small village comprising 199 households, the majority of whom are extremely poor, and located on the sea-edge in the Mnazi Bay and Estuary Marine Park in Southern Tanzania. Over 80 percent of households in Mkubiru are estimated to be dependent on marine resources for their livelihoods, although many were also engaged in other supplementary income generating and livelihood activities (c.f. Harrison 2005, as above). Thus as well as marine resources (fisheries) and mangrove forests, two other key natural assets in Mkubiru were land for crops, coconuts and cashews, and livestock (Ireland 2004).

Alternative livelihood and income generating activities that have reported to have been introduced in many coastal areas of Tanzania, in the agriculture and forestry sectors, include beekeeping and honey production, tree nursery management and poultry production (Jumaa et al no date). Among local people taking part in an IUCN-linked national coastal community workshop in Tanga Region in 2008, members of the Kipumbwi Economic Development Society (Kiedeso) from Pangani explained their efforts to diversify beyond fishing by undertaking beekeeping and honey production activities, tree planting

(mangroves and terrestrial trees) and modern livestock farming, and to operate a micro-finance credit mechanism for members (Mwigah et al no date).

In Mkubiru it was reported that strong winds were causing significant damage to housing and crops. Where households had access to more assets this vulnerability was cushioned by the ability to substitute assets for resources to cope with this damage i.e. livestock can be sold to buy food when crops have been damaged. Government policies have a potential role here. For example, as a response to these strong winds government could have established reforestation along the coast to create a barrier/safeguard to these winds thus helping to reduce the vulnerability of these communities. Knowing what vulnerabilities a community are exposed to and how they manage their risk to these vulnerabilities is important to planning policy (Ireland 2004).

#### **4. Policy and Governance**

Apart from the statement of environment and biodiversity objectives in Tanzania's Poverty Reduction Strategy Paper (PRSP), strategies to attain those objectives have not yet been articulated (United Republic of Tanzania 2005). The Government considers that the PRSP should entail actions that will be taken to ensure that forest resources are sustainably utilised to enhance the livelihoods of rural populations in Tanzania (MNRT no date).

According to Shayo (2006), Tanzania's National Environmental Policy of 1997 includes as objectives to:

- Ensure sustainability, security and equitable use of resources for meeting basic needs now and in the future
- Prevent degradation of land, water, vegetation
- Conserve biological biodiversity
- Improve condition and productivity of degraded areas
- Raise public awareness and understanding of the essential linkages between environment and development and to promote individual and community participation in environmental action.

The Tanzania National Adaptation Programme of Action (NAPA) was prepared to look at the country's climate change related vulnerabilities in various sectors which are important for the economy and identifies 14 priority areas including afforestation programmes and forest fire prevention programmes. Key national level adaptation strategies relevant to agriculture and food security are set out in Table 3 below.

**Table 3: Adaptation Strategies at the National Level for Agriculture and Food Security**

Intensification of the early warning system	Government is implementing a Famine Early Warning System and establishing Livestock Early Warning System. The main actors are Ministry of Agriculture, Food Security and Cooperatives and Ministry of Livestock Development, respectively.
Mainstreaming environment into NSGPR	Public participation regarding integration of environmental concerns to the planning process at all levels is being implemented. Implemented in 38 out of 123 districts by 2006.
Agricultural research and extension	Demand driven research to solve the problems encountered in the agricultural sector, including the effects of climate change including development of suitable storage methods and efficient water use.
Strategy to combat degradation of land water catchments	Strategy for Urgent Action adopted by the government to identify specific challenges on land and water catchment degradation in the country. This includes environmental degradation due to illegal agricultural human activities, deforestation, unsuitable irrigation projects, wild fires destruction, desertification and land use conflicts among various stakeholders. The envisaged budget is USD 30 Million per year for 5 years. The Government committed USD 9 million in 2006/7 to kick start the implementation.

Source: Shayo 2006.

With regard to forestry, Participatory Forest Management (PFM) was introduced into law with the passing of the Forest Act of 2002. This law provides a clear legal basis for communities, groups or individuals across mainland Tanzania to own, manage or co-manage forests. Different models of PFM have been supported by projects, NGOs, districts and national government since the early 1990s, but they were first formalised with the 2002 law. PFM has mainly been supported by donor funding through NGOs, area-based projects or donor funds channelled through the Forestry and Beekeeping Division of the Ministry of Natural Resources and Tourism (MNRT). PFM has been strongly promoted by the Forestry and Beekeeping Division as a forest management strategy in montane catchment forests in the high biodiversity Eastern Arc forests and in mangrove forests along coastal Tanzania since the late 1990s. This initiative has been reinforced by national and international NGOs promoting forest conservation such as WWF and CARE (MNRT 2006).

## 5. Planning and Management

Despite forest conservation and management efforts over time, conflicts between local people who wish to exploit forest resources, commercial companies that wish to exploit the forest for profit and forest departments who attempt to police the forest from such exploitation continue to upset the management of coastal forests in Tanzania. The situation has been exacerbated by dwindling allocations of funding and other crucial resources to institutions charged with management of forests in Tanzania (MNRT no date).

The percentage of total forest area currently under PFM is 10.8 percent, which includes 1,821 villages in 57 districts being involved with ongoing PFM processes (MNRT 2006). According to MNRT (2006) the law recognises two different types of PFM which:

- Enable local communities to declare – and ultimately gazette – Village, Group or Private Forest Reserves; and
- Allow communities to sign joint forest management agreements with government and other forest owners which is referred to as 'Joint Forest Management' or JFM.

Table 4 (below) gives an overview of the structure of community-based forest management (CBFM) on mainland Tanzania; however no precise quantitative data are available specifically for management of coastal forests.

**Table 4: Overview of CBFM on Mainland Tanzania**

Number of villages with CBFM established or in process	1,102
Area of forest covered by CBFM arrangements	2,060,608 hectares
Number of declared Village Land Forest Reserves	329
Number of Gazetted Village Land Forest Reserves	53
Number of districts where CBFM is implemented	50
Primary forest types where CBFM has been promoted	Miombo, coastal and acacia woodlands
Percentage of public land forests now under CBFM arrangements	10.2%
Percentage of villages on mainland Tanzania that are engaged in CBFM activities	10.5%

Source: MNRT 2006.

In 2002 the Tanzania National Coastal Forest Task Force systematically evaluated and ranked coastal forest sites for their global biological importance in terms of threats and identified eight national hotspots requiring critical attention in the coming decade as shown in Table 5 below.

**Table 5: Threats and Threat Levels Challenging Eight Coastal Forest Areas in Tanzania**

Priority Site	Area (ha)	Level of Threat	Main Threats
Lowland East Usambaras	7,056	High	High pressure on the land from population increase. Clearance of forest up to the boundaries of the forest reserve lead to frequent fires from the burning of adjacent fields.
Rondo/Litipo/Noto plateau	3,900	Very high	Intensive logging and shifting cultivation as well as frequent forest fires. Human disturbance on buffer zone by pole cutting and charcoal burning illegally.
Pande/Puge/Ruvu	4,300	Very high	Exploitation of timber and non-timber products at unsustainable levels. Animals hunted illegally for consumption.
Matumbi/Kichi Hills	2,000+	Very high	
Kiono/Zaraninge	1,780	Very high	
East Ulgurus (Kimboza)	400	High	
Jozani	5,000	High	Logging, pit sawing, shifting cultivation, forest fires, poaching, hunting and other cultural uses. Infrastructure development such as roads had wiped out a lot of natural resources.
Ngezi	1,476	High	Multinational international companies trying to acquire virgin forest areas to build hotels along the beaches. Low agricultural production and lack of alternative sources of livelihood has caused encroachment by the community and deterioration of biodiversity and created a vicious cycle of poverty manifested by unhealthy human labour practices.
Kiwenga	3,000	High	
Mlola (Mafia Island)	300	High	

Source: MNRT no date

## 6. Development, Trade and Projects

The WWF in Eastern Africa is currently developing a coastal forest programme to enhance the conservation and better management of these resources for both local community and global value. As part of preparations for this they reviewed the main ongoing programmes and projects that would be relevant to their own programme, as summarised in Table 6 below.

**Table 6: Main Ongoing Programmes and Projects Relevant to the Eastern Africa Coastal Forests Ecoregion (EACFE) –Tanzania**

National Forest Programme – NFP	Programme was launched in 2001 and will end in 2010. It was developed to address the challenging responsibilities in the near future and to increase the sector's contribution to the national economy and more so in poverty reduction. Its implementation is expected to draw resources from various sources under different stakeholders including private and public sectors and external assistance. So far funding is from the Governments of Finland and Tanzania
Tanzania Forest Conservation and Management Project – TFCMP	The project has a Participatory Forest Management Component covering Morogoro, Irenga, Mbeya and Lindi regions. Most of the forests covered by the project are coastal forests. The PFM component is supported by DANIDA with an overall budget of 60 million DKK
Lowland East Usambara and Forest Landscape Restoration projects	Coastal forest projects run by the Tanzania Forest Conservation Group – TFGG in partnership with WWF. Funded by FINNNIDA from 2004–2006 with a budget of 300,000. The Lowland East Usambara project is managing Kambai FR focusing on conservation aspects while the other one is concentrating on landscaping the area.
Misitu Yetu Project	Partnership between TFCG and CARE international and works in close cooperation with the relevant departments of the Government of Tanzania, Tanzania communities and other local and national NGOs. The project operates at three levels, firstly directly with communities, secondly through information sharing, training and networking between communities managing forests and thirdly by the capacity building of a national NGO (TFCG) that provides services to support and advise community groups over the long term. The project period is 5 years with a budget of \$1,750,000
Rufiji Environment Management project – REMP	Objectives: <ul style="list-style-type: none"> <li>• Promote the integration of environmental conservation and sustainable development through environmental planning within the Rufiji delta and flood plain</li> <li>• Promote sustainable use of natural resources</li> <li>• Promote awareness of the values of forests, woodlands and wetlands</li> </ul>
East Africa Marine Ecoregion – EAME	This programme brings together a wide cross section of stakeholders to identify biodiversity priority areas and understand forces that put pressure on these areas
Miombo Ecoregion	Activities started in 2001 through WWF. The budget is \$100,000 funding by the USA. A project proposal was developed for Conservation of identified areas of biological significance with a budget of £2.5m

Source: MNRT no date

Poverty in coastal areas is a major source of forest destruction because the more poor people are, the more they depend on natural resources for consumption. The PRSP understands this concept as it notes that the poor in Tanzania are heavily dependent on environmental resources for income generation. However, the PRSP creates a course for promotion and facilitation of a partnership between the Government, the private sector and the civil society for the purpose of poverty reduction. Arguably, any gains in alternative household income generation might lead to a corresponding decrease in pressure on biological diversity, especially because most Tanzanians currently depend upon biodiversity for income generation and consumption. Given the importance of biodiversity to the income and consumption patterns of the people of Tanzania the Government has therefore adopted a multi-sectoral approach addressing poverty issues in the Development Visions 2020 and 2025, including the National Biodiversity Strategy and Action Plan (NBSAP) which sets out to build a society that values all 'biodiversity richness'. The main targets of these visions are to reduce the widespread poverty in Tanzanian society by improving socio-economic opportunities, good governance, transparency and improved and redefined public sector performance (United Republic of Tanzania 2005).

Further information on projects identified in this scoping study which could help meet the objectives of easing pressure on natural resources by increasing income generation from alternative sources or using improved methods in farming and forestry are given in Section 10 below.

## 7. SWOT Analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Subsistence agriculture supporting coastal livelihoods (e.g. crop farming, cashews, coconuts, non-timber forest products/resources such as molluscs supporting food security)</li> <li>• Coastal forests (especially mangroves) providing wide range of useful resources (e.g. fuelwood, timber for charcoal production, boat building and woodcarvings, medicines, bee products etc.)</li> <li>• Some recognition in the literature of the importance of coastal agriculture and forestry in livelihoods of coastal communities (i.e. it is not just all about fishing), but whether or how to support development for subsistence only or more ambitiously is not clear (see Weaknesses)</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Ongoing forest depletion weakening the natural resource base (from timber harvesting and destruction for agriculture as well as soil erosion etc.)</li> <li>• Lack of information on local community resource management structures and strength of local community capacity to sustainably manage agricultural and forestry resources – much emphasis in the literature on fisheries management and participatory management of marine resource with less regard to other vital livelihood resources in coastal areas</li> <li>• Agriculture relatively small-scale in coastal areas so limited opportunities for developing exports, similarly for forestry the main markets for both timber and non-timber forest products likely to remain internal and probably local (e.g. boat-building for local fishing industry, woodcarvings to sell to tourists at beach hotels etc.) with corresponding limited scope for agriculture or forestry to drive development and income generation substantially in the coastal zones, and therefore likely less interest from donors, Government and projects to support these activities if they are deemed likely to remain predominantly subsistence</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Participatory forest management strategies and projects promise more success in sustainable development of these coastal resources, with scope for community involvement and capacity growth which can crossover into improved management of coastal natural resources more generally</li> <li>• Potential for funding for community development and capacity building through World Bank project and WWF EACFE project (see further information in projects list, section 10 below)</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Forest depletion and overall resource degradation requires sound implementation of Government adaptation policies and fulfilment of the PRSP but capacity and funding may not be sufficient to achieve this in a fast enough time scale</li> <li>• Fisheries and marine resources may continue to be prioritised in coastal development efforts, while population growth puts increasing pressure on agricultural and forest resources for subsistence (food)</li> <li>• Impact of ongoing Government land tenure reforms on coastal land resources also not yet clear but could lead to increasing privatisation with detrimental effects on community-accessed resources such as mangrove forests</li> </ul>

## 8. Bibliography

- Brugere et al (2008) *Livelihood Diversification in Coastal and Inland Fishing Communities: Misconceptions, Evidence and Implications for Fisheries*. FAO
- Harrison P (2005) *A Socio-economic Assessment of Sustainable Livelihoods Regimes for Communities of Mnazi Bay Ruvuma Estuary Marine Park, Tanzania*. IUCN
- United Republic of Tanzania (2005) *National Strategy for Growth and Reduction of Poverty*
- Ireland C (2004) *Alternative Sustainable Livelihoods for Coastal Communities – A Review of Experience and Guide to Best Practice*. IUCN
- Jumaa et al (no date) *Building Capacity for Coastal Communities to Manage Marine Resources in Tanzania: Seaweed (Mwani) Farming Group*. IUCN
- Ministry of Natural Resources and Tourism (MNRT) (no date) *The Coastal Forests of Tanzania - A national synthesis report for the preparation of WWF—EACFE Programme*, by Arthur I.M.Dallu, Forestry Officer, Forestry and Beekeeping Division, MNRT, P.O.Box 426, Dar es salaam, Tanzania
- MNRT (July 2006) *Participatory Forest Management in Tanzania, Facts and Figures*, by Extension and Publicity Unit, Forestry and Beekeeping Division, MNRT
- Marine Resources Assessment Group (MRAG) (2003) *Understanding fisheries livelihoods and constraints to their development: Kenya and Tanzania, Annex 1.1*.
- Mwigah et al (no date) *Building Capacity for Coastal Communities to Manage Marine Resources in Tanzania: Fish Traders, Commerce and Socio-Economic Development (Biashara) Group*. IUCN
- Shayo (2006) *UNFCCC African Regional Workshop. Adaptation Planning and Implementation: Agriculture and Food Security*.
- Wio-Lab (2008) *Transboundary Diagnostic Analysis of Land-based Sources and Activities in the Western Indian Ocean Region*.

## 9. List of Datasets

None found.

## 10. List of Sector-Related Projects

### Marine and Coastal Environment Management Project, World Bank

Component 3, Coastal Community Action Fund – this finances community demand-driven sub-projects to support and boost livelihoods, focusing on vulnerable groups and under the two sub-components of a Coastal Village Fund and Coastal Community Capacity Enhancement, with the expected outcomes being reduction in income poverty and increased local participation in sustainable resource management. The project appraisal document implies there would be some emphasis given to alternative (ie non-marine resource dependent) livelihoods, and this could include agricultural and forestry development activities.

**Main Project Site:**

[http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000090341\\_20050706100530](http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000090341_20050706100530) (last accessed 13 May 2010)

**Project Appraisal Document:**

[http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/07/06/000090341\\_20050706100530/Rendered/PDF/32500a.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/07/06/000090341_20050706100530/Rendered/PDF/32500a.pdf) (last accessed 13 May 2010)

**Participatory Forest Management in Tanzania, Facts and Figures (produced by Extension and Publicity Unit, Forestry and Beekeeping Division, Ministry of Natural Resources and Tourism, July 2006)**

This document gives general information about participatory forest management in Tanzania and includes a table at the end listing a number of past and ongoing projects and initiatives in forestry (including beekeeping and forest based resource livelihoods development) across Tanzania, some of which are in coastal areas and/or specifically targeted on coastal forests.

- <http://www.tzonline.org/pdf/pfmstatus.pdf> (last accessed 13 May 2010)

**The Coastal Forests of Tanzania, Ministry of Natural Resources and Tourism**

This document, which was prepared for the WWF – EACFE Programme by the Ministry, includes a list in Section 6 of past and ongoing projects and initiatives in forestry (including beekeeping and forest based resource livelihoods development) across Tanzania, some of which are in coastal areas and/or specifically targeted on coastal forests (and included in Table 3 of this report above).

- <http://coastalforests.tfcg.org/pubs/CFNationalSynthesis-Tz.pdf> (last accessed 13 May 2010)

**IUCN, Collaborative Forest Management Projects in Tanga Region and the Rufiji Environmental Management Project**

- [http://iucn.org/about/union/secretariat/offices/esaro/our\\_work\\_drylands/forests\\_and\\_woodlands/](http://iucn.org/about/union/secretariat/offices/esaro/our_work_drylands/forests_and_woodlands/) (Website scanned in April and specific link to a document providing information about a vegetable growing project in Tanga Region was found ( <http://www.iucn.org/places/earo/pubs/marine/TANGAGEN.PDF> ) but no longer accessible when last accessed on 13 May 2010).

## Annex 1 – Livelihood Activities in Ruvuma Estuary Marine Park

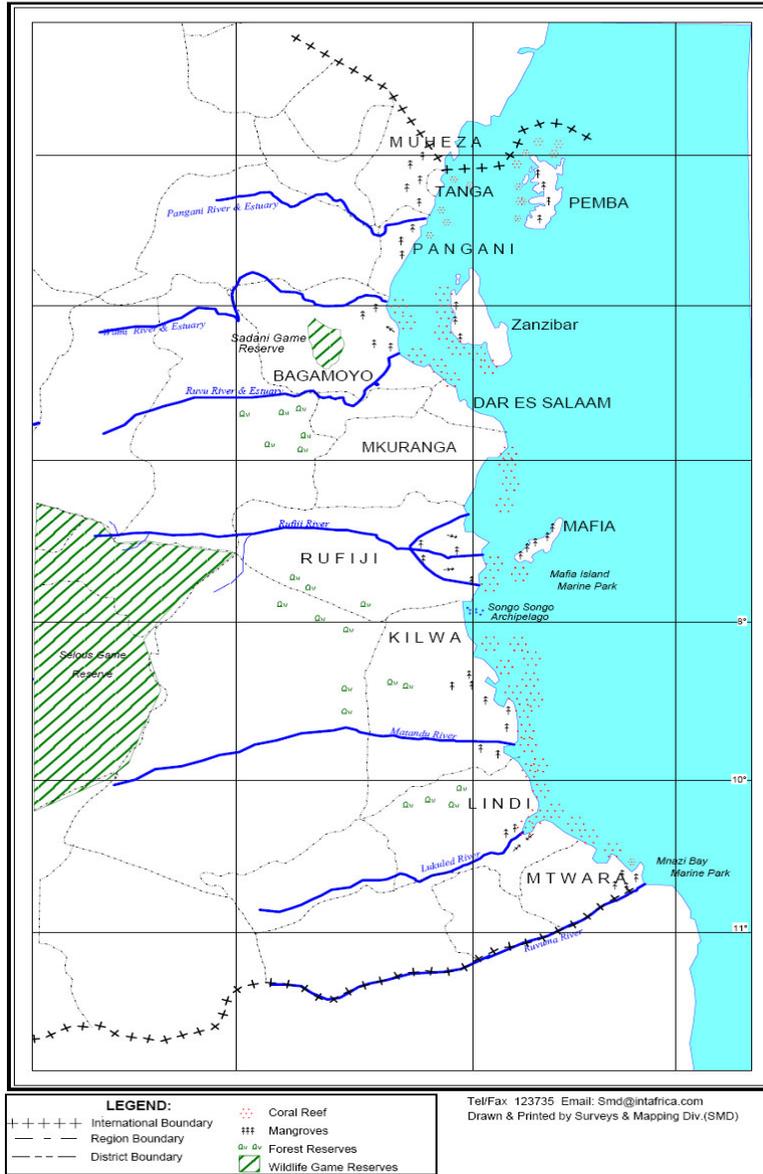
Livelihood Activities Activity	Dependent Natural Resources			Activity Sector		Current Status	
	Marine	Terrestrial	None	Primary	Secondary	In practice	Potential AIG
Agriculture - Cashew Harvesting							
Agriculture - Cashew Processing							
Agriculture - Cassava							
Agriculture - Coconut Palms							
Agriculture - Fruit							
Agriculture - Groundnuts							
Agriculture - Mushrooms							
Agriculture - Pigeon peas							
Agriculture - Rice							
Agriculture - Sesame							
Agriculture - Subsistence Food Crops							
Agriculture - Vanilla							
Agriculture - Vegetable Gardens							
Artisans - Boat building & repair							
Artisans - Carpenters							
Artisans - Carving							
Artisans - Coconut beauty products							
Artisans - Food vendors							
Artisans - Hairdressers							
Artisans - House builders							
Artisans - Mechanics							
Artisans - Net making & repair							
Artisans - Painters & Decorators							
Artisans - Potters							
Artisans - Rope makers							
Artisans - Tailors							
Artisans - Thatchers							
Artisans - Trap making							
Artisans - Weavers (with mangrove area dyes)							
Beekeeping (mangroves)							

Livelihood Activities Activity	Dependent Natural Resources			Activity Sector		Current Status	
	Marine	Terrestrial	None	Primary	Secondary	In practice	Potential AIG
Bicycle repairers							
Blacksmiths (local materials)							
Business - Cooking and selling food							
Business - Dried fish sales							
Business - Fresh crustaceans sales							
Business - Fresh fish sales (refrigerated)							
Business - Fruit sales							
Business - Ice selling							
Business - Sea Cucumber Trading							
Business - Shopkeepers							
Business - Trade of vegetables							
Business - Goods & food trade with Mozambique							
Casual Labour							
Charcoal making (mangroves and terrestrial)							
Cow dung collection							
Deep water crustaceans trawling							
Deep water long line fishing & trawling							
Development of FADS for fishing Pelagic species							
Dress making							
Employment (local government)							
Employment (private sector)							
Fossil Coral Harvesting							
Fuelwood collection (mangroves and terrestrial)							
Horticulture - flowers							
Livestock - Cattle							
Livestock - Chickens							
Livestock - Goats							
Livestock - Sheep							
Mangrove harvesting (inc. selling poles)							
Mariculture - Fish Cages							
Mariculture - Fish and crab ponds							

Livelihood Activities Activity	Dependent Natural Resources			Activity Sector		Current Status	
	Marine	Terrestrial	None	Primary	Secondary	In practice	Potential AIG
Mariculture - Sea cucumber (ponds)							
Mariculture - Seaweed							
Palm wine making							
Salt Panning							
Sea Cucumber Harvesting (sea)							
Shell collection							
Stone quarrying							
Tandlo netting for dagaa species							
Traditional medicine							
Transport (on bicycles)							

Source: (Harrison 2005)

**Annex 2 – Map 1 – Marine Resources of Mainland Tanzania**



Source: (MRAG, 2003; 10)

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

1	Oxfam Website (2009) <b>Oxfam's work in Tanzania in depth</b> . Available at: <a href="http://www.oxfam.org.uk/resources/countries/tanzania.html">http://www.oxfam.org.uk/resources/countries/tanzania.html</a>
2	Oxfam (2009) <b>Picture this: A Tanzania without poverty. Oxfam GB Tanzania: Annual Report 2007-9</b> . Available at: <a href="http://www.oxfam.org.uk/resources/countries/downloads/oxfam_gb_tanzania_annual_report07-09.pdf">http://www.oxfam.org.uk/resources/countries/downloads/oxfam_gb_tanzania_annual_report07-09.pdf</a>
3	Oxfam (2007) <b>National Change Strategy for Tanzania 2007-2017: Our scaled-up plan of action to reduce extreme poverty</b> . Available at: <a href="http://www.oxfam.org.uk/resources/downloads/tanzanianatlchangepublic.pdf">http://www.oxfam.org.uk/resources/downloads/tanzanianatlchangepublic.pdf</a>
4	Harrison P (2005) <b>IUCN: A Socio-economic Assessment of Sustainable Livelihoods Regimes for Communities of Mnazi Bay Ruvuma Estuary Marine Park, Tanzania</b> . Available at: <a href="http://www.kilimanyika.com/pdf/Harrison%20Report%20on%20Sustainable%20Livelihood%20Regimes%20IUCN.pdf">http://www.kilimanyika.com/pdf/Harrison%20Report%20on%20Sustainable%20Livelihood%20Regimes%20IUCN.pdf</a>
5	GCRMN (2008) <b>Socioeconomic conditions along the world's tropical coasts: 2008</b> . Available at: <a href="http://www.socmon.org/pdf/socmon_global_report.pdf">http://www.socmon.org/pdf/socmon_global_report.pdf</a>
6	Ireland C (2004) <b>ICUN: Alternative Sustainable Livelihoods for Coastal Communities – A Review of Experience and Guide to Best Practice</b> . Available at: <a href="http://www.theidlgroup.com/documents/SustainableCoastalLivelihoods-IUCNOct2004.pdf">http://www.theidlgroup.com/documents/SustainableCoastalLivelihoods-IUCNOct2004.pdf</a>
7	CARE Website (2010) <b>CARE in Tanzania</b> . Available at: <a href="http://www.careinternational.org.uk/11062/tanzania/care-in-tanzania.html">http://www.careinternational.org.uk/11062/tanzania/care-in-tanzania.html</a>
8	Save the Children (2009) <b>Tanzania Country Brief</b> . Available at: <a href="http://www.savethechildren.org.uk/en/docs/Tanzania_CB_2008.pdf">http://www.savethechildren.org.uk/en/docs/Tanzania_CB_2008.pdf</a>
9	Brugere et al (2008) <b>FAO: Livelihood Diversification in Coastal and Inland Fishing Communities: Misconceptions, Evidence and Implications for Fisheries Management (working paper)</b> . Available at: <a href="ftp://ftp.fao.org/fi/document/sflp/wp/diversification_june2008.pdf">ftp://ftp.fao.org/fi/document/sflp/wp/diversification_june2008.pdf</a>
10	MRAG (2003) <b>Understanding fisheries livelihoods and constraints to their development: Kenya and Tanzania, Annex 1.2, Marine Resources Assessment Group</b> . Available at: <a href="http://p15166578.pureserver.info/fmisp/Documents/r8196/r8196_3.pdf">http://p15166578.pureserver.info/fmisp/Documents/r8196/r8196_3.pdf</a>
11	MRAG (2003) <b>Understanding fisheries livelihoods and constraints to their development: Kenya and Tanzania, Annex 1.1, Marine Resources Assessment Group</b> . Available at: <a href="http://p15166578.pureserver.info/MRAG/FMSP_pdfs/ahj00/r8196/r8196_2.pdf">http://p15166578.pureserver.info/MRAG/FMSP_pdfs/ahj00/r8196/r8196_2.pdf</a>
12	Ministry of Natural Resources and Tourism (2006) <b>Participatory Forest Management</b> Available at: <a href="http://www.tzonline.org/pdf/pfmstatus.pdf">http://www.tzonline.org/pdf/pfmstatus.pdf</a>
13	United Republic of Tanzania (2008) - <b>Ministry of Planning, Economy and Empowerment - Poverty Reduction Strategy Paper Annual Implementation Report</b> Available at: <a href="http://www.imf.org/external/pubs/ft/scr/2008/cr0822.pdf">http://www.imf.org/external/pubs/ft/scr/2008/cr0822.pdf</a>
14	United Republic of Tanzania - <b>National Strategy for Growth and Reduction of Poverty (2005)</b> Available at: <a href="http://www.imf.org/external/pubs/ft/scr/2006/cr06142.pdf">http://www.imf.org/external/pubs/ft/scr/2006/cr06142.pdf</a>
15	Shayo (2006) <b>UNFCCC African Regional Workshop. Adaptation Planning and Implementation: Agriculture and Food Security</b> . Available at:

	<a href="http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200609_tanzania_agriculture_paper.pdf">http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200609_tanzania_agriculture_paper.pdf</a>
16	Ministry of Natural Resources and Tourism - <b>The coastal forests of Tanzania</b> Available at: <a href="http://coastalforests.tfcg.org/pubs/CFNationalSynthesis-Tz.pdf">http://coastalforests.tfcg.org/pubs/CFNationalSynthesis-Tz.pdf</a>
17	Jumaa et al (no date) <b>Building Capacity for Coastal Communities to Manage Marine Resources in Tanzania: Seaweed (Mwani) Farming Group</b> . IUCN. Available at: <a href="http://cmsdata.iucn.org/downloads/tangaseaweed.pdf">http://cmsdata.iucn.org/downloads/tangaseaweed.pdf</a>
18	IUCN (2010) <b>Forests and Woodlands</b> Available at: <a href="http://iucn.org/about/union/secretariat/offices/esaro/our_work_drylands/forests_and_woodlands/">http://iucn.org/about/union/secretariat/offices/esaro/our_work_drylands/forests_and_woodlands/</a>
19	World Bank (2010) <b>Marine and Coastal Environment Management Project Website</b> Available at: <a href="http://www-wds.worldbank.org/external/default/main?pagePK=64193027&amp;piPK=64187937&amp;theSitePK=523679&amp;menuPK=64187510&amp;searchMenuPK=64187283&amp;siteName=WDS&amp;entityID=000090341_20050706100530">http://www-wds.worldbank.org/external/default/main?pagePK=64193027&amp;piPK=64187937&amp;theSitePK=523679&amp;menuPK=64187510&amp;searchMenuPK=64187283&amp;siteName=WDS&amp;entityID=000090341_20050706100530</a>
20	World Bank (2010) <b>Marine and Coastal Environment Management Project Appraisal Document</b> Available at: <a href="http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/07/06/000090341_20050706100530/Rendered/PDF/32500a.pdf">http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2005/07/06/000090341_20050706100530/Rendered/PDF/32500a.pdf</a>
21	Mwigah et al (no date) <b>Building Capacity for Coastal Communities to Manage Marine Resources in Tanzania: Fish Traders, Commerce and Socio-Economic Development (Biashara) Group</b> Available at: <a href="http://cmsdata.iucn.org/downloads/tangatraders.pdf">http://cmsdata.iucn.org/downloads/tangatraders.pdf</a>
22	Wio-Lab (2008) <b>Transboundary Diagnostic Analysis of Land-based Sources and Activities in the Western Indian Ocean Region</b> Available at: <a href="http://www.wiolab.org/information-and-publications/technical-reports/techRep-drft-TDAwiolab-verNov08">http://www.wiolab.org/information-and-publications/technical-reports/techRep-drft-TDAwiolab-verNov08</a>

## V. Energy - Prepared by Mr Francois Busson, E-mail: [rafrabus@free.fr](mailto:rafrabus@free.fr)

### 1. Introduction

The United Republic of Tanzania is a nation in central East Africa, bordered by Kenya and Uganda to the north, Rwanda, Burundi and the Democratic Republic of the Congo to the west, and Zambia, Malawi and Mozambique to the south. The country covers 945,087 km<sup>2</sup> and has 39,384,223 inhabitants, mostly of Bantu origin. Its capital Dodoma is located in the interior but the main economic hub is the former capital Dar es Salaam on the coast. The official languages are Kiswahili and English, however, Arabic is also spoken, particularly on the islands of Zanzibar and Pemba.

Shortly after their independence in 1964, The United Republic of Tanzania was formed through the union of two independent states, the Republic of Tanganyika and the Peoples' Republic of Zanzibar.

The United Republic of Tanzania is a unitary state based on a multiparty parliamentary democracy. In 1992, the Tanzanian government introduced constitutional reforms permitting the establishment of opposition political parties. Tanzania's legal system is based on the English Common Law system. Unlike the unwritten British constitutional system, the first source of law for the United Republic of Tanzania is the 1977 Constitution.

#### 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, which includes the drilling and operating of the well, are capital-intensive, specialized activities, executed by specialized corporations. The decision to exploit a field 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 want to 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 some 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 local workforce

According to the available data (seismic data, drilling, etc), Tanzania has strong hydrocarbon potential, however, it is still largely underexplored. Several companies are conducting oil and gas exploration, however, no crude oil discovery has been made to date. A fourth deep offshore bidding round is to be launched, with 13 deep offshore blocks located around 1,200 and 3,000 metres below the sea surface.

Tanzania has made natural gas discoveries in four locations. Two of them - Songo Songo off the eastern coast, and Mnazi Bay in southeast Tanzania - are in production. Estimated gas potential ranges from 2 to 3 trillion cubic feet. In 2008 Songo Songo's daily production was 70mcf (63mcf for electricity and 7mcf for industries), while Mnazi Bay's daily production was 1mcf (for electricity). Both projects have an expected lifetime of 20 years.

A 16" diameter pipeline transports gas from Songo Songo Island to Dar es Salaam, a distance of 230km., while a 16km 8" pipeline has been extended northwards to provide natural gas to the Wazo Hill cement plant, which has replaced fuel oil with gas to drive the cement manufacturing plant.

The utility company Songas runs Songo Songo through the operator PanAfrican Energy, a subsidiary of Canada's Orca Exploration. It supplies the gas to 35 industrial customers and also generates some 190 MW at its power plant in Dar es Salaam.

The refinery in Dar es Salaam, a joint venture between Tanzania and Italy called the Tanzanian Italian Petroleum Refinery (Tiper), was constructed in 1963. It was closed in 1999 under the International Monetary Fund's imposed structural adjustment programme.

Storage capacity for oil products is close to 400,000 MT in Dar es Salaam (and 22,000 MT for the secondary port of Tanga), and is estimated to be 500,000 MT for the entire country.

Imports of LPG, coming through Dar es Salaam port, were 9,000 MT in 2005 (forecasted 13,500 in 2010 and 20,000 in 2015).

Outside of the country's domestic needs, Dar es Salaam is also the gateway to the "Southern corridor" (according to SEA terminology)(1), which supplies Uganda, Rwanda, Burundi and Eastern DRC. One pipeline transports crude oil to the Indeni (Ndola) Refinery in Zambia. Other products are transported by road and rail. The central railway line runs from Dar es Salaam to Mwanza and branches at Tabora to Kigoma. From Kigoma to Bujumbura, products are transported by road or barge across Lake Tanganyika. The line is also linked to Tanga, Arusha, Moshi and to Voi in Kenya.

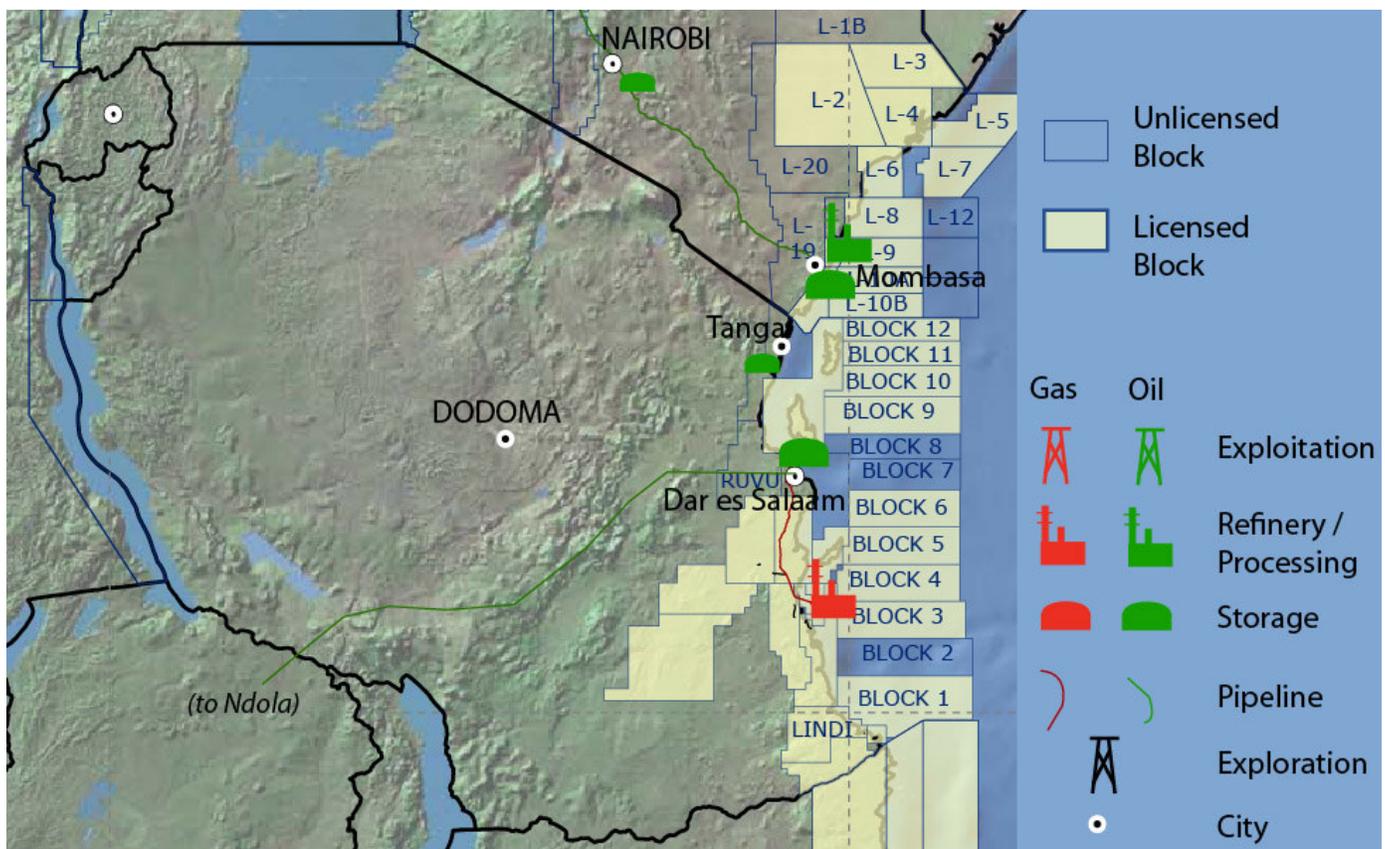


Figure 1: Map of the Oil & Gas activities in Tanzania (adapted from Deloitte 2009)

## 1.2 Biofuels sub sector

Based on its agro-ecological characteristics and relatively low population density, Tanzania is considered to have great potential for biofuels production (2). Development of the sector is also viewed by the government as a major opportunity to decrease the country's current 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 <sup>2</sup>	< 25/km <sup>2</sup>	< 10/km <sup>2</sup>	< 5/km <sup>2</sup>
93,786	29,388	9,244	4,010	8,659	4,600	1,234

As seen in Table 1, several million hectares can be considered suitable for agro-industrial crops. Tanzania Investment Centre estimates that, at present, Tanzania has about 44 million ha of arable land, yet only 10.2 million ha is currently under cultivation (3).

The Tanzanian government encouraged the development of large scale biofuel projects before any specific policies had been implemented. However, claims against ongoing activities led to the delay of some projects, while the National Biofuels Task Force works to complete formal guidelines for biofuel investments.

In 2009, official government figures indicated that nearly 20 companies had requested land for commercial biofuel production (requested areas varied from 30,000 ha to two million hectares of land at a time). Sulle and Nelson (3) identified 24 projects (see Annexes 2 and 3), and report that over 4 million hectares of land have been requested for biofuel investments, particularly for jatropha, sugar cane and oil palm. However, only 640,000 ha have so far been allocated, only 100,000 ha of which have been granted formal rights of occupancy. The same authors specifically studied 4 projects (see map Annexe 2), two of which are in the coastal zone (SEKAB and Sun Biofuels, not far from Dar es Salaam):

- **FELISA** – promoting cultivation of hybrid oil palm in Kigoma Region (target : 10,000 ha)
- **Diligent Tanzania Ltd** – processing jatropha produced by more than 5,000 contracted local farmers from across northern Tanzania. (target : 10,000 ha by 2010).
- **SEKAB Bioenergy Tanzania Ltd** – a major Swedish bioethanol producer which is pursuing the development of large-scale sugarcane production models for bioethanol in Tanzania. SEKAB BT is in the process of acquiring roughly 22,000 ha in Bagamoyo District and up to several hundred thousand hectares of village land planned for acquisition in Rufiji District.
- **Sun Biofuels Tanzania Ltd** – a local affiliate of a UK-based company. Sun Biofuels has acquired 8,211 ha in Kisarawe District, in a case that directly or indirectly affected over 10,000 villagers resident in 12 villages that allocated land to the company. This case has received much local and international media attention and contributed to concerns about the land access impacts of ongoing biofuel investments in Tanzania.

Main findings are the following:

- Some land acquisitions for biofuels are targeting land that is used for forest-based activities
- The compensation process is generally not understood by local people
- Projects using outgrowers have few negative impacts and represent the most positive model for local livelihoods and the environment

In one study, Mkindee (4) observed that “ *export production demands efficiency, economies of scale, and profit maximisation, often through the squeezing of the farmers*”. He also states that “*The most fertile lands, with best access to water are being targeted, even though these lands are already used for food crop production by small-scale farmers. Any talk of biofuel production for local energy consumption is undermined by the obvious intent of international investors to target foreign markets.*”

Most of the existing studies on the subject reach the same conclusions, and these concerns should be integrated in the national biofuel strategy that is currently being prepared.

### **1.3 Trends and prospects**

Given the growing national and regional demand for energy, several projects have been planned for the forthcoming years:

#### **New refinery in Dar es Salaam:**

A four-nation consortium (Noor Oil and Industrial Technology Consortium : NOITC), involving Tanzanian, Russian, Qatar and German companies, should soon start construction on a state-of-the-art oil refinery in Dar es Salaam, as well as an oil pipeline from the city to Mwanza and Kigoma. The government has a 10 per cent share in the oil refinery and 5 per cent share in the oil pipeline. The oil refinery will have the capacity to produce 200,000 barrels a day. 5,000 people are expected to be employed during the construction period while 2,000 job opportunities will be available upon its completion.

#### **Increase of Songo Songo gas field capacity:**

Orca Exploration Group Inc. plans to double output from its Songo Songo project. Production should rise to 200 million cubic feet a day from the 90 million cubic feet currently being produced. The development of a 600 km pipeline, which would carry natural gas from the Songo Songo Island and Mnazi Bay gas fields in southern Tanzania, is also planned. The proposed pipeline would transport gas from the Songo Songo Island gas fields to Dar es Salaam by looping an existing 207 km pipeline. From Dar es Salaam, the pipeline would be extended along the coast – north to Mombasa, Kenya, south to Mtwara near Tanzania’s border with Mozambique and to the Mnazi Bay gas discovery.

#### **Increased oil storage capacity in Dar es Salaam:**

Ongoing rehabilitation of the storage tanks at the former TIPER refinery will produce 208,180 tonnes of additional storage capacity.

## **2. Biophysical**

Tanzanian’s coastline is characterized by a vast variety of eco-systems such as estuaries, dunes, mangrove forests, coastal lakes, banks and coral reefs, marine weed and swamps, all of which are under growing pressure from population increases and economic development.

10 of the 26 regions in Tanzania are coastal (Mtwara, Lindi, Pwani, Tanga, Dar es Salaam, and the 5 regions of Zanzibar and Pemba). About one fourth of the population lives in the coastal zone.

**Table 2: 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)
18,278	88.56	10.25	5,367.76	0.13

Source: World Bank, year 2007

Like most African countries, Tanzanian's energy consumption relies mostly on biomass, particularly wood. CO2 emissions per capita are, thus, very low.

**Table 3: 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"> <li>Oil spills, accidents</li> </ul>	<ul style="list-style-type: none"> <li>Restrictions for fishing zones</li> <li>Opportunities for employment</li> </ul>
Oil & Gas transport	<ul style="list-style-type: none"> <li>Oil spills, accidents</li> <li>Water and soil contamination</li> <li>Invasive species in ballast waters</li> </ul>	<ul style="list-style-type: none"> <li>Risks of accidents (fire, collision, etc)</li> <li>Improvement of transportation network</li> </ul>
Refinery (cf. project in Dar es Salaam)	<ul style="list-style-type: none"> <li>Oil spills, accidents</li> <li>Water and soil contamination</li> <li>Air pollution</li> </ul>	<ul style="list-style-type: none"> <li>External workers increases the risk of AIDS spreading</li> <li>Opportunities for employment</li> <li>Opportunities for new services (education, health, etc)</li> </ul>
Gas station and retail	<ul style="list-style-type: none"> <li>Oil spills, accidents</li> <li>Water and soil contamination</li> </ul>	<ul style="list-style-type: none"> <li>Opportunities for employment</li> <li>Opportunities for new services</li> <li>Fuel availability</li> </ul>
Biofuels development	<ul style="list-style-type: none"> <li>Swamp drainage</li> <li>Monoculture and biodiversity loss</li> <li>Pollution</li> </ul>	<ul style="list-style-type: none"> <li>Opportunities for employment</li> <li>Opportunities for new services</li> <li>Competition for arable land</li> </ul>

No major oil spills have been reported in Tanzania's waters (5)

In 2010, Tanzania was in the final stages of establishing and implementing a National Marine Oil Spill Contingency Plan (NMOCP) with the support of Western Indian Ocean Marine Highway Development and Coastal and Marine Contamination Prevention Project (WIOMHP).

### 3. Human Environment

Agriculture is the leading economic sector in Tanzania, accounting for 45 percent of GDP and about 60 percent of export earnings in recent years. As well as being a key national source of food and raw materials, it also provides livelihoods for 82 percent of the population. The overall constraints to growth in this sector, which includes livestock and beekeeping activities, are related to low land productivity, underdeveloped irrigation potential, limited capital and environmental degradation

The Tanzanian coast is home to a quarter of the country's population, with fishing and farming being the primary means of subsistence for most communities. Diversification strategies (combining fishing and agriculture activities) are widely used. The coastal districts do not appear to be the poorest in the country (6).

### 3.1 Socio-economical indicators

**Table 4: National economic indicators**

GDP (million current US\$)	GDP growth (annual %)	GDP per capita (current US\$)	GDP per capita growth (annual %)	GINI Index (2007)
<b>20,490.44</b>	<b>7.45</b>	<b>496.41</b>	<b>4.40</b>	<b>34.6</b>

Source: World Bank, year 2008, and HDI

**Table 5: 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
<b>42.48</b>	<b>2.88</b>	<b>88.52</b> (2000)	<b>30.0</b>	<b>0.530</b>

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

**Table 6: 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)
<b>56.45</b>	<b>54.88</b>	<b>66.3</b>	<b>79</b>	<b>0.527</b>

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

As said above, upstream activities of the oil and gas sector are highly specialized. Experts and builders are not locally hired, and very 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. However, like other big mining or industrial projects, oil and gas activities may generate local immigration flows with negative consequences, including the spreading of HIV and STDs, inflation from increases in demand, and competition with local populations 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 threat pertaining to Medium and Large Foreign Direct Investment that can be addressed by the government is the eviction effect and the Dutch disease

In its 2001 survey (7), the National Bureau of Statistics stated that 14,698 (0.1% of employed population) people are employed in the electricity and gas sector. No specific statistics are available for gas alone, nor for the oil sector.

On its website, Songas (owner of Songa songo gas field) states that it “provides more than 100 job opportunities”

Given these figures, the oil and gas sector is not likely to have an important economic impact at the national level.

### 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
Songas	<p>The company has initiated effective and dynamic community development and conservation programs. Each program has a budget of over USD 300,000 per year, which supports a wide range of development initiatives around health, education, livelihood improvement and measures to conserve and protect the environment.</p> <ul style="list-style-type: none"> <li>• Support for Communities at Songo Songo Island and along the Wayleave</li> <li>• Projects focusing on health, education and livelihood improvement</li> <li>• Conservation activities with communities</li> </ul>

#### Songo songo project benefits to Tanzanians (cf TPDC website):

- Meet the growing demand for electricity in Tanzania using domestic natural resources
- Reduce the country's dependence on imported oil for electric power generation
- Provide an alternate, lower-cost and more reliable power source
- Create skilled and unskilled employment opportunities during construction and operations
- Permit the use of natural gas in industry as an energy source or a chemical feedstock (e.g. fertilizer production)
- Develop the infrastructure to boost exploration for oil and gas
- Provide power, gas and associated economic benefits to Songo Songo island and communities along the pipeline route
- Promote private investment in the energy sector and contribute to government revenue through fees, taxes and royalties
- Enable the Wazo Hill cement manufacturer to use natural gas as fuel instead of imported fuel oil.
- Enable Tanesco to diversify their generation options from the heavy dependence on hydroelectricity.

At the local level (Songo Songo zone), gas activities have a positive impact on livelihoods. However, in other parts of the country and at the national level, oil and gas activities do not appear to make a major contribution to livelihoods.

## 4. Policy and Governance

### 4.1 Policy and Legislation

Strategies / Regulations	Description – Comments
Energy	<ul style="list-style-type: none"> <li>The National Energy Policy, 2003 - Aims to ensure the availability of reliable and affordable energy supplies and promote their use in a rational and sustainable manner in order to support national development goals.</li> </ul>
Petroleum legislation	<ul style="list-style-type: none"> <li>The Petroleum (Conservation) Act, 1981</li> <li>The Petroleum Act, 2008 - The new bill is designed to encourage competition and efficient use of petroleum products</li> <li>EWURA Act, 2003 - Governs the regulation functions of the Energy and Water Utilities Regulatory Authority.</li> </ul>
Environmental regulations	<ul style="list-style-type: none"> <li>National Environmental Policy 1997</li> <li>The Mining (Environmental Management and Protection) Regulations 1999;</li> <li>Water Utilization (Control and Regulation) Act, No.42 of 1974 and with Amendments of 1981 and Act N.8 of 1997WURA act of 2001 (bsln stud)</li> <li>Environmental Management Act No. 20 of 2004</li> <li>The Marine Parks and Reserves Act (1994), The</li> <li>Tanzania Investment Act (1997)</li> </ul>
Land tenure management	<ul style="list-style-type: none"> <li>The Land Ordinance Act, 1963 (Act No. 25/1963) - to provide for the settlement of certain disputes between the owners and occupiers of certain lands and for incidental matters.</li> <li>The Land tenure Act, Act No. 15/2003</li> <li>The Land Act, 1999 and the Act No. 2/2004 (amendment) - to provide for the basic law in relation to land other than the village land, the management of land, settlement of disputes and related matters.</li> <li>The Rural Lands (Planning and Utilization) Act, 1973 - (Act No. 14/73) - to empower the Government to control and regulate Utilization of Land.</li> <li>The Village Land Act, 1999 - to provide for the management and administration of land in villages, and for related matters</li> </ul>
Coastal specific regulation	<ul style="list-style-type: none"> <li>National Integrated Coastal Environment Management Strategy, 2002</li> <li>Coastal Biodiversity Conservation Strategy, 1995</li> </ul>
Biofuels	Biofuels Task Force (BTF) established in April 2006 to promote development of the sector and development of the legislation to stimulate the use of biofuels.

As described by Sulle (3), the process for an investor willing to acquire lands for agro-industrial purposes is the following:

- Prospective investors start at the national-level Tanzania Investment Centre, the one-stop-shop that facilitates investment in Tanzania, where they are required to demonstrate the financial viability of the proposed project in order to get a Certificate of Incentives
- From here they go to the district level, as advised and facilitated by the TIC
- In the simple case they take up previously identified and surveyed land, registered with the TIC “land bank”. But if all or part of the proposed land area is still ‘village land’, negotiations with local communities are necessary. The investor must have the request for land transfer approved in turn by the Village Council (senior village representatives), the District Council Land Committee and finally the Village Assembly (comprising all adult residents of a village)

Investors can only lease and use ‘general land’, not ‘village land’. However, the latter category can be transferred to ‘general’ status with the permission of the local community. In this case, provisions are also made so that villagers gain compensation from the government. Investors tend to pay compensation directly to the villagers and there are substantial differences in opinion and confusion over the amount of compensation and the entitled beneficiaries.

## 4.2 Governance

Entity	Responsibility/ Description
Ministry of Energy and Minerals (MEM)	The mission of MEM is to support the sustainable development of energy and mineral resources by providing best services and a conducive environment for investment to customers through competent and skilled staff. Through the Ministry of Energy and Minerals, the energy department is mandated to administer petroleum exploration and production in Tanzania
Tanzania Petroleum Development Corporation (TPDC)  (wholly owned Government parastatal)	Established under the Public Corporations Act No.17 through the Government Notice No.140 of 30 <sup>th</sup> May 1969 TPDC oversees exploration operations in the country as a licence holder on behalf of the government. It is a national oil company and has a monopoly in terms of petroleum exploration and development in Tanzania. It is the agency through which the Government participates in production sharing agreements and joint ventures in all facets of the petroleum industry, from exploration to distribution.
Energy and Water Utilities Regulatory Authority (EWURA)	Established by the Energy and Water Utilities Regulatory Authority Act, Cap 414 of the laws of Tanzania. It is responsible for technical and economic regulation of the electricity, petroleum, natural gas and water sectors in Tanzania pursuant to Cap 414 and sector legislation. The functions of EWURA include licensing, tariff reviews, monitoring performance and standards with regards to quality, safety, health and the environment.
Ministry of Agriculture, Food security and Cooperatives	Its mission is to deliver agricultural and cooperative services, provide a conducive environment to stakeholders, build the capacity of local government authorities and facilitate the private sector to contribute to sustainable agricultural production, productivity and cooperative development.
Ministry of Lands, Housing and Human Settlements Development	Its role encompasses core sector departments, which are: Land Administration, Survey and Mapping, Physical Planning and Housing. Core sector units are Registration of Titles, Property Valuation, and District Land and Housing Tribunal.
Ministry of natural resources and tourism	The MNRT's mandate is to protect and manage natural and cultural resources, as well as develop tourism
National Environment Management Council (NEMC)	The National Environment Management Council (NEMC) was established by the Act of parliament No. 19 of 1983 as a corporate body responsible for the protection of the environment. NEMC aims to protect the environment and promote the sustainable use of resources for enhancing the quality of lives in Tanzania. NEMC has a specific Directorate (DEIA) for Environmental Impact Assessments: DEIA was established in order to ensure that environmental issues regarding development projects/activities, plans, programmes and policies in all sectors of the economy are integrated and taken into account early in the planning and designing phases with the goal of minimizing negative impacts and achieving sustainable development.
Integrated Coastal Management Office, Zanzibar and Tanzania	This entity ensures that the various sectors which have the potential to impact the marine environment incorporate environmental dimensions into sectoral policies, programmes and activities e.g., fisheries, tourism, industry, agriculture, mining, etc.

## 5. Planning and Management

Poverty in coastal areas is a major facilitator of forest destruction due to the fact that poverty often leads to a dependency on natural resources for consumption. The PRSP understands this concept, as it notes that the poor in Tanzania are heavily dependent on environmental resources for income generation. The PRSP therefore advocates a program for promoting and facilitating partnerships between the government, the private sector and civil society for the purpose of poverty reduction.

<b>Policy Planning Initiative</b>	<b>Objective</b>
Vision 2025	National vision of economic and social objectives to be attained by the year 2025
National Poverty Eradication Strategy (NPES)	National Strategy and objectives for poverty eradication efforts through 2010
Tanzania Assistance Strategy (TAS)	Medium-term national strategy for economic and social development, encompassing the joint efforts of government and the international community.
Poverty Reduction Strategy Paper (PRSP) - 2000	Medium-term strategy of poverty reduction, developed through broad consultation with national and international stakeholders, in the context of the enhanced Highly Indebted Poor Countries (HIPC) Initiative

The most recent Petroleum Act (2008) does not provide guidance with respect to the standards to be adhered to, nor the conditions and framework for EIAs. Rather, the EWURA is responsible for managing the process of producing the EIAs, as stated in the articles below:

26.-(1) The Authority (EWURA) shall, in consultation with the TBS (Tanzania Bureau of Standards), develop and carry out a program of gradual adoption and adaptation of the prevailing international standards, technical specifications and codes of practice in order to upgrade the infrastructure of the supply chain, the quality of petroleum products and the services provided by the participants to the standards of the international petroleum industry.

27.-(1) The Authority shall, in co-ordination with the competent environmental authorities, establish the classification of petroleum supply operations or projects within the supply chain which shall require environmental impact studies as a condition for issuing an approval or a licence issued under this Act.

Concerning biofuels and land tenure issues, a National Land Use Planning Commission (NLUPC) was established by Act of Parliament No. 3 of 1984 and later repealed by Act No.6 of 2007. In doing so, the goal was to harmonise and co-ordinate all land-use related policies and legislation, as well as to promote effective protection and enhancement of land quality with the aim of ensuring the sustainable utilisation of land, to provide optimal production, to foster socio-economic development and to maintain land quality for long-term productivity.

## 6. Development, Trade and Projects

Development project	NGO / Donor / Private Sector	Project details
Regional Coastal Management (ReCoMap)	EU	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 deals with seven countries of the region, namely 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 valorisation and sustainable management of coastal resources of the seven countries in the region.
Western Indian Ocean Marine Highway Development and Coastal and Marine Contamination Prevention Project	GEF	Concerned countries: South Africa, Mozambique, Tanzania, Comoros, Madagascar, Mauritius, Seychelles and the Reunion Island. All countries are required to have a NOSRCP to provide a national framework for responding to oil spills and protecting the coastal resources
Tanzania Coastal Management Partnership (TCMP)	University of Rhode Island and the United States Agency for International Development (USAID).	The TCMP influences government policy related to coastal environmental issues and their management. It also provides accurate, up-to date information to stakeholders and policy makers.
Marine and Coastal Environment Management Project, World Bank (MACEMP)	World Bank	Component 3, Coastal Community Action Fund – this finances demand-driven community sub-projects to support and boost livelihoods. It focuses on vulnerable groups and under the two sub-components of a Coastal Village Fund and Coastal Community Capacity Enhancement, the expected outcomes are reductions in income poverty and increased local participation in sustainable resource management. The project appraisal document implies there would be some emphasis on alternative (ie non-marine resource dependent) livelihoods, which could include agricultural and forestry development activities

## 7. SWOT Analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Government is committed to energy issues and is willing to develop domestic resources, including oil and gas fields and biofuels</li> <li>• Interest of investors to start projects in Tanzania</li> <li>• Availability of land</li> <li>• Involvement of NGOs and international organisations in coastal zone management</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Unclear petroleum regulation regarding standards</li> <li>• Inconsistent EIA framework</li> <li>• Financial, operational and human resources limitations do not permit adequate management, enforcement and monitoring, particularly at lower levels of Government</li> <li>• Large scale biofuel projects already implemented without clear and consistent framework</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Oil and gas sector development could generate employment</li> <li>• Oil and gas activities are implemented by large companies generally engaged in corporate social responsibility</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Increase in oil operations (drilling, exploitation, transport, processing, storage, etc) will increase oil spill risks.</li> <li>• Inappropriate development of agrofuels projects could be a threat to food security and rural livelihoods</li> </ul>

## 8. Bibliography

- (1) EAC, 2008 Strategy for the development of regional refineries 73 p.
- (2) World Bank, 2010, “Rising Global Interest in Farmland: can it be sustainable and equitable benefits?”, 164 p.
- (3) Sulle E. & Nelson F., 2009, “Biofuels, land access and rural livelihoods in Tanzania”, 85 p.
- (4) Mkindee A., 2007, « Agrofuels in Tanzania », 3p.
- (5) ITOPE, 2008, “Country profile : Tanzania”, 2p.
- (6) The research and analysis working group , 2005, “TANZANIA poverty and human development report”, 43 p.
- (7) National Bureau of Statistics, 2001, “Integrated Labour Force Survey, 2000/01 – Analytical Report”

## 9. List of datasets / 10. List of sector related projects

The Tanzanian development vision 2025 -

<http://www.tanzania.go.tz/pdf/theTanzaniadevelopmentvision.pdf>

Economic Regulation in the Petroleum Downstream Sub-Sector in Tanzania -

<http://www.ewura.go.tz/pdf/Notices/Detailed%20Analysis.pdf>

Status of Exploration Wells Drilled in Tanzania - <http://www.tpdctz.com/hydrocarbon%20shows-database.pdf>

Petroleum exploration study: a baseline report -

<http://xa.yimg.com/kq/groups/20674633/918787565/name/ESRF-NPA>

Petroleum conservation act - <http://www.ewura.com/pdf/THE-PETROLEUM-%28CONSERVATION%29-ACT-CAP-392.pdf>

Petroleum exploration and production act -

<http://www.ewura.com/pdf/act/PETROLEUM%20EXPLORATION%20AND%20PRODUCTION%20ACT.pdf>

Petroleum act 2008 - [http://www.saflii.org/tz/legis/num\\_act/pa2008137.pdf](http://www.saflii.org/tz/legis/num_act/pa2008137.pdf)

Environmental Impact Assessment of Foreign Investment Projects -

<http://www.lead.or.tz/publications/foreign.investment/foreign.investment.pdf>

The Environmental Management Act - <http://www.nemctan.org/downloads/ema%20act.pdf>

Policy Challenges Related to Biofuel Development in Tanzania - <http://hup.sub.uni-hamburg.de/giga/afsp/article/viewFile/250/250>

Vulnerability to Climate Change in Tanzania: Sources, Substance and Solutions - [http://www.gechs.org/savi/workshop/maputo/papers/paavola\\_tanzania.pdf](http://www.gechs.org/savi/workshop/maputo/papers/paavola_tanzania.pdf)

A socio-economic assessment of sustainable livelihoods regimes for communities of Mnazi Bay - <http://www.kilimanyika.com/wp-content/uploads/2010/10/Harrison%20Report%20on%20Sustainable%20Livelihood%20Regimes%20IUCN.pdf>

Coastal and Marine Ecosystems—Tanzania - [http://earthtrends.wri.org/pdf\\_library/country\\_profiles/coa\\_cou\\_834.pdf](http://earthtrends.wri.org/pdf_library/country_profiles/coa_cou_834.pdf)

Tanzania State of the Coast 2001: People and the Environment - [http://www.rmportal.net/library/content/aquatic\\_marine\\_coastal\\_zone/tan\\_0047.pdf/view](http://www.rmportal.net/library/content/aquatic_marine_coastal_zone/tan_0047.pdf/view)

Tanzania State of the Coast report 2003 - [http://www.crc.uri.edu/download/State\\_of\\_the\\_coast\\_2003.pdf](http://www.crc.uri.edu/download/State_of_the_coast_2003.pdf)

Options for National Integrated Coastal Environment Management Strategy - [http://www.crc.uri.edu/download/TCM\\_004A.PDF](http://www.crc.uri.edu/download/TCM_004A.PDF)

National Integrated Coastal Environment Management Strategy - <http://www.crc.uri.edu/download/TanzNatlStrategy.pdf>

Draft National Integrated Coastal Management Policy - [http://www.crc.uri.edu/download/TCM\\_0049.PDF](http://www.crc.uri.edu/download/TCM_0049.PDF)

Environmental Law in Tanzania: How far have we gone? - <http://www.lead-journal.org/content/07026.pdf>

Aspects of SEKAB's plans for large scale biofuel production in Tanzania - <http://www.nai.uu.se/livelihood/Notes-from-rufiji-seminar-090520.pdf>

Biofuel Investments, Governance & Sustainability - <http://www.nai.uu.se/pushes/2009/09/29/131601/WWF-biofuel.pdf>

Rufiji district, Tanzania – historical and current contexts for biofuel investments - <http://www.nai.uu.se/livelihood/NAI-Rufiji-district-Tanzania-historical-and-current.pdf>

Biofuels, land access and rural livelihoods in Tanzania - <http://www.iied.org/pubs/pdfs/12560IIED.pdf>

Land grab or development opportunity? Agricultural investment and international land deals in Africa - <http://www.iied.org/pubs/display.php?o=12561IIED>

Agrofuels in Tanzania - [http://www.landcoalition.org/cpl-blog/wp-content/uploads/case\\_studies\\_15.pdf](http://www.landcoalition.org/cpl-blog/wp-content/uploads/case_studies_15.pdf)

SEKAB press release -

[http://www.sekab.com/Eng2/Information%20pages/Information%20PDF/091022\\_%20Press\\_SEKAB%20s%C3%A4ljer%20Afrikabolagen%20EN%202.pdf](http://www.sekab.com/Eng2/Information%20pages/Information%20PDF/091022_%20Press_SEKAB%20s%C3%A4ljer%20Afrikabolagen%20EN%202.pdf)

Tanzania Land Policy and Genesis of Land Reform Sub-Component of Private Sector Competitiveness Project - [http://www.nlupc.org/images/uploads/Tanzania\\_Land\\_Policy.pdf](http://www.nlupc.org/images/uploads/Tanzania_Land_Policy.pdf)

National Land Policy - <http://www.nlupc.org/images/uploads/nationallandpolicy.pdf>

Tanzania poverty and human development report -

[http://www.repoa.or.tz/documents\\_storage/PHDR\\_2005\\_Prelim.pdf](http://www.repoa.or.tz/documents_storage/PHDR_2005_Prelim.pdf)

Integrated Labour Force Survey, 2000/01 – Analytical Report -

<http://www.tanzania.go.tz/ilfs.htm>

Employed population (Chapt 3 of Integrated Labour Force Survey, 2000/01) -

<http://www.tanzania.go.tz/ilfs%5CChapter%203.pdf>

Gov. Of United Republic of Tanzania - <http://www.tanzania.go.tz/profilef.html>

Energy and Water Utilities Regulatory Authority - <http://www.ewura.com/>

Ministry of Lands, Housing & Human Settlements Development - <http://www.ardhi.go.tz/>

Ministry of Agriculture, Food security and Cooperatives - <http://www.kilimo.go.tz/>

Ministry of natural resources and tourism - <http://www.mnrt.go.tz/>

National Environment Management Council - <http://www.nemctan.org/news.htm>

Tanzania national parks - <http://www.tanzaniaparks.com/index.html>

Noor oil Refinery & Pipeline Tanzania - <http://nooroilrefinerytanzania.com/index.html>

Songas - <http://www.songas.com/>

Tanzania Petroleum Development Corporation - <http://www.tpdz.com/>

Tanzania Port Authority - <http://www.tanzaniaports.com/>

Southern Africa Legal Information Institute - <http://www.saflii.org/>

Regional Coastal Management Programme of the Indian Ocean Countries - [http://recomap-io.org/integrated\\_coastal\\_zone\\_management/iczm-country-updates/](http://recomap-io.org/integrated_coastal_zone_management/iczm-country-updates/)

Western Indian Ocean Marine Highway Development and Coastal and Marine Contamination Prevention Project - <http://gefonline.org/projectDetailsSQL.cfm?projID=2098>

Programme for the Agulhas and Somali Current Large Marine Ecosystems: Agulhas and Somali Current Large Marine Ecosystems Project (ASCLMEs) - <http://gefonline.org/projectDetailsSQL.cfm?projID=1462>

Addressing Land-based Activities in the Western Indian Ocean (WIO-LaB) - <http://gefonline.org/projectDetailsSQL.cfm?projID=1247>

Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa - <http://gefonline.org/projectDetailsSQL.cfm?projID=849>

Strategic Partnership for a Sustainable Fisheries Investment Fund in the Large Marine Ecosystems of Sub-Saharan Africa (Tranche 1, Installment 1) - <http://gefonline.org/projectDetailsSQL.cfm?projID=2093>

Regional Activities of the Strategic Partnership for a Sustainable Fisheries Investment Fund in the Large Marine Ecosystems of Sub Saharan Africa, Tranche 1 - <http://gefonline.org/projectDetailsSQL.cfm?projID=3271>

Demonstrating and Capturing Best Practices and Technologies for the Reduction of Land-sourced Impacts Resulting from Coastal Tourism - <http://gefonline.org/projectDetailsSQL.cfm?projID=2129>

Annex 1 a.

Activities and “key players” in the Tanzanian Oil and Gas sector:  
Oil and gas exploration companies  
(TPDC web page)

<b>OIL AND GAS EXPLORATION COMPANIES OPERATING IN TANZANIA</b>		
<b>Company name</b>	<b>Country of Origin</b>	<b>Area/Block</b>
Antrim Resources	Canada	Zanzibar/Pemba
Artumas Group	Canada	Mnazi Bay
Dominion Oil & Gas	UK	Mandawa, Kisangire, Selous & Deep Sea Block#7
Dodsal Resources	UAE	Ruvu Block
KEY PETROLEUM	Australia	West Songo Songo
Mauriel ET Prom	France	Bigwa & Mafia Channel
Ndovu Resources/Tullow Oil	Australia	Nyuni, Ruvuma
Ophir Energy	Australia	Deep Sea Block#1,3,&4
Pan African Energy	UK	Songo Songo
Petrobras	Brazil	Deep Sea Blocks#5,6 &
Petrodel Resources/Heritage	UK	Tanga, Kimbiji & Latham
RAK-GAS Company	UAE	East Pande
SHELL International	Holland	Deep Sea Blocks#9,10,11,&12
STATOILHYDRO ASA	Norway	Deep Sea Block#2
HYDROTANZ	UK	North Mnazi Bay
TULLOW OIL	UK	North Lake Tanganyika
BEACH PETROLEUM	AUSTRALIA	South Lake Tanganyika

**Annex 1 b.**

**Activities and “key players” in the Tanzanian Oil and Gas sector:  
Market shares in terms of end-user petroleum supply  
in “Economic Regulation in the Petroleum Downstream Sub-Sector in Tanzania”**

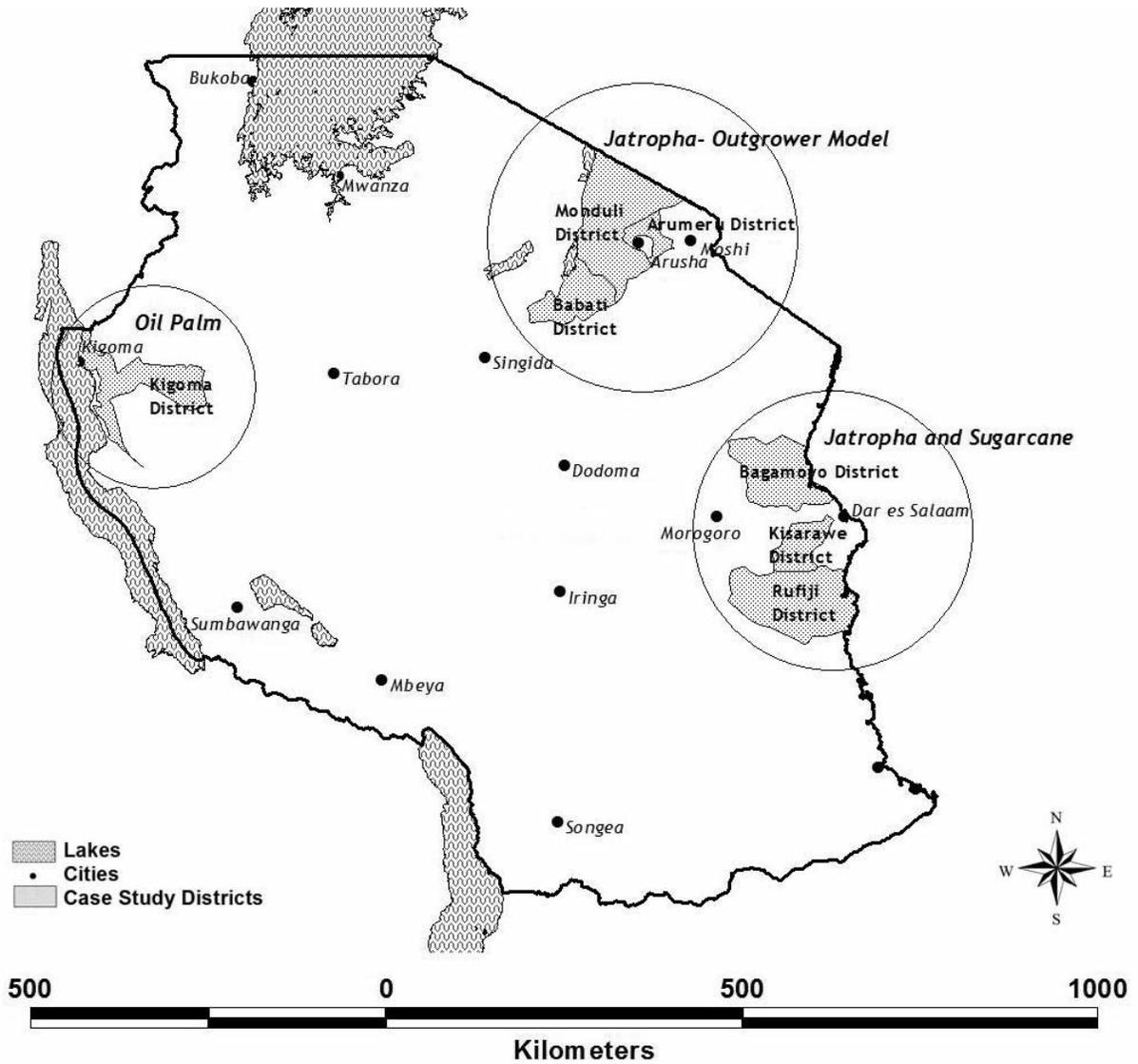
Tanzanian Petroleum Market Shares and HHI analysis (2006) Data

<b><i>Company:</i></b>	<b><i>Market share :</i></b>
Acer	4.47%
BP	14.09%
Engen	2.97%
Gapoil	5.18%
Gapco	10.41%
Hass	1.83%
Kobil	3.78%
MGS	2.79%
Natoil	4.57%
Oilcom	18.46%
Oryx	11.06%
Shell	7.03%
Total	8.68%
Others	4.73%
<b>TOTAL</b>	<b>100.00%</b>

---

Annex 2

Map of the biofuels projects reviewed by Sulle E. & Nelson F.(2009)



### Annex 3

#### Summary of existing and proposed biofuel investments in Tanzania

(From Sulle E. & Nelson F., 2009, "Biofuels, land access and rural livelihoods in Tanzania")

Investor	Crop	Location	Land area acquired (ha)	Land area originally requested (ha)	Project status
FELISA	Oil Palm	Kigoma	4,258	5,000	Land dispute in court for extra 350 ha obtained from 2 villages. No EIA done
BioShape	Jatropha	Kilwa	34,000	82,000	400 ha pilot farm planted. Integrity of first EIA questioned, following which a second EIA was commissioned
Sun Biofuel	Jatropha	Kisarawe	8,211	50,000	8,211 ha of land formerly belonging to 12 villages transferred to general land; derivative title being finalised
SEKAB BT	Sugarcane	Bagamoyo	22,500	24,500	Seed cane planted and irrigation reservoir constructed
SEKAB BT	Sugarcane	Rufiji	0	400,000	In land acquisition process
Diligent Tanzania Ltd	Jatropha	Arusha Babati Handeni Singida Monduli	n/a	n/a	Contracted over 4,000 farmers
	<i>Croton megalocarpus</i>		n/a	n/a	Collecting seeds from natural and planted forests
Donesta Ltd & Savannah Biofuels Ltd	Jatropha	Dodoma	2,000	n/a	200 ha planted
Trinity Consultants/ Bioenergy TZ Ltd	Jatropha	Bagamoyo	16,000	30,000	Surveying land to be granted
Shanta Estates Ltd	Jatropha	Bagamoyo	14,500	n/a	Agreement with villagers signed
Tanzania Biodiesel Plant Ltd	Oil palm	Bagamoyo	16,000	25,000	Land not surveyed; land granted by district but not by TIC
Clean Power TZ Ltd	Oil palm	Bagamoyo	3,500	n/a	Project abandoned after realised high cost of doing land use plans

Investor	Crop	Location	Land area acquired (ha)	Land area originally requested (ha)	Project status
CMC Agriculture Bio-energy Tanzania	White sorghum	Bagamoyo	25,000	n/a	Land request approved but asked to do land use plans
ZAGA	Jatropha	Kisarawe	n/a	n/a	Applied for land
African Green Oils	Oil palm	Rufiji	860	n/a	Planted 360 ha and financing land use plans in 7 villages
InfEnergy Co. Ltd	Oil palm	Kilombero	5,818	n/a	Land lease pending. Cultivating rice while growing oil palm
Bio Massive	Jatropha & Pangamia	Lindi Region	50,000	n/a	
JCJ Co. Ltd	Jatropha	Mwanza Mara Shinyanga Tabora	n/a	n/a	Aimed to sensitise local communities but project abandoned due to alleged lack of government support
African Biofuel and Emission Reduction Co. TZ. Ltd	<i>Croton megalocarpus</i>	Biharamulo	20,000	n/a	No operational progress due to lack of funds
Prokon BV	Jatropha	Mpanda	10,000	n/a	Contract farming with 2000 smallholders; does not own any plantation land
Mitsubishi Corporation	Jatropha	Arusha, Dar es Salaam, Coast	n/a	n/a	Looking for land in these regions
Kapunga Rice Project	Jatropha	Mbarali District	50,000	n/a	Planned to replant rice with jatropha; President recently ordered that rice cultivation patterns not be changed
DI Oils Tanzania Ltd	Jatropha	Kilimanjaro	n/a	n/a	Abandoned plans for Tanzania
Kikuletwa Farm	Jatropha & Aloe vera		400	n/a	Growing jatropha

Sources: study fieldwork; Kamanga, 2008; Kulindwa, 2008; Songela and Maclean, 2008.

## **VI. Ports and Coastal Transport - Prepared by Professor Gavin Maasdorp, E-mail: [gmaasdorp@imanidevelopment.com](mailto:gmaasdorp@imanidevelopment.com)**

### **1. Introduction**

Historically, the East African coast of what is today Tanzania was marked by a number of small ports that provided links to the outside world and communication between towns along the coast. The export trade was dominated by Arab traders dealing in ivory, gold, timber, slaves and animal products. Today there are only three ports with deepsea shipping links – Dar es Salaam, Mtwara and Tanga. Tanzanian ports are described, from south to north in this section.

Approximately 50 km north of the Mozambique-Tanzania border is the port of Mtwara with deep water and considerable space in the large Mikindani Bay. The port is underutilised due to lack of economic activity in the hinterland but is planned to become a deep-water bulk port if mineral developments take place. It is important for ferry traffic to the islands and to points in Mozambique such as Pemba, while cashews are exported direct to India.

The small port of Lindi, which is situated at the mouth of the Lukuledi River to the north of Mtwara, has facilities that are rudimentary, allowing one or two very small cargo or passenger ships at a time. It cannot accommodate ocean going ships but is used for coasters and passenger ferries.

The port of Kilwa Masoko is situated in a deepwater bay at the mouth of the Mavuji River. The discovery of an offshore gas field near Songo Songo Island could provide power for industrial development and make a difference to the future of the port.

The small port - on Mafia Island, to the south of Dar es Salaam is used by dhows and ferries only.

Approximately 400 km north of Mtwara, the port of Dar es Salaam is located in a large river estuary, providing access for ocean going vessels. Dar es Salaam is Tanzania's major port, city and centre of industry. The port handles about 95% of the country's international trade.

Further north, approximately 160 km from Dar es Salaam lies the small port of Bagamoyo, providing a base for ferries which run to Zanzibar island and along the coast. The port of Zanzibar on Zanzibar Island requires further development for cargo handling and for berthing of deepsea passenger liners. It experiences high levels of passenger ferry activity. Ferries run to Dar es Salaam, other points on the mainland, and Pemba Island to the north.

The port of Tanga is located close to the Kenyan border. Tanga is the terminal of Tanzania Railway Corporation and is linked by a single track line north to Arusha and Moshi, and south to Dar es Salaam. The port has a draft of only 2.5-3 metres, so cargo is handled by lighters from ships anchored in midstream to the shallow berths at the quays.

## **2. Extent of ports and transport activities**

Tanzanian ports are described from south to north in this section.

### **Mtwara**

The port was built between 1948-54. The deepwater quay is dredged to 9.8 metres Chart Datum. There are no tidal restrictions for vessels entering and leaving the harbour. A sheltered anchorage exists in the inner bay (basin) with good holding ground of 20 metres. The basin can accommodate six vessels of 175 metres, but the number could be increased if numerous shoal patches were removed. The port has a quay wall of 385 metres which can accommodate two ships and one coastal vessel at a time. The draft is 9.85 metres and, with the introduction of new navigational aids, the port would be accessible to ships on a 24 hour-a-day basis.

Cargo handling equipment includes three mobile cranes (25, 15 and 4 tons); four tractors, 18 trailers, eight forklifts and one front loader of 7.5 tons which can be upgraded to 15 tons. Marine craft available are a pilot boat and mooring boat. The port does not have specialised equipment for handling container traffic because the volume at present does not justify such investment. The major import commodities are foodstuffs, i.e., maize flour, rice, beans, sugar, wheat/wheat flour, beer, cement and other general cargo. Principal export commodities are raw cashew nuts, cassava roots, simsim (sesame) and sisal.

There are four transit sheds with a total storage capacity of about 15,000 tons. The port is mainly equipped to handle conventional break-bulk cargo. It can handle 400,000 tons per annum, but could be upgraded to handle up to 750,000 tons with the same number of berths if additional equipment were put in place for handling containerised traffic.

The immediate hinterland of the Mtwara port comprises the regions of Mtwara, Lindi and Ruvuma. These are agriculturally rich areas once famous for cashew nuts, coffee, tobacco and simsim (sesame) farming. Mtwara town has the basic requirements for broader commercial activities, including an airport with a runway capable of landing Boeing 737-sized aircraft, a telecommunications network, banking services and potential power from the natural gas field of nearby Songo Songo Island.

### **Lindi**

Lindi is 50 km north of Mtwara by sea, and had a population of 42,000 in 2002. The port is located in Lindi Bay at the mouth of the Lukuledi River. The port facilities are rudimentary, allowing one or two small cargo and passenger boats at a time, and cannot accommodate ocean-going ships. The port has a dhow jetty and a storage shed with 1,500 square metres of available space.

### **Kilwa**

Kilwa is located 190 km north of Mtwara by sea. The name refers to two towns - Kilwa Kivinje (used by local fishermen but with no port facilities) and Kilwa Masoko. The latter is on the shore of a natural bay, and is connected to the main road between Mtwara and Dar es Salaam by a 20 km paved road. The port is located inside a natural bay and is well sheltered from open sea. The water depth in the bay is more than 7 metres. There is a pier with a water depth of 8 metres from Chart Datum (CD); it is a piled structure with concrete deck, built in the 1970s. Although serious corrosion is visible, the structure is still usable.

The port is used by some larger vessels of up to 120m length. Local captains can be exempted from pilot duty; however, foreign captains are obliged to use a pilot. Tug assistance is not necessary. There is no

mechanical equipment in the port. Cargo handled includes timber and gypsum as well as project cargo for the offshore oil and gas facilities. There is a storage shed with approximately 300 square metres of space.

### **Dar es Salaam.**

Dar es Salaam (population 2.8 million) is the main port of Tanzania located at latitude 06° 49' S longitude 39° 18' E. The entrance channel is approximately 2 km long and the width varies from about 277 metres to about 92.5 metres at its narrowest part, between East and West Ferry Point. Draft is about 6.7 metres at low and 10.7 metres at high water. The winding channel limits maximum vessel length to about 175.2 metres, but plans are in hand to widen the entrance channel to permit ships of the size of Panamax vessels.

The port is linked to its hinterland by two railway networks: the Tanzania Railways Corporation (TRC) and Tanzania-Zambia Railways Authority (Tazara). The TRC line is 1,255 km long and links the port to western Tanzania, Burundi, Rwanda, Uganda and DRC. The Tazara line links to Zambia Railways at New Kapiri Mposhi and then southward with connections via Zimbabwe to the South African ports. A transfer depot at Kidatu permits wagons to be transferred from the Tazara line to the TRC line which connects to Kigoma and Mwanza. TRC has a modern depot for cargo transshipments to rail wagon ferries across Lake Victoria, operated by both TRC and Uganda Railways Corporation, connecting Dar es Salaam with Port Bell in Uganda. There is an international airport 13 km from the port.

Port Facilities include 11 deepwater berths with a depth of 10 metres, a bulk oil jetty, a single mooring buoy, a grain silo (30,000 tons), four lighterage and dhow wharves with a depth of 8 metres, and 19 sheds. There is compulsory pilotage for vessels over 200 NRT, while berthing is handled by tugs. Terminals are described in the box.

**Container terminal** - three berths of 550 metres in length within an area of 12 hectares. Capacity is 120,000 TEUs per annum. Container depots are being concessioned to local companies such as Tanzania International Container Terminal Services. Equipment consists of two ship-to-shore gantries each with a capacity of 35.6 tons, 19 forklifts, reachstacker, a rail mounted gantry crane, 76 reefer plugs, six rubber-tyred gantry cranes, 14 front-end loaders, and a bonded warehouse of 12,000 square metres.

**General cargo terminal** - eight deepwater berths to cater for dry break-bulk cargo. The facility is supported by eight well-sheltered sheds with a total floor area of 81,040 square metres. The terminal has an annual capacity of 2.5 million tons. Equipment consists of 28 (5-ton) portal cranes, 44 tractors, 27 (3-5 ton) yard cranes, 86 trailers and 119 (2.5-3.5 ton) forklift trucks.

**Grain terminal** - with fully automated silo. Discharge is by a grab/hoppers system including three bagging units. Grain is transferred from the quay by dump tractors. The silo is aerated and temperature controlled, and has a holding capacity of 30,000 tons, while a warehouse can store 1,500 tons of grain in bags.

**Oil terminal** – the Single Buoy Mooring, located south of the port, moors tankers up to 120,000 (dwt), handling about 300,000 tons of crude oil. White products and refined oils are handled at the Kurasini Oil Jetty whose capacity is to handle tankers of up to 45,000 deadweight tons. It has a pumping capacity of 750 tons per hour.

## **Tanga**

The port of Tanga is situated 200 km north of Dar es Salaam, close to the Kenya border. It is a lighterage port where ships are worked at stream buoys by means of lighters and pontoons for loading and off-loading cargo. The port has two shallow-water berths built in 1914 and 1954. Alongside the multi-purpose jetty, there are 12 anchorage berths and a quay for lighterage and local shipping with 3.8m draft at full tide and 2.55 metres at low tide. Only very small vessels and pontoons can operate safely. The harbour provides safe anchorages for seven vessels with lengths of up to 213 metres and drafts from 6.4-9.45 metres. There are three outer anchorages with a depth of over 9.45 metres at low water. Port access is along a 6 km-long, deepwater, natural channel that follows the course of the river. The tanker berth has a maximum draft of 3.5 metres, and uses a submarine pipeline to discharge fuel oil to a storage point on the quay.

The port provides stevedoring services to all geared vessels 24 hours a day with night ship-working on request. The shift performance on general cargo is 170 tons per gang per shift and 56 TEUs on containerised cargo per gang/shift. Three tugs and 18 barges provide lighterage services between anchorages and the lighter quay 24 hours a day. Facilities include one 40-ton tower crane, one 120-ton port crane and five (5-ton) portal cranes. There are two transit sheds for exports and one for imports, a total storage area of over 20,000 square metres. A modern 13,000 square metre container yard is in use, with a capacity of 500 TEUs. Containers are afforded a 15-day free storage period for both imports and exports. Other facilities include refrigerated container services, fresh water provision, ship chandlery, fire-fighting services, and a medical service in town.

Annual traffic totals 194,000 tons, including 66,000 tons of imports and 129,000 tons of exports. This includes 6,500 TEUs of container traffic, bulk, liquid-bulk and break-bulk cargo. More than 90% of annual traffic is moved by road and the remainder by rail. The port handles about 50 liner ships, 40 coasters, 25 coastal tankers and 75 passenger vessels per year. The East African Conference lines make fortnightly calls, two container lines make fortnightly calls, and two coasters call monthly to transport cement to the southern ports. Local passenger ferries make weekly calls to Pemba.

### **3. Policy and Governance of Ports and Transport**

Transport in Tanzania is primarily controlled by the government, with Tanzania Ports Authority managing all major ocean and lake ports. The two railway systems are government-owned, Tanzania-Zambia Railways (Tazara) is owned jointly with Zambia, and the Tanzania Railway Corporation (TRC) is wholly government-owned. The concessioning of transport systems has been approved but intensive negotiations with bidders have not yielded any results.

### **4. Planning and Management of Ports**

The Tanzania Ports Authority (TPA), established in April 2005, owns and manages the ports of Dar es Salaam, Tanga, Mtwara and Kilwa, and all the lake ports. The TPA is increasingly entering into concessioning and joint-venture agreements to improve the efficiency of the ports. A joint venture project is in hand to replace the existing single buoy mooring facility in order to handle bigger vessels and increased volumes of crude oil, while container operations have been concessioned to a private operator.

### **5. Development and Trade**

In 2007 the port of Dar es Salaam handled about 5.7 million tons of imports, 1.3 million tons of exports, and 434,000 tons of transshipments. Imports included 2.0 million tons of liquid bulk, 1.1 million tons of

dry bulk, 1.9 million tons of containerised cargo, and 557,000 tons of conventional cargo. Exports amounted to 987,000 tons of containerised cargo, 292,000 tons of conventional cargo, and 47,200 tons of liquid bulk.

In 2007, containerised cargo consisted of about 334,000 TEUs, of which 160,100 were imported and 145,000 exported. Transhipments amounted to 29,000 TEUs. The port handled over 41,000 motor vehicles in 2007. Passenger numbers in 2007 were 982,000 of which 626,000 were arrivals and 356,100 departures. Local products exported from the port of Dar es Salaam include paint, soap, cigarettes, metal ware, textiles, shoes, glassware, wood carvings, and food products.

The port of Tanga handled 194,000 tons in 2007, including 66,000 tons of imports and 128,000 tons of exports. This included 6,500 TEUS in container traffic, dry-bulk, liquid-bulk and break-bulk cargo. The main imports were chemicals, machinery, motor fuel oil, vehicle materials, consumer goods and food grains. The main exports were coffee, seed beans, sisal fibre, sisal twines and forest products.

Mtwara handles about 100,000 tons p.a. of mainly import cargo. However, the Mtwara Development Corridor, a SADC programme, is based on large iron-ore and coal mining developments near Lake Nyasa, construction of an 875-km railway line, and significant expansion of ports for which there is enormous potential in the large bay. The Songo Songo and Mnazi Bay gas projects could provide the power for smelting plants, and an export processing zone is planned.

## **6. Ports Impact and Benefits to Local Communities**

The Tanzanian coast offers a number of sheltered inlets and bays that have promoted the use of small boats and ferries as the means of travel between coastal towns. In addition, all coastal villages have artisanal fishermen who provide a major source of food combined in traditional dishes. Imports for small coastal towns are received by sea from small coasters and sailing vessels that also double as ferries and fishing vessels. The impact of the main port of Dar es Salaam is significant as most of the country's deepsea imports are received there for further redistribution up and down the coast.

From the available literature it is not clear to what extent further economic advantage can be developed for coastal communities from use of the sea. It is, however, evident that ports such as Mtwara and Tanga are critically important to the future development of mining and agriculture in their respective regions. The potential for the use of these ports extends beyond the Tanzanian borders to Malawi, Zambia, Burundi, Uganda and even DRC.

## 7. SWOT Analysis

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Relatively stable and socially concerned government.</li> <li>• Extensive agricultural potential, production growing as the result of more open economy.</li> <li>• Excellent port locations for potential development</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Ineffective government services.</li> <li>• Corruption and lack of controls.</li> <li>• Inadequate communication and transport in large areas of the country.</li> <li>• Government ownership and involvement in transport</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Development of the Mtwara Corridor and the southern region based on opening of coal and iron-ore mines.</li> <li>• Opportunities to redevelop Tanga into a deepsea port.</li> <li>• Further modernisation of Dar-es Salaam and enhancement of the road and rail corridor to increase throughput and business opportunities on the coast.</li> <li>• Sustainable development of agriculture along the coast could improve living conditions; this requires long term structured management approach</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Failure of manufacturing economy to compete with imports from the East.</li> <li>• Lack of training institutions and skills deficiencies for sustainability of port and transport operations</li> </ul>

## 8. Bibliography

Comesa (2002) - The Role of Transport Infrastructure in a Free Trade Area – Regional Integration Research Network. Lusaka-Zambia

Comesa (2007) - Traffic Cargo and Container Statistics. Lusaka

Tanzania Ports Authority - Source: <http://www.tanzaniaports.com>

Transport World Africa (2009) – “Investments to Improve Tanzanian Transport”, Vol. 11-12, pp 10-11.

Wikipedia - Lindi – Kilwa -Tanga – Tanzania

## VII. Coastal Mining - Prepared by Mr. Thomas Cushman, E-mail: [tom@tomcushman.com](mailto:tom@tomcushman.com)

### 1. Introduction

The United Republic of Tanzania is a nation in central East Africa bordered by Kenya and Uganda to the north, Rwanda, Burundi and the Democratic Republic of the Congo to the west, and Zambia, Malawi and Mozambique to the south. The country covers 945,087 km<sup>2</sup> and has 39,384,223 inhabitants, mostly Bantu. Its capital Dodoma is located in the interior but the main economic hub is the former capital Dar es Salaam on the coast. The official languages are Kiswahili and English but Arabic is also spoken especially in the islands of Zanzibar and Pemba.

The United Republic of Tanzania was formed in 1964 through the union of two independent states, the Republic of Tanganyika and the Peoples' Republic of Zanzibar shortly after their independence from the United Kingdom. The Republic of Tanganyika and the Peoples' Republic of Zanzibar entered into a union on 26<sup>th</sup> April 1964 to form the United Republic of Tanganyika and Zanzibar which was later renamed on 29<sup>th</sup> October the United Republic of Tanzania.

The United Republic of Tanzania is a unitary state based on a multiparty parliamentary democracy. In 1992 the Tanzanian government introduced constitutional reforms permitting the establishment of opposition political parties. Tanzania's legal system is based on the English Common Law system. Unlike the unwritten British constitutional system, the first source of law for the United Republic of Tanzania is the 1977 Constitution.



Figure 1: Map of the coastal Mining activities in Tanzania

## **2. Mining Sector Overview**

Tanzania has a large and growing mining industry exporting \$995,000,000 worth of minerals in 2008. Tanzania is Africa's third largest gold producer exporting gold valued at \$932,000,000 in 2008. The Williamson diamond mine in Tanzania produced 134,000 carats of diamonds in 2008. Tanzania is also the world's sole source of the gemstone tanzanite and is a producer of other precious stones, notably sapphire and garnet.

Tanzania has a substantial cement industry and produced 1.76 Mta of cement in 2008. Expansion of the cement industry since 2008 has Tanzania producing over 3Mta in 2010 with new plants coming on line in 2011. In 2007 the mining sector contributed 3.7% of the gross domestic product. This contribution has been attributed to both large scale mining operations as well as medium- and small-scale mining activities. However, medium- and small scale mining has been an important contributor to local economies, providing a means whereby large numbers of people can complement income derived from other primary activities, such as subsistence or seasonal agriculture.

The mining sector of Tanzania contributes 42.9% to foreign earnings. The value of output in the mining sector grew by 10.7% in 2007 after increasing by 15.6% in 2006. Formal employment in the mining sector amounted to about 8,000; an estimated 500,000 artisanal miners produced colored gemstones, diamond, gold, and other commodities.

Tanzania's legislature passed a new Mining Act in emergency session April 2010. To date the act has not been implemented.

## 2.1 Coastal Mining Characteristics

The nature of the coastal mining sector, compared to mining in Tanzania in general, is very limited and small in relation to large inland mining operations and is mostly limestone mining for cement manufacturing. Current coastal cement producers include Heidelberg's subsidiary Tanzania Portland Cement Company and AfriSam South Africa subsidiary Tanga Cement Company Ltd. A new mine in Lindi, south of Dar es Salam will begin construction in 2010.

Coastal Mining Activity	Company Name	Production	Mining Method	Production Capacity (per year)	Stage of the Project / Status	Market
Twiga Cement	Tanzania Portland Cement Company (TPCC)	Portland cement,	Open-pit mine	1 million of tons (2009)	Production, and Expansion	Local and Export to Burundi and Zambia
Tanga Cement	Tanga Cement Company Limited (62.5% Holcim Mauritius, 36.25% Tanzania General Public and Institutions, 0.75% Employees' Share Trust )	Portland cement	Open-pit mine	700 000 tons a year	Production and Expansion	Local and Export to East Africa
Lindi Cement Plant	Lee Building Materials Ltd	White Cement	Open-pit mine	Estimated 300,000 metric tons  Plant under construction	Plant Construction planned to start in September 2010	Local and Export to East Africa
Lime Industry	Maweni Limestone Ltd (Athi River Mining )	Quicklime and hydrated lime	Open-pit mine	60,000 tons	Production	Export: Kenya and Uganda
Coral Mining	Informal Artisanal mining activity	Corals (used to produce lime for local construction)	Artisanal mining  Temporary open pyres or kilns	6,738 tons	Production	Local: Coastal communities

## 2.2 Coastal Mining Project Benefits

Name of Mine	Location	Economic effect in %	Employment	Economic Benefits	
				National level	Micro-level
Twiga Cement	Wazo Hill (Dar Es Salaam )	-	343 direct jobs created	<ul style="list-style-type: none"> <li>• USD 108 million of investment for the expansion of the company in 2007</li> <li>• 40 billion TZS of tax and revenue.</li> </ul>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Corporate and Social responsibility of TPCC</li> </ul>
Tanga Cement	Tanga	-	311 direct jobs created	<ul style="list-style-type: none"> <li>• 170 billion TZS of tax and revenue</li> </ul>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Training for employees</li> <li>• Corporate and Social responsibility</li> <li>• The Company spent a total of TZS 249 million to support various projects</li> </ul>
Lime Industry (Maweni Limestone Ltd)	Tanga	-	-	<ul style="list-style-type: none"> <li>• \$120 million of investment for the project</li> </ul>	<ul style="list-style-type: none"> <li>• Employment</li> <li>• Corporate and Social responsibility of ARM</li> </ul>
Coral Mining (Informal Artisanal mining activity)	Mafia, Mtwara	-	-	-	<ul style="list-style-type: none"> <li>• Coral mining provides revenue for local communities and low cost building materials for the construction of their homes.</li> </ul>

### 3. Environment

Coastal Mining Activity	Environmental issues
Tanga Cement	The cement industry generates emissions of dust, combustion gases, noise and particulates from the kiln stacks. The operation also generates wastewater, waste from plant maintenance and laboratory waste. Gaseous wastes because the cement plants pump out into the atmosphere combustion gases – i.e. NO <sub>x</sub> , CO, CO <sub>2</sub> , SO <sub>x</sub> , etc.
Twiga Cement	
Lime Industry	Waste from plant maintenance and laboratory waste
Coral Mining	<ul style="list-style-type: none"> <li>• The main coral mining issues concern the loss of reef habitat, loss of natural breakwaters with concomitant indirect loss of adjacent coastal habitats, loss of the aesthetic value of the reefs for tourism, deforestation and reduced fish stocks.</li> <li>• Since coral mining simplifies the surface topography of reefs, there is also a reduction in microhabitat diversity that, in turn, results in a decrease in biodiversity.</li> <li>• Mangroves in the coastal zone in Tanzania are cut for fuel for the processing of mined coral.</li> <li>• The mining of both coral and sand weakens the coasts natural protection against erosion</li> </ul>

### 4. Human Environment

Most rural coastal communities are very poor. They are directly dependent on coastal and marine resources for survival and income. The 2002 Population and Housing Census show that 23% of the Tanzanian population (8 million) resides along the coast. The average per capita income in most rural coastal villages does not exceed \$US100.

#### 4.1 Socioeconomic Indicators

Social indicator	Mozambique
<i>Social indicators</i>	
Total population	40.5 million.
Population growth rate	1.83%
HIV/AIDS prevalence rate	7%
<i>Economical indicators</i>	
GDP (2009)	\$22,318 million
GDP (real growth rate)	5.8%
GDP per capita	\$ 558

## 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
Tanga Cement	<p>The Company spent a total of Tzs 249 million (\$190,000) to support various projects.</p> <p><u>ZAYEDESAs Community Development Activities</u>: The Association supports Zanzibar youth development, education, environment and other community development activities. Tanga Cement has continued to support this initiative in Zanzibar and has donated a total of 100 tons of cement for renovation of schools, dispensaries, cooperative societies, and the construction of an orphanage as well as residential houses in rural areas.</p> <p><u>Rosmini Secondary School</u>: The Company donated a total of 80 tons of cement to the school for its expansion program. The school is in Tanga Region and is one of the top performing schools in Tanzania.</p> <p><u>Construction of Classrooms</u>: A total of four classrooms were built by the Company. One block of three classrooms was built for the Pande Secondary School in Tanga District. Another classroom was built in the Korogwe District for Kwamsisi Secondary School. Each classroom was furnished with 25 desks and 25 chairs.</p> <p><u>Musoma Dispensary</u>: The Company donated a total of 40 tons of cement towards construction of a dispensary in the Musoma District.</p> <p><u>Teachers College in Karagwe District</u>: In the same spirit of contribution to the education sector, the Company contributed 20 tons of cement towards construction of a Teachers College in Karagwe District in Kagera Region.</p> <p><u>Msangani High School Water Project</u>: The Company contributed Tzs 20.2 million for the completion of the school water project in Kibaha Coast Region.</p> <p><u>Friends of Serengeti</u>: The Company donated a total of 400 bags of cement for repairing ranger posts as well as constructing bridges and drifts in Serengeti and Tarangire.</p>
Twiga Cement	<p>TPCC states they have a program for supporting civic activities in local communities. However we did not find any information related to the specific activities undertaken by the company in Tanzania.</p>
Lime Industry	<p>Construction of Mwapachu Secondary school. Note that ARM Ltd. Is a Kenya-Tanzania company and reports aggregate figures. Specific CSR activities for Tanzania are not available.</p>
Coral Mining	<p>Local communities in the coastal zones involved in this coral mining activity depend strongly upon the sector for their income.</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"> <li>• The Mining (Mineral Rights) Regulations 1999; The Mining (Mineral Trading) Regulations 1999;</li> <li>• The Mining (Safe-working and Occupational Health) Regulations 1999;</li> <li>• The Mining (Provisional Licenses) Regulations 1999; The Mining (Mirerani Controlled Area) Regulations 2001;</li> <li>• The Mining (Diamond Trading) Regulations 2002; and</li> <li>• The Mining (Gemstone Board) Regulations 2004; and The Mining (Dispute Settlement Resolution) Rules 1999.</li> <li>• Tanzania's Mineral Policy, 1997</li> </ul>
Environmental regulations	<ul style="list-style-type: none"> <li>• National Environmental Policy 1997</li> <li>• The Mining (Environmental Management and Protection) Regulations 1999;</li> <li>• Water Utilization (Control and Regulation) Act, No.42 of 1974 and with Amendments of 1981 and Act N.8 of 1997</li> <li>• Environmental Management Act No. 20 of 2004</li> <li>• The Marine Parks and Reserves Act (1994), The</li> <li>• Tanzania Investment Act (1997)</li> </ul>
Land tenure management	<ul style="list-style-type: none"> <li>• The Land Ordinance Act, 1963 (Act No. 25/1963), to provide for the Settlement of certain Disputes between the Owners and Occupiers of certain Lands and for matters incidental thereto.</li> <li>• The Land tenure Act, Act No. 15/2003</li> <li>• The Land Act, 1999 and the Act No. 2/2004 (amendment ) to provide for the basic law in relation to land other than the village land, the management of land, settlement of disputes and related matters.</li> <li>• The Rural Lands (Planning and Utilization) Act, 1973 - (Act No. 14/73) to empower the Government to control and regulate Utilization of Land.</li> <li>• The Village Land Act, 1999 to provide for the management and administration of land in villages, and for related matters</li> </ul>
Coastal Mining specific regulation	<ul style="list-style-type: none"> <li>• National Integrated Coastal Environment Management Strategy, 2002</li> <li>• Coastal Biodiversity Conservation Strategy, 1995</li> </ul>

## 5.2 Governance

Entity	Responsibility/ Description
Ministry of Energy and Minerals (MEM)	The mission of MEM is to spearhead sustainable development of energy and mineral resources by providing best services and conducive environment for investment to our customers through competent and skilled staff.
Minerals Division of MEM	The mineral division includes: the mineral economics and trading section, the mines inspectorate section, Licensing and Mineral Rights Management Section, Explosives Management Section, Minerals Auditing Section, Environmental Management Unit, Legal Services Unit, Zonal Mines Office.
National Environment Management Council (NEMC)	The National Environment Management Council (NEMC) was established by the Act of parliament No. 19 of 1983 as a corporate body responsible for protection of the environment. NEMC aims to ensure protection of the environment and sustainable use of resources for enhancing the quality of lives of the people of Tanzania
Integrated Coastal Management Office, Zanzibar and Tanzania	This entity ensures that the various sectors which have the potential to impact on the marine environment incorporate environmental dimensions into sectoral policies, programmes and activities e.g., Fisheries, Tourism, Industry, Agriculture, Mining, etc.

## 5.3 Planning and Management

### Investment Facilitator

The *Tanzania Investment Centre (TIC)* is the primary agency of Government to coordinate, encourage, promote and facilitate investment in Tanzania and to advise the Government on investment related matters. TIC is the focal point for investors. It is the first point of call for potential investors; it is a “one stop facilitative centre for all investors”.

### Environment Management

The Environmental Management Act, 2004 provides that, ‘Any person, being a proponent or a developer of a project or undertaking of a type specified in the Third Schedule to this Act [i.e. the Environmental Management Act, 2004], to which environmental impact assessment is required to be made by the law governing such project or undertaking [...] shall undertake or cause to be undertaken, at his own cost, an environmental impact assessment study.

The 1998 Mining Act and the Mining (Environmental Management and Protection) Regulations of 1999, require requires commissioning of independent consultants of international standing selected by the

project proponent and approved by the Government to carry out environmental impact assessment (EIA) on the proposed mining operations. The project proponent must produce an Environmental Management

Plan (EMP) acceptable to the Government. Approval of a project involves screening, scoping, EIA and EMP evaluation by government experts. In addition relevant Regional Administration, Local Government Authorities and the public are consulted and their opinions taken into account during the approval process. The approved EMP is subject to a first review by the government after two years, and thereafter every five years.

### **Integrated Coastal zone Management (ICZM)**

A National Integrated Coastal Environmental Management Strategy exists (NICEMS, 2003) and several District ICZM Plans were prepared over the past five years and are pending endorsement at National Level (through NSC-ICM). The ICZM Capacity Development was finished (Policy Development, Planning Processes, Monitoring and Reporting) in Tanzania and Zanzibar.

### **5.4 Development, Trade and Projects**

<b>Policy Planning Initiative</b>	<b>Objective</b>
Vision 2025	National vision of economic and social objectives to be attained by the year 2025
National Poverty Eradication Strategy (NPES)	National Strategy and objectives for poverty eradication efforts through 2010
Tanzania Assistance Strategy (TAS)	Medium-term national strategy of economic and social development, encompassing joint efforts of Government and the international community.
Poverty Reduction Strategy Paper (PRSP) - 2000	Medium-term strategy of poverty reduction, developed through broad consultation with national and international stakeholders, in the context of the enhanced Highly Indebted Poor Countries (HIPC) Initiative

<b>Development Project</b>	<b>NGO / Donor / Private Sector</b>	<b>Project Details</b>
Tanzania Coastal Management Partnership (TCMP)	University of Rhode Island and the United States Agency for International Development (USAID).	The TCMP influence government policy related to coastal environmental issues and their management and to provide accurate, up-to date information to stakeholders and policy makers.
Tanga Coastal Zone Conservation and Development Program	Development Cooperation Ireland (DCI).	The TCZCDP aims to enhance the well being of coastal communities by improving the health of coastal and marine environment on which they depend and by diversifying the options for using coastal resources
Sustainable Management of Mineral Resource Project (SMMRP)	World Bank	SMMRP aims to improve the benefits of the mineral sector in Tanzania, strengthen the governance and transparency in mining, and stimulate mineral sector investment,
Mafia Island Marine Park	GEF (UNDP)	Tanzania's first marine park

## 6. SWOT ANALYSIS

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• The government supports the development of mining.</li> <li>• Involvement of NGOs, and international organisations for the coastal zone management</li> <li>• Strong mining and environmental regulations and policy.</li> <li>• Tanzania is very advanced in term of ICZM and has produced a White Paper</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Many informal mining activities especially in coral mining.</li> <li>• Lack of inter-institutional co-ordination for environmental management</li> <li>• Financial, operational and human resources limitations do not permit adequate management, enforcement and monitoring especially at lower levels of Government</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Development of new cement works in coastal communities (Lindi Cement)</li> <li>• Employment for local workers and SMEs</li> <li>• Greater NGO involvement.</li> <li>• Good investment incentives</li> <li>• Providing support to develop a sector plan.</li> <li>• Signatory of the Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region (The "Nairobi Convention", 1985)</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• The populations on the coastal zone of Tanzania are poor and underemployed. Coral mining is viewed as an acceptable revenue source</li> </ul>

## 7. Bibliography

Tanzania Coastal Management Partnership Science and Technical Working Group (October 2001), *Tanzania State of the Coast 2001: People and the Environment*.

Tanzania Coastal Management Partnership Science and Technical Working Group (2003)

Greg M. Wagner (2004), *Tanzania State of the Coast 2003: People and the Environment, Coral Reefs and Their Management in Tanzania*.

A.G.N. Kitula (2005), *The environmental and socio-economic impacts of mining on local livelihoods in Tanzania: A case study of Geita District*.

A.K. Semesi, Y. Mgaya, M. Muruke, J. Francis, A. Julius, C. Lugomela, M. Mtolera, B. Kuguru, D. Kivia, J. Lilungulu, D. Magege, A. Mposo, D. Kaijunga N. Mwinoki, G. Msumi and B. Kalangahe , *Coastal resources of Bagamoyo District, Tanzania*,

Daniel Mirisho Pallangyo (2007), *ENVIRONMENTAL LAW IN TANZANIA: HOW FAR HAVE WE GONE?*

Gratian Luhikula ( 1998 ) , Tanzania Coastal Management Partnership,

WWF (2006), *Lime Production from Land-Based Fossil Corals, The Eastern African Marine Ecoregion*.

### Websites

[www.tanzania.go.tz](http://www.tanzania.go.tz);

[www.nemctan.org](http://www.nemctan.org),

[www.recomap-io.org/index.php?id](http://www.recomap-io.org/index.php?id),

[www.wikipédia.com](http://www.wikipédia.com),

[www.heidelbergcement.com/.../TwigaCementAnnualReport2007.pdf](http://www.heidelbergcement.com/.../TwigaCementAnnualReport2007.pdf)

<http://eame.wiomsa.org/pubs/Poster-LimeProduction.pdf>