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FUTURE MANAGEMENT AND REHABILITATION OF MAPUTO FISHING PORT IN MOZAMBIQUE

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ABSTRACT

The extensive coast supporting diverse fisheries makes Mozambique a sensitive place for illegal, unreported and unregulated (IUU) fishing. In marine fisheries, the issues are various illegal fishing activities such as illegal trawling, lack of enforcement of regulations, and unlicensed fishing. Trawling is common along Mozambique's sandy-bottomed coast, and foreign trawlers are reportedly operating within as few as 12 miles of the Mozambican coastline. In order to achieve the sustainable development of the fisheries sector, management of fishing port facilities is an important issue. Currently, no landing charges or levies are collected from Maputo Fishing Port, the port is not properly maintained and is in serious deterioration. In fact, the industrial wharf of Maputo Fishing Port does not even meet minimum sanitation and hygiene standards.

This project analyses and discusses the rehabilitation of the industrial wharf in relation to the improvement of Maputo Fishing Port, with the aim to recover and improve the functions of the fishing port. In the implementation of this project, it is assumed that donors provide grant aid for re-construction.

This project also discusses how and why fishing ports and institutions can adapt to a changing environment.

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1 INTRODUCTION

1.1 Country and the community

Mozambique lies from 10°20' (the mouth of the Rovuma River on the Tanzania border) to 26°50' south (Ponta do Ouro on the South African border). The coastline is 2,780 km long, and the Exclusive Economic Zone is 562.000 km^2. The population of the nation is just under 18 million (as at 1996). The country occupies 800,000 km^2 of the southeast coast of Africa, sharing a border with South Africa, Swaziland, Zambia, Malawi and Tanzania (Figure 1).

Figure 1: Mozambique's coastline showing important fishing ports such as Maputo, Beira, Quelimane and Angoche.

Only after the 1992 peace settlement was Mozambique able to effectively pursue economic policies based on privatisation of public expenditure and fiscal balance. Since 1992, the government has won a well-earned reputation for prudent macroeconomic management and commitment to rural poverty alleviation. This is a positive picture that has only recently been disrupted by serious floods that affected much of the country in 2000 and 2001 (GoM 2000a)

A stable multi-party democracy has been established and consolidated. Political and economic decentralisation has proceeded, albeit very gradually. The constitution has been substantially revised, through an open process of public hearings, so as to

achieve a better balance of power in the state apparatus and legislation has been passed in areas such as governance ethics (GoM 2000b).

Mozambique is one of the world's poorest countries, with 70% of the population living below the poverty line (GoM 2000a). Yet the country is rich in under-exploited resources. Peace, better policies, rising foreign investment and continued external assistance have contributed to encouraging economic performance and the creation of an environment in which these resources can be developed. Real gross domestic product (GDP) has been increasing at an annual average rate of 10% since 1996. The value of exports of all the sectors has increased rapidly and is rising faster than the value of imports. Annual inflation declined from 70% in 1994 to less than 1% in 1998, and it was expected to hover at 4% in 1999-2000, as the government relaxes its monetary policy. However, confidence in the economy is strong and private investments have grown over the past few years and are expected to pass 25% of the GDP by 2000 (GoM 2000c).

Mozambique's fisheries sector is very important, and currently accounts for a large portion of the country's economy. Still the sector has been in decline since the demise of the socialist regime. Reportedly, approximately 90,000 people are directly involved in fishing both in coastal regions and inland lakes. Nevertheless, Mozambique has considerable potential in commercial fishing. Because of its unique advantages in geographic location, a long coastline, abundant inland water resources, and proximity to lucrative markets, the development of Mozambique's fisheries sector could provide employment opportunities, increased export earnings, and other contributions to the national economy.

Currently the fisheries sector is rather chaotic. After the end of the socialist regime, the institutional framework for the fisheries sector collapsed. Since that time there has been a serious vacuum in the management of fisheries resources and fishing ports, resulting in various illegal fishing activities.

This report introduces a new paradigm for understanding the present situation in the fishing grounds and discusses the close collaboration between the government and the fishing communities in order to achieve sustainable development of the fisheries sector. Specifically, the report asserts that the government will develop a sector strategy and planning, and local fishing communities will develop and enforce local fisheries co-management plans in cooperation with the government. The fishing communities will also facilitate the collection of information on marine resources to help improve the monitoring of the resources by the government, which in turn will coordinate with regional organisations and neighbouring countries.

Currently, not enough fisheries landing charges or levies are collected from the Maputo Fishing Port. Different scenarios will be discussed for the future management of the Maputo Fishing Port.

In order to achieve better management of Maputo Fishing Port and port services, Chapter 4 of this report describes the rehabilitation of the industrial bridge-wharf and conceptualises the role and reasons why donors, UN agencies and NGOs are required for this project as well as economic and social effects on the target population. The management of fishing port facilities would not only increase the productivity of the

fisheries sector, but would also contribute to the future development of tourism along the Maputo Bay. Maputo city and two neighbouring islands (Inhaca and Catembe) have good potential for developing marine-based tourism, which could provide local fishing communities with new sources of income and an incentive to protect marine resources. In addition, because of their proximity to South Africa, Maputo fishing communities could provide supplies and services to smaller boats sailing between the two countries. Since Maputo Fishing Port would become a key entry and departure point for tourists, it will be essential to keep it clean and well maintained. Chapter 6 should be read in conjunction with the accompanying appendix, which describes the components of the rehabilitation project by the Civil Engineering Consultancy.

The results of the main issues regarding future management of Maputo Fishing Port are presented in Chapter 7, (Discussion and Conclusion) and the final Chapter contains key recommendations for management of the fisheries sector.

2 FISHERIES SECTOR DESCRIPTION

2.1 Strategic importance of fisheries

The fisheries sector has played an important role in the economy of the country, contributing about 40-50% of Mozambique's foreign exchange earnings in later years. About 85% of the export value comes from industrial shallow-water shrimp fisheries, which is the most important fishery in Mozambique. The contribution of fisheries to the Gross Domestic Product (GDP) was 8% in 1997 (GoM 2000c).

The continental shelf varies in width and reaches 90 nautical miles in front of Beira. The primary productivity is relatively high due to marine currents and numerous rivers bringing considerable amounts of sediments. Freshwater fisheries are linked with Malawi and Cahora Bassa lakes, and the numerous rivers that cross the country (SADC 2000).

Total catches are estimated at 110,000 tons of which 80% are caught by artisanal fishers (SADC-MCS 1996, Appendix). The potential could be twice this figure as only 40,000 tons of small pelagic fish are captured and tuna is under-exploited. 25,000 tons of demersal fish are landed on average per year (FAO 1999).

Prawns, the "golden rose of Mozambique" play the key role for commercial fisheries with a total catch of about 10,000 tons. In 2001 the TAC (Total Allowable Catch) was 10,300 tons of penaeids (white and tiger prawns), a 10% reduction compared to previous years. The main fishing grounds are located on the Sofala Bank. The fishery is shared between several companies, all Mozambican, and dominated by two former joint venture companies registered under the Mozambican flag and established with Japanese and Spanish partners. A recent trend is to limit the fishing effort for shallow water prawns to a sustainable level. Some newly introduced fisheries are still at a relatively low level of exploitation, about 10% of the fisheries, even though such development is encouraged by government policy (SADC 2000). The closed season has recently been extended to three months (December to March) from being one month (GoM 2000a).

Artisanal fishers also actively fish prawns, and there is probably a potential to develop the northern area (Angoche) if basic investment was made onshore. The Japanese and Spanish companies that are involved in the fishery largely control the markets for these high value products. The South African market is no longer big as better prices are found in the EU and Japan. The fast-growing Zimbabwean market has completely vanished as a consequence of recent political events (SADC 2000).

The South African market gives very good prices for the fish in the southern area of Mozambique. On the other hand, the northern area is still suffering from the general lack of communication facilities. Recreational fisheries have great potential in Mozambican waters and this will certainly encourage new investments in relatively remote areas along the coast.

Annual fish consumption is still very low, about 7 kg per capita (SADC 2000). Mozambique imports horse mackerel ("carapau") from Namibia to satisfy the national demand. These imports are duty free and are considered as a government incentive directed towards the poorest fringe of the population settled around Maputo. This trade was initiated in the 1970s, when the USSR fleet was active in the Mozambique Channel, and carapau was a popular food item. In remote areas, dried freshwater fish is the main source of animal protein (SADC 2000).

2.2 Fisheries management

Fisheries bring in vital cash revenues, and the fisheries sector has been given higher status through the creation of a Ministry of Fisheries. The organisation of the Ministry indicates that the authorities are now seriously addressing problems in the sector, such as the over-fishing of prawn stocks.

The Ministry of Fisheries (MoF) in Mozambique is comprised of three national directorates, three departments and four financially autonomous institutions: the Fisheries Development Fund (FFP), the National Fisheries Research Institute (IIP), the National Small-scale Fisheries Development Institute (IDPPE) and the Fishing School (EP). Both biological data and catch data is required in order to be able to make informed decisions, particularly regarding the products that have commercial importance, for which licences are granted or sold. The objective is to keep the catch within a sustainable volume. At the provincial level, the MoF is represented by the Provincial Services of the Fisheries Administration (SPAP), which has the main task of monitoring and controlling fishing activity (MoF 1999).

Legally, the fisheries resources in Mozambican waters are national property. The state, as the representative of the nation, is the owner and guardian of the fishery resource. The state is thus responsible for ensuring that fishing activities do not threaten the long-term sustainability of the natural resources and that the benefits gained from these activities for the communities and for the country, as a whole, are maximised (SEP 1994). The main fishery law, "Lei 3/90", defines the role and responsibilities of the fishery administration and the guideline principles for fishing activities.

The Fisheries Regulation (Regulamento da Pesca Maritima, Decreto 16/96)[1] establishes the technical specifics for those fisheries and it appears that it clarifies the ambiguity between subsistence fisheries and artisanal fisheries because it takes the commercial aspect into consideration.

According to senior experts in the field of fisheries management, Mozambique's fisheries sector has been in decline and the institutional framework for the fisheries sector has represented a serious vacuum in the management of fisheries resources and the management of fishing ports, resulting in inadequate fishing support facilities and high post-harvest losses. The number of fishing ports and ice making plant capacity in Mozambique cannot meet the increasing demand. Thus, high post-harvest losses are being caused by the shortage of ice supply and lack of cold storage facilities to support the fishermen's activities for the purpose of realising high valued quality fish products.

However, the absence of organisation in fishing communities is also an issue, particularly concerning the enforcement of fishing regulations and the main fishery institutions (DNAP and IIP) are severely under-resourced. Recent progress has been made in improving data collection and analysis through an SADC – SCU/FAO and MCS project, which is funding the development of a Fisheries Management Information System (FMIS). This project, funded by FAO, is aimed at identifying and analysing priority marine policy issues at the regional level with a view to developing a medium-term strategy in support of the SADC process of harmonising marine fisheries policy and legal framework, in line with the Code of Conduct for Responsible Fisheries and other recent relevant international instruments (SADC 2000).

2.3 Fisheries policy and master plans in Mozambique

The main fisheries objectives of the government are:

a) To improve the capacity to supply the internal market with fish products in order to reduce part of the food deficit of the country,
b) To increase foreign exchange earnings from the fisheries sector
c) To improve living conditions in the fishing communities.

These aspects were taken into consideration regarding the specific objectives for each fisheries sector in Mozambique.

The current fisheries policy was based on cost-benefit analysis. The 1994 Fisheries Master Plan was created, based on the fisheries policy that was to promote economic benefit for the nation from the utilisation of fisheries resources.

The Government of Mozambique adopted the Master Plan in March 1995 outlining strategies and programs up to 2005. According to the Master Plan the state should maintain ownership of the infrastructures of the fishing ports of Maputo, Beira, Quelimane and Angoche, including the docks as well as other public installations

[1] The regulation was originally written in Portuguese, any interpretation of the rules mentioned above is solely the responsibility of the author of this paper.

connected to the ports. The defined strategy of the state for the development of the fishing ports is summarised as follows:

- To arrange construction, rehabilitation and equipment of the port infrastructure, and
- To arrange management of the port with private companies, through management contracts or transfer of authorisation.

The government emphasises the establishment of appropriate management action in artisanal fisheries to ensure sustainable exploitation of the resources, e.g. the involvement of the fishing communities and the delimitation of zones in which industrial and semi-industrial fishing activities are excluded. Nevertheless, in semi-industrial fisheries, the government's policy is based on the use of several gear types depending on the type of resources, such as trawls for small pelagic fish (for instance horse-mackerel and sardines), hooks for sharks and demersals, etc. New investments, new ports and the improvement of inspection services are all part of the suggested improvements (MoF 1994).

Other measures involve the gradual reduction of the present number of boats and modernisation of the remaining boats in order to maximise their economic yield. Better use of shrimp by-catch, the prohibition of foreign fleets and the reduction of the priority of quota distribution as the semi-industrial fleet increases are the additional measures. For prawns and their accompanying crustaceans, emphasis is on the experimentation of different types of boats for determining the appropriate one for the fishery as well as permission for foreign fleets to operate in association with national companies. For deep-water lobster, government measures stress the maintenance of the present effort in traditional fishing zones (MoF 1994).

The present assumption in fishery policy is that the main targeted resources are relatively different. Thus, for demersals the government indicates the exclusive use of hooks while for the pelagic fishery the government policy of licensing foreign fleets to fish tuna will be maintained, although for this fishery the use of gill nets is clearly prohibited. Small pelagic fishing is only allowed outside Sofala Bank (MoF 1994) – the main pool of the shrimp fishery resources in Mozambique.

3 ANALYSIS OF THE PROBLEMS IN THE MOZAMBIQUE FISHERIES

3.1 The present situation in the fishing grounds

Fishing has always been a significant source of food for humans, and an increasingly important source of protein in our diets. As with all natural resources that we exploit, it is essential to adopt a sustainable management plan to prevent the depletion of the stock.

There is currently lack of information on the state of marine and freshwater natural resources in Mozambique. What little landing data is collected is not verified and may therefore be grossly inaccurate. Indications from official data (including FAO) suggest that total landings have decreased drastically from a traditional annual production of 100,000 tons in late 1997. A key question is whether this reduction in

recorded landings is due to unreported catches and landings by the Mozambican fleet and/or illegal fishing by foreign vessels or whether it is due to a lower level of fishing effort by the Mozambican fleet. It is difficult to assess from historical data, what has happened to the fishing effort in recent years, but published data by Maputo Fishing Port (DOP 2001) indicates that the yield per vessel has decreased significantly in recent years. This suggests that there is serious unregulated over-fishing of the country's aquatic resources, in particular in the southern region marine grounds.

The National Directorate of Fisheries Administration (DNAP) within the Ministry of Fisheries (MoF) is institutionally responsible for the management of fisheries regulations and for the enforcement and control of the fishing grounds in Mozambican waters (MoF 1999). There is almost no effective monitoring, control and surveillance (MCS) of the fisheries sector. The government has no resources for policing the Mozambican 12-mile zone, and it is suspected that foreign vessels are fishing unchecked within this zone (either the coastal or inland fishery). The Mozambican economy does not accrue any benefits from this illegal activity, and the MoF appears to be powerless to stop it. Illegal fishing is also a problem on a number of the inland lakes, in particular Lake Niassa and the Cahora Bassa reservoir. Anecdotal evidence also suggests that there is increasing conflict within the domestic fleet between the coastal fishermen (who use static gear) and the demersal trawling fishermen.

Because of this near-total absence of fishery sector law enforcement (Law on Fisheries, 3/90 and Decreto 16/96, and associated fishery regulations), there is great concern over the potential depletion of Mozambique's fisheries resources. Consensus amongst those advising the MoF is that the future of the fisheries sector depends on a combination of fisheries policy and planning, and the involvement of fishing communities in co-managing these resources with the government.

The principle of fisheries co-management should be the sharing of responsibility and/or authority for managing fisheries resources between the government and local fishermen. Co-management represents a new approach to fisheries management, and as such is an alternative to the traditional 'top-down' management approach, which has failed in the past to resolve the problems inherent in managing an open access fishery.

A MCS consultancy report was prepared by the FAO in 1994, and the report proposed a number of coastal options. These included the use of inspectors at a number of ports and inland fish landing sites, deployment of fisheries observers, coastal surveillance (using a fisheries protection vessel), the establishment of a network of coastal radar stations, the use of air surveillance and electronic (satellite) surveillance (SADC 2001).

Traditionally, the main means of enforcement is through the physical restraining of offenders. This should require the purchase of physical enforcement platforms such as patrol boats. It is to a great extent beyond the ability of the government of Mozambique to purchase such capital equipment. Thus, in developing measures to deal with IUU fishing, consideration must be given to the feasibility and sustainability of those measures and the ability of Mozambique to support them over the long-term.

3.2 The current situation in the management of Maputo Fishing Port

Maputo Fishing Port provides all the post-harvest facilities within one particular port area. It also functions as the main collection and distribution centre of fish and provides linkages among neighbouring small islands, nearby urban centres and passengers to artisanal boats.

However, problems related to Maputo Fishing Port development (DOP 2001) relate mostly to the under-utilisation of Maputo Fishing Port by industrial fishing vessels and the poor state of commercial fisheries (Table 1).

Table 1: Number of industrial vessels and landings in Maputo Fishing Port from 1998 – 2001.

Industrial wharf	**1998**	**1999**	**2000**	**2001**
Local vessels	22	29	34	41
Foreign vessels	335	324	229	188
Total	**357**	**353**	**263**	**229**
Mooring (days):				
Local vessels	438	339	553	308
Foreign vessels	2137	3160	2777	1523
Total	**2575**	**3499**	**3330**	**1831**
Fish landings (tons):				
Local vessels	N/a	N/a	34,8	43,6
Foreign vessels	N/a	N/a	672	765,3
Total	**N/a**	**N/a**	**706,8**	**808,9**

The role of the fisheries cooperatives in Maputo is critical for the future well being of the small-scale fisheries, as they are the only existing institutional bodies owned and operated by the fishermen themselves. There are more than 200 boats in the fisherman villages in the vicinity of Maputo Fishing Port. Based on fisheries statistics in Mozambique, the catch in Maputo Province is determined by the type of ships and by the species of fish. In Maputo province there is only one fishing port, Maputo Fishing Port, which can accept semi-industrial and artisanal boats (Table 2) for unloading catch and mooring boats (PPM 2000). Therefore, the catch brought in by these types of boats in Maputo province is landed in Maputo Fishing Port.

As for the catch by artisanal boats, national fishery statistics have inaccurate information about the actual volume. Catch prior to 1993 is based on the number of semi-industrial boats and do not represent the total catch (PPM 1998).

Many artisanal fishing boats will land in this catch port, because most of the fish is sold and consumed in the vicinity of Maputo city, and no fishing port infrastructure is available in those fishing villages. However, Maputo Fishing Port has a limited waterfront area and the boats of Catembe and Matola fisherman villages have to utilise this port for unloading of catch and preparation of sailing out for fishing.

Table 2: Mooring days and landed catch for semi-industrial boats and artisanal boats from 1998 – 2001 in Maputo Fishing Port.

Mooring (days)	**1998**	**1999**	**2000**	**2001**
Semi-industrial boats	10.929	7648	8623	9635
Artisanal boats	N/A	699	979	1123
Total	10.929	8347	9602	10758
Unloading (tons)				
Semi-industrial boats	N/A	N/A	919.2	795.8
Artisanal boats	N/A	N/A	N/A	134.8

While Maputo city has, over the years, created a substantial infrastructure for industrial fisheries (cold storage, ship repairs) such infrastructure was largely geared towards handling frozen products. With most high value fish increasingly being traded in fresh/iced form, Maputo Fishing Port still lacks sufficient facilities to handle iced fish for local consumption and export from small-scale fisheries. Notably, the number of cold storage, ice plants, chill rooms and auction sites is inadequate, and there is also considerable scope for improvement of fish markets in Maputo Fishing Port (PPM 2000).

The Maputo Fishing Port is situated between two fishing villages (Catembe and Matola) and the fishing grounds. Many fishermen and brokers think that when chill rooms and market auctions are available in Maputo Fishing Port, most of the fish now landed in Catembe and Matola will be landed in Maputo Fishing Port (PPM 1999).

3.3 Present profitability of Maputo Fishing Port

The project analysis lacks alternative options for improving or expanding existing facilities through studies of the present financial situation of Maputo Fishing Port. However, it was greatly influenced by a number of factors, both internal and external, including substantial time and cost overruns, slower than expected growth in traffic, inappropriate levels of tariff and lack of staff qualified, which affected the functioning, economic and financial viability (Table 3). Based on post-evaluation findings, the main sources of these implementation problems may be attributable to (i) lack of understanding of the factors affecting the demand of facilities which led to unrealistic traffic projections, and (ii) institutional shortcomings including lack of autonomy of Maputo Fishing Port utilities to set appropriate cost-based tariffs.

Table 3: Profitability of Maputo Fishing Port.

Item	**2001**	**1st year**	**2nd year**	**3rd year**
Income	268.019,00	288.195,00	357.557,00	393.756,00
Cost	242.287,00	221.429,00	247.485,00	261.583,00
Debt	33.131,52	0,0	0,0	0,0
Total profit	**-7.399,52**	**66.766,00**	**110.072,00**	**132.173,00**

Using the experience of Akureyri Port, forecasting methodology for future management of Maputo Fishing Port to become financially viable, port policies and development plans should take the following factors into account: a) Reduced force labour from 80 to 50 employers; b) Future environmental situation after rehabilitation;

c) More investment for new technology to adapt service for more vessels. However, as can be seen in Figure 1 and Table 4 in the Appendix, the fixing of tariffs based on mere accounting figures often proved adverse to the utilisation of ports in that it discouraged traffic and resulted in loss of revenue. Continued efforts should be made to refine forecasting methods for future financial prospects of Maputo Fishing Port, shown in Table 4 (income) and Table 5 (cost).

3.4 Improving fishing port facilities and building robust fishing communities

The improvement of fishing ports and fishing communities, which serve as the foundation for the production of seafood and the livelihood of fishermen, is an essential factor in the development of the fishing industry. Unfortunately the Maputo Fishing Port facilities are still inadequate for the safe accommodation of fishing vessels. In addition, if fishing ports are to become more open they must consider the needs of urban residents, who in recent years have begun to take a more active interest in such marine pursuits as small cruising and fishing for leisure.

Maputo Fishing Port serves as a point of transit between Inhaca Island and Catembe village. Better urban planning and comprehensive fishing port management should change the nature of the interaction between the city and the fishing port. Downsizing, or migration of the port out of the city does not threaten the city but is rather seen as an opportunity for investment and redevelopment (Borruey and Fabre 1998), coupled with planning objectives to revitalise the inner city (Hall 1993). Often, these planning objectives aim to turn the former port area from the backside of the city to its forefront (Ferras and Volle 1993). The local conditions for urban economic development and the current business climate have a great impact on fishing port redevelopments. These changes are affected in the shift from mass production to consumption, leisure and recreation (Hall 1993).

Other ideas relate to the projection of the port as a dynamic-unstable area (Cau 1996). Current planning policies in favour of inner city regeneration tend to reduce the importance of the port in the city's competitive advantage. Yet, the function of the port image has usually been recognised as a point of reference of the city's identity (Mathé 1992).

For a port manager the port has become a capital-intensive enterprise (Hayuth 1992), promoting wider partnership with the business community and generating its own added value by means of goods handling and processing, not just performing the traditional transport function (Vallega 1996). In this way, the modern seaport is seen as a gateway between economic regions rather than as the traditional central place of the past (Bird 1971). In parallel with these technological views, Maputo Fishing Port officials stress the relevance of the fishing port and marine history and culture, often overlooked in current Maputo city planning. They point out the importance of the port heritage for the fabric and identity of the city.

Recent literature on port management and development seems to recognise the critical aspects relevant to the development of fishing port research. These aspects are:

1) Insufficient attention paid by fishing port authorities to the importance of the urban quality surrounding the port and of how port-related activities can be

transformed into new opportunities for leisure and recreation to open up the city to tourists.
2) Lack of coordination between mid-term management plans of fishing port authorities and strategic and land use plans of municipal authorities.
3) The impact of environmental policies on the fisheries sector is likely to favour port interests opening up new opportunities for short voyage small and medium shipping networking.
4) Fishing port authorities frequently neglect the environmental impact of port operations and infrastructure particularly in zones of great environmental sensibility and risk, such as coastline estuaries vulnerable to erosion.

4 STRATEGIC MANAGEMENT OF THE PORT OF AKUREYRI – A CASE STUDY

The Port of Akureyri has been selected for the purpose of studying the changing nature of interaction between a city and a port. The town of Akureyri is located in the northern region of Iceland. The case study consists of an analysis of the port and the adjacent town. Information was gathered from management documents and a series of interviews with key stakeholders in the port and city administration.

The Port of Akureyri was established under the Port Services Act 1994 of the Ministry of Transport and Communication (MoTC 1994). The municipality controls the Akureyri Port Authority. Its board has five members from each of the political parties and also has representatives of the three smaller harbours in the Eyjafjörður – Svalbarðseyri, Grenivík and Hjalteyri (Hafnarhandbók 2000-2002).

As Iceland's second port after Reykjavik, Akureyri Port serves a major part of the Icelandic fishing fleet and its main activities are focused on servicing the fishing industry, loading and unloading general cargo and receiving tourist cruise ships, thus providing the town of Akureyri with economic strength and security as well as local employment (Hafnarhandbók 2000-2002).

4.1 Other service providers in the Port of Akureyri

Section 23 of the Port Services Act 1994 includes as prescribed services towage, pilotage, bunkers and waste disposal (MoTC 1994). These operational services are generally provided by independent providers operating within the ports, rather than by the port corporations.

Traditional port charging practices are complex. In common with most port organisations throughout Iceland and the world, Akureyri Port operators obtain their revenue from a variety of sources (Hafnarhandbók 2000-2002). The existing regulatory regime sets revenue targets on a portwide basis. This, however, raises the possibility of significant cross-subsidies between particular trades using the port.

On the other hand, setting targets at a more complex level will tend to increase information requirements and may also require arbitrary allocations of joint costs. Some of these are specific charges for identifiable services offered, such as berthing (mooring) charges or pilotage (Hafnarhandbók 2000-2002).

Tariff structure considerations, which usually comprise a far grater share of port revenue, are generally regarded as relating to the provision and maintenance of infrastructure. There are four main components to these infrastructure charges (MoTC 1994):

1) Wharfage is a charge per unit of cargo loaded or discharged by a vessel. It is payable by the owner of the cargo. However, particularly in the liner trades wharfage is usually collected by the port organisation from the shipowner, who then passes it on to the importer or exporter. Typically, wharfage charges are uniform throughout a port, irrespective of which berth is used.

2) Facility or area hire charges provide an alternative to site leases for 'common user' berths, i.e. berths that are made available on a short-term hire basis to a number of different operators. These are time-related charges that are typically levied on stevedores.

3) Site leases, in addition to the two activities-related charges, refer to sites that are made available exclusively to a single occupant that are subject to period leases. The payments for these leases may not include volume or performance-related components.

Slippstöðin shipyard is one of the facilities under the Akureyri Port Authority. It provides a floating dock with 5000 tons of lifting capacity and two slipways between 150-1000 tons of lifting capacity for all kinds of repair services for various sea going vessels (Hafnarhandbók 2000-2002).

4.2 Akureyri Port price and governance

Port managers are responsible for implementing the Act of 1994 as specified by the Ministry of Communications in sections related to port price and governance. The Act of 1994 provides useful input in the area of institutional development, particularly for improvements in port operating performance, financial management and budgetary control systems.

Significant improvements in port operating efficiency were noted in terms of fish-handling capacities, average ship-waiting times and overall port productivity. Important socio-economic benefits were derived, such as lower freight rates and cargo handling charges, enhanced employment opportunities arising from the growth of industries in the port areas, improved operating and working conditions for port staff, and increased income resulting from greater efficiency in the distribution of commodities (Hafnarhandbók 2000-2002).

In the Akureyri Port pricing policy it is recognised that the port has to be financially viable and has to attract new traffic, especially for the strategic fisheries companies within the port.

4.3 Lessons learned

The major findings and lessons gathered from the Akureyri Port are summarised below:

a) The Akureyri Port experience demonstrates the importance of maintaining an appropriate degree of flexibility in design, so as to be able to respond to changing environmental circumstances. Beneficial changes in design and scope, such as the conversion of general cargo wharves to container terminals to accommodate unexpected increases in container traffic, contributed to its financial success.

b) Demand forecasting for port facilities needs to be implemented with care, as fluctuations in traffic are crucial to the financial and economic viability of ports.

c) The importance of careful traffic forecasting to capture potential traffic; careful analysis of the timing and size of a new investment should be done to reduce the risks and costs associated with delays in developing traffic.

d) Institutional changes through the introduction of cost-accounting systems and performance indicators and further refinements of data processing systems were crucial to improving port efficiency.

5 MARKET AND COMPETITION ANALYSIS

A SWOT analysis is grounded on the basic principle that strategy-making efforts must aim at producing a good fit between a company's resource capability and its external situation (Thompson and Strickland 2001). Perceptive understanding of a company's resource capabilities and deficiencies, its market opportunities and the external threats to its future well-being is essential to good strategy formation.

5.1 A SWOT analysis for Maputo Fishing Port

5.1.1 An opportunities / threats analysis

Market opportunity is a big factor in shaping a company's strategy (Thompson and Strickland 2001). In evaluating a company's market opportunities and analysing their attractiveness, managers have to guard against viewing every industry opportunity as a company opportunity. The market opportunities most relevant to a company are those that offer important avenues for profitable growth, those where a company has the most potential for competitive advantage, and those that match up well with the company's financial and organisational resource capabilities (Thompson and Strickland 2001). Table 4 presents a list of potential threats and opportunities to Maputo Fishing Port's future profitability and market position. Opportunities and threats not only affect the attractiveness of a company's situation but, more importantly, they point to the need for strategic action.

Table 4: Threats and opportunities of Maputo Fishing Port.

Opportunities	**Threats**
- Serving additional customer groups and expanding new markets – tourism boats and tourism facilities within fishing port areas - Additional facilities to meet fish sales agents, producer organisations, port wholesalers, retailers and customers - A greater role for the provision of market information service and the introduction of descriptive and fisheries product quality systems - Maputo Fishing Port should target temperature control as an important move towards maintaining quality - Buyers will demand more product information and want Hazard and Critical Control Point (HACCP) systems as part of the equipment of the fishing port market and handling facilities.	- Entry of powerful new multimode port competitors - Increasing intensity of competition among cold storage facilities offered by port rivals – may reduce the profit margins - Low levels of industrial fisheries landings - Weak financial conditions to expand the business

5.2 The dimensions of competition (The five forces model of competition)

One way of analysing the structure of a market is by means of the five powers model. This model was originally devised as a tool for identifying opportunities for achieving sustained high profits, but can also be used as a tool for the analysis of market structure and the intensity of competition under different market structures. At its core is the recognition that market power is a consequence of the complex but systematic interplay of a number of structural and behavioural elements (see Figure 2, Porter 1980).

The intensity of competition in an industry is neither a matter of coincidence nor bad luck. Rather, competition in an industry is based on the underlying structure and goes well beyond the behaviour of current competitors and the five competitive forces. These forces are: a) entry; b) threat of substitution; c) bargaining power of buyers; d) bargaining power of supplies; e) rivalry amongst current competitors. Customers, suppliers, substitutes and potential entrants are all “competitors” to firms in the industry and may be more or less prominent depending on the particular circumstances (Porter 1980).

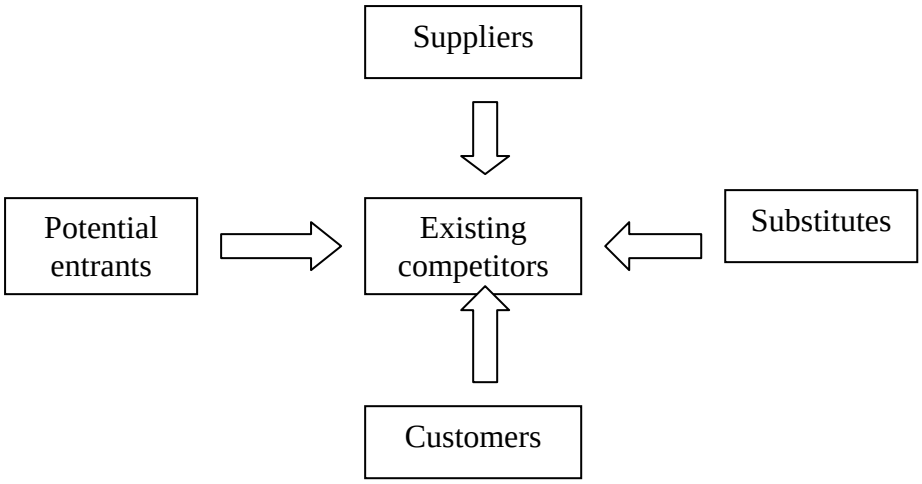

Figure 2: The five forces model of competition: a key analytical tool for diagnosing the competitive environment (Porter 1980).

5.2.1 Some implications for the fishing port sector

The influence of existing competitors in a market with a high entry barrier, where few competitors exist and there is normally greater scope to restrict supply and raise prices (Porter 1980). Where there are few competitors (as in the fishing port due in part to economies of scale and large sunk investments) there is reason to be more concerned about the effectiveness of competition.

According to Porter's theory, the focus should be on the ability of potential entrants to discipline the market behaviour of existing firms. In general, the easier it is for firms to enter and exit an industry, the more effective the threat of new competition will be.

Factors that are important in assessing the potential for new firms to enter the fishing port include:

1) Regulatory and contractual barriers to the entry of new firms, for example, exclusive contracts between fishing port and towage companies that effectively preclude the entry of additional operators.
2) Structural and strategic barriers to entry, such as that the capacity of well-established port services with significant sunk capital to reduce prices if a new entrant attempts to enter the market.

6 REHABILITATION OF THE INDUSTRIAL WHARF OF MAPUTO FISHING PORT

6.1 Financing the rehabilitation of the Maputo Fishing Port

Maputo Fishing Port is the largest fishing port in the southern region of Mozambique and is utilised by all types of fishing boats such as artisanal, semi-industrial and industrial fishing boats, and tourist boats. The port not only supplies marine products to the people living in the southern region of the country, but also exports seafood to South African countries and the EU. Maputo Fishing Port is connected by the Maputo Development Corridor, which makes it an advantageous location for the future. Therefore, Maputo Fishing Port is of special importance compared with the other main fishing ports in Mozambique.

Nevertheless, the basic infrastructure of Maputo Fishing Port is characterised by a piled jetty and an industrial wharf, which were constructed in 1912. These structures are severely worn out and damaged in many portions, rendering port activities ineffective (PPM 2000).

The refrigeration building, the rail mounted wharf crane and electric crane were constructed /introduced in 1977. These facilities and equipment have exceeded their normal operational lives and maintenance during this period has not been adequate. As a result the equipment operates at a low level of efficiency and requires frequent repairs (PPM 2000).

Various donors, such as JICA, DANIDA or ICEIDA, will finance the reconstruction of the port.

6.2 Justification and objectives of the rehabilitation project

This renovation project aims to recover and improve the functions as the marketing centre of marine products in the metropolitan area by rehabilitating and expanding the deteriorated facilities of Maputo Fishing Port. Another objective is to stimulate the activities of the fisheries sector in the region, Maputo being the main fishing port of southern Mozambique.

The total estimated cost for the rehabilitation of the industrial wharf and general improvement in all facilities is about US$ 5, 792, 000 (Table 5).

Table 5: Breakdown of rehabilitation costs of Maputo Fishing Port.

TASK	**UNIT**	**QTY**	**COST (US$)**
REHABILITATION OF INDUSTRIAL FISHERY WHARF			
Existing piled wharf	L/S		1,118,000
Accessories	L/S		1,287,000
Refrigerators and cooling system	L/S		1,910,000
Dredging work	L/S		111,000
External wall	M	140	143,000
Water tank	Unit	1	35,000
Generator	Unit	1	154,000
Crane	Unit	1	1,034,000
TOTAL			**5,792,000**

In order to improve the deteriorated facilities of Maputo Fishing Port, the Port Authority has requested the company Engenheiros Consultores to prepare an appraisal and to estimate the cost of rehabilitating or constructing the following facilities and equipment (Engenheiros Consultores 2001).

The rehabilitation plan and the order of the construction tasks is listed below:

- ✓ Replacement of covers of the inspection boxes
- ✓ Replacement and renewal of the pavement of the bridge-wharf
- ✓ Replacement and renewal of the beam of the forehead of the bridge
- ✓ Replacement of the 20 ton steel anchorage sets
- ✓ Replacement of the bumpers for cranes
- ✓ Renewal of the wall of lateral ban
- ✓ Renewal of the pavement for parking vehicles
- ✓ Repairs to the flagstone of board of the forehead of the bridge
- ✓ Renewal of vertical vessels bumpers
- ✓ Renewal of external ban

In the fishing port, the industrial wharf is backed by land and a piled jetty (184 m long) facing the Espirito Santo River. These structures were built in 1912 and utilised for the mooring of industrial fishing vessels (PPM 1999).

The structures are in poor conditions after more than 90 years of use. The concrete is worn and cracks have formed, so they cannot withstand regular activities much longer. Therefore, it is necessary to rehabilitate or demolish and renew these facilities (PPM 2000).

It is very expensive to completely demolish the structure and construct a new one. However, the need is urgent as it is estimated that the wharf parts are in such poor condition that the structure will collapse in a few years. The pier, which is not only cracked and broken but also lacks full strength in some parts, is exposed to severe damaged risk due to frequent collisions with vessels. It is believed that the best course of action is to demolish the pier completely and construct a new one after sufficient funds have been made available (Engenheiros Consultores 2001). The Appendix shows the work plan for the rehabilitation of the piled jetty and the wharf (Engenheiros Consultores 2001).

6.3 Economic and social effects of the project

The implementation of the project will benefit the entire population of Maputo.

Despite the high number of people active in fishing communities, most of the families are poor depending only on the fish they harvest for their livehood. The core problem is “high post-harvest losses” in the production cycle. This problem can be solved by rehabilitating all important infrastructure and facilities in order to secure the safe landing of catches and to protect fisheries products from deterioration (PPM 2002).

The production of the industrial fisheries is mostly for export, which contributes to the foreign exchange earnings of the sector. However, as shown in the Table 6, the

number of industrial fishing vessels seems to be declining. The cause is the deterioration of the port facilities for industrial fishing vessels (PPM 2000).

Table 6: Number of industrial fishing vessels from 1999 and 2000.

Sector	1999	2000	Decline (99/00)
Industrial	353	263	26%

Mozambique, which suffers from scarcity of capital, lack of foreign exchange, a high rate of unemployment, difficulties in food supply and the deterioration of infrastructure, cannot implement this project without external aid. At least 18 million people are expected to benefit from this rehabilitation project.

6.4 Environmental impact issues to be addressed by the rehabilitation project

The institutional systems for environmental conservation and for the rational use of natural resources in Mozambique are still being created.

The Ministry of Environmental Affairs was established in 1994 and has functioned as the centre of administrative activities for environmental conservation (MICOA 1994). The National Environment Management Programme was prepared and published in 1996. The National Council for Sustainable Development, which is defined in the environmental framework law (MICOA 1997), has functioned as a consultative organ of the cabinet to comprehensively co-ordinate governmental activities and regulations for environmental management.

The environmental issues and tasks in relation to the rehabilitation of and improvements to Maputo Fishing Port facilities relate to cleaning up wreckage, repairing damage to essential port facilities (e.g., quays and jetties), and providing essential infrastructure such as water supplies and additional stock and equipment according to Appendix Table 6 (PPM 2000).

Compliance with a number of international conventions also needs to be addressed by the project. In accordance with the recommendation of the 28th session of FAO, Resolution 4/95 adopted the Code of Conduct for Responsible Fisheries on 31 October 1995. The same Resolution ushered in appropriate precautionary technical guidelines for the procedures for the development and management of harbours and landing places for fishing vessels. Some of the provisions in these guidelines may be or have already been given binding effect by means of legal instruments for third country directives, such as:

1) UNCLOS 82 (UN Convention on the Law of the Sea, December 82);
2) MONTREAL PROTOCOL (Montreal Protocol to the Vienna Convention);
3) MARPOL 73/78 (International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978);
4) UNCED 92 (UN Conference on the Environment and Development, June 1992)

Because Maputo industrial fisheries infrastructure has been neglected for several decades, much of it has fallen into disrepair, and solid waste materials have

accumulated near the jetties (PPM 1999). A waste reception system is going to be established in line with the recommendations of the International Maritime Organisation (IMO), and substantial clean-up work will be carried out involving the removal of numerous wrecks and accumulated rubbish.

Although the project is not funding any new vessels, the current fleet may eventually increase the harvesting of pelagic species. The increased use of the vessels may lead to increased pollution levels. Pollution of the aquatic environment from vessel operations typically falls into two broad categories, i.e. from the repair of the vessels and from the vessels themselves. Maputo Fishing Port will eventually increase vessel repair operations. These repair operations will give rise to solid wastes, which will include antifouling paint scrapings and cans, machine spares and oily rags that may be considered toxic to the marine environment. Vessel operations in the fishing port give rise to a variety of wastes all of which are deemed toxic or detrimental to the marine environment such as of oily bilge water, spent engine oil, hazardous solid wastes such as starter batteries and engine components and non-toxic solid wastes such as nets, fenders and other fittings (PPM 2001).

7 DISCUSSION AND CONCLUSION

In spite of numerous problems, Maputo Fishing Port remains an indispensable contributor to rural and national progress. As such, its development should be aggressively pursued and given more attention by the Fisheries Ministry. The development of Maputo Fishing Port should lead to lower post-harvest losses in fisheries and better utilisation of infrastructure for the purpose of landing a considerable quantity of catch. However, this discussion covers many issues that have a similar conclusion.

Maputo Fishing Port is under-utilised. One probable reason for this is that fishermen have found other ways of landing their catch to avoid paying fees to the harbour. Failing to deal with this problem reflects weak management of the fisheries sector. Over-fishing is widely recognised as a growing threat to the sustainable management of Mozambique's fisheries. In major fishing areas, investment in new capacity (vessels, equipment and labour force) has supported fishing efforts at levels significantly exceeding the reproductive capacity of fishing grounds.

Many experts suspect that excessive government support policies and especially subsidies to the fishing industry have a direct causal relationship to recent over-fishing trends. Furthermore, when the volume of fish catches goes down at the national and regional level, there will be less economic rationale to build additional facilities in the fishing port. Policy reforms should integrate environmental, social, economic, and trade objectives to ensure the long-term sustainability of entire fishery ecosystems while minimising negative social and economic impact on segments of the population that rely on fishing for employment or subsistence.

Poor environmental management practices in Maputo Fishing Port are of great concern. The construction of drainage and sewage systems that can systematically handle all effluent, such as the discharge of solid and liquid wastes, which are by-products of vessels operations, should be emphasised in the rehabilitation project. This will show that Maputo Fishing Port is designed to properly handle environmentally related issues.

The relationship between Maputo Fishing Port and the city could be evaluated in relation to Akureyri and its harbour. The town of Akureyri is sheltered by its harbour, with an excellent situation within the firth, which surrounds and protects the town. A long time ago, the economic basis of this town was focused on harbour activities and even today these activities are particularly important as far the general economy of the town is concerned. But the town is now going through a stage of economic development, which is giving Akureyri the chance to reach a wholly different level, which could also lead to the diversification and consolidation of its economic basis. However, Maputo is a city and its urban and economic future does not only depend on the opportunities created by port activities, although we must recognise their importance for the city.

The activity and organisation of Maputo Fishing Port needs to be ready to face the changes that the sea transport market is going through. These changes are being reflected in the dramatic growth in the transport of different types of merchandise in

coastal traffic, which will inevitably have an impact on the strategies to be adopted by those responsible for its management.

Analysing the market and competition potential of the Maputo Fishing Port leads to a general discussion of concepts and issues relevant to an analysis of markets and competition of ports and their contribution to the achievement of economic efficiency. This should also bring out some general issues for the analysis of competition and market potential in the Maputo Fishing Port and the possible need for regulation of certain port services. The results of such a discussion should be expressed in general terms and are intended to provide a conceptual framework for the more focussed issues of direct relevance to future business plans.

8 RECOMMENDATIONS

All issues raised in this report should be addressed to the Fisheries Ministry and to the Maputo Fishing Port Authority. The aim of the report is to suggest improved utilisation of an already existing fishing port by investing more in post-harvest facilities such as cold storage, warehouses for storing fishing gear and basic additional facilities to improve business for Maputo Fishing Port.

This study project aims to increase the role of the Maputo Fishing Port in the Mozambique fisheries sector. With this objective in mind, the following recommendations are put forward:

1) Preparation of a business plan for the Maputo Fishing Port:
    - Fisheries- tourism centre will improve the profitability of the fishing port.
    - Environmental management plan providing information in relation to the hydrological situation and other physical conditions.
    - Methodology of activities, finance and governance.

2) The need for further analysis of the interaction between subsidies, over-capacity and over-fishing.
3) Guidelines towards potential reforms of fisheries policies.
4) Creating a better understanding with respect to quantification and classification of economic, environmental, and other related social effects of subsidies to the fisheries sector.

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Last but not least I want to thank the Port of Akureyri and many other organisations for the useful experience gained on observation tours, as well as the local authorities and people of Akureyri for their kind hospitality.

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APPENDIX

Appendix Table 1: Population in Marine Fisheries

Employment in:	1995	1996	1997	1998	1999
Industrial Fisheries	8000	N/A	9000	N/A	N/A
Artisanal Fisheries	72000	N/A	89000	50000	N/A
Population dependent on fishing	480000	N/A	550000	660000	N/A
Total population	16600000	18000000	18000000	N/A	N/A

Source: SADC - *MCS study of 1996, Marine Fisheries Ministers meeting 1998, Ministry of Fisheries.*

Appendix Table 2: Economy (Marine Fisheries)

	1995	1996	1997	1998	1999
Total value of Fish products (million US$)	N/A	N/A	150	121.1	124.7
Fisheries as % of GDP	N/A	N/A	8	8	N/A
Fish exports (tonnes)	8362	8335	10367	18924	13919
Fish exports (million US$)	68	59.1	85.6	102.8	87.7
Fish import (tonnes)	N/A	N/A	10000	N/A	N/A
Fish import (million US$)	N/A	N/A	5	10	N/A
Total exports of country (million US$)	132	132	230	N/A	N/A
Fish exports % of total	51.5	44.8	37.2	N/A	N/A

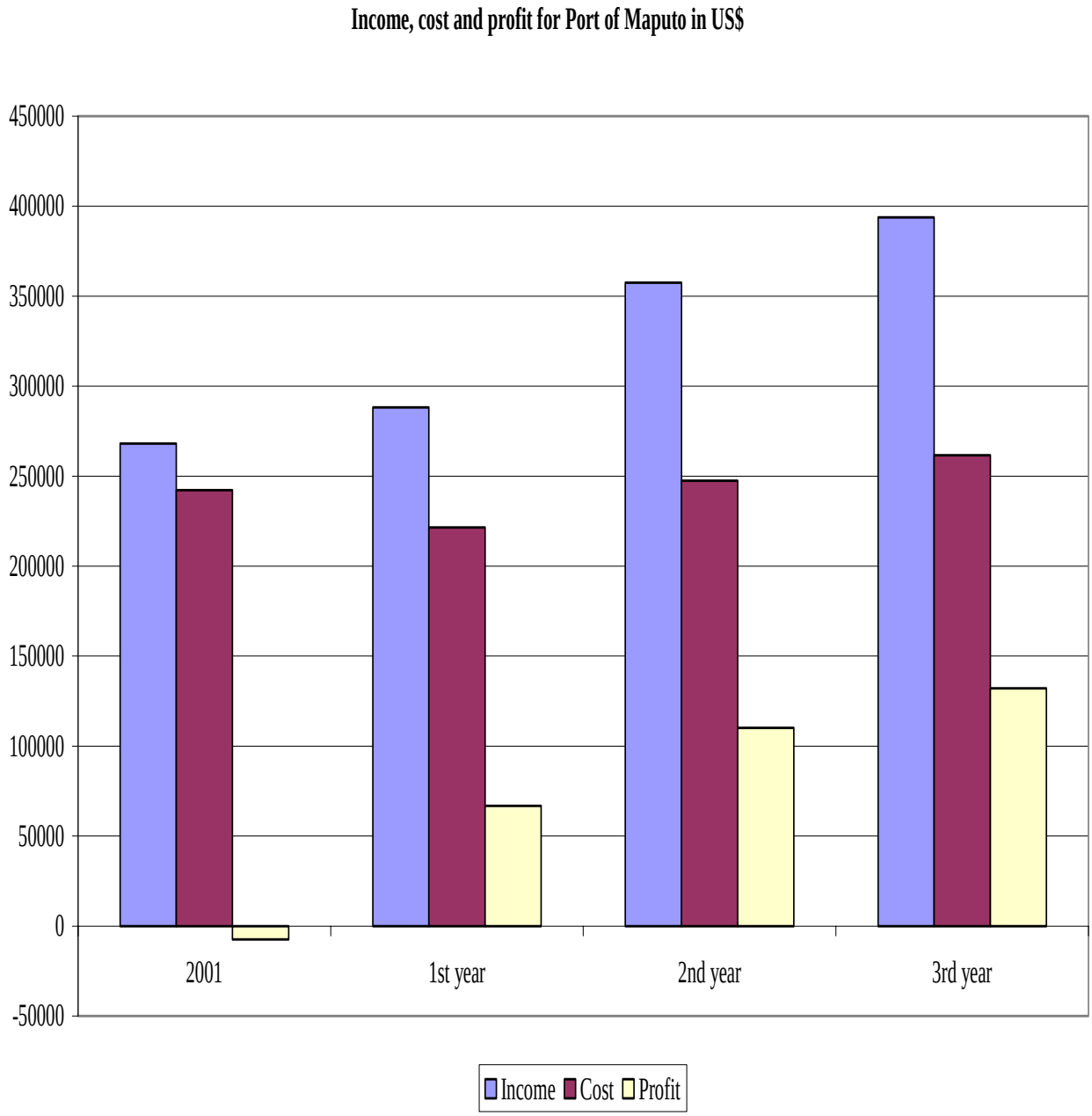
Source: SADC - *MCS study of 1996, Marine Fisheries Ministers meeting 1998, Ministry of Fisheries*

Appendix Table 3: Marine Fisheries

	1995	1996	1997	1998	1999
Major industrial fisheries					
Total catch (tonnes)	25000	25000	34225	36627	33432
Total TAC (tonnes)	N/A	N/A	32900	28880	31150
Potential yield (tonnes)	N/A	N/A	391400	392000	392000
Licensed vessels					
National	206	N/A	216	139	140
Foreign	62	N/A	138	152	153
Major artisanal fisheries					
Total catch (tonnes)	80000	80000	80000	37000+	N/A
Total TAC (tonnes)	N/A	N/A	N/A	N/A	N/A
Potential yield (tonnes)					
Artisanal fleet	12000	N/A	10877	+-20000	N/A
Consumption per capita (kg/yr)	6	N/A	7	6.5	6.5

Source: *SADC – MCS study of 1996, Marine Fisheries Ministers meeting 1998, Ministry of Fisheries.*

Figure 1


Income, cost and profit for Port of Maputo in US$
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
-50000
2001
1st year
2nd year
3rd year
Income
Cost
Profit

Appendix Table 4: Income of Maputo Fishing Port; Unit: $dollars

Services	**2001**	**1st Year**	**2nd Year**	**3rd Year**
Ice	54.170,00	54.500,00	72.626,00	82.086,00
Water supply	1.940,00	2.227,00	2.989,00	3.386,00
Electricity supply	837,00	961,00	1.290,00	1.462,00
Telephone card	327,00	376,00	504,00	571,00
Admission card	1575,00	1.808,00	2.426,00	2.749,00
Free traffic card	9610,00	10.000,00	10.000,00	10.000,00
Sub-total Sales	**68.459,00**	**69.872,00**	**89.835,00**	**100.254,00**
Industrial vessels	66.131,00	75.919,00	101.883,00	115.433,00
Semi-industrial boats	29.396,00	29.000,00	29.000,00	29.000,00
Artisanal boats	782,00	780,00	780,00	780,00
Fish unloading	19.097,00	21.924,00	29.422,00	33.335,00
Cargo unloading	7.201,00	8.267,00	11.094,00	12.570,00
Sub-total Dues	**122.607,00**	**135.890,00**	**172.179,00**	**191.118,00**
Crane	8.382,00	9.622,00	12.913,00	14.631,00
Forklift	1.986,00	2.280,00	3.060,00	3.466,00
Cold storage	19.091,00	21.917,00	29.412,00	33.324,00
Fish storage	2.093,00	2.100,00	2.100,00	2.100,00
Processing plant	27.611,00	28.000,00	28.000,00	28.000,00
Warehouse for storage	4.490,00	4.500,00	4.500,00	4.500,00
Fuel supply station	2.979,00	3.420,00	4.590,00	5.200,00
Office	6.867,00	6.800,00	6.800,00	6.800,00
Parking	953,00	1.094,00	1.468,00	1.663,00
Sub-total Rent	**74.452,00**	**79.733,00**	**92.843,00**	**99.684,00**
Financial income	703,00	700,00	700,00	700,00
Other income	1.798,00	2.000,00	2.000,00	2.000,00
Sub-total income	**2.501,00**	**2.700,00**	**2.700,00**	**2.700,00**
Total Income	**268.019,00**	**288.195,00**	**357.557,00**	**393.756,00**

Appendix Table 5: Cost of Maputo Fishing Port; Unit: $ dollars

Item	2001	1st year	2nd year	3rd year
Salary	92.622,00	63.809,00	63.809,00	63.809,00
Part-time	9.689,00	6.672,00	6.672,00	6.672,00
Holiday subsidy	7.440,00	5.125,00	5.125,00	5.125,00
13° month/ salary	6.258,00	4.309,00	4.309,00	4.309,00
Compensation	7.362,00	5.066,00	5.066,00	5.066,00
Sub-total Salary	**123.371,00**	**84.981,00**	**84.981,00**	**84.981,00**
Water	5.691,00	6.533,00	8.767,00	9.933,00
Electricity	31.707,00	36.399,00	48.848,00	55.344,00
Fuel / oil	4.180,00	4.799,00	6.440,00	7.297,00
Sub-total	**41.578,00**	**47.731,00**	**64.055,00**	**72.574,00**
Telephone / fax	3.605,00	4.138,00	5.554,00	6.292,00
Mobil phone	1.202,00	1.500,00	1.500,00	1.500,00
Sub-total	**4.807,00**	**5.638,00**	**7.054,00**	**7.792,00**
Office supplies	3.992,00	4.500,00	4.500,00	4.500,00
Magazine / newspaper	1.013,00	1.000,00	1.000,00	1.000,00
Photocopy	88,00	90,00	90,00	90,00
Sub-total office cost	**5.093,00**	**5.590,00**	**5.590,00**	**5.590,00**
Travels	735,00	1.000,00	1.000,00	1.000,00
Training	815,00	2.000,00	2.000,00	2.500,00
Technical assistance	5.953,00	6.834,00	9.171,00	10.391,00
Expenses / cheques	27,00	30,00	30,00	30,00
Advance of accountancy	492,00	500,00	500,00	500,00
Material / HACCP	2.714,00	4.000,00	4.000,00	4.000,00
Medicine	3.771,00	4.000,00	4.000,00	4.000,00
Rental car / machinery	3.102,00	2.000,00	2.000,00	2.000,00
Expenses / canteen	3.379,00	1.000,00	1.000,00	1.000,00
Accident / fire insurance	1.322,00	2.034,00	2.034,00	2.034,00
Others social expenses	5.128,00	6.000,00	6.000,00	6.000,00
Various expenses	1.525,00	2.000,00	2.000,00	2.000,00
Uniform	329,00	377,00	506,00	573,00
Expenses for representation	2.036,00	3.000,00	3.000,00	3.000,00
Stamp value	7,00	8,00	8,00	8,00
Sub-total expenses	**31.335,00**	**34.783,00**	**37.249,00**	**39.036,00**
Tax / broadcasting	190,00	200,00	200,00	200,00
Tax / IRT	3.751,00	4.000,00	4.000,00	4.000,00
Value added tax / IVA	1.219,00	1.800,00	1.800,00	1.800,00
Tax / Rubbish	1.086,00	1.600,00	1.600,00	1.600,00
Tax / Social pension	1.742,00	2.000,00	2.000,00	2.000,00
Sub-total tax	**7.988,00**	**9.600,00**	**9.600,00**	**9.600,00**
Tools	2.445,00	3.000,00	3.000,00	3.000,00
Maintenance / repair	10.769,00	13.000,00	13.000,00	13.000,00
Maintenance / installation	13.320,00	15.291,00	20.520,00	23.250,00
Maintenance / Vehicle	1.581,00	1.815,00	2.436,00	2.760,00
Sub-total Maintenance	**28.115,00**	**33.106,00**	**38.956,00**	**42.010,00**
Total Cost	**242.287,00**	**221.429,00**	**247.485,00**	**261.583,00**

Appendix Table 6: Civil Work components of the rehabilitation project

Specification	Remarks
Border Ban	Maputo fishing port is delimited in south end by a masonry wall with two meters of height on which metallic elements will be put to the height of half suitable in accordance meter in the drawings. The interior face of the wall will be towed and it will take painting of plastic of colour to choose.
Parking	The parking will be executed with pavement in cement covering with a thickness of 0,10 on a box of base of 0,20. All construction phases will be executed according to the specifications. The delimitations of the areas of parking in accordance display the plant; they will be executed with "lancil L B 15" in concrete.
Drainage	The drainage of the facilities will consist of the replacement of the existent system.
Pave General	The existent pavement, in blocks, will be removed completely, and substituted for other, also executed in concrete blocks, on a layer of thick sand and stone 3/8", in a thickness of 10cm, above the structural flagstone.
Flagstone of Board of the bridge's forehead	The existent flagstone will be removed and substituted for other in simple concrete of the class B20, on a layer of "Toutvenant" moisturized and compacted properly. The flagstone will take a thickness of 15 cm.
Beam of the bridge's forehead	This beam will be in armed concrete, and it will be according to the previous static system. It will be on the structural flagstone and fastened to this through reinforcement steel. The flagstone will be peeled in its board beside the sea, for the reinforcement fixation. The cover of reinforcement steel will be of 5 cm.
Piles of the bridge-wharf	Because the section lost by the piles of the bridge-wharf and the reinforcement steel, it will be peeled and cleaned with compressed air, than filed with concrete class B30, and emended the reinforcement steel where it necessary.
Bumper for vessels	The whole system of bumper for vessels, vertical and horizontal, will be renewed being the horizontal ones done in wood that will be fastened to the flagstone through screw of steel with diameters of 35 mm. The vertical ones will be of rubber, to specifying, that will be fastened according to details of the drawing. The wood bumpers will be treated with material to protect it and resistant to salt water, while the one of rubber will be according to the manufacturer's specifications.
Steel anchorage sets	The steel anchorage sets will be done with capacity of 20 Ton, and fastened according to details of the drawing. These sets will be in steel, and they will be separate amongst themselves of 23 m. They should be painted and protected against the corrosive effect of the salts.

Appendix Table 7: Civil work components of the rehabilitation project

Specification	Remarks
Tracks	The existent tracks in the bridge-wharf of Maputo fishing port, excluding the one of cranes, will be removed completely. The tracks of cranes will suffer a substitution of joints screws, and his bed will be pricked and regularized with cement. In the ends they will take crane bumpers done in tracks duplicated according to details of the drawing.
Boxes of Inspection	The inspection boxes will be providing of new covers in sheet irons and, with dimensions according to the drawings.
External Wall	This wall will be executed with duplicated masonry, with 40 cm wide and 90 cm height. Metallic elements will be put to the height of the wall, according to the drawings, with 1, 90 m. It will take piles separated 5 m, with 2,8 m high and square section 40x40 cm.
Water Tank	It will be constructed with 80m³ of capacity, to increase the actual capacity of the Maputo fishing port
Dredge	Will be taken effort to dredge an area of fishing port, according actual technology applicable in Mozambique. The dredge will be set to achieve 4 meters.
Refrigeration and Cool System	This system will take three refrigerators, according with the specific project available in which will be set cool equipment as shown in properly drawings. The list of equipment required is: 1) Compressor MYCOM CUT F42 WA-1200 2) Condensate set MEF-40AN 3) Evaporator 5/8 C1220T ALFIN 4) Oil Separator 5) Liquid Deposit 450x2200 Lmm 6) Water pump 65 LPD 51,5 7) Water pump 50x40 FS4 H5,75
Cranes	New cranes will be set to replace the old one. It will be with capacity of 6 Ton.
Generator	New generator will be set to replace the old one in Maputo fishing port with a power of 568 Kva. This generator will be the type Caterpillar with CAT engine model 34121 Diesel.
Final Considerations	The execution of all of the details presented in the execution of the work will respect the most meticulous technique precepts and art of well construct; All of the works placed in the present Descriptive Memory should be executed in agreement with the Notebook of responsibilities and drawings of the project and, respecting the norms and legislation in use in the Republic of Mozambique, not should constitute reason to the bad execution for the contractor, of any omission here content.