

Tanzania Mtwara Development Corridor
(Mtwara port and Economic Development Zone (EDZ) development plan)

Study Report

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Engineering and Consulting Firms Association, Japan

Japan Development Institute (JDI)



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Pictures



Sky view of the Mtwara Bay



Meeting with Mtwara Port Authority



Mtwara port



Mtwara port cargo handling facilities



Mtwara port cargo handling facilities



Fisherman's Wharf near Mtwara port

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Abbreviations

AfDB	:	African Development Bank
CNG	:	Compressed Natural Gas
DFPCL Limited	:	Deepak Fertilizers and Petrochemicals Corporation
DMI	:	Dar es Salaam Maritime Institute
DOM	:	Dodoma
DRC	:	Democratic Republic of Congo
DSM/DES	:	Dar es Salaam
DWT	:	Deadweight Tons
EDZ	:	Economic Development Zone
EIA	:	Environmental Impact Assessment
EPZ	:	Export Processing Zone
FAO	:	Food and Agriculture Organization of UN
F/Y	:	Financial Year
GDP	:	Gross Domestic Product
ICD	:	Inland Container Depot
IMO	:	International Maritime Organization
JBIC	:	Japan Bank for International Cooperation
JICA	:	Japan International Cooperation Agency
KPA	:	Kenya Port Authority
LNG	:	Liquefied Natural Gas
MCC	:	Millennium Challenge Corporation
MEP	:	Mtwara Energy Project
MID	:	Ministry of Infrastructure Development
MOFA	:	Ministry of Foreign Affairs
MSCL	:	Marine Services Company Limited
MtDC	:	Mtwara Development Corridor
MT	:	Metric Ton
NBMM	:	National Board for Materials Management
NCC	:	National Construction Council
NDC	:	National Development Corporation
NIT	:	National Institute of Transport
ODA	:	Official Development Assistance
PAX	:	Passengers
PGM	:	Platinum Group Metals
PPIAF	:	Public Private Infrastructure Advisory Facility
PPP	:	Public Private Partnership
SADC	:	Southern African Development Community
SDI	:	Spatial Development Initiative
SEZ	:	Special Economic Zone
SOG	:	Songea
SSATP	:	Sub Saharan Africa Transport Policy Programme
SUMATRA	:	Surface and Marine Transport Regulatory Authority
SWAG	:	Sumbawanga
TAA	:	Tanzania Airports Agency
TAG	:	Tanga
TANESCO	:	Tanganyika Electric Supply Company Limited
TANROADS	:	Tanzania National Roads Agency

TAZARA	:	Tanzania Zambia Railway Authority
TCAA	:	Tanzania Civil Aviation Authority
TDC	:	Tanga Development Corridor
TEU	:	Twenty-foot Equivalent Unit
TIC	:	Tanzania Investment Center
TICS	:	Tanzania International Container Service
TMA	:	Tanzania Meteorological Agency
TPA	:	Tanzania Ports Authority
TPDA	:	Tanzania Petroleum Development Corporation
TRA	:	Tanzania Revenue Authority
TRL	:	Tanzania Railways Limited
USAID	:	United States Agency for International Development
VLCC	:	Very Large Crude Carrier
WB	:	World Bank

Basic Background Data of Tanzania

No.	Particular	Data/Information
1.	Location	East Coast of Africa between latitudes 10S and 110s and between longitudes 290E and 410E.
2.	Share border with	Kenya and Uganda to the North, Rwanda, Burundi and Democratic Republic of Congo to the West and Zambia, Malawi and Mozambique to the South.
3.	Total area of Tanzania	939,701 km ² of which 58,100 km ² is water representing a part of Lakes Victoria, Tanganyika Nyasa and several other smaller lakes, rivers and sea.
4.	Capital City	Dar es Salaam with an estimated population of 3.0 million.
5.	Number of Regions	21 regions in Tanzania Mainland and 5 regions in Zanzibar
6.	Number of Districts	120 in Tanzania Mainland
7.	Arable Land	15.1 million hectares
8.	Cultivated Land per Year	5.1 million hectares
9.	Rainfall	950 – 1500 mm per year
10.	Population	About 39.8 million people in 2007.
11.	Other major regions with their estimated population (2005)	Mwanza (3,207,000), Dodoma (1,792,000), Arusha (1,433,000), Tanga (1,722,000) and Mbeya (2,211,000).
12.	Average population density of the country	35 inhabitants per square kilometer (inh/km ²)
13.	Extremes of average population density of the country	Dar es Salaam 2,167 inhabitants/km ² to 12 inh/km ² in Lindi region.
14.	GDP at constant 2001 Prices	Tshs 13,801,849 millions (2007)
15.	GDP Growth rate	7.1% (2007)
16.	Transport growth rate	6.5% (2007)
17.	Mining and Quarrying growth rate	10.7% (2007)
18.	Hotels and Restaurants growth rate	4.4% (2007)
19.	Total Road Network	85,541 Km
20.	Railway Network	TRL2,970Km (with 1m gauge)TAZARA975Km(Tz section) with1.067m gauge Total Railway Network 3,945 Km
21.	Major Airport	JNIA, KIA Mwanza and Arusha
22.	Aerodromes Network	There are more than 200 airports in Tanzania including airstrips serving domestic and international traffic. The government manages about 63 of them.
23.	Ports Network	3 major seaports namely DSM, Mtwara and Tanga ports. Smaller seaport facilities at Kilwa, Lindi, Mafia, Pangani and Bagamoyo. There are also 3 major inland waterways ports at Mwanza, Bukoba, Musoma and Kigoma.
24.	Major Mountains	Mt Kilimanjaro and Mt Meru
25.	Major Rivers	River Rufiji, River Wami and River Ruvuma

Source: MoID/ TANCOT House

Introduction

Japan Development Institute (JDI) has been actively involving in the Mtwara Corridor development project in the past three years as a part of “Tanzania Mini-Tiger Pan 2020”, which was carried out by JDI in cooperation with the Presidential Office between 2004 and 2005. JDI also carried out a Master Plan/Feasibility Study for Muchuchuma Coal and Lilinga Iron Ore development project in 2006, and proposed a development of coal and iron ore with several related investment projects including the Mtwara Port development. Due to an increase in resource price from 2006 to 2008, proposed iron ore and coal development projects has been given wide attentions. In fact, several investors have shown keen interests in the possibility of developing resource based industries. Therefore, as an initial step, the development of the Mtwara Port and Economic Development Zone (EDZ) is very important for the proposed resource based investment projects since the port and adjacent EDZ will become the key supporting infrastructures of these projects.

In the past few years, JDI discussed the possible expansion of the Mtwara Port and the development of the surrounding vast land (about 2,600 ha) as EDZ with Tanzania Port Authority (TPA), and agreed to jointly carry out a Pre-Feasibility Study in the early 2008. Based on this agreement, JDI dispatched a study mission headed by Dr. Kobayashi and the following members:

- 1) Dr. Shoichi Kobayashi: Project Leader and Chief Economist
- 2) Mr. Chinpal Rauniar : Transportation and Logistic Expert
- 3) Mr. Sumiyuki Otsuki: Regional Development and Market Analyst
- 4) Ms. Yumiko Ota: Social and Environmental Impact Analyst

JDI Mission Schedule:

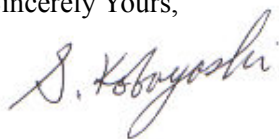
- 1) Mission Duration: July 19-August 1, 2008
- 2) Dar es Salaam: July 19-23 and July 28- August 1
- 3) Mtwara: July 24-27

During the study mission, JDI visited many related Tanzanian Government Offices and received relevant information and data. Opinions on the development of the Mtwara Port and SEZ were also exchanged. We are thankful for many officials who supported our study. We would like to express our special thanks to the following officials:

- 1) Tanzania Port Authority
- 2) National Development Corporation
- 3) Ministry of Industry, Trade and Marketing
- 4) Ministry of Infrastructure Development
- 5) Ministry of Finance
- 6) Ministry of Energy and Minerals

Finally, we are hoping that this Pre-Feasibility Study will be useful for the Tanzanian Government to develop the Mtwara Port and Corridor.

Sincerely Yours,



Shoichi Kobayashi Ph.D.
Chairman of Japan Development Institute (JDI)

Executive Summary

This study report focuses on the development of the Mtwara port in southern Tanzania and the Mtwara Development Corridor (about 1,000km from east to west) where the development and growth potential are high but has been left behind from the economic development up to now. In this development corridor, industrial development and a promotion of the private projects namely 1) agriculture and forestry resource development (soybean, maize, cassava, Jatropha, and afforestation for the paper manufacture pulp) and 2) mineral resource development (iron ore, coal, and natural gas and nonferrous metals such as nickel, uranium and lime stone) are planned with utilizing vast unused land and the given natural environment. Moreover, the corridor connects three countries (Mozambique, Malawi, and Zambia) in the surrounding area. In this line, the role of the Mtwara port as an importing and exporting gateway of trade goods from this corridor is important for the development of the corridor's potentials, as well as the surrounding country's economy and trade. For this purpose, economic cooperation and assistance for private business activation and foreign trade promotion in the corridor is encouraged, and the development of the "Unity Bridge" that connects Tanzania with Mozambique has started as a symbolic infrastructure development. The road of 55.1km between Masashi - Mangaka is also examined by the support of the Japanese Government as JICA technical assistance, and the construction is expected to be executed by the yen loan as a basic infrastructure development project that connects the corridor inland.

The business proposals and plans of the above-mentioned projects along the corridor, which include (1) gas, (2) fertilizer, (3) cement, (4) forest resources, (5) agricultural resources, (6) coal, and (7) iron ore and steel manufacture, have already been submitted to one of the institutions among Tanzanian Port Authority (TPA), Nation Development Corporation (NDC), and Tanzania Investment Center (TIC). However, the situation of the region's logistic infrastructure is still insufficient and the improvement is seen to be a critical factor for the feasibility of those businesses. Therefore, the improvement measures and development of the Mtwara port becomes an important focus and premise for the proposed business projects.

A present, the Mtwara port is just handling 100,000 tons of freight out of its handling capacity of 400,000 tons. In this sense, the Mtwara port just plays the role of a local harbor with 9.8m water depth, and handles daily commodity, cement and agricultural goods such as the cashew nuts which only make the port busy in a particular season. However, the situation could be changed dramatically when the production of mining from the corridor and oil and gas near the port were started in near future, the demand for the gateway of the products will become increased. In fact, the development of gas-related industries has been proposed in the Mtwara bay, and the operation is planned to launch in 2 to 3 years.

Based on this study, a mid/long-term demand forecast of the Mtwara port is expected to become about 3.5 million-ton in 2015, and 30 million-ton in the long term. This implies that there is a remarkable mismatch of the current state and prospective needs in the future. Moreover, TPA plans to develop the hinterland of 2,650 hectares as Economic Development Zone (EDZ) as an export and trade base that is integratedly supported by the port function, as well as by the preferential treatment for the proposed investing firms in the Mtwara port. However, currently there is no master plan of the port and seaside industrial estate development to proceed such a development idea. Without a proper plan, there comes a concern that various industries will flood in the coastal industrial zone without proper planning which will only result in a dysfunction of port and inefficient industrial operations. In this sense, there is an urgent need to formulate the development master plan of the coastal industrial region including a development

plan of port and zoning of industrial estate as well as a policy to facilitate the Mtwara port development. This project finding/formulation study was, therefore, conducted with a consensus among the Tanzanian related parties on the need to formulate a master plan for the Mtwara port and sea side industrial estate.

For this purpose, the objectives of this study lie in (1) an evaluation of the necessity and the validity of the Mtwara port development plan, (2) the formation of ODA projects related to the port development. Moreover, (3) the investigation and the analysis as to how the master plan and development policy should cast impacts on the development of the port and region shall be examined. As for the development scheme of the entire Mtwara development corridor (mineral resources, road, railway, port, communication, and electric power), it is provisionally proposed to be conducted in a cost sharing model which follows Public Private Partnership (PPP) scheme in which 30% is financed by the public sector, and the remainder is injected as private investment.

In the end, this port development project can be regarded as a practical model case to implement PPP project of resource and infrastructure development in Africa. Consequently, the request letter from TPA to the Japanese Government for assistance to formulate the master plan of the Mtwara port and seaside industrial estate (EDZ) and sequential capital cooperation has been issued through this study in July 2008.

1 Background and objective of project

1.1 Development concept of Mtwara Development Corridor

The Mtwara Development Corridor (MtDC) is conceptualized under an initiative undertaken by the Southern African Transport and Communications Commission of the Southern African Development Community (SADC) in 1992. The SADC member countries of Tanzania, Malawi, Mozambique, Zambia agreed to work together for realization of the Mtwara Development Corridor, which is aiming for a facilitation of the regional integration with reducing poverty by stimulating broad economic growth through expanding industrial production and enhancing exports from the corridor.

Mtwara, Lindi, Iringa, Mbeya, Rukwa and Ruvuma are six regions in Tanzania which are composing the Mtwara Development Corridor. The regions in the corridor as a whole have approximately 6.4 million population. The regions are recognized as land-, agro- and mineral- resource rich area, and are assuming an important role catering for Tanzania's breadbasket. Among regions, the Mtwara Region is regarded as a corridor's gateway with a port connecting to overseas and with the "Unity Bridge" on the Ruvuma River to link Tanzania and Mozambique.

In the Mtwara Development Corridor, Mchuchuma coal and Liganga iron ore exploration project has been a centerpiece. From the coal mine, a thermal power plant project has been proposed, and the 400 MW capacity power generation from the plant has already been integrated in Tanzania's main electricity supplier TANESCO's future power supply plan. Iron ore deposit is supposed to contribute to establishing domestic iron and steel related industries in Tanzania where most of the steel products are imported. Besides, a discussion on potential regional development projects along the corridor other than the mine exploration is presented to enable bringing considerable movement of goods and socio-economic benefits to the region.

However, in reality, the projects have not advanced well until quite recently. In pursuing such development, the main constraint was basically the lack of availability in reliable transportation infrastructure such as road, railway and port in the Corridor. The region is endowed with rich natural resources, favorable environmental conditions and a broad unused land. Therefore, an installation of transportation channel of those resources has been a much demanded instrument which is necessary to materialize the corridor development.

In addition, there is truly another factor to be considered. Having the present surrounding situation been changed along with the global demand fall in industrial raw materials (severely impacted from the current global financial/economic crisis), the corridor's project prosperity and development feasibility can be also severely influenced. Accrued from the sharp fall in the mineral resources price, Mchuchuma and Liganga mines cannot be also attractive taking account of putting on a heavy investment to construct transportation infrastructures to remove resources to sea coast and, ultimately to domestic and overseas market. However, since the corridor has a great potential for other private business projects from other mineral exploration to agro-forestry projects, as they are discussed in the following chapter, their products evacuation channel starting at the Mtwara port development still comes under the spotlight.

In this report, reflected from the supporting background to boost the Mtwara Development Corridor, the projects profile on related mineral and agro-forestry shall be studied, and subsequently, requirements for the development plan of the Mtwara port and sea side

industrial estate shall be discussed.

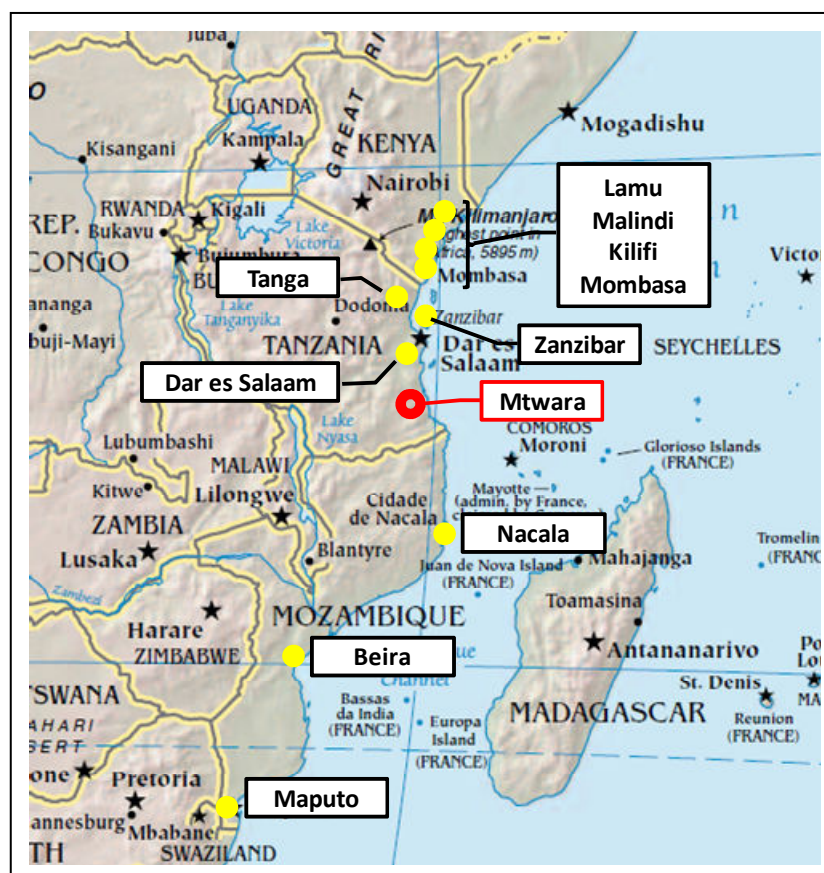
1.2 Trend of port developments in Tanzania and neighboring countries

Before going further on describing the nature and prospect of the Mtwara port, in this section, the role of the Mtwara port among the East African regional major ports shall be observed.

Ports along the East African coast have been prospered along the gold and slave trade by the Arabs since 11th century. By the time Portuguese arrived in 15th century, East Africa's trading links were stretching from the Red Sea and Persian Gulf to China. Through these trade links, each port has developed and improved its capacity, and established its own character. Upon the development scenario and prospective role of the Mtwara port, the development trend of neighboring ports should be understood to study the anticipated future traffic as well as the risk of cargos/containers shifting from the Mtwara port to different ports.

Although major ports along the East African coast—from Mombasa to the north to Maputo to the south—will be explained in the following chapters, because of its proximity as well as the similarity of the character, the port improvement project at the Nacala port in Mozambique and the Tanga port in Tanzania especially need to be closely examined with a careful attention.

Figure. 1-1 Major Ports in East Africa



Source: Study team

1.2.1 Mombasa

Kenya, the leading country in terms of economic performance in East Africa, has four main ports, which are Mombasa, Kilifi, Malindi, and Lamu. However, all of Kenya's cargos and containers related to international trade are handled at the Mombasa port. The port is managed by Kenya Port Authority (KPA), and has a 10m depth of the wharf. The cargo handling volume in 2003 reached 12 million tons which increased about 50% in the past 5 years. Among 12 million tons, about 2.4 million tons are transit cargos for neighboring countries such as Uganda, Rwanda, Burundi, and Zaire. The container handling volume marked about 380,000 TEU in 2003 which was 60% increase in the past 5 years. However, this amount was more than the current Mombasa port's handling capacity. In addition, since Mombasa is the hub for second-hand car trade, scattered cars at the terminal are impeding the smooth operation of loading/unloading of cargos and containers. Therefore, a major improvement plan has been planned and undertaken through JICA.

From April, 2008, a new upgrading project for the Mombasa port costing about \$235 million, which is funded by Japan Bank for International Cooperation (JBIC, at present JICA) has started. The improvement project involves, a construction of a new container port at Kipevu, an access road, dredging of the port's entrance channel to an average depth of 15 m and widening the turning basin. This new improvement, if completed, could double the amount of cargo passing through the Mombasa port. In addition, an automated operation system was introduced in July 2008, which is expected to speed up operations and cargo movement, and reduce overhead costs at the port since the new system allows clients to monitor the status of documents and cargos online. What is also remarkable is that Kenya decided to operate the Mombasa port for 24 hours, 7 days a week from the end of August, 2008, as well as to remove unnecessary police blocks which have been delaying the transport of cargos. This new effort will reduce transaction time and costs to bring goods through the Mombasa port for inland countries like Rwanda, Uganda, and Burundi. Therefore, provided all three efforts mentioned above were well performed, it is certain that the status of Mombasa port as the region's major gateway will be further lifted.

1.2.2 Tanga

Tanga port is the second largest port in Tanzania after the Dar es Salaam port. It is a good natural harbor, although lacking a deep-water berth. As the result, lighters are used to bring goods to and from the shore. In 1970s-1980s, the port experienced an increased handling amount due to large amount of imports required for industrial development in regions between Arusha and Tanga, together with congestions in the Dar es Salaam port. The trend has gradually faded away because of the enterprises' closure in the Tanga corridor, and increased advantages in the Dar es Salaam port. As each ship increased its carrying amount in 1990s, it was more economically efficient to use Dar es Salaam which has high frequencies of ship connections in many directions. However, today, although still a large percentage of goods coming/going from Tanzania go through the Dar es Salaam port, this trend will likely to change together with the improvement project of the Tanga port.

The improvement of the Tanga port was encouraged partially by the congestion in the Dar es Salaam port, but also from the potentiality of the Tanga Development Corridor (TDC). TDC was designed to link the Tanga port to the Great Lake Zones and to the border with Uganda and Kenya via central railway line running from Dar es Salaam to Kigoma, and the Tanga line from port town to Moshi. TDC is an integral project of a rail-marine transport corridor which intends to connect Tanga-Arusha-Musoma-Port Bell/Jinja in Uganda, and currently being initiated by the East African Community. Along this corridor, numbers of new industrial projects are under planned, such as Lake Natron Soda Ash Project being

carried out by TATA Chemicals and National Development Corporation (NDC) of Tanzania, Pare Copper project, Gemstone Mining project, and a development of Special Economic Zone (SEZ) which is expected to accommodate many other industries. In order to make TDC attractive to these expected investors, infrastructural development would not be limited to Tanga port and railway development, but also extended to aviation, road, logistics, communications, and energy facilities improvement.

In 2004-05, the Tanga port's utilization rate reached to 99.7% of its 500,000 ton/ year handling capacity. This is largely due to increasing exports fuelled partly by privatization process. To meet this rising demand, and even more expected demand with TDC project initiation, the port improvement projects are planned in that 1) construction of a permanent quay (90 ha) from direct ship-berthing at Mwambani and SEZ industries, 2) rehabilitation of quays (No.1 and No.2), 3) procurement and rehabilitation of pontoons, tugs, boats and lighters, and 4) construction of a bagging plant are being proposed.

In addition to this port development, there is also a plan to process a concession of the operation of the existing railway to increase the service quality. The recent efforts already started in railway improvement are also likely to fasten this process. The World Bank disbursed a \$33 million loan for the initial rehabilitation of the railroad and rolling stock, "which comprises 90 locomotives, 1,280 freight wagons and 110 passenger coaches". Tanzania Railways Ltd (TRL) entered a partnership between India's Rites consortium and a state-owned Reli Assets Holding Company. Rites has bought 51% of the share of the phased-out Tanzania Railways Corporation, while the government of Tanzania retains the remaining 49%. TRL will run the rail under a 25-year concession under the supervision of the Surface and Marine Transport Regulatory Authority.

In this line, Tanga port can have a similar corridor development plan with utilizing already existing infrastructures.

1.2.3 Dar es Salaam

Together with the Tanga Port, Dar es Salaam port handles about 95% of cargos/containers related to international trades in Tanzania. However, since the Tanga port is only used for loading/unloading, almost all cargos/containers are concentrating in Dar es Salaam. The depth of the Dar es Salaam port is constrained to 9-10.5m, besides dredging is a necessary task every year. The Dar es Salaam Container terminal (managed by Tanzania International Container Service: TICS) handles containers at an average rate of 250,000 TEUs per annum. During the last 3 years, container throughput has been increasing at an average rate of 19.5% per annum compared to earlier projections between 5 – 10 %. During the year 2006, the terminal handled 255,880 TEUs, which is higher than the terminal capacity. The upsurge is primarily due to increase in transshipment cargo. The average growth rate of import container was 15.5% and that of export was 11.9% per annum. The cargo handling volume was about 5 million tons in 2003. Among this, about 30% of the handled cargos are for either Congo or Zambia.

This situation illustrates that, just like the Mombasa port, the actual handling amount is exceeding the capacity, which as a result forces vessels to line up in the outer bay to unload its containers/cargos. In the end, large size vessels which usually cost a lot just to let engines idling are incurring a large amount of loss. Therefore, the Mtwara port could be proposed to be used as a transit port for large size vessels to unload cargos/containers which later to be picked up by smaller size vessels.

In addition to the divide of the cargo/container flow from Dar es Salaam port, TICS decided to invest \$62 million to expand the container terminal in March, 2008. Another \$52 million will be invested in equipments and \$10 million for further improvement in the next five years, together with the container terminal construction. However, expanding the terminal is not enough to soften the congestion. The current congestion is also due to a slow pick-up rate of containers by road and rail, which resulted in a state that more than 300 TEU cargos are left in the port for more than 21 days. These cargos occupy yard space and reduce yard capacity levels, pushing the terminal to the current level of congestion. Simplifications of custom clearance is also in process, since currently 30% of local import containers arrive without documentation, and 40% of all documents are at least rejected once by officers because of an incomplete information. In 2007, Tanzania experienced a 280% container throughput growth since 1999, but still expected to have 380,000 TEU for 2008. To ease the congestion more efficiently, consequently, the improvement at the Mtwara port is expected so that vessel flows can be divided between two ports.

1.2.4 Nacala

Nacala is also known by its natural deep water harbor sheltered from the ocean, just like the Mtwara port. Therefore dredging is not required, and no size limit exists for ships. The port is jointly operated by Mozambique's parastatal railway and port authority called CFM and 3 private firms. The total cargo and container handling volume are 740,000 tons and 27,000 TEU respectively in 2001. The only neighboring country that uses the Nacala port as transit is Malawi. Although the current handling volume is comparatively low, the future expectation is large. In 2005, the Nacala Corridor Development Project, including the improvement of the Nacala port was launched for 15 years concession period.

Nacala region also has a corridor development plan to explore regional agro-forest and mineral projects with utilization of railway and port. If the Nacala Corridor Development Project progresses better than the Mtwara Development Corridor Project, because of its proximity to the Mtwara port, there might be a chance that cargo/container traffic that should have been arrived to the Mtwara port may be shifted to the Nacala port.

1.2.5 Beira

The Beira port is the second largest port situated in the second largest city in Mozambique. The interesting part of this port is that it handles more cargos/containers for neighboring countries like Zimbabwe, Malawi, and Zambia, than its own country's. This is mainly because of the easy access to neighboring countries. The Beira port connects to Zimbabwe and Zambia through roads and railways and with Malawi through roads (railway under construction). The operation of the port is conducted by JV between private firms (67%) and CFM and the government (33%). However, the port is tolerating an inconvenient contact with the open ocean. For ships to actually reach the terminal, they need to pass through the 30km waterway (60m width) that needs constant repair. Therefore, the port is likely to possess a limited capacity as an international port in the future too. The cargo handling volume was 2.7 million tons in 2002 but decreased to 2 million in 2004.

1.2.6 Maputo

By situating in the capital city of Mozambique, the Maputo port is the largest port in Mozambique. The depth is about 8-11m, and operation is jointly carried out by public (49%) and private (51%) since 2005. The cargo handling volume reached to 6.2 million tons in 2005, largely because of the improvement in the facilities happened together with the

start of public-private consortium. Since the port is connected to Johannesburg in South Africa through the Maputo Corridor, and to Zimbabwe and Swaziland through railway, it has a large potentiality to further grow in the future. In fact, the new \$274 million investment project launched in 2007 to further improve the Maputo port is quickly pushing it to the position of a vibrant alternative to the Durban port in Kwa-Zulu Natal for handling large cargo volumes from the Southern African Development Community (SADC) region. The new project involves a plan to build new bulk terminal facilities, container holder facilities, sheds and further infrastructure developments to reach a handling volume of 18 million tons in 2008. Because Maputo is only 581km away from Johannesburg by rail while Durban is 750km away, once the project is completed, a large amount of cargo is expected to transit through Maputo. In fact, today, already about 56% of all cargo exports through Maputo are from South Africa.

Ports along the East African coast are becoming busier with the growth of its own country and inland countries without a port. At the same time, East African countries are getting more integrated through improvements in transportation infrastructure like railways, roads, and bridges. Currently, the Mtwara port is under utilized compared to its potentiality. Thus, once an improvement in facilities was completed with impetus from private business activities, the port can be the region's major port. Consequently, to understand what improvements are needed, the current state of the Mtwara port will be discussed in the next section.

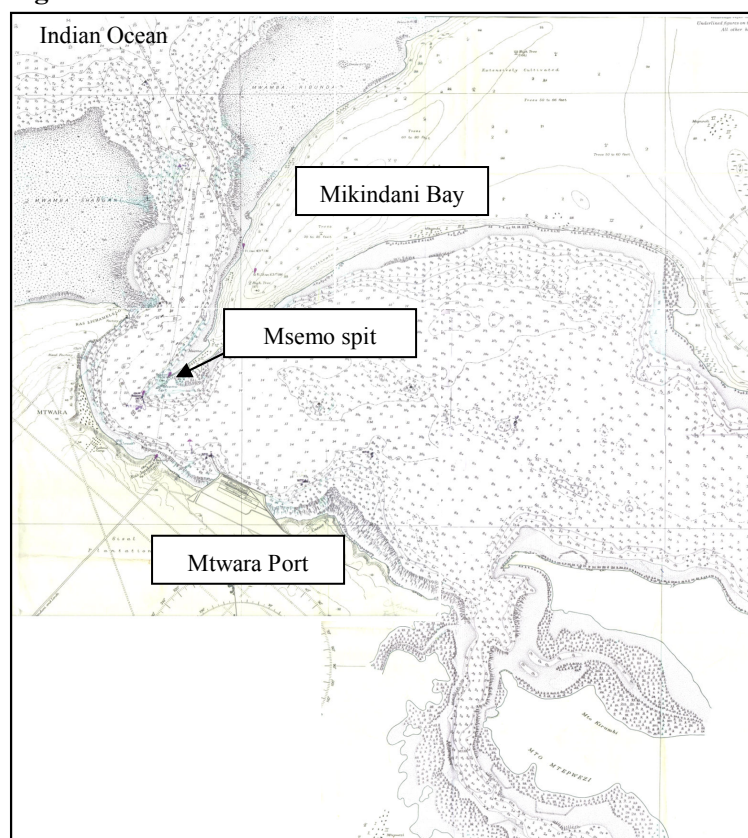
1.3 The current state and cargo handling of the Mtwara port

(1) Physical state

The Mtwara port is located at 580 km southward from Dar es Salaam, and was initially developed for the groundnuts export base in the 1950s. In the scale of cargo handling volume, the Mtwara port is currently ranked at third place after Dar es Salaam and Tanga ports. However, it has advantages and potentials over those two sites by being located inside of the Mikindani Bay which is forming a naturally protected harbour by the overhanging peninsular.

Although the current quay is dredged to -9.8m chart datum, the notable worthy advantages are the naturally gifted deep water depth and the large cove in front of the port, which is consisted of 2.7 km² with the water depth of more than 10 Fathoms (18.3 m), 3.6 km² with the water depth of more than 6 Fathoms (10.8 m). On the other hand, the water depth of Dar es Salaam is only 10.5 m and the area is no more than half of the total cove of 3.5 km². However, the utmost constraint of the Mtwara port is a narrow entrance where Msemu spit is arched out into the channel. The channel is also sharply turned at the angle of 77 degree, which limits the entrance of vessels to 175 m of 20,000 DWT class. The length of quay wall is 385 m for 5 berths with the depth of 9.85 meters. Thus, the present Mtwara port's capacity is limited to 20,000 DWT class vessels at a maximum level, despite the worthy advantages of well protected large waters with deep water depth.

Figure. 1-2 Marine chart of Mtwara harbour



Source: Cornes & Company Ltd.

(2) Cargo handling

The Mtwara port is capable of handling 400,000 metric tons (MT) of imports and exports per annum. The port is mainly designed to handle conventional cargos. As for port facilities, 3 mobile cranes of 25 tonnes, 15 tonnes and 4 tonnes; 4 tractors, 18 trailers, 8 forklifts and 1 front loader of 7.5 tons are installed. Marine crafts are served by 1 pilot boat and 1 mooring boat. However, the port does not have specialized equipment for handling container traffic because the volume at present does not justify such investment. On the port ground, there are four (4) transit warehouses with a total storage capacity of about 15,000 tons.

The average annual cargo throughput at the Mtwara port for the past 5 years is about 150,000 MT which is only 37.5% of its capacity of 400,000 metric tonnes. The annual figures and related freight data are shown below:

Year	Imports	Exports	Dwt (deadweight tons)	
			Total	
2002 - 03	77,898	91,667	169,565	
2003 - 04	73,301	78,808	152,109	
2004 - 05	60,169	83,457	143,626	
2005 - 06	57,058	76,915	133,973	
2006 - 07	62,941	80,131	143,072	

Source: Tanzania Ports Authority

Table. 1-2 Shipping Traffic (Ship Calls)

Year	Deep Sea	Coastal	Total
2002 - 03	37	137	174
2003 - 04	36	93	129
2004 - 05	41	114	155
2005 - 06	29	96	125
2006 - 07	31	84	115

Source: Tanzania Ports Authority

Table. 1-3 Container Traffic (No. of Boxes)

Year	Import	Export	Total
2002 - 03	4,601	4,411	9,012
2003 - 04	3,735	3,722	7,457
2004 - 05	3,615	3,336	6,951
2005 - 06	3,314	3,288	6,602
2006 - 07	4,170	3,804	7,974

Source: Tanzania Ports Authority

Table. 1-4 Raw Cashew nut Export (tons)

2002 – 03	2003 – 04	2004 – 05	2005 – 06	2006 – 07
76,257	62,507	70,504	63,574	63,711

Source: Tanzania Ports Authority

Table. 1-5 Shipping Traffic (Ship Calls)

	Deep sea	Coastal general cargo	Coastal Tankers	Total
July '07	2	4	-	6
Aug	-	6	1	7
Sep	-	5	-	5
Oct	3	3	1	7
Nov	-	3	-	3
Dec	5	2	-	7
Jan '08	8	3	1	12
Feb	4	4	-	8
Mar	-	3	-	3
Apr	-	3	-	3
Total	22	36	3	61

Source: Tanzania Ports Authority

Table. 1-6 Principal Export Commodities Handled at Mtwara Port (tons)

No.	Commodity	2003	2004	2005	2006	2007
1	Cassava Roots	-	-	-		
2	Beans and Soya Beans	-	583	1,225	5,540	5,540
3	Cashew nuts Raw	54,581	65,123	24,432	76,412	67,711

4	Simsim	4,168		2,442	3,596	3,596
5	Cashewnuts Kernels		32	3,275	4	2,441
6	Groundnuts	-	-	-		
7	Sisal	-	-	-		
8	Other General Cargo	8,715	16,004	7,388	7,083	4,450
Total Exports		67,464	81,742	38,762	92,635	80,131

Source: Tanzania Ports Authority

Table. 1-7 Principal Import Commodities Handled at Mtwara Port (Tons)

No.	Commodity	2003	2004	2005	2006	2007
1	Bulk Oil					
	Bulk Oil	14,730	15,134	11,604	10,805	5,436
	Sub – Total	14,730	15,134	11,604	10,805	5,436
2	General Cargo					
	Maize and Maize Meal	2,741	3,426	759	1,186	115
	Rice	5,532	5,216	1,040	661	126
	Beans	139	25	21	-	
	Sugar	683	1,469	941	501	
	Wheat and Wheat Flour	963	4,682	1,649	2,090	1,430
	Bear	1,250	549	216		
	Empty Gunny Bags	223	94	326		
	Cement	13,335	15,904	19,718	16,944	30,849
	Other General Cargo	35,349	12,934	18,518	24,717	26,198
	Sub – Total	60,215	44,934	43,189	46,099	57,724
	Total Imports	74,945	59,433	54,793	56,904	64,160

Source: Tanzania Ports Authority

Table. 1-8 Shipping Traffic at Major Ports - Deep Sea Ships

No.	Category	Dar es Salaam		Tanga		Mtwara	
		2006	2007	2006	2007	2006	2007
1	Dry Cargo						
	Number of Calls	905		101		29	
	Average Stay in Port (Days/Ship)	1		1.6		1.8	
2	Tankers						
	Number of Calls	158					
	Average Stay in Port (Days/Ship)	3.7					

Source: Tanzania Ports Authority

(3) Cargo handling equipment

Table. 1-9 Cargo Handling Equipment and Marine Crafts (by June 2007)

	Facilities	Dar es Salaam	Tanga	Mtwara
1	Cargo handling Equipments: Cranes			
	Portal Cranes	24	6	-
	Mobile Cranes	18	6	5
	Tower Cranes	-	1	-
	Ship to Shore Gantry Crane	3	-	-
	Rubber Tired Gantry Crane	9	-	-
	Rail Mounted Gantry Crane	1	-	-
	Floating Cranes	1	-	-

2	Operational Equipments			
	Tractors	74	6	8
	Trailers	150	22	18
	Forklifts	84	11	15
	Front Loader	22	3	1
	Crane Crawlers	1	-	-
	Reach Stacker	-	1	-
	Conveyors (Loading, Chain & Bert)	13	-	-
	Grabs	8	-	-
	Spreader	18	-	-
	Weighbridge	1	-	-
	Bucket Elevator	3	-	-
	Grain Hoppers	3	-	-
	Bagging Scales	6	-	-
	Dust Coll Unit	3	-	-
	Bag Unit Mobile	3	-	-
3	Marine Crafts			
	Berthing Tugs	6	-	-
	Lighter Towing Tugs	1	3	-
	Lighters	10	18	-
	Pontoons	9	14	-
	Labour Launches	-	2	-
	Pilot Boats	2	1	1
	Patrol Boats	5	1	-
	Mooring Boats	12	2	1
	Water Barge	1	-	-
	SBN Tender	1	-	-

Source: Tanzania Ports Authority

(4) Port land use

As for the port land use, at present, it is proposed that an extension of the existing quay wall toward both ends by 400 meters each. With this improvement, it is expected in effect that the volume of cargoes could be doubled. The total area reserved for an expansion is 80 ha. In addition, the Tanzania Ports Authority owns 2,650 ha land surrounding the Mtwara bay, and it is claimed to be developed as Economic Development Zone (EDZ).

(5) The expected role and major projects in the port area

As the port is geographically well located, the port may also be able to cater for the trading goods for neighboring countries of Malawi, Mozambique and Zambia, in the hinterlands, provided that a good inland transport network or road and railway is put in place. The potential may be also sighted as a role of transshipment port for cargoes originating from and destined to the Indian Ocean Islands of Mauritius, Seychelles, Comoro, and Madagascar.

Moreover, a number of private corporations have already stationed their business operations and developments in the Mtwara Development Corridor. And thus, the advancement of those new industrial activities in the region would surely put a demand on the port traffic. It is presumed, therefore, that the development plan of the Mtwara port should assist business operations with offering an ideal logistic channel. Consequently, with an integration of private sector's claims, the formulation of a port development master plan of Mtwara should

be pursued.

For this purpose, as major private projects which would directly or indirectly increase the throughput of the Mtwara port, the following projects are identified:

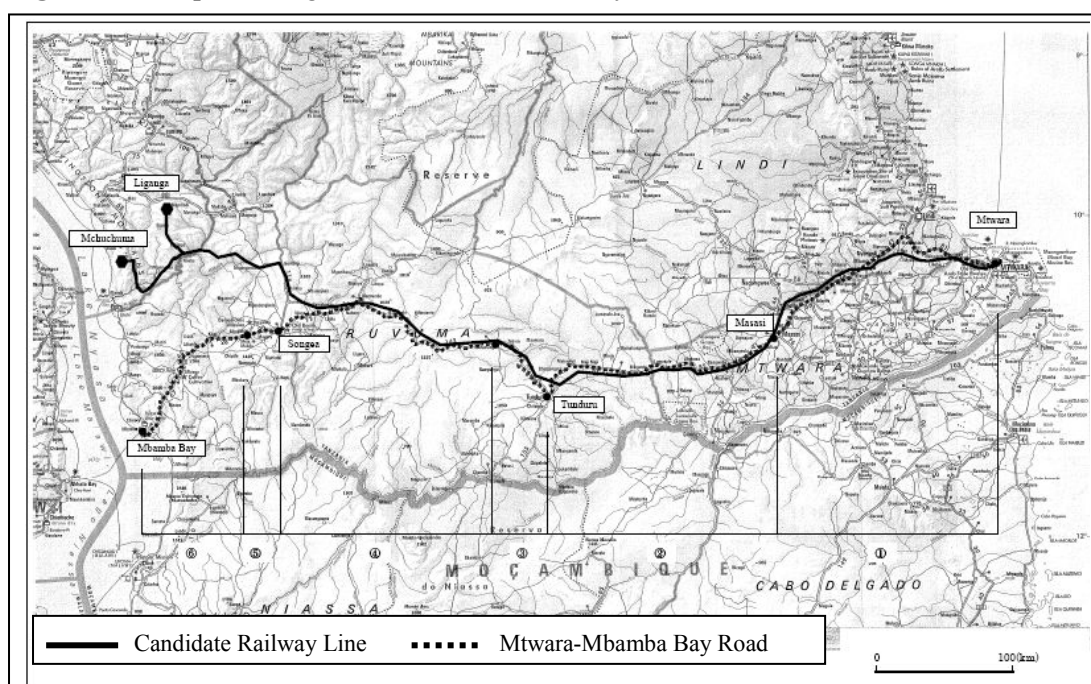
- Mnazi bay gas projects
- Fertilizer project
- Cement project
- The Liganga Iron ore project
- The Mchuchuma coal project
- Other mineral mining projects
- Agriculture, livestock, fisheries and forestry projects
- Ship-breaking project
- Railway line development project
- Economic Development Zone

The detail of the projects mentioned above shall be looked into further depth, and the estimated volume of products from each projects are forecasted in the following chapter.

2 Profile of private projects in the Mtwara Development Corridor

With the development of a modern port with sufficient handling facilities, the commodities to be named are expected to consist the potential traffic that would be generated along the Mtwara Development Corridor (refer to proposed railway alignment map), and the traffic would be directed to the region's sole port of Mtwara as a gateway for evacuation and transshipment. The volumes of such traffic from the potential projects are also given in the following section. For the purpose of forecasting future cargo traffic demand, the projects are classified along with the investment scale and timing into three categories of the short, medium or long term in the end.

Figure. 2-1 Proposed Alignment of Mtwara Railway Corridor



Source: Feasibility Study on Infrastructure Development for the Liganga Iron Ore and the Mchuchuma Coal Mine Development Project in Mtwara Development Corridor, 2006, METI

2.1 Current mineral resources development

2.1.1 Gas related

In the coastline of Mtwara, there are several on-going oil and gas exploration projects. Artumas Group and Tullow Oil inc. partnered with Aminax PLC are the main players. In Mnazi Bay field, locating in the south of Mtwara, estimated recoverable resource size of natural gas is 759 billion cubic feet.

Artumas has a power generation project from a gas of the Mnazi Bay. The Mtwara Energy Project (MEP) is comprised of 300MW gas-based power project (currently 16MW,) that will provide reliable, accessible and affordable electricity to end users in the Mtwara and Lindi regions. And yet the power demand is still limited in the region and the Artuman is considering developing high-voltage transmission interconnection options from Mtwara to the Tanzania grid in order to sell electricity to a larger market in the north. In this plan,

ultimately 62.5 million cubic feet per day of natural gas is projected to be harness in the power plant in the port area.

Besides the power generation project, there are several projects proposed with a utilization of natural gas. The marine compressed natural gas (CNG) export project has been one of them, and the CNG is proposed to be exported to Mombasa, Kenya to be harnessed in 150MW of power plant. And yet, a bilateral agreement between the Tanzania-Kenya governments on export-import of hydrocarbons has been pended and it is hampering the project materialization. Once this project was launched (expected to start in 2010), CNG processing project of 35 to 50 million cubic feet per day would be created in the port demand. As for the transshipment, an 8 m draft CNG carrier is proposed, and the port capacity will be required to be expanded.

Moreover, it is reported that a considerable size of the hydrocarbon potential is anticipated in northern Mozambique where Artumas has a prospecting license. The Rovuma Delta Basin in Mozambique side is acknowledged as “one of the last undrilled tertiary basins in the world”, and Artumas is given some very encouraging probabilities of oil and gas reserves. Natural gas analysis indicates potential of finding one or more prospects equal to or greater than the Minimum Economic Field Size of 1,751 bcf gross, and in Rovuma area 1 Offshore (10,500 sq km concession), potential for crude oil discovery is indicated up to 1,100 mmo gross recoverable.

In Artumas’s concession, together with the Mnazi Bay & Rovuma Delta Gas Resources, economically recordable natural gas reserve as a total is estimated to be about 2,500 billion cubic feet. This figure would not be adequate for LNG project which would require a minimum gross volume of 4,000 bcf of natural gas. Therefore, it is assumed that more field search for exploration would be necessary to materialize LNG project at the Mtwara field.

2.1.2 Fertilizer

With utilizing locally available natural gas and a condition that there is no plant for manufacturing fertilizers in the region, several private business groups are proposing to build a fertilizer plant near the Mtwara port.

Egyptian Polyserve group has a proposal of producing 1.200 tonnes of Ammonia and 1,800 tonnes of Urea per day (about 650,000 tonnes per year). The project was expected to launch in 2008, but it is delayed although the Tanzania Ports Authority has already provided 200 acres of land for construction of the plant. The project is set to address both domestic agro-business demand to boost productivity and external market. In their business plan, 20% of processed fertilizer is to be marketed domestically (nation’s total fertilizer demand could be around 400,000 – 680,000 tonnes, and yet current annual consumption volume is around 54,000 tonnes, and nearly all fertilizer products are imported¹), and the remaining of 80% will be exported. The project would increase export revenues for Tanzania by about 200 million US dollars per year. Furthermore, it is expected to create new employment opportunities for between 350 and 400 Tanzanians.

In addition, Deepak Fertilizers and Petrochemicals Corporation Limited (DFPCL) of India have shown an interest in developing fertilizer plant as well. The proposed fertilizer

¹ Source: FAOSTAT

complex is estimated to produce over 300,000 tons of urea per year, of which about 50,000 tons per year will be sold in Tanzania to meet the current demand. The project is envisaged to generate 275 direct with additional over 200 indirect jobs, and earn the foreign currency of some USD 140 million, to be generated every year, through export of surplus Urea and Ammonia to neighboring countries.

However, in order to establish an economic scale of a fertilizer plant, a competitive production cost needs to be attained to match especially with major oil and gas producing countries in the Middle East where an abundant dry gas is available. In the Middle East, gas is regarded as a by-product of an oil exploration of which cost is covered solely by the sales of petroleum, which in turn means a raw material for fertilizer is cheaply available.

In this regard, for the proposed plant, it is a viability condition that a feedstock requirement of 3.6 to 4.3 million cubic feet per day over a 25 year contract life must be attained as a minimum requirement. Therefore, in order to attain such volume of gas, current proven reserve is not enough and then, it is anticipated that the gas developers would need to invest more in gas exploration, processing, receiving facilities and pipelines expansion in coming years. Consequently, cargo demand from the project materialization of fertilizer plant is considered to be in a long-term basis.

Table. 2-1 The principal five import commodities of Tanzania

(Unit thousand tonnes)						
	2004	2005	2006	One year period ending Feb 2006	One year period ending Feb 2007	% annual change
Oil	431.8 (18.4%)	510.91 (19.2%)	1146.5 (29.7%)	862.1	1294.6 (30.9%)	50.2
Industrial raw materials	227 (9.7%)	255.46 (9.6%)	376.5 (9.7%)	268	414.3 (9.9%)	54.6
Food & foodstuffs	248.8 (10.6)	167.64 (6.3%)	249.2 (6.5%)	177.6	265.8 (6.3%)	49.5
Machinery	445.5 (19%)	532.20 (20%)	722.4 (18.7%)	551.3	752.3 (18.0%)	36.5
Building & construction equipment	185.5 (7.9%)	258.12 (9.7%)	338.0 (8.7%)	267.9	364.7 (8.7%)	36.1
Transport equipment	229 (9.7%)	290.05 (10.9%)	374.8 (9.7%)	315.6	388.6 (9.3%)	23.1
Other Consumer Goods	518.1 (22.1%)	585.42 (22%)	602.8 (15.6%)	574.3	654.0 (15.6%)	13.9
Fertilizers	54.1 (2.3%)	63.86 (2.4%)	53.9 (1.4%)	54.8	54.8(1.3%)	0

Source: Monthly Commercial and Economic Report

Note: Figure in bracket indicates % share of the commodity)

2.1.3 Cement

In recent years, the demand of cement in the East African region has been surged. The reason behind is supposed to be the increase of construction activities in the Great Lakes region countries - the Democratic Republic of Congo, Rwanda, Burundi, Malawi and Zambia - where cement fetches higher prices (construction demand rise 12% in 2008). Moreover, cement demand in South Africa, which is constructing modern stadiums for the up-coming World Cup, is deemed to put a pressure even on the Tanzanian local cement supply.

In this reflection, it is revealed that domestic cement plants in Portland, Tanga and Mbeya are not capable of meeting the current local and foreign cement demand. It is reported, Tanzania now imports 45,000 tonnes of cement manufactured from Kenya in an attempt to regulate the spiraling consumer prices. In the mean time, domestic cement manufacturers proposed to increase their production capacity to cater for the increasing cement demand.

Currently, the total installed cement production capacity in Tanzania is about 1.6 million tonnes per year, while the annual total cement demand in the country in 2008 was 1.7 million tonnes. However, experts say per capita consumption of cement in Tanzania is still low. According to industrial estimates, Kenya's annual per capita consumption stands at 54 kg; it is 37kg in Tanzania and 32kg in Uganda. South Africa's per capita cement consumption is estimated at 250 - 300 kg. Consequently, the remaining gap plus potential domestic demand increase of some 900,000 tonnes needs to be added to the nation's combined annual capacity in coming years.

Now, as a frontier of new cement production base, the Mtwara region is given a focus of hosting a large scale cement plant capable of producing 1.0 - 2.0 million tonnes per annum. Taking an advantage of being closely located to raw material deposit sites like limestone, red clay and gypsum, Mtwara is regarded as an ideal spot to build a new cement plant.

A Nigerian conglomerate, the Dangote Group has shown an interest in developing a cement plant with a production capacity of around 2 million tonnes per year, addressing to both domestic and overseas market. The Makonde Cement project is also proposed to be funded by the Department of Trade and Industry of South African Government through the Regional Spatial Development Initiative (SDI) Programme. In addition, EDBANK Capital Investment Banking, a South African bank group, is reportedly planning to establish a joint venture with the State Mining Corporation (Stamico) of Tanzania for a construction of a cement plant at Mikindani in the Mtwara region.

The size of 1.0 to 2.0 million tonnes per year is quite a large scale compared with three existing domestic cement plants in Tanzania. For example, the Tanga cement has a production capacity of 600,000 annual tons (1,600 tons of clinker per day). In this sense, the introduction of a cement manufacturing industry in the region would cast significant socio-economic impacts as well as an increase in the port handling volume of bulk cargoes. Hence, this cement project can be the vital element to forecast the port demand.

2.1.4 Coal mining and coal power plant

There are several coal deposit sites in the corridor. Among them the Mchuchuma coal field is the largest, and in 2002, NDC formed a joint venture with Cinergy Global Power Inc., Grinaker-LTA, and Siemens Ltd. to develop the field, and yet the project was not

materialized. Resources at Mchuchuma were estimated to be 536 million tonnes. A surface mine with a capacity of 5.5 million tonnes per year and a coal-fired power plant with a capacity of 400 MW were planned (annual coal use is estimated 1.5 million tonnes). The balance of coal will be transported through a railway line toward the Mtwara port.

Considering the coal quality and an estimated quantity of the coal reserve, Mchuchuma-Katewaka coal should be developed for both domestic as well as for exporting purpose. For the domestic purpose, due to the urgent need for electric power, the already proposed 400 MW power plant should be prioritized and initiated by NDC, which holds a prospecting license over the Mchuchuma and the Ketewaka deposits. NDC could find a strategic investment partner through international bidding to develop these deposits. The mine was expected to be commissioned in late 2008 at the earliest; the development of the mine would start in late 2009. Costs for the mine development project were estimated to be \$600 million.

2.1.5 Iron ore mining and pellet plant

ROM production rate of the Liganga mine is assumed to be 1.56 million tonnes per year, from which about 1 million tonnes of iron concentrate can be produced. This iron concentrate will be transformed to iron pellet, which production volume will be 0.5 million tonnes per year. Life of mine is assumed to be about 20 years with the above production rate, and mineable ore reserves of 45 million tonnes at a grade of 52% iron. Moreover, the Liganga iron ore deposit was reported to contain titanium and vanadium. Thus, NDC's investment plans for the Liganga Iron and Steel Project includes the possibility of processing titanium and vanadium concentrates for export.

As for the market of iron and steel products, the domestic demand for steel will reach around 1.2 million tonnes in 2010; assuming a demand of 680,000 tonnes in 1998 was moderately increased by an annual growth rate of 5%. With 100,000 tonnes of steel production, local supplier plays a minor role, which makes the majority of steel products to depend on imports. In our study, Tanzania's imports of iron and steel products amounted to about 620,000 tonnes in 2005, 600,000 tonnes in 2006 and 750,000 tonnes in 2007. In this respect there is a tremendous potential for the development of local iron and steel industry once favorable conditions are set like in the Mtwara Development Corridor.

Regarding to an iron ore processing plant from raw materials to be brought from Liganga iron ore, a new technology based iron nugget production plant, which is applicable for using low quality iron ore and coal, is expected to be introduced in the Mtwara port area. The plant will be designed to have a capacity to produce 0.5 million tonnes of iron pellet per year.

2.1.6 Other mineral products

(1) Uranium

The results of a recent drilling conducted by Mantra Resources Limited in the Mkuju River Project have confirmed the presence of multiple thick, high grade zones of sandstone-hosted uranium. Mantra is focused on aggressively pursuing the ongoing exploration, appraisal and potential development of these outstanding uranium prospects.

In total, the regional survey has resulted in the identification of 33 uranium radiometric anomalies which amount to 35.9 million pounds U_3O_8 over 30 km long and contain

numerous discrete uranium anomalies up to 2.5 km by 500 m in size.

(2) Nickel, Copper, Niobium and other

In the Mtwara Development Corridor, there are several mineral exploration projects of non-ferrous metals.

Albidon Ltd. has prospecting licenses in the Kitai, the Mbinga, the Mhangaji, the Peramiho, and the Pitu River where exploration for copper, nickel, and platinum group metals (PGM) has been pursued. A systematic stream sediment geochemical survey undertaken by an Albidon-BHP Billiton team revealed the identification of significant nickel and copper anomalies in these areas, with peak values of up to 582 ppm Ni and up to 176 ppm Cu.

As another project, Panda Hill Mines Ltd. explored for columbium (niobium) and tantalum at the Panda Hill deposit in the Mbeya region. Resources at Panda Hill were estimated to be 480 million tonnes at a grade of 0.33% Nb₂O.

Goldstream Mining NL of Australia explored for cobalt, copper, and nickel at the Mibango Project near Lake Tanganyika and at the Luwumbu Project near Lake Malawi. Exploration work at Mibango focused upon nickel laterite resources. According to preliminary data from the company's drilling program, nickel resources at Mibango were estimated to be 113.1 million tonnes at grades of 0.82% nickel and 0.05% cobalt. Goldstream also started exploration work at its new Nachingwea copper-platinum project in southeastern Tanzania and the Morogoro copper-goldplatinum project west of Morogoro.

Consequently, these mineral resources could be additional source of cargo traffic in the corridor, and handled in Mtwara port once railway system was established in the corridor.

2.2 Current agricultural products development

Mtwara and Lindi regions have about 1,672,000 ha of land of which 85% is potentially arable. Rainfall ranges from 700 mm to 1,000 mm per annum depending on the height, and the volume is ideal for most of the tropical agricultural crops. In this sense, the regions appear to be a suitable location for agricultural production. However, the actual utilized land for farming is limited to only 470,000 ha (33%) on estimation. There are several challenges lying in front to realize the regions to be an agro-forestry production center, and yet, it is certain that the region have a room for expanding agro-forestry cultivation. The following shows the land use percentages and agro-ecological land use map of the current Mtwara region.

Figure. 2-3 Farming System/Agro-Ecological Zones of Mtwara and Lindi Region (right)



2.2.1 Current state of agricultural activity

(1) Farming Scale and Impeding Factors

Farming in the Mtwara region is performed mainly in small scale ranging from 0.2-5.0 ha. Almost all households have small holdings of land for farming which is only utilized in a particular season. The factors impeding the region to be a large scale agricultural center would be region's reliance on rain fed agriculture and continuous use of the traditional hand hoe for cultivation. The low utilization of agricultural inputs, like fertilizer and improved seeds are also sighted. Moreover, inaccessibility to technical advice (low literacy rate would exacerbate the situation unable to acquire latest farming technologies) and weak marketability of the products is critical for farmers not willing to expand the scale of cash crop production.

(2) Food Crop Production Performance

People in the Mtwara Development Corridor area have produced a variety of rich agricultural products, such as raw cashew nuts (86,000 tons), Cassava (365,900 tons), Maize (58,100 tons), Rice (24,700 tons), Sorghum (31,700 tons), and Peas (70,300 tons) in 2004/05. Sesame production to export to Japan also reached at more than 25,000 tons in 2004, mainly from Mtwara and Lindi regions and Tunduru district. Table 2-2 shows the general trend of food production in the Mtwara region.

Table. 2-2 Performance of Food Crop Production in Mtwara Region

Year	98/99		99/00		00/01		01/02		02/03		03/04		04/05	
Crop	Ha	MT	Ha	MT	Ha	MT	Ha	MT	Ha	MT	Ha	MT	Ha	MT
Cassava	206924	285828	221928	345805	228147	300468	289833	262157	229540	306002	286697	322074	253918	365976
Sorghum	671999	47924	56297	31416	55170	34130	49053	22598	23996	9291	51531	16983	43222	31673
Maize	133547	114531	72652	39226	81223	56613	86034	81040	67718	10543	78644	68795	75130	58120
Paddy	40615	41119	39226	23313	42258	36339	41966	31100	31026	12634	38572	24664	31855	24691
Peas	142032	98916	81223	33306	88981	49262	135541	99757	65442	20480	113093	70336	104323.7	70263.6
Total	1195117	588318	471326	470691	476740	476812	602427	807106	417722	358910	568537	502852	508448.7	550723.6

Source: The Socio-Economic Profile and Investment Potentials of Mtwara Region, 2007

(3) Cashew Nuts Production

Cashew nut is Tanzania's eighth major traditional export crops generating over \$70 million in foreign exchange. Among 100,000 mt of cashew nuts produced nationwide, 60-80% is produced in Mtwara, Lindi and Ruvuma particularly along the coast. It is predominantly grown by smallholder farmers on about 400,000 ha in mono- or mixed-crop production systems. Large scale private plantations occupy only about 2,000 hectares in Lindi and Mtwara regions. For Mtwara region, cashew nut is the main source of income for most farmers, and the largest shipped good in Mtwara port.

However, the most important value addition processes have been little conducted locally until recent years. Usually, the raw cashew nuts are shipped to India for further processing. In addition, due to poor management, production per tree currently stands at only 4 kg while with improvement, it can be increased to as much as 40kg.

2.2.2 Potentiality of conducting large scale agro-business

(1) Large scale agricultural plantation

As stated above, the Mtwara region is experiencing a low agricultural productivity. But it does not mean that the region does not have a potential and/or capability of conducting a large scale agro-business. The availability of large scale unutilized land together with adequate natural environment parameters could be the pre-requisite for a large scale production if adequate technological and financial resources together with assured market

are attained.

In fact, an experimental plantation of eucalyptus for woodchip production is now undertaken in the region by the consortium of Oji Paper Co. and Marubeni Co. (the Economic Survey, 2006). The consortium is considering the expansion of its woodchip experimental farm upto 20,000 ha with other outgrowing farming of 30,000 ha. The strategic importance of Mtwara region lies in not only the natural environment that their trees are growing sufficiently, but also in the availability of the Mtwara port to become the export/import hub with its required depth. Of course, access to the inland is also a key element to make the agricultural project viable. In this sense, access road and railway development enabling easy and less-costly pass to the inland need to be developed. If investors could acknowledge the region has enough land blessed with natural environment together with road/railway access and a high quality port facility, materialization of the project implementation may come faster.

Table. 2-3 Cargo transport costs for selected routes from Mtwara (Dec. 2007)

	Destination	Truck Weight (Ton)	Average Cost/Ton (Tshi)	Total Cost (Tshi)	Distance (Km)
1	Dar es Salaam	10	120,000	1,200,000	624
2	Lindi	5	60,000	300,000	167
3	Newala	5	80,000	400,000	140
4	Nachingwea	5	70,000	350,000	220
5	Masasi	5	80,000	400,000	200

Source: Mtwara Cargo Transporters

(2) Project volume of agricultural products and related cargoes

It is expected that once an access to the land through railway, road and port was opened up, the agricultural projects and subsequent production will grow up further. Thus, the transit volume of agricultural cargoes would also dramatically increase in the future.

In specific, the Mtwara region could create agricultural products at a dramatically increased rate based on the assumption that a large-scale production together with small-scale contract farming could be properly implemented. According to “The Socio-Economic Profile and Investment Potentials” of the Mtwara Region published in 2007, if the latest agricultural expertise and technologies are applied in the region, the crop production could increase three times more of the current. In Table 2-4 below, based on the numbers given in Table 2-2, the forecasted yield with modern technologies application, and average world yield in 2007 taken from FAO (Food and Agriculture Organization of UN) data are compared.

Table. 2-4 Food Yield forecast in Mtwara Region

Crop	Yield in 2004 (t/ha)	Forecasted Yield With Modern Tech. (t/ha)	Average World Yield in 2007 (t/ha)
Cassava	1.4	4.2	12
Sorghum	0.7	2.1	1.4
Maize	0.8	2.4	4.9
Paddy	0.8	2.4	4.1
Peas	0.7	2.1	1.4

Source: The Socio-Economic Profile and Investment Potentials of Mtwara Region, 2007, World Average: FAO Statistics

Since this forecast is only dependent on the assumption that a technological improvement may applied, we formed another forecast which includes an assumption that more agricultural investors come in the region with availability of improved transportation infrastructures. In Table 2-5 below, it is assumed that a technological improvement will occur first in Phase 1 (2009-2015) before an actual application of a large investment. Therefore, in Phase 1 (2009-2015), the rates in the forecasted yield with modern technology in Table 2-4 is applied. The yield is estimated to eventually reach the same level as the world average in Phase 2 and 3 with sufficient improvements of agricultural production, therefore, the yield rate in world average in Table 2-4 is applied for latter two phases. However, for Sorghum and Pea, the larger rate is applied.

As for the scale of cultivated land, there will also be an expected increase in the land used for agriculture. As it is introduced in chapter 2.2, among the total 1,672,000 ha of land in the Mtwara region, 85% is arable. In this regards, we estimated the development process into 3 phases. In the 1st phase (2009-2015), 40% of the arable land is assumed to be cultivated, 50% in the 2nd phase (2016-2020), and 60% in the 3rd phase (2021-2030) will follow.

Based on Table 2-4, the proportion of expected cultivated land for each agricultural crop is calculated as follows: Cassava: 50%, Sorghum: 8%, Maize: 15%, Paddy: 6%, and Peas: 21%. In the following estimation (Table 2-5) this percentage will be applied throughout the 3 phases, assuming no drastic change in crop production proportion will occur.

Table. 2-5 Estimated Food Crop Production in Mtwara region

Crop	Estimated Production in 2009-2015		Estimated Production in 2016-2020		Estimated Production in 2021-2030	
	Ha	MT	Ha	MT	Ha	MT
Cassava	284,240	1,193,808	355,300	4,263,600	426,360	5,116,320
Sorghum	45,478	95,504	56,848	119,381	68,218	143,258
Maize	85,272	204,653	106,590	522,291	127,908	626,749
Paddy	34,109	81,862	42,636	174,808	51,163	209,768
Peas	119,381	250,700	149,226	313,375	179,071	376,049
Total	568,480	1,826,527	710,600	5,393,455	852,710	6,472,144

Source: Study team

Increased production of agricultural crops means sufficient provision to the domestic market, as well as to the international market. As a result, there will be a larger demand at the Mtwara port waiting for their crops to be exported. In addition, although the above five is the major cash crop, there is a good chance that there might be more varieties in the future if the bio-energy resources like *Jatropha* were added in the regional crops list. As a result, the port handling volume would be increased more dramatically.

2.3 Proposed projects

2.3.1 Ship breaking industry

(1) Background of the industry

There have been a large number of ships in line due for scrapping. Presently, some 700 ships of greater or lesser scale of vessels are taken out of service every year. In 2001 the total number of 608 vessels sold for scrap was 28 million dwt. The figure is said to mark a

year on year growth of nearly 25%.

The reasons behind the acceleration of ship breaking cycle may lie in the fact that the normal lifetime of a steel vessel is usually 20 years. Even though any conversion or repairs might have been carried out, the ultimate lifetime of vessel cannot be extended beyond 25 years. International Maritime Organization (IMO), thus, fixes 25 years to be lifetime of vessels. Moreover, insurance coverage of cargo is a very important factor for ship owners to decide timing to abandon vessels for scrapping, since insurance companies hesitate to provide insurance coverage to the ships of over 20 years of age.

Consequently, there are about 16,100 thousand container ships (over 500 GT), chemical tankers and general cargo ships sailing around the world, which are now expected to reach their lifetime. Additionally, there are about 4,900 bulk carriers (over 500 GT) of which nearly 30% of them are built before 1980. As a total, it is expected that by 2010, 3,000 ships per year will be scrapped.

Furthermore, the decision of the International Maritime Organization (IMO) and the European Union that all single-hull oil tankers must be phased out by 2010 - some types as early as 2007, will surely trigger a flood of scrapping single hull tankers including Very Large Crude Carriers (VLCCs). In 2010, 173 single-hull tankers of over 200 thousand DWT are supposed to be removed, and 28 single hull VLCCs, which comprise a combined 46.8 million DWT, are due for demolition by 2010.

(2) Advantage and Challenges of Mtwara for the industry

There are several advantages of introducing ship breaking industry in Tanzania, especially in Mtwara area. Firstly, a first hand availability of natural gas to produce acetylene for steel cutting torches is raised. Secondly, the ideal characteristic of Mtwara as a deep sea port with an advantageous physical setting for accommodating 200,000 tonnes class of VLCC, which are lined up for seeking the place to be dismantled, comes up. From the scraped ship, various commodities can be gained such as steel material, power generator, boiler and so on. These will cater for an increase demand in domestic use of re-rolled steel as a construction material in Tanzania.

On the other hand, there are issues in ship breaking business. From the environmental point of view, in the international arrangement, there are guidelines and regulations in place to end the beaching ship breaking in concern for phasing out the socio-economically detrimental manner of ship breaking by 2012. But with the industry bringing in so much cash and raw materials together with valuable scraped metals, it is not clear how this will be accomplished. As far as it goes, the practices and imposition of environmental guidelines and regulations are basically voluntary by concerned countries of import and export the ships.

Nonetheless, there is a tendency and movement in international community that all scrapping should be carried out in a dry dock which contains the environmental pollution and protects the worker's health and safety. In this regard, eventually it comes to a conclusion that the installation of scrap yards would enable the ship breaking to be operated safely and eco-friendly.

(3) Scale of ship recycling yard

The domestic production scale of iron and steel products in Tanzania at present is estimated to be about 100,000 tones covering about 10% of domestic demand, and the shortfall

depends on the import from foreign countries. Therefore, a part of the remainder 200,000 tones is assumed to do the import substitution by the ship recycling business.

As practiced in main ship recycling countries like India and Bangladesh, the ability of typical ship recycling yard is eventually pursued to be 250,000 ton class per year. Then, because the steel material of 200,000 tons or more will be supplied, the domestic steel production ratio of Tanzania can be extended up to 20%, enabling the import replacement to be performed, and will result in savings of a valuable foreign currency. A ship recycling ability of 250,000 LDT per year corresponds to the amount of the iron scrap obtained by dismantling 8 VLCC per year.

In this scale, eventually it is estimated that there are over 210,000 tons of the steel scrap material. In order to process this amount of scrap, the Steel Work Mill can be installed, and then the steel scrap is melted in electric furnace to make steel billets which will be re-rolled for manufacturing those products for construction work such as round bars, flat bars, sections, etc.

2.3.2 International transit cargos

According to NDC report (Transport Strategy for Consideration of the Mtwara Development Corridor) formulated in May 2005, when the transit transportation system in the Mtwara Development Corridor was improved by railway and port development, the international transit freight demand of timber and fertilizer from Malawi is estimated to be increased as follows: Timber → 400,000tons/year, Fertilizer → 40,000tons/year. Additionally, timber from Mozambique will be transported by improving the Unity Bridge and access road from Nangomba, and by improving the freight station near Nangomba for demands from both Tanzania and foreign countries.

Consequently, transshipment cargos utilizing Mtwara port are as follows.

- Cargo generating from the southern area of the capital city through Inland Container Depot (ICD), and
- Transshipment cargo shifting from Dar es Salaam container port to New Mtwara port. Adding to the above transshipment cargo, a demand for both export and import cargoes through transshipment from /to neighboring countries is to be included.

Figure. 2-4 Spatial position of private projects in Mtwara Development Corridor



Source: National Development Corporation

3 Scenario of demand expansion in Mtwara port and seaside industrial estate

As we have illustrated the profile of the private sector projects in the previous chapter, the increasing demand for the Mtwara port handling volume can be forecasted. As for the information attributable to such analysis, there could be various information sources applicable. Taking the references based on the available project plans and hearings with related parties into the analysis of the port demand forecast, the following Mtwara port demand forecast compilation is presented. In comparison, NDC is also collecting information regarding the good demand forecast in Mtwara Development Corridor. So we shall eventually compare those results.

Table. 3-1 Project profile and port demand forecast of goods (thousand tons)

Phases	Current status 2008	Phase 1 2009-2015	Phase 2 2016-2020	Phase 3 2021-2030
1. Coal & Iron				
1) Coal for Power	- Tender	200 MW	400MW	400MW
2) Coal for Export	- FS	Construction	5,000	7,000
3) Iron & Pellet	- FS	Construction	500	500
2. Gas-related				
1) Fertilizer	- FS	300	600	1,000
2) CNG/LPG	- FS	50	100	100
3) Power	- FS	100 MW	200 MW	300 MW
3. Cement Project				
1) Cement	- FS	1,000	1,500	2,000
4. Forest Project				
1) Woodchip	- Experimental	Planting (20,000ha)	1,000	3,000
2) Lumber & Others	- Pre Study		100	500
5. Agro-Business				
1) Agricultural crops	- Pre Study	1,800	5,400	6,500
2) Bio-Energy material	- Pre Study	200	1,000	3,000
6. Other Mineral				
1) Nickel	- Pre Study	- FS	500	1,000
2) Uranium	- Pre Study	- Pre FS	- FS	500
7. Ship-breaking	- Pre Study	- FS	100	250
8. Transit Cargo				
1) Bulk Cargo	- Miner volume	10	500	2,000
2) Container Cargo	- Miner volume	5	100	500
9. Total	50	3,365	16,400	27,850
1) Bulk Cargo	30	2,700	13,100	22,300
2) Container	20	665	3,300	5,550

Source: Study team

Table. 3-2 Required handling capacity of Mtwara port in future (thousand tons)

Phases	Current 2008	Phase 1 2009-2015	Phase 2 2016-2020	Phase 3 2021-2030
1) Bulk Cargo (number of berth)	Multi Jetty	5,000 (2)	15,000 (5)	25,000 (10)
2) Container (number of berth)	300 Meter	700 (1)	4,000 (1)	6,000 (2)

Source: Study team

The following tables show the projects list collected by NDC to calculate Mtwara Development Corridor's total investment value and accrued trading and manufactured products in detail from each of the region 6 regions, namely Mtwara, Lindi, Rukuma, Iringa, Mbeya and Rukwa. And the estimated volumes that may pass/use the Mtwara port are classified in the short, medium and long term basis.

Table. 3-3 Synopsis of Potential Volume and Value using Mtwara Gateway

Region	Short Term	Medium Term	Long Term	MT (000)	Value (\$M)
Mtwara	146	1,777	111	2,034	480
Lindi	136	378	-	514	130
Ruvuma	31	863	-	894	109
Iringa	-	15,000	1,000	16,000	586
Mbeya	-	-	-	-	-
Rukwa	-	-	-	-	-
Total	303	18,018	1,111	19,442	1,305

Source: NDC

Table. 3-4 Potential Volume and Value of Surrounding Regions

ID	Project	Who	Where	Mtwara Port	
				MT ('000)	Value (\$m)
MTWARA REGION					
SMS01	Mnazi Bay Gas & Gas To Power Project - 30MW Power	P	M	50	16
SMS02	Community & Commercial Wood Chips Plantations - Black wattle & Jatropha (for Bio-diesel) around perimeter	P	M	253	20
SMS03	Community & Commercial Wood to Charcoal Plantations - Black wattle & Jatropha (for Bio-diesel) around perimeter	P	M	338	34
SMS04	Indigenous Hardwood Processing Plant - Mtwara	P	M	60	8
SMS05	Cashew Processing Plants (9 factories) - in Mtwara, Lindi & Ruvuma regions	P	M	6	11
SMS06	Expanded Cashew Production (+120,000mt/y v 80,000mt/y current) - in 3 regions of Mtwara, Lindi & Ruvuma	P	M	14	2
SMS07	Mtwara/Lindi - Potential Lime to cement, Agriculture & Industrial Projects (200 t/d or 66,000 t/y cement plant+ others)	P	M	76	11
SMM01	Aquaculture Farm + Processing Facility - Mtwara	P	M	675	67
SMM02	Tuna Fishing and Canning	P	M	24	48
SMM03	Bio Diesel Growing 30,000Ha (up to 250,000Ha later) - for 30 Million liters / year (250mL/y later) in Mtwara, Lindi & Ruvuma	P	M	10	5
SMM04	Bio Diesel Processing (30 Million liters / year) - in Mtwara, Lindi & Ruvuma	P	M	10	5
SMM05	Ship Breaking & Steel Industry - Plant & Industry Mtwara Port	P	M	200	55
SML01	Titanium Pigment Plant - with raw materials	P	M	70	140

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	from Malawi				
SML02	Nepheline Synte Glass Manufacturing plant with raw materials from Malawi Plant - with raw materials from Malawi TIO2 Project at Chipoka	P	M	10	18
IMS01	Mtwara-Mbamba Bay Road	G	M		
IMS02	Unity Bridge 1 + Approach Roads	G	M		
IMS03	Kilambo-Namoto Ferry Crossing + Approach Roads	G	M		
IMM01	Mtwara Port Upgrade	G	M		
IMM02	Mtwara-Palma Cross Border Telecommunications Project	G	M		
IMM03	Ship Breaking & Steel Industry - Infrastructure at Mtwara Port	G	M		
IML01	Mchuchuma-Mtwara Mineral Railway	G	M		
DMS01	Cashew Semi Processing Plants (9 factories)	P	M		
DMS02	Reef's Lodge and Dive Centre	P	M		
DMS03	Ras Ruarwa Retreat	P	M		
DMS04	Leatherback Ecolodge	P	M		
DMS05	Mtende Eco-Hotel, Beach Club and Adventure Centre	P	M		
DMS06	Mashua Mangrove Eco-Lodge	P	M		
DMS07	Mtumbwi Cabanas, Kauri Club and Adventure Centre	P	M		
DMM01	Banyan Plaza Hotel - Mikindani	P	M		
DMM02	Swahili Beach Club - Mikindani	P	M		
DMM03	Banyan Plaza Village Square - Mikindani	P	M		
DMM04	Indigenous Hardwood + Pre-Processing Southern Regions	P	M	192	24
DMM05	Mlima Jumba Retreat - Mikindani	P	M		
DMM06	Octopus fishing and processing	P	M	5	3
DMM07	Deepwater line fishing	P	M	6	3
DMM08	Shark fishery	P	M	3	2
DMM09	Deepwater shrimp	P	M	1	1
DMM10	Mudcrab aquaculture	P	M	0	1
DMM11	Pearl production (10 farms)	P	M	0	1
DML01	Hardwood & softwood furniture Factory for export - Mtwara	P	M	31	8

TOTAL MTWARA REGION				2,034	480
	Short Term - MTWARA Region			146	39
	Medium Term - MTWARA Region			1,777	275
	Long Term - MTWARA Region			111	166

LINDI REGION					
SLS01	Expanded Cashew Production (+120,000mt/y v v 80,000mt/y current) - in 3 regions of Mtwara, Lindi & Ruvuma	P	L	14	2
SLS02	Cashew Processing Plants (9 factories) - in Mtwara, Lindi & Ruvuma regions	P	L	6	11
SLS03	Songo Songo Gas & Gas To Power Project - 75MW Power	P	M	25	34

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SLM01	Sesame Project	P	L	20	35
SLM02	Community & Commercial Wood to Charcoal Plantations - Black wattle & Jatropha (for Bio-diesel) around perimeter	P	L	338	34
SLM03	Bio Diesel Growing 30,000Ha (up to 250,000Ha later) - for 30 Million liters / year (250mL/y later) in Mtwara, Lindi & Ruvuma	P	L	10	5
SLM04	Bio Diesel Processing (30 Million liters / year) - in Mtwara, Lindi & Ruvuma	P	L	10	5
ILS01	Dar es salaam - Mingoyo Road	G	L	0	0
DLS01	Ras Mantous Integrated Tourism Resort - Kilwa	P	L	50	1
DLS02	Mtwara/Lindi - Gypsum for cement, Agriculture & Industrial Projects (100 t/d or 30,000 t/y plant) - part community based projects	P	L	30	3
DLM01	Cashew Semi Processing Plants	P	L	11	2

TOTAL LINDI REGION				514	130
	Short Term - LINDI Region			136	52
	Medium Term - LINDI Region			378	78
	Long Term - LINDI Region			0	0

RUVUMA REGION					
SRS01	Tobacco expansion project in Ruvuma Region	P	R		
SRS02	Expanded Coffee Production (from 6 to 9,000 tons so inc. 3,000 tons)	P	R		
SRS03	Indigenous Hardwood + Pre-Processing Southern Regions	P	R	192	24
SRS04	Indigenous Hardwood Processing Plant - Mtwara/Ruvuma	P	R	60	8
SRS05	Cashew Processing Plants (9 factories) - in Mtwara, Lindi & Ruvuma regions	P	R	6	11
SRS06	Expanded Cashew Production (+120,000mt/y 80,000mt/y current) - in 3 regions of Mtwara, Lindi & Ruvuma	P	R	14	2
SRS07	Heavy Capacity Ferry Linking Mbamba Bay (Tanzania) with Nkhata Bay (Malawi)- 1 x Ro-Ro Ferry & 2 x 400 t Barges	P	R		
SRM01	Selous Lion Park Eco Tourism 5 star project - 100 beds	P	R		
SRM02	Mbamba Bay Coal Fields - 2.5m t proven & 29m t total	P	R		
SRM03	Community & Commercial Wood Chips Plantations - Black wattle & Jatropha (for Bio-diesel) around perimeter	P	R	253	20
SRM04	Bio Diesel Growing 30,000Ha (up to 250,000Ha later) - for 30 Million liters / year (250mL/y later) in Mtwara, Lindi & Ruvuma	P	R	10	5
SRM05	Bio Diesel Processing (30 Million liters / year) - in Mtwara, Lindi & Ruvuma	P	R	10	5

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SRM06	Community & Commercial Wood to Charcoal Plantations - Black wattle & Jatropha (for Bio-diesel) around perimeter	P	R	338	34
IRS01	Unity Bridge 2 + Gravel Approach Roads	G	R		
IRS02	Mtwara-Mbamba Bay Road	G	R		
IRM01	Heavy Capacity Ferry Linking Nkhata Bay (Malawi) with Mbamba Bay (Tanz)	G	R		
IRM02	Mbamba Bay Port Upgrade	G	R		
IRL01	Mchuchuma-Mtwara Mineral Railway	G	R		
DRS01	TUNDURU Gemstone Small-Scale Mining Project	P	R		
DRM01	Hunting Concessions - WMA's Southern Tanzania	P	R		
DRM02	Songea District -Lime to cement, Agriculture & Industrial Projects (200 t/d or 66,000 t/y cement plant+ others)	P	R		
DRM03	Cashew Semi Processing Plants	P	R	11	2

TOTAL RUVUMA REGION				894	109
	Short Term - RUVUMA Region			31	14
	Medium Term - RUVUMA Region			863	95
	Long Term - RUVUMA Region			0	0

IRINGA REGION					
SIS01	Mchchuma Coal To Power Project (400MW) - Phase 1 - includes transmission line to Mufindi	P	I		
SIS02	Mchchuma Coal Production - Phase 11 - can go through Malawi	P	I		
SIS03	Heavy Capacity Ferry Linking Chipoka Port (Malawi) with Manda Port Bay (Tanz) - HARBOUR Construction at Manda	P	I		
SIS04	Heavy Capacity Ferry Linking Chipoka Port (Malawi) with Manda Port Bay (Tanz) - Operation of Shipping Cargo - SEE ST2b above	P	I		
SIS05	Ngaka Coal Fields - 66m t proven & total 99m t to export to Malawi	P	I		
SIM01	Mchchuma Coal Production - Phase 1 - to go through Mtwara	P	I	15,000	225
SIM02	Manda Port - Upgrade & Construction to move coal to Chipoka	G	I		
SIL01	Liganga Iron Ore, Titanium + Vanadium Mine + Sponge Iron Plant - short term project	P	I		
SIL02	Liganga Iron Ore, Titanium + Vanadium Mine + Plant US\$ 850 ea - phase 1	P	I	261	116
SIL03	Liganga Iron Ore, Titanium + Vanadium Mine Plant - phase 2	P	I	739	245
IIS01	Tanzania - Malawi Interconnector across the lake Mchuchuma to Chilumba - PBPpower	G	I		

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DIM01	Coal to Smokeless Fuel (Charcoal) in Ruvuma Region near the Muchuchuma coal reserves - using excess energy from process in another project still to be identified. - small scale mining/processing - 10 projects each US\$ 0.75m	P	I		
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TOTAL IRINGA REGION				16,000	586
	Short Term - IRINGA Region			0	0
	Medium Term - IRINGA Region			15,000	225
	Long Term - IRINGA Region			1,000	361

MBEYA REGION					
SMbM01	Songwe River 3 Dam Integrated Irrigated Agricultural Project	P	Mb		
SMbM02	Bio Diesel Growing & Processing 30,000Ha (30 Million litres / year)	P	Mb		
IMbM03	Kiwira Colliery And Power Plant (200+200 = 400 MW)	/P	Mb		
IMbM01	Zambia-Tanzania-Kenya Interconnector	G	Mb		
IMbM02	Songwe River 3 Dam Integrated Power Project	G/P	Mb		
IMbM01	Itungu Port Relocation + Upgrade	G	Mb		
IMbM03	Mbeya Airport Development & Improvements	G	Mb		
DMbM01	Coal to Smokeless Fuel (Charcoal) in Ruvuma Region near the Muchuchuma coal reserves - using excess energy from process in another project still to be identified. - small scale mining/processing - 10 projects each US\$ 0.75m	P	Mb		

TOTAL MBEYA REGION				0	0
	Short Term - MBEYA Region			0	0
	Medium Term - MBEYA Region			0	0
	Long Term - MBEYA Region			0	0

RUKWA REGION					
SRkM01	Bio Diesel Growing & Processing 30,000Ha (30 Million litres / year)	P	Rk		
IRkM01	Kasanga Port Upgrade	G	Rk		
IRkM02	Sumbawanga-Mpanda Road	G	Rk		
IRkM03	Sumbawanga - Kasanga Gravel Road	G	Rk		
IRkM04	Sumbawanga - Kasesya-Mbala Gravel Road	G	Rk		
IRkM05	Sumbawanga - Tunduma Road	G	Rk		
DRkL01	REM - Rear Earth Minerals - Nkasi District - based on Malawi project info	P	Rk		
DRkM01	Maize & Miawe Milling	P	Rk		

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TOTAL RUKWA REGION				0	0
	Short Term - RUKWA Region			0	0
	Medium Term - RUKWA Region			0	0
	Long Term - RUKWA Region			0	0

TOTAL ALL REGIONS	19,442	1,305
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TOTAL by phasing of project - ALL REGIONS	19,442	1,305
Total Short Term	313	105
Total Medium Term	18,018	673
Total Long Term	1,111	527

Total Short Term	313	105
Mtwara	146	39
Lindi	136	52
Ruvuma	31	14
Iringa	0	0
Mbeya	0	0
Rukwa	0	0

Total Medium Term	18,018	673
Mtwara	1,777	275
Lindi	378	78
Ruvuma	863	95
Iringa	15,000	225
Mbeya	0	0
Rukwa	0	0

Total Long Term	1,111	527
Mtwara	111	166
Lindi	0	0
Ruvuma	0	0
Iringa	1,000	361
Mbeya	0	0
Rukwa	0	0

Total Short + Medium +Long Term		
Mtwara	2,034	479
Lindi	513	130
Ruvuma	893	109
Iringa	16,000	586
Mbeya	-	-
Rukwa	-	-

Source: Report made available by NDC

Referring to the above two demand forecast analyses, mainly the analysis from NDC tends to understate the impact of opening the corridor with modern transportation facilities via road, railways and port. The remarkably different standpoint can be seen in the volume of produced cement, fertilizer, agricultural products and transit cargoes. In the proposed demand forecast, cement products will go upto 2 million tons per year in the long run whereas the estimation of

NDC is confined to only about 100 thousand tons. At this point, reflecting even from the current financial/economic crisis, once an investment project was launched in which benefiting scale merit needs to be incurred, especially the process industries like cement and fertilizer are likely to install a large-scale operation plant provided enough market is available. In fact, an investor on the fertilizer project has already working on constructing the processing plant as it was initially designed (a production capacity of 0.7 million ton per year, as of Dec. 2009). Consequently advancement of small-scale processing industries is unlikely to be implemented.

Agricultural industry is also aiming for maximizing productivity and minimizing the cost per unit ton in that a large-scale plantation is an ideal model to be practiced in the Mtwara Development Corridor. In this regard, Mtwara Development Corridor is an ideal area to allocate the large-scale plantation for private investment because vast unutilized land available, and again an investor on large scale agricultural products, like cassava, is proposing to develop cultivation field in large-scale. In addition, an impact of transit cargoes should not be neglected in a long term basis.

Consequently, in this study, it is assumed, with a simple compilation of freight demand attributed from various private projects activities, a higher freight demand forecast is elected as a base for the planning purpose. However, compilation does not include evaluation of the support of the assumptions underlying the forecast. Moreover, there will usually be difference between the forecasted and actual results, because events and circumstances often do not happen as expected, and those differences may be material. Hence, this is not our aim and responsibility to update this report for events and circumstances occurring afterwards.

4 Mtwara port development plan

Based on the forecasted demand scale of the Mtwara port, in this chapter., any requirements for the Mtwara port development and reasonable approach for the formulation of the master plan shall be discussed As a premise, the private business projects are on-going and they are putting pressure on a facilitation of the Tanzanian government's effort to develop Mtwara port and seaside industrial zone as an important gateway for private project activities. Thus the development of the Mtwara port should be a correlative investment project for both the government and private sectors. In this regard, it can be said that the government spending on the Mtwara port would create more investment projects in the region to mobilize the economy.

In this study, having been faced with time and financial constraints, the formulation of a detail planning is deemed beyond the scope, and it shall be left for the forthcoming task to be undertaken in the next full-scale study.

4.1 Development requirements

In reference to the forecasted demand of goods obtained in the previous chapter, prospective port development requirements compatible with the advancement of each industries and their freight demand in phases are summarized in the following table.

Table. 4-1 New industry and Port Demand

Kind of Industry	Project Profile	Port demand (Phase-1,2,3) (Million ton)	Objecting Vessel (DWT)	Water (Depth m)	Remarks
1. Gas Related LPG/ CNG	CNG 35-50 ft3/day, 150MW	0.1 – 3 – 4.2	20,000– 100,000	10 – 14	To: Mombasa , Kenya
Fertilizer	0.5-1.0 Million ton	0.3 – 0.6 – 1	20,000– 50,000	10 – 13	
2. Cement		0 – 4.5 – 4.5	20,000– 50,000	10 – 13	Mtwara region only
3. Woodchip/ Lumber	20,000 Ha	0 – 4.6 – 4.6	15,000	13	
4. Agro-Product / Bio-Energy	Cassava, Sorghum, Maize, paddy, Peas	0.7 – 2.4 – 5	10,000– 50,000	10 – 13	Mtwara region only
5. Container / Transit Cargo		0.1 – 0.2 – 1	10,000– 80,000	10 – 16	
6. Coal	Mchuchuma 536 Million ton	0 – 12 – 12	100,000– 150,000	18	
7. Iron Ore/ Other Mineral	Under FS	0 – 3 – 3	100,000– 150,000	18	
8. Ship-Breaking Dock		0 – 0.1 – 0.3	5,000– 300,000	Dry dock	
9. Construction material/ equipment and others		0.1 – 0.6 – 1.4	20,000– 50,000	10 – 13	
Total		2.3 – 13 – 26			

Source: Study team

4.2 Constraints and potentialities of Mtwara port for development

For a transformation of the Mtwara port into a modern international port, the following factors need to be considered in planning.

1) Constraints

- a At present, a cargo handling volume is quite limited due to the lack of present demand, and the delay in resource developments in the hinterland.
- b Existing port facilities are 300m wharf with 8-10m depth and small warehouse mainly for cashew nuts and some other consumer goods.
- c An approach channel is applicable only below 20,000 DWT vessels.

2) Potentialities

- a A worthy potentiality of Mtwara port lies in the well protected deep natural harbor with large basin within the overhanging peninsula.
- b An extensive port area of 2,650 ha extending to southern side of peninsula. This extensive hinterland has a big advantage for multiple industries and surrounding environmental condition.
- c A vitalization with an equipment of very deep wharf enabling accommodations up

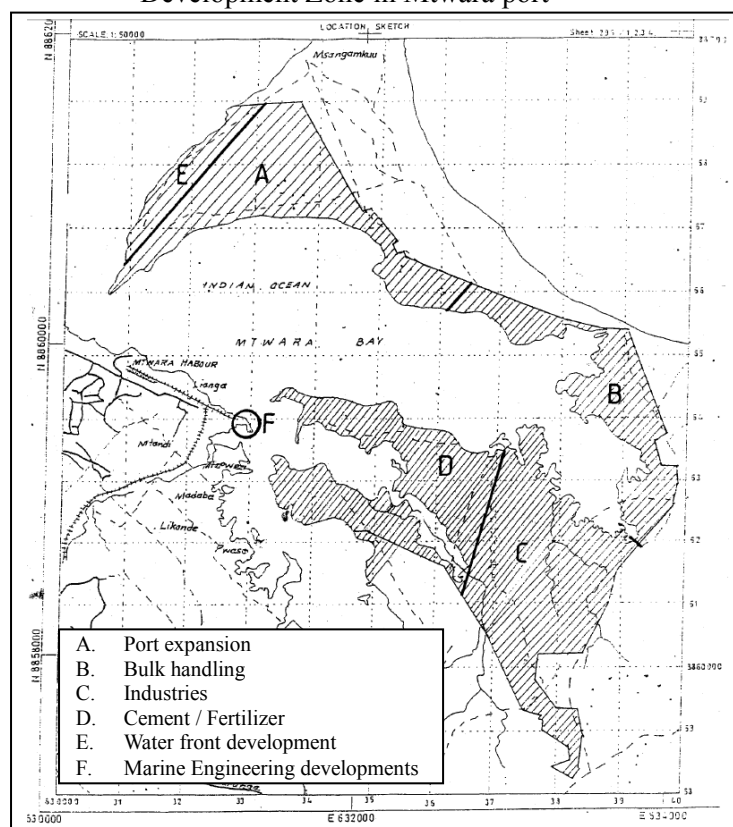
to 150,000 DWT class vessels will bring end-users in big benefit by taking into consideration of the current high price of fuel.

4.3 Approach and methodology for master plan study

Although Tanzanian government has a preliminary land use plan for the Mtwara port and seaside industrial zone developments plan as per Table. 4-2, taking account of the factors above, a formulation of a master plan is urgently required to eventually materialize efficient and systematic operation and management of the port and the surrounding seaside industrial zone. In order to do so, the following suggestions are also to be made for the planner.

- 1) Close communication between domestic/foreign investors (potential port users) in the region and an authorized Tanzania government agency is required for the realization of appropriate port development specifications to match demand and supply.
- 2) Interview and workshop meetings with related private and public agency in Tanzania and neighboring countries are likely to be required to prepare a reasonable development scenario basis of the Mtwara Corridor Development, and integrate it into the Mtwara port vitalization development plan.
- 3) Private projects including natural resources development will be proceeded in phases so that flexible adjustment of port exposition plan need to be prepared.
- 4) To accommodate vessel larger than 20,000 DWT, improvement of approach channel is necessary, and a simulation model test should be performed in order to verify practical feasibility.

Table. 4-2 Current proposed layout plan of Economic Development Zone in Mtwara port



Source: Tanzania Ports Authority

4.4 First truck port development project

Overall master plan of Mtwara port and EDZ development needs to be envisaged. At the same time the on-going private projects have not been allowed of any delay. Especially the projects using natural gas for power generation, CNG and fertilizer have been partly operational and some parts are in the stage of land acquisition. Hence a first track port development plan needs to be laid in parallel for the preparation of overall master plan.

Regarding the power generation project, the land for existing 12MW power plant and CNG jetty are illustrated in the following figure. As for the additional future expansion of 300 MW gas based power plant, which is preliminarily planned, has not yet be implemented and the project site selection is pending at this moment.

Figure. 4-1 The existing power plant and proposed location for the CNG jetty



Source: Artumas Group Inc.

Taking an account of the fertilizer project in Mtwara, the Tanzanian government is in the process of selecting investor who will develop the Ammonia/Urea plant in the area. The Ministry of Industry and Trade is a focal point which is now in the process of selection/evaluation of the proposal. The basic feature of fertilizer processing project is assumed as follow;

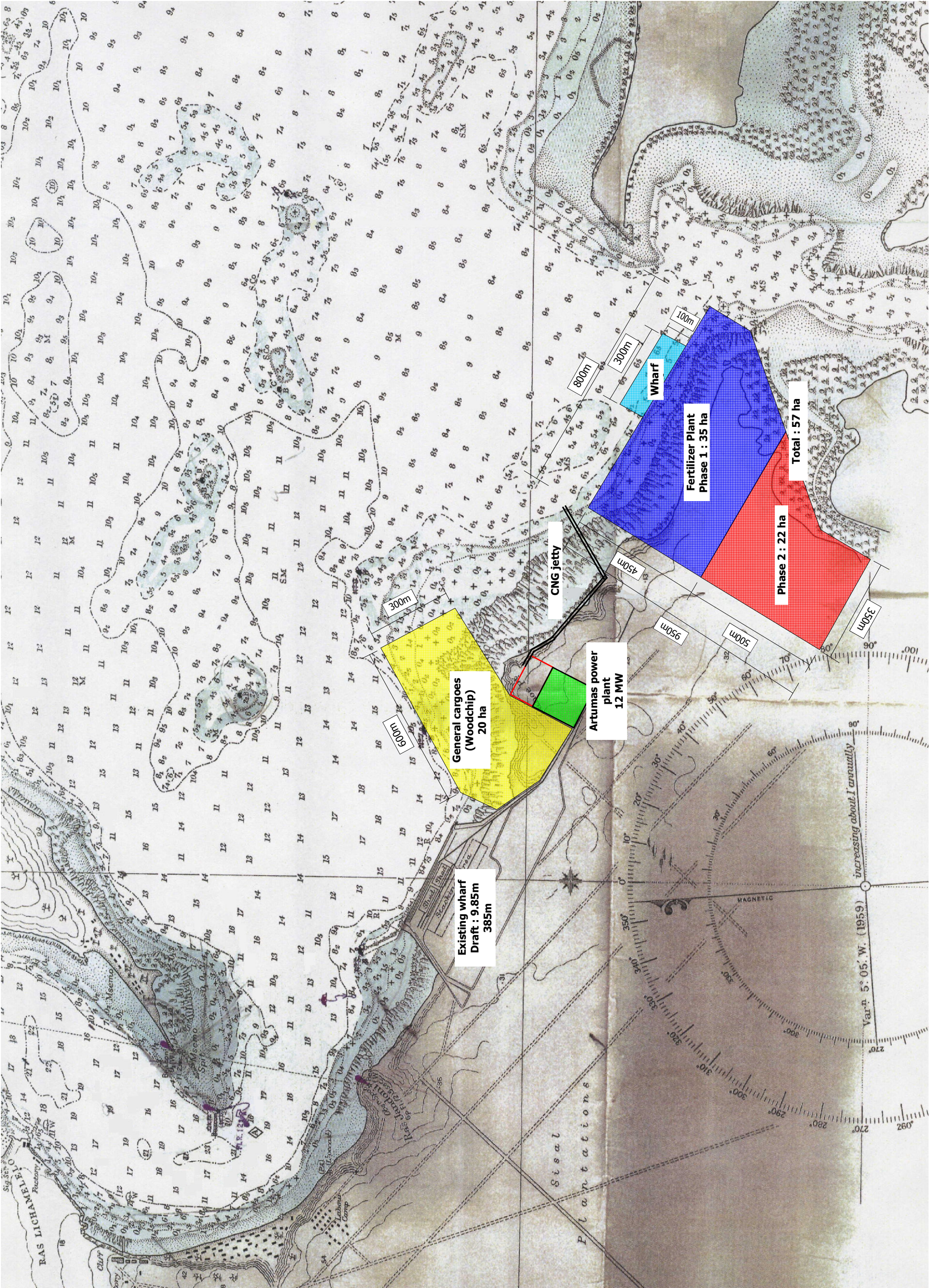
The basic feature of fertilizer project:

- 1) Capacity: 0.5 million ton per year urea and 0.2 Million tons of ammonia
- 2) Required land: 30 hector initially and 50 hector finally

- 3) Port requirements: 300 meter and 10 meter depth
- 4) Project schedule: port and land preparation: 2009-2010 and plant construction: 2011-2012
- 5) Estimated cost: USD 400 million

Considering the urgency and required size of project, it can be proposed the next site to the existing port would be an ideal location. However, taking a consideration of the nature of fertilizer project and the already planned CNG related project, the practicable option can be proposed as per the following drawing. In the drawing, moreover, the wharf development plan for handling general cargoes, which includes woodchip, is indicated, which is to be developed as the first phase of port expansion plan.

Figure. 4 2 Proposed fast track development plan for fertilizer project



The primary remarks of the first track port development plan are as follow;

- 1) The phase - 1 of 35 Ha involves wharf with 300m length and depth of 12m
- 2) Clear land use plan will be decided through the discussion among related parties
- 3) Land title and available land information need to be clarified, especially in the phase -2 area
- 4) High water level of this port is 11.42', say 3.5m above low water level.
- 5) Elevation of the new wharf would be about 5.5m
- 6) The port is possible to accommodate upto 150,000 DWT class vessels with some countermeasure of access channel

Consequently, the first track port development plan needs to be specifically negotiated and agreed upon project implementation in conformity with related parties' mutual interest..

5 Socio-environmental impacts perspective

A large project like the Mtwara port and seaside industrial estate development and subsequent industrialization will certainly cast significant socio-environmental impacts, both positive and negative, to the surrounding community. However, with proper policy and mitigation measures, negative impacts can be minimized. Primarily, in order to understand the possible impacts and to prepare the right policy and applicable measures, the current socio-environmental status needs to be firstly grasped. Possible socio-environmental impacts list will then follow, and eventually the discussion will lead to what kind of policy and measures should be applied prior to the actual implementation of the projects.

5.1 Socio-environmental status of Mtwara region

The Mtwara region is considered to be one of the least developed areas in Tanzania, and regarded as dominantly rural where 90% of the population engages in agriculture. Although the actions mainly through external aids are taken to improve the livelihood through improvement of health, education, and basic socio-economic infrastructure, the region still has a large room to be improved. In the following section, socio-environmental status of Mtwara region shall be grasped.

5.1.1 Population

Although Mtwara is considered as one of the least developed areas in Tanzania, it is experiencing a steady growth of population. According to the 2002 National Census of Tanzania, Mtwara region has a population of 1.1 million whom 52.6% are females and 47.4% are males. Compared to the same study in 1988, a net population growth rate is about 1.7%, and the average population density increased from 53.0 to 67.5 persons/km², which makes Mtwara region the fourth most densely populated region in Tanzania. Among the five main districts—Masasi/Nanyumbu, Newala, Mtwara Rural, Tandahimba, and Mtwara Urban—Masasi is the most populated district accounting for almost 39% of the region's population.

5.1.2 Sources of income

The main income source for the majority of Mtwara's inhabitants (87%) is agriculture, the other activities are fishing, beekeeping and small-scale industries. The regional GDP earnings increased from Tsh.193 billion in 1988 to Tsh.302 billion in 2004. This increase is mainly attributed to increased production in agricultural, fishing and mineral sectors. For farmers, main cash crops are cassava, rice, sorghum, millet, maize, peas, groundnuts, cowpeas, hill rice, sesame, legumes and soya. However, among 8 farming zones in Mtwara

region, cashew nuts are grown in 5 zones, which cover 75% of the region's land. Therefore, it can be said that the region's economic growth depends on the cashew nuts' production level. In fact, cashew nut is the main source of income to most farm families, village governments and district councils. GDP performance by region is shown in Table 5-1 below. Accordingly, Mtwara region's contribution to national GDP is still weak in spite of the increase of the amount of regional GDP, in turn, it can be said that a productivity of the region has little changed.

Table. 5-1: Trends in Regional GDP Performance in Tanzania: 1998-2004 (%)

Region/ Year	1998	1999	2000	2001	2002	2003	2004	Average
Dodoma	3.49	3.48	3.37	3.47	3.49	3.31	3.11	3.29
Arusha	7.49	7.47	7.61	7.64	7.7	3.95	4.35	5.29
Kilimanjaro	4.24	4.23	4.1	4.07	4.05	4.35	4.72	4.4
Tanga	4.09	4.08	4.2	4.42	4.39	4.26	5.33	4.61
Morogoro	4.57	4.56	4.42	4.76	4.76	4.48	5.49	4.86
Coast	2.17	2.17	2.1	2.03	2	2.31	2.08	2.16
DSM	17.88	17.84	17.27	16.82	16.93	16.18	15.14	16.22
Lindi	2.22	2.22	2.15	2.08	2.05	2.34	2.11	2.19
Mtwara	3.76	3.98	3.8	3.89	3.83	2.97	2.68	3.16
Ruvuma	3.75	3.75	3.62	3.18	3.15	3.83	3.85	3.72
Iringa	5.55	5.54	5.36	5.57	5.59	5.53	5.36	5.52
Mbeya	5.72	5.7	5.52	5.75	5.76	5.92	6.76	5.47
Singida	2.99	2.99	2.89	2.65	2.61	2.31	2.09	2.41
Tabora	3.81	3.8	3.68	3.45	3.41	3.7	3.95	3.76
Rukwa	3.75	3.74	3.62	3.27	3.23	3.55	3.46	3.51
Kigoma	2.45	2.44	2.37	2.48	2.45	3.64	3.34	3.14
Shinyanga	7.22	7.2	7.76	7.73	7.79	6.8	6.14	6.82
Kagera	3.76	3.75	3.9	3.8	3.77	4.77	4.31	4.29
Mwanza	7.71	7.69	8.55	9.58	9.74	8.5	8.51	8.55
Mara	3.39	3.38	3.7	3.36	3.32	4.51	4.16	4.03
Manyara	-	-	-	-	3.18	2.79	3.06	3.01
Total	100	100	100	100	100	100	100	100

Source: "Mtwara Region - The Socio-Economic Profile and Investment Potentials, 2007

5.1.3 Education level

Citizens above 10 years of age and who can read and write in Mtwara region comprise only 61% of the region's population. However, the primary school education is showing a steady improvement since 1970s. The number of schools improved from 371 to 532 in 2002, and 538 in 2003. The total enrollment also increased from 74,790 in 1974 to 187,828 in 2003 and 209,610 in 2004. The improvement in numbers also contributing to the academic performance: 92% of students who took national standard four exams in 2003 passed the test while it was only 59% in 2002.

Table. 5-2 Primary Schools, Streams and Total Enrolment in Some Selected Regions (2002)

Selected Region	No. of Schools	No. of Streams	Total Enrolment
Arusha	401	5,827	243,650
Dar es Salaam	285	874	386,683
Dodoma	596	7,891	284,548
Lindi	339	3,322	125,879

Mtwara	532	5,472	187,828
Grand Total in Tanzania	12,649	165,667	6,531,769

Source: Ministry of Education and Culture, 2003

As the number of primary school enrollments increase and industrialization advanced, the demand for secondary school education naturally increases too. However, as Table 5-3 shows below, it can be seen that the Mtwara region has given less attention to secondary education than to primary levels. Still, for the Mtwara region to grow economically in the future, human capital with advanced education is needed in a form of such as accountants, IT workers, engineers, health care workers and other professional occupations like lawyers.

Table. 5-3 Gov. and Non-Gov. Secondary Schools, Streams and Enrollment (2003)

Selected Region	No. of Schools		No. of Streams		Total Enrolment	
	Govt	Non Govt	Govt	Non Govt	Govt	Non Govt
Arusha	40	27	326	219	11,400	7,544
Dar es Salaam	14	54	311	765	13,300	29,969
Dodoma	33	13	309	151	10,405	5,388
Lindi	15	3	106	6	3,717	175
Mtwara	21	4	165	27	5,820	763
Grand Total in Tanzania	649	434	5,595	3,941	200,720	144,721

Source: Ministry of Education and Culture, 2003

5.1.4 Health sector

Although the Mtwara Regional governments acknowledge that improved health of its population greatly contributes to achieve its social and economic development goal, the health sector in the Mtwara region is facing various basic problems, such as poor communications, poor water supplies, poverty, poor rural health services and malnutrition. One of the reasons of poor performance in the health sector can be attributed to a relative isolation of the Mtwara region from development centers in the north.

Table. 5-4 Basic Health Statistics for Mtwara Region by Districts (2003)

		Masasi	Newala	Tandahimba	Mtwara (Urban)	Mtwara (Rural)	Mtwara Region
1	Infant Mortality (IMR)/1,000	157	115	132	90	115	122
2	Child Mortality (USMR)/1,000	203	191	223	80	112	162
3	Life Expectancy	54	51	53	50	45	51
4	Maternal Mortality (MMR)/100,000	224	324	389	260	234	285
5	Health Service Accessibility within 5km in %	64	57	75	100	92	75
6	No. of People per Doctor	28,269		6,795		6,489	
7	No. of Doctor per Health Facility	8,698	681	8,863		6,107	6,798
8	No. of Health Staff	6,462		4,992		15,977	
9	Total Fertility Rate (TFR)/1,000	22	137	112	4.6	63	
10	Birth Rate (%)			1.7	4.6	1.14	1.7
11	Crude Birth Rate (CBR)/100	4.6		20		54	
12	Crude Death Rate /1,000			1.2	0.6	4	
13	No. of People per Hospital Bed	787	1,206	1,859		1,977	765
14	Bed Occupancy Rate	50.3	52	24		7	50

Source: Mtwara Regional Medical Office, 2004

Currently, the region owns 4 hospitals, 14 health centers and 139 dispensaries. Among 14 health centers, 12 are government owned while the rest is owned by religious institutions. One health center caters for an average of 80,609 people while there is only 1 bed per 1,021 persons. Therefore, the region's health policy is targeting to increase the number of hospitals, health centers and dispensaries. However, the shortage in medical staffs is also a huge concern. Currently, the region only has 12 medical doctors and 3 specialists, thus the ratio of doctor per patient is poorly covered.

5.1.5 Environment

Environmental degradation through uncontrolled cultivation and deforestation is causing a

serious trouble to both water resources and forests that are home to various valuable species. In Tanzania, most of the sources of water are used for domestic purposes. Degraded access to water means lower quality of living, which eventually leads to health problems. Recently, the destruction of trees covering over spring water sources made some important natural water sources to be dried up. This is also a serious concern for Mtwara whose people depend on underground water and springs for water source. Currently, water sources in Mtwara region provide 700,000 liters/day while the demand amounts to 12,000,000 liters/day. This implies that more sources must be found to supply the forecasted increase in water demand for envisaged increase in economic activities and population.

About 8% of the regional land area is covered by forest reserves, and more than 90% of the forest land is owned by the central government. These forests are rich in valuable timber, thus being the target of exploitation by lumbering and wood carving dealers. Woods will be usually used for firewood, charcoal, building poles and timber which demand is more than what the region can give out without replacement. The rising demand is mostly attributed to population increases in the area. Although there are some actions to mitigate degradation, such as tree planting program or establishment of community woodlots, the pace is too far behind the destruction speed.

5.2 Resettlement

The first impact on the Mtwara community from the port development and industrialization is deemed to be resettlements of people who are currently living in the project areas. The key area will be the proposed Economic Development Zone (EDZ) around the Mtwara port. Although this proposed area of 2,630ha is owned by Tanzania Ports Authority (TPA), there have been a few settlements and small scale industries operating in the area. Although the development will not happen in the 2,630ha at once and people is required be moved step by step, the following critical factors should be reviewed in the master planning stage.

5.2.1 Critical factors in resettlement

Resettlement issues are not an easy task especially in developing countries like Tanzania. This is largely due to people's skepticism toward the government which historically failed to provide adequate social services and security to people. If the government cannot satisfy people who only claim for basic services, how can it satisfy resettled people who should be provided more. Usually, to satisfy the resettlers, the condition in the resettled area must be at least equal to those available in the original settlement area. The following list is the 8 critical factors that the government especially needs to pay respects.

1) Agro-ecological Factors in the Resettled Area

Although the industrialization which the Mtwara Corridor Development Plan will bring to the community might change people's economic activity, until the development plan completes, still a large number will be engaged in agriculture. Therefore, the soil sustainability and productivity at the new settlement area is a crucial factor. Can a similar crop be grown, does the land have access to safe and reliable water, does the new soil has at least an equal quality to the former, if a new crop is to be introduced because of the soil difference, does it help to improve settlers' livelihood? Numbers of questions must be answered. In this case, if the new land is not so suitable for agriculture, the government can compensate by promising to put the resettled household first for newly opened positions at construction works or new jobs created at new factories, rather than recruiting outsiders.

2) Agricultural Extension and Support

As mentioned above, guaranteeing the quality of the new soil is not enough. Agricultural

support is also essential to a successful long-term transition to the new area. The government must also provide food security during the transition, provide skilled instructors to lessen the likelihood of crop failure, make sure that resettlers have access to the market, clarify who will provide the different components of support, and make sure that there are enough officers who could cover all the households resettled to the area.

3) Land Tenure

A large development plan like the Mtwara port and seaside industrial estate development will likely to change the land value greatly. Therefore, a proper land tenure status must be given to the resettlers. The most vulnerable, like women-headed households and elderly, particularly need to be supported as well as given a secure long-term tenure rights. On the contrary, securing land tenure also helps people to encourage leaving the land even with family ties and roots. However, the land security transfer process should be kept simple and transparent so that people can feel the security immediately, as well as the clarification of the conditions of acquiring land tenure needs to be provided. Particular key conditions may be the follows;

1. Status of enforceable ownership to the allocated land (the allocated land can be inherited? or can be used as collateral to borrow money?)
2. Arrangements of payment for acquiring land (grant? the balance to be paid?)
3. Preferential terms to be given for socially weak household?

4) Social Services

One of the important factors to process resettlement smoothly is to give enough motivation to resettlers to move to a new land. Therefore, social infrastructures and services, such as energy, housing, water, communications, markets, transportation, health and education, at the new land should be carefully reviewed. Each element is also inter-linked, like “if transportation is not enough, will the promised social aids can be provided?”. As listed in 1), the government can motivate resettlement by promising to give newly created jobs at EDZ to resettlers.

5) Relationships between Resettlers and the Host Community

The possible conflicts between resettlers and the host community must also be kept low. In the past history, when the new settlers receive substantially better social services than the host community, conflicts are unavoidable. Therefore, resettlement policy should be enforced in a way that raises the standard of the whole community, but not just the resettlers.

6) Gender

The government must avoid women and children to disproportionately suffer by understanding different needs for women. Men and women usually affected differently by moving to a new land. An effective way is to encourage women’s participation in the resettlement planning process.

7) Environmental Sustainability

Poor and marginalized groups often rely heavily on natural resources, therefore the availability of sustainable resources affect their intentions of moving. However, the spoiling on the surrounded environment at the new area should also be avoided. The conflict between resettlers and the host community happens in this area too because new settlers may bring increased competition over natural resources.

8) Administration, Coordination, and Cost

The most important factor is to manage new policy and projects to minimize the problems listed above by proper administration, coordination, and budget. Using grassroots or village leadership is useful, however the right agency must be chosen carefully because they affect the decision-making process. Feasibility study including the social-economic conditions should be conducted to calculate the cost of resettlement. If the cost exceeds the local government's ability to pay, a proper aid agency must be identified.

Resettlement program is usually developed to give "right incentives" to the targeted population, however, it also needs to be fit into Mtwara and Tanzania's overall development framework. The process involves tremendous resource inputs in the form of finance, material, and human capacity. Although the local government will be the center in carrying out the task, the project planners need to give a constant support to them. Once the resettlement process is carried out, the industrial development process will start, and bring a large impact to the Mtwara community. The socio-environmental influence is studied in the next section.

5.3 Possible socio-environmental influence to the Mtwara region

The large scale industrialization that the Mtwara port and seaside industrial estate development brings to the community will certainly have positive as well as negative impacts on people's socio-economic activity. The major changes industrialization may bring are 1) more local employments, 2) improved infrastructures, and 3) urbanization. Both positive and negative impacts that each change causes to the society is observed below.

5.3.1 Local employments

The Mtwara port and seaside industrial estate development is expected to bring new industries to the region, such as woodchip processing, agro-processing, steel mill, ship-breaking, fertilizer and cement industries. There come first the industries that can use available resources in the Mtwara region and conduct simple processing. In later on, once the Mtwara port is improved with Economic Development Zone (EDZ) and industrial concentration developed, much more advanced industries are expected to locate their industrial bases in the region. Consequently, the economic impacts through this industrialization process causing to the local community will be large. Each new industry needs at least a few hundred workers for development and operation stages throughout. Since more than 90% of the current population is relying on agriculture and fishery production which income fluctuates according to the conditions of natural environment, a stable income source brought by full-time employments at these new industries could cast tremendous impacts on the people's lifestyle.

Stable, sometimes higher income enables a household an access to health care and education. Children who previously could not attend schools or needed to be absent time to time to help the family for farming, fishing, or other activities will become able to attend school daily with a stable income. Daily attendance enables children to keep up with study, which eventually lessen the drop-out rate and helps children to achieve a higher educational level. People who completed a higher educational level usually have more knowledge and skills, thus have more options in employments in the future. Healthy and well educated population will also eventually contribute to Tanzania in boosting its national economy.

A constant full-time work experience is the best way for job training. A large portion of new industries which are expected to come into the Mtwara region is deemed to be foreign companies with better work ethics and capacity training than local small scale industries the Mtwara region currently has. Through employment in such new industries, workers will

improve their knowledge and skills, which leads to more varieties of income source in the future. For example, a Canadian energy company called Artumas Group, which operates a power station in the Mtwara region and employs 24 staffs all from the local area and previously unemployed, provides English courses to enable local workers to communicate with Canadian employers and read English manuals, and make workers experience every division of the entire operation—from technical assistance to supervision. With improved English skill and experiences in various working tasks, workers can build advantages in aiming for more complicated or higher level jobs in the future at different companies, which may lead to higher income.

5.3.2 Improved infrastructures

For developments and operations of new industries, improvement in infrastructures—road, railway, port, electricity, sewage, and water distribution—is a necessary investment. Currently, Mtwara town already possesses the basic requirements to become a regional hub with broader commercial activities, including:

- An airport with a runway capable of landing Boeing 737-sized aircraft;
- A telecommunications network;
- Banking services;
- Potential power from the natural gas field of nearby Songosongo Island.

Further improvement in infrastructures brings a great benefit to local people. With improved transportation infrastructures, people will receive improved access to and from urban to rural areas. This enables household to access to health services easier, as well as children and workers to commute to schools and work places easier. Easier access to schools lessens the drop-out rate, thus lead to better education level. In addition, normally, improvement in electricity facilities enables people to work late, children to study longer, and women to make daily chores easier by water pumping and cooking. Improved water/sewage facilities lessen the danger of people infected by dirty water.

On the contrary, improved infrastructure facilities also cast negative impacts to people's life. Good transportation infrastructures eventually lead to a large traffic volume, which if left uncontrolled, lead to pollution and traffic accident. Road and railway development through a previously almost untouched area of Mtwara also means a need of cutting down a certain amount of forests. As it is happening in China and India, if a country rapidly industrializes without sufficient regulations and policies on environmental control, people will start suffering from pollution, which devalues people's improved access to health care as a result of higher income brought by industrialization.

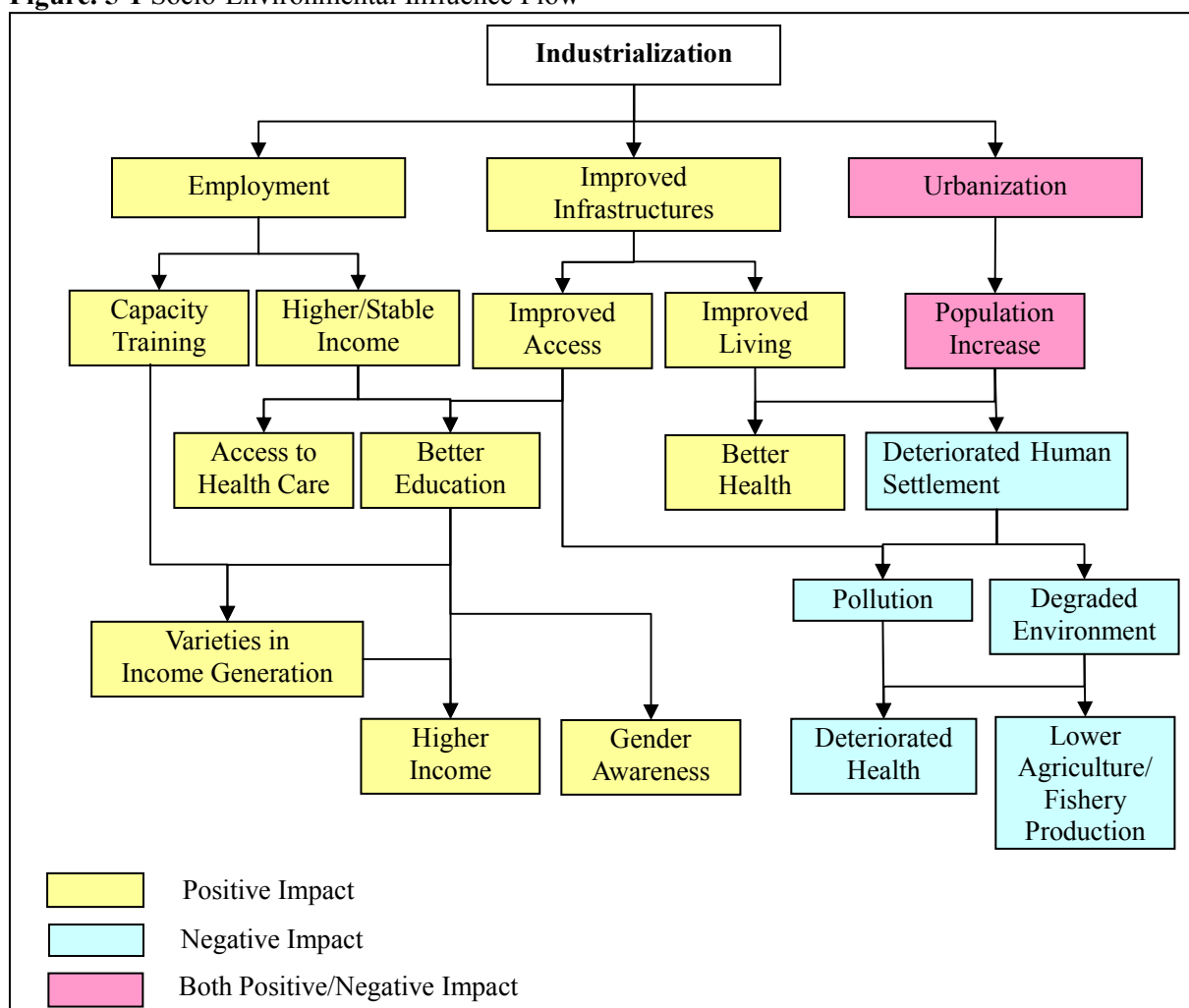
5.3.3 Urbanization

New employments generated by industrialization will surely attract a flow of people from around the country where the unemployment rate exceeds 20%. Increased population will lead to more health service, education, banking, and commercial facilities because of the collective demand. Increasing number of public and private facilities will hopefully lead to more access to services and raise people's living standard. However, what is problematic about the Mtwara port and seaside industrial estate development is the anticipation on the rapid urbanization process that regulations and policies cannot keep up with the pace. In the past history in newly developing countries in Asia and South America, increasing urbanization without proper policies and capable regulatory institutions has led to deteriorating human settlements conditions, depletion of natural resources, and increased discharge of unprocessed wastes into the environment, which resulted in severe health problems. Degraded environment will result in

lower agriculture and fishery production, degraded quality of livestock management, and less-attractiveness in game reserves for the tourists.

The possible influences caused by industrialization explained above are summarized in Figure 5-1 below. In the next section, necessary policies and regulations that the Mtwara region should take to maximize the benefit and minimize the harm are discussed.

Figure. 5-1 Socio-Environmental Influence Flow



Source: Study team

5.4 Policies and regulations to maximize the benefit and minimize the harm

From the analysis above, we can predict that the most concerned area among socio-environmental impacts is the environmental harm that infrastructural developments and urbanization process might bring to the community. Therefore, a proper regulations and policies should be enforced before the actual development happens.

5.4.1 Proper urban planning policy

A rapid urbanization process that the Mtwara port and seaside industrial estate development is likely to bring would trigger a significant growth of the population and concentration in some of the districts. As we can see in the capitals of developing countries, unplanned human

concentration in certain areas results in deterioration of the human environment, which often described as “slums”. According to the socio-economic report of the Mtwara region, all district councils supposed to have town plans and regulations which intend to provide detailed information on land development and investment areas. Calling in investors and building appropriate infrastructures are important for the community to economically develop, however, securing the environment and affordable housing is also an important aspect of the local government’s provision. If there is a need, a strategic urban development plan for the Mtwara region must be drafted.

5.4.2 Environmental Impact Assessment (EIA)

Since the environmental issues are one of the most debatable issues around the world at the same time Africa is known by its abundant nature, if the Mtwara port and seaside industrial estate development project deteriorates the Tanzanian environment too large, the project itself became controversial and might need to be delayed. Thus, Environmental Impact Assessment (EIA) should be carried out to properly plan countermeasures. EIA is required under the Environmental Management Act 2004. The institution responsible for EIA implementation is Environmental Units (EUs) located at district and sector levels, which is largely governed by the national Environmental Regulatory Body (ERB). However, since environmental policies and laws are still new to Tanzania, local authorities have often very few resources regarding to environmental management, such as environmental experts and funds. Thus, capacity training for officers, and a stronger coordination with the central government must be implemented. Since EIA is widely enforced around the world, Tanzania can find many model countries upon its start.

In addition, though less emphasis is placed on compared to EIA, the Tanzanian laws also encourage carrying out Strategic Environmental Assessment (SEA). SEA applies primarily to development-related initiatives that are known or likely to have significant environmental effects, notably those initiated individually in sectors. SEA is considered to be broader than EIA in a way including social, health and other consequences of a proposed action and their relationship to sustainable development concepts and strategies. Once the actual plan of the Mtwara port and seaside industrial estate development is conceptualized, a consultation with the local regulatory body on which kind of environmental assessment report should be prepared must be held.

Tanzania’s economic development is an important incident not only for its country, but also for the Africa region as a whole. Therefore, its impact must be carefully analyzed so that it does not go against the world’s development policy trend. In order to achieve a universal support, any harm must be minimized and certain amount of measures to prevent harm should be taken, at the same time the benefit is widely shared by all classes in the region.

6 Organizational coordination

For preparing the Mtwara port and seaside industrial estate development plan, the Public-Private-Partnership (PPP) is deemed to be a base. PPP refers to a collaboration between public sectors and private sectors in the project development and operation by each party’s engagement in what they perform and facilitate better under certain circumstances. For example, in the port development which requires huge investment, the basic and shared infrastructures (common wharf and entrance channel development, safety equipments etc.) should be reasonably developed by the public sector, while specialized individual wharf (different type of goods handled according to each industry’s need) should be developed by the private sector. However, since there are many concerned organizations to be involved under the name of

“public” and “private”, the coordination between concerned organizations will be clarified and the important roles for smooth facilitation of the plan are discussed.

6.1 The government of Tanzania

The collaborative coordination between different governmental entities will be especially difficult, since each agency possesses different interests and different decision making structures and speed. During the visit of study team in July, 2008, the majority of the governmental entities proposed that the Ministry of Infrastructure Development should be the focal point since it is the main contact organizations for port operation and development. The following list shows the governmental entities and the particular roles in this Mtwara port and seaside industrial estate development plan.

- 1) *Tanzania Ports Authority (TPA)*: possesses the land right over the Mtwara port and surrounding area, of which total is 2,630ha. Mtwara Port Authority is one of the regional offices of TPA.
- 2) *Ministry of Infrastructure Development*: approves the request from Tanzania Ports Authority to build/improve public infrastructures
- 3) *Ministry of Finance*: receives the development request from fellow governmental agencies and, if required, further requests to aid agencies like, WB and foreign governments.
- 4) *Ministry of Energy and Minerals*: monitor whether the plan is moving toward the same goal as the Tanzanian government has in terms of energy policy.
- 5) *Ministry of Foreign Affairs (MOFA)*: monitors the relationship between Tanzania and Japan, and other countries involved.
- 6) *Tanzania Petroleum Development Corporation (TPDC)*: process the development of natural gas in the Mtwara region.
- 7) *National Development Corporation (NDC)*: possesses the development right for Mchuchuma coal mine and Liganga iron ore mine sight as well as the Mtwara development corridor.

6.2 Aid agencies

Aid agencies which are expected to be involved in this plan are;

- 1) *Japan International Cooperation Agency (JICA)*: JICA has already been funding the road development plan from Masasi to the inland in the Mtwara region. In addition to the support on infrastructure development, JICA should support a capacity development program for officers, especially for those working at the Mtwara port. Staff upgrading is indeed critical for any port development. Individuals would have the basic skills like in pilotage but because of the increase in expected handling capacity of the new port and related technological advances, upgrading of skills is necessary. Especially, staffs in engineering, operations, marine, finance, port planning and IT would greatly benefit from well designed programs.
- 2) *Japan Bank for International Cooperation (JBIC)*: JBIC agreed to extend a grant of US\$ 63 million for the construction of the Arusha-Namanga road and the budget support of \$20 million for five years for the government's programme on poverty reduction and growth. JBIC was integrated to JICA from October, 2008.
- 3) *African Development Bank (AfDB)*: AfDB agreed to undertake the construction of roads from Permiho-Mbinga-Mbamba Bay in 2008, which further integrates scattered towns inside the Mtwara Development Corridor. The construction is expected to be finished by

2011. In relation to the above, since the Mtwara port will become a gateway for the road traffic, AfDB is showing interest in participating in the plan and actual development.

- 4) *World Bank (WB)*: WB originally assisted NDC during the kick-off of the Mtwara Development Corridor project in 2006 through one of its group called, Public Private Infrastructure Advisory Facility (PPIAF). PPIAF helped to train designated staffs of NDC on conducting project appraisal and reviewing consultants' work appropriately and effectively. As it is showing an interest in assisting Tanzania's integrated transportation network process, WB is expected to assume a larger role in the future.
- 5) *United States Agency for International Development (USAID)*: Although USAID currently does not have an active role in the Mtwara Development Corridor projects, it is willing to collaborate with Millenium Challenge Corporation (MCC) of the United States government on the rehabilitation of the trunk roads of the corridor. The concerned roads are 61km between Nawtumbo-Songea, and 78km between Peramiho-Mbinga. The program also includes the capacity building of the Tanzania National Road Agency (TANROADS) to manage the mainland trunk road activity.

Since the Mtwara port and seaside industrial estate development plan is relating to many different projects, such as coal mining development, iron ore development, port improvement, new industries development, etc, multiple aid agencies are expected to be involved. To maintain efficiency, each aid agency's role should not be overlapped, and its interest should not be collided. Therefore, the coordinator should carefully follow each aid agency's objective in each project.

6.3 Private sector

Upon the plan officially launched by the Tanzanian government, interests and business plans of numbers of private firms, including both those who are already operating in the region or possess natural resource concession, and those who would like to put new factories in the EPZ area, are expected to be integrated in the plan. Since private agencies are more interest specific, they are quick in processing at the same time and tend to be less careful about side effects (both positive and negative). Therefore, there is a need to utilize their ability to get things done at the same time carefully aligning their course of work to the Tanzanian governments' interests by effective regulations.

Besides Artumas Energy, a Canadian energy company which is providing electricity to the Mtwara region, various energy companies, construction companies, cement companies, fertilizer companies, and trade companies are expected to be involved in the earlier stage. After experiencing economic and population growth, service companies like entertainment and hotel operations are to be followed.

6.4 Local community

Although the main decision making is happening at the central government in Dar es Salaam, a large part of the actual implementation activities is expected to be handled by the local government. Mtwara Regional Commission, Lindi Regional Commission, and Mtwara Port Authority (under TPA) were informed about the conceptual framework of the Mtwara port and seaside industrial estate development plan during the visit of the study team in July, 2008, and they expressed a keen interest in the plan. Still, since it is the first time for the Mtwara region to experience such a large development plan, a proper training for officials in coordinating the process and concerned players will be necessary.

In addition, as it shall be mentioned in Chapter 7.2, the involvement of the local community upon the resettlement issue is crucial. They are the source of the current socio-economic status, the indicator of the level of the resettlement compensation, and the essential work force once the development process starts. Therefore, the local government must listen to the opinions from their fellow residents, and process the development plan in a way that balances the local community's needs and development initiators' needs.

7 Implications for the formulation of practical master plan

For proceeding the Mtwara port development master planning, an outline for drastic improvement measures to accommodate 150,000 DWT class carriers, which is enough to embark large volume of mineral bulk cargoes, as well as efficient land use of EDZ for industries and logistic channels need to be considered. The followings are preliminary remarks to be incorporated in the Mtwara port and seaside industrial estate development master plan.

1. Widening of Msemo spit entrance channel would be required for allowing entrance of swell (estimated significant wave height of 3.5~4.5 m) into the port during monsoon season.
2. Installation of breakwater of approximately 450 m length on the reef at about 1.7 km northward from the Msemo spit would be necessary to protect invasions of swell and geographical changes. Allocation of breakwater and influence to the inside of the port should be examined through simulation model and ship maneuvering simulation.
3. Seaside industrial zone and land use plan
As several private business projects are proposed in the port area, well-mannered coordination of land allocation and zoning will be a critical measure to facilitate efficient and systematic flow of industrial goods and materials in the port operation.
4. Railway track connection
Since a large volume of coal, iron ore and other stuff is planned to be brought into the port via railways, the connecting track and debarking station need to be installed near the port. Land allocation is also an important measure to be considered at this planning stage.

To consolidate and clarify the Mtwara port and EDZ development program, consequently, the following definitive master plan and feasibility study need to be conducted.

Objectives

- 1) To formulate the role of Mtwara port in consideration of Dar es Salaam port and Tanga port.
- 2) To formulate the requirement and necessary approach from SADC member countries of Mozambique, Malawi, and Zambia to get information and request on the MtDC.
- 3) To formulate a master plan for Mtwara port with phasing construction scheme
- 4) To formulate Short Term Development Plan with target year of 2012
- 5) To evaluate and integrate the major private and public projects in the MtDC
- 6) To recommend management and operation system
- 7) To formulate a master plan for Economic Development Zone (EDZ) for 2,650 ha of land owned by the TPA.

To accomplish the above objectives, the study should contain following aspects.

Scope of the study

- 1) To evaluate the role of the Mtwara port taking into account the role of Dar es Salaam, new Bagamoyo port and Tanga ports.
- 2) To evaluate the connectivity to Mozambique, Malawi, and Zambia as the hinterland of MtDC.
- 3) Socio economic conditions of the Tanzania and the hinterland of MtDC
- 4) Present situation of the Mtwara port and Mikindani bay
 - (i) Natural conditions including sea bed, current, tide and wind etc.
 - (ii) Natural and social environmental conditions
 - (iii) Port facilities
 - (iv) Present port activities

Master plan

- (i) Development policy and strategy
- (ii) Conceptual zoning and land-use for 2,650 hector for EDZ
- (iii) Cargo demand forecast
- (iv) Long term master plan for Mtwara port and EDZ
- (v) Preliminary design and cost estimate for Mtwara port and EDZ
- (vi) Preliminary economic evaluation for Mtwara port and EDZ
- (vii) Initial environmental examination for Mtwara port and EDZ
- (viii) Financial arrangement of both for Mtwara port and EDZ
- (ix) Management and operation for Mtwara port and EDZ

Feasibility study for short term development plan (2009-2015)

Structural Design

- (i) Construction and implementation plan
- (ii) Cost Estimate
- (iii) Financial program
- (iv) Economic analysis
- (v) Financial analysis
- (vi) Environmental impact assessment
- (vii) Management and operation
- (viii) Review regulatory frameworks
- (ix) Cluster analysis (value-chain analysis)
- (x) Identify market potentials
- (xi) Detail site development plan and frame benefits to target firms competitiveness

8 Action plan

In this study, prospective Mtwara port users are mostly identified. In proceeding the project preparation and eventual implementation, discussions with those business players, the Tanzanian government and responsible agencies will be critical. When responsibility matrices, inputs, outputs and resource requirements are identified and then program was developed to address the requirements for project implementation, then the formulation of master plan and a detail project feasibility study with technical perspective will be the next focal point. As the next action, therefore, studying technical and physical feasibility with comprehensive port and EDZ development master plan as port users (private investors) desire is fairly important. Cargo demand and port handling capacity could be reciprocal in that unless cargo demand is not much high, the port capacity is deemed limited.

In this sense, the fast track project of gas-related fertilizer project will become important facilitator which can be applicable to lure additional demand creation for the cargo. However, land use and zoning policy must be put in place at the earliest so that efficient flows of cargo and ship navigation would not be laid up with dysfunction. Since, Japan can assist in the field of study master plan and the Tanzanian government intends to request for the assistance, the project preparation work can be ideally provided by JICA technical assistance.

Once the Master plan with feasibility study was conducted, and a positive outcome was received, detail design of the port and EDZ development and cost estimate should be performed. Since the private project is on-going, port and EDZ development can not be slow, hence consultancy service for those technical assistance need to proceed in fast track with optimal timeframe.

Among several proposed industrial projects, the fertilizer project is likely to be implemented in the near future; therefore, a preparation of the first track port expansion and land development as EDZ will be needed urgently. The proposed fertilizer plant using natural gas discovered near the Mtwara has been planned for some time and Tanzanian Government has been promoting the fertilizer project. In order to finalize the fast track expansion of port and EDZ, more detail discussion and consensus among stakeholders (TPA, investors for fertilizer and gas-providing company) need to be facilitated.

The target year of the completion of the detail designing is 2011. Consequently, the master plan for port and EDZ development is aimed to be proceeded as per the following schedule.

Future action plan for the Mtwara port and EDZ development

- ▶ Establishing cooperative relationship with related ministries and agencies (TPA, NDC, EPZ, etc.) that bears responsibilities for the development of the Mtwara port and industrial estate (EDZ)
(2007 - 2008) - carried out
- ▶ Briefing to personnel in charge in the Japanese Government (Ministry of Economy, Trade and Industry, Ministry of Foreign Affairs, Ministry of Land, Infrastructure, Transport and Tourism and JICA)
(Summer, 2008) - carried out
- ▶ Sending a request letter on the Mtwara port development from TPA to the Japanese Government
(July, 2008) - carried out

- ▶ Project finding mission
(Spring, 2009) – to be carried out
- ▶ First track port expansion plan survey and design work
(Spring, 2009) - to be carried out
- ▶ Project preparation (Master plan, Detail Design, Feasibility study)
(Summer, 2009) - to be carried out
- ▶ Port development implementation
(2011) - to be carried out

9 Summary and recommendations

For the promotion of this project, the involvement of a lot of stake-holders is assumed partly because of a strong concern from the Tanzanian government and private companies. Accordingly, special circumstances over the Mtwara port development and the significance of this project are summarized in the end:

- (1) The Mtwara port has been used to send off agricultural products from the region. However, its potentials have not been explored in spite of surrounding abundant fertile land resources and a vast forest and agricultural resources in the hinterland. Hence, it can be said that the Mtwara port has been left from real development up to now.
- (2) Although feasibility of the Mtwara port development was positively evaluated through the study on the Mtwara Development Corridor resource-related infrastructure development project investigated by METI in 2005-06, the resource price in the international market afterwards increased three time more than the time study was carried out (even after the current international financial/economic crisis, price remains twofold that the previous study). Consequently, the haste resource development business came to get on the profit enough. In order to seize this chance and realize the development of Mchuchuma and Liganga mines, the Tanzanian government is willing to propose international competitive bidding for mines and transportation development (port, railway and road) to advance regional development as well as related integrated infrastructure to be laid in the Mtwara Development Corridor.
- (3) As for the Mtwara Development Corridor projects, which includes coal, iron ore, power generation, and a related infrastructure projects, has a total investment scale of \$4.3 Billion. The implementation is expected to perform through PPP scheme with an arrangement of 30% from the public fund and 70% from the private investment. The development of the Mtwara port is among the public sector-led part.
- (4) The Mtwara port development, which is expected to be worked as a gateway for the entire corridor, is a first step in an important corridor development where an enormous natural resources and the agriculture and forestry resources have been embedded for nearly more than 100 years. Moreover, the corridor with the Mtwara port gateway would bring 3 land-locked countries in East Africa to be connected, and facilitate economic and trade integration. However, the issue is how to promote investment decision from private companies that is expected to put 70% of the project total cost as the capital investment, and how to support their operation partly by ODA. That is to say, ODA can be a possible calling water of the larger sum of private investment advancement for the entire corridor

development. Hence, ODA on the Mtwara port development can play an important role for initiating this successful PPP model for Tanzania.

- (5) This Mtwara port project is an excellent case that the Japanese government should initiate with direct involvement and support from the Tanzanian government. The project would surely bring benefits for prospective Japanese investments in the region through a realization of infrastructure development related to the mineral and agricultural resources in the future. If the development support on the port and EDZ is achieved with yen loan assistance, it is expected to become a strong backup initiative, and a driver for private business advancements.
- (6) Since any port should be developed based on the Market Driven Approach, Mtwara port development should be also based on actual demand first. In this regard, the fertilizer plant is likely to come as the first project to be implemented in the area in near future and preparation work of the fast track (300 meter port and 50 hector sea-side industrial zone development) have been taken placed. Therefore the preparation of the fast track project should be a facilitator of subsequent full-scale port development master plan in the summer of 2009.