



A PRELIMINARY STUDY ON DEVELOPMENT PORT OF BENGHAZI

Manal ABMDAS

High Institute for Engineering Professions manal.abmdas@gmail.comBenghazi /Libya

Asst. Prof. Dr. Ergun DEMİREL

Piri Reis University, edemirel@pirireis.edu.tr Istanbul/Turkey

ABSTRACT

As result of the Civil War and Foreign Intervention in Libya in 2011, damage and disorder from the war has been considerable. There are frequent electric outages, little business activity, and a loss in revenues from oil by 90%. A third of the country's population has fled to Tunisia as refugees. Main source of the country, oil production has fallen from 1.6 million barrel per day to 900,000 in five years of war and civil disturbance. Despite periodic economic and political crisis, a considerable emerge of economic activity is expected in the near future in particular reconstruction of urban areas and infrastructure is expected soon. Shipping is one of the most important forms of transportation for global trade. The ports play an important and vital role in the maritime transport chain, because it represents the link between road transport and maritime transport, in addition cannot be global trade that have an affair in the absence of ports.

The port of Benghazi acquires importance and distinction of being a key ring and a centre link between many of the regional countries in the field of various economic transactions. The port of Benghazi is the second largest ports in Libya after the port of Tripoli and the advantage of the port it serves a wide and large area includes eastern and southern Libya, and extend to west (Ras-Lanuf area), because importance economic and commercial of Benghazi city and as the largest also most important east cities of country and the second Libyan cities in terms of population

The aim of study is preparation of studies to improve the port of Benghazi in particular in civil works, to meet existing and future requirement of the Libya.

This study starts evaluation of the economic activities which lead in understanding the logistics requirements of Libya as well as major difficulties in the different type of logistics operations. Then the role of Port of Benghazi in Libyan economy will be discussed to define port development requirements. In the light of these requirements an Architectural Design Study will be improved to shape future posture of the port. Based on this future posture possible civil work requirements will be considered.

This is an initial study which aims to define future works for development of Benghazi port to meet the requirements of Libyan economy in next decade.

Key Words: Port of Benghazi, Libyan Economy, Port Development, Civil Works in Port.

1. INTRODUCTION

The development of a new or extended port layout requires adequate attention to a number of aspects, Firstly creation of an Architecture Design Study to show schematic view of existing, modified and new facilities to meet overall requirements, Secondly to definition of required civil works in the port to complete the development project.

There is a need for innovative solutions for port development which are in harmony with port opportunities and which are robust or adaptable under change.

In this study, we discuss the concept of impact of port development in joint creation with principles of architecture, engineering infrastructure and points of view for environmental, social and economic. The following table shows the percentage share in import and export for some regional countries for Libya:

Table 1: The Percentage share in total exports and import for some regional countries for Libya

		2005	2006	2007	2008	2009	2010	2011	2012	2013
Chad	Imports	386	418	635	779	904	1,333	767	822	1,080
	Exports	2,172	2,513	2,515	3,924	2,301	3,101	3,859	3,276	3,105
Niger	Imports	736	860	956	1,208	1,627	2,290	1,917	1,685	1,714
	Exports	486	470	470	1,026	628	484	1,081	1,307	1,337
Libya	Imports	5,033	6,196	6,749	9,116	12,859	17,674	7,114	19,719	24,417
	Exports	30,948	31,632	32,503	44,696	27,256	36,440	18,734	58,267	42,221
Tunisia	Imports	13,174	15,007	19,099	24,638	19,096	22,215	23,952	24,471	24,266
	Exports	10,494	11,694	15,165	19,320	14,445	16,427	17,847	17,007	17,060
Algeria	Imports	20,357	21,456	27,631	39,475	39,258	41,000	47,220	50,369	54,910
	Exports	46,002	54,613	60,163	79,298	45,194	57,051	73,436	71,866	65,998
Italy	Imports	384,836	442,565	511,823	560,960	414,784	486,984	558,832	489,104	476,414
	Exports	372,957	417,153	500,203	541,786	406,479	446,840	523,256	501,529	513,717
Turkey	Imports	116,774	139,576	170,063	201,961	140,869	185,541	240,839	236,544	251,651
	Exports	73,476	85,535	107,272	132,002	102,139	113,979	134,915	152,537	151,796
Spain	Imports	289,611	329,976	391,237	418,728	287,502	315,547	362,835	325,835	332,267
	Exports	192,798	214,061	253,754	279,231	223,132	246,265	298,171	285,936	310,964
France	Imports	475,857	529,902	611,364	695,004	540,502	599,172	700,852	663,269	668,658
	Exports	434,354	434,354	539,731	594,505	464,113	511,651	581,542	556,576	566,879
Malta	Imports	3,865	4,396	4,947	5,141	4,034	5,732	7,396	7,896	7,525
	Exports	2,431	2,847	3,158	3,029	2,280	3,717	5,279	5,646	5,206
Egypt	Imports	19,812	20,594	27,031	52,751	44,912	53,003	62,282	69,866	66,666
	Exports	10,366,216	11,985,054	13,823,121	15,971,873	12,310,033	15,050,924	18,055,465	18,003,055	17,974,395

Source: ITC, 2015 and UNCTAD, 2011c)

This Table show that the level of the economic interactions throughout the regional countries is not well improved. If the respective countries desire to get maximum benefit from the geographical advantage, they should spent more effort and try to improve more simple and effective manners to improve their economic achievements. Cooperation in the logistics field is considered as a key, suitable and easy field to improve the economic cooperation in general.

2. RESEARCH METHOD

The aim of study is preparation of studies to improve the port of Benghazi in particular in civil works, to meet existing and future requirement of the Libya.

This study starts evaluation of the economic activities which lead in understanding the logistics requirements of Libya as well as major difficulties in the different type of logistics operations. Then the role of Port of Benghazi in Libyan economy will be discussed to define port development requirements. In the light of these requirements an Architectural Design Study will be improved to shape future posture of the port. Based on this future posture possible civil work requirements will be considered.

The research will also cover a SWOT analysis to identify strengths and weaknesses, threats and opportunities, as well as analysis of existing site elements and services provided. This will facilitate to determine development requirements. Architecture Design Study will be shaped in accordance with port location, and specifications. This part of study will lead to define civil work requirements oriented by engineering standards.

This is an initial study which aims to define future works for development of Benghazi port to meet the requirements of Libyan economy in next decade.

3. RESEARCH

From a certain point of view, the expansion of violence in Libya was a direct result of the weakness of the Libyan state, which lacked the classical concept of abandoning the concept, that it had no legitimate monopoly on the use of force within its territory. The basic needs of state-building in Libya have been, and continue to be, substantial. The circumstances in which these needs were to be met were also very difficult.

Often civil wars in resource-poor states are needed to maintain basic governance institutions and provide public services. However, Libya was rich compared to many other war-torn countries. Relatively high levels

of per capita income have made a good candidate for easy post-conflict transition, and economic activity was widely expected to return rapidly after the war.

Libya's energy resources are a blessing and a curse. On the one hand, Libya is liberalizing some of the economic constraints faced by post-war countries. On the other hand, Libya's oil wealth has created problems - some unexpected, others predictable. Therefore, serious consideration must be given to the diversity of sources of economy under the prevailing conditions. This will be a difficult battle.

Luckily, the economic damage due to the conflict was relatively minimal. To sustain growth over the longer term, however, Libya will need economic reforms to improve the business environment. Under the former regime, labour laws and financial and trade regulations were largely unclear. The development of non-oil infrastructure has been neglected consequently, the Libyan economy is experiencing significant distortions, and the non-oil sector remains small.

Like the Gulf States, Libya seeks to use its oil wealth to invest in infrastructure. However, the economic growth environment will improve if the country invests in developing its airports and seaports, especially if the country provides opportunities for the private sector to participate in the investment and management of these operations.

3.1. Existing and Future Requirements of Libya in the Near Future

At a time of global gloom when most governments are tightening their belts, Libya is a rare source of light. The North African oil exporter is splurging on massive building projects in an attempt to make up for 40 years of underinvestment that have left it with poor services and its infrastructure in tatters.

Nearly all infrastructure projects are funded by public money, but Libya, which has some of the richest oil and gas reserves in Africa, can afford its ambitious modernisation programme. Hydro-carbon exports account for 95 per cent of foreign revenues, and the country has built up substantial foreign currency assets of \$139bn (£95bn, €114bn), giving it plenty of room to manoeuvre. Total spending in this year's budget is \$46.6bn, up 32 per cent from a year before. According to official figures, Libya has allocated roughly \$66bn to infrastructure and housing projects between 2010 and 2012.

Libya spends \$ 2.5 billion on infrastructure, with an emphasis on airport and port development, but the delay is unusual in Libya, a bureaucratic state that has not yet created the administrative capacity to handle the huge number of planned projects.



Figure 1: North African Context

In order to expand the sources of economic income of Libya, the maritime transport sector must be seriously considered and the port's performance improved and improved in order to attract the large shipping lines of the container vessels and the need to provide a good internal transport network to serve these ports in order to improve the production capacity and service of the maritime transport industry, And the development of related activities, in addition to the rehabilitation and development of some ports and integration in their environment in order to contribute to the achievement of sustainable development.

3.2. Existing Situation of Benghazi Port

Benghazi port is the largest of Libyan ports in terms of space as an area of total 4.4 million square meters. But it is not the largest in terms of transactions in the country. Run and give him services since 1986, the company's socialism for the ports, which manages all the Libyan commercial ports. The port has 19 berths including 11 berths for general cargo. The annual capacity of the port is 4,000,000 tons at unit a day.

The reasons to choose search the current situation of Benghazi port compared to neighbouring ports in the Mediterranean basin, especially after the recent war. And the need scientific overview for study port in terms of layout of port site and its needs, and give more effective for port.

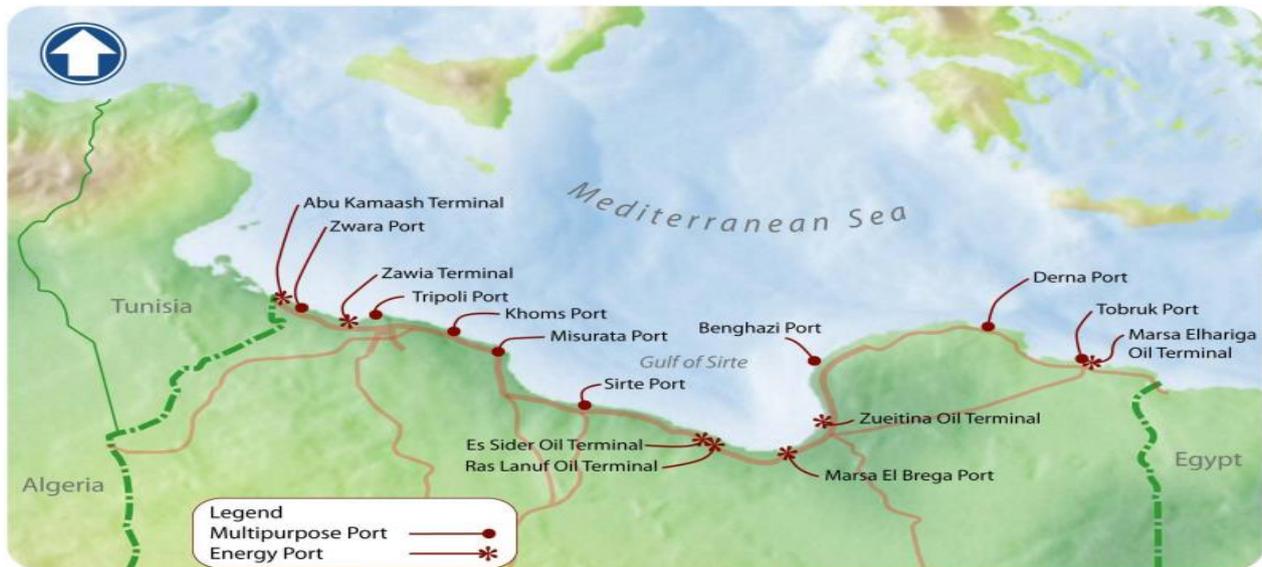


Figure 2: Libyan Port Locations

Benghazi port was selected for development studies due to the following reasons: The port of Benghazi Maritime, the second Libyan ports of importance and space, which is one of the most important vital facilities in the city and the eastern region in general with weak infrastructure. However, it is the only port that serves the eastern and south-eastern regions of Libya and extends services westward to Ras-Lanuf. This will make it possible to obtain excellent results from development studies. Libya is also seeking to develop the port of Benghazi to become a medium commercial port by acquiring land areas, developing roads, entrances and exits, development of port berths lop and developing a container terminal.

3.3. The Factors Effect on Benghazi Port Development

There are several factors influencing the development of Benghazi port to meet Libya's future requirements of these factors:

- ✓ Economic Considerations (Hinterland, Export and Import)
- ✓ Geographic, Topographic and Hydrographical Conditions
- ✓ Transportation structure of the area.

In order to improve transportation which is also directly related to the logistics, three issues are considered have high priorities (Trissari, 2006);

- ✓ Infrastructures: The regional projects should be consistent with the EU transportation strategy
- ✓ Interoperability: The achievement of standards in the sector and the lowering of non-physical barrier to transports such as customs controls and procedures; delays in the ports, railroad systems.
- ✓ Intermodality: Improvement of multimodal logistics to facilitate transfers from one mode of transport to another.

The main element of the logistics activities are; the inventory management, storage and distribution. These functions are closely related to the maritime transportation in particular for international logistics. After the

rise of the multi-modalism (or intermodalism) ports became rather important to support full spectrum of the logistics activities. The ports also serve as a logistics storage hub.

Nowadays intermodal operations are the backbone of the international logistics. The container terminals connect key actors in the international container transport chain, including shippers, shipping lines, and intermodal transport operators. In addition, container terminal operators undertake a series of planning activities such as yard planning, quayside planning, and vessel stowing planning (Lun et al, 2010).

The role of shipping lines is to operate container ships and provide liner shipping services to consign cargoes (Lun and Browne 2009). Shipping lines in a supply chain operation offer door-to door transport services by coordinating with feeder operators, road carriers, rail operators, logistics service providers, and container terminal operators.

The development of global supply chains requires high inland accessibility and efficient port operations. There is a tendency towards logistics integration in the shipping and port industry. The integration between ports and logistics-related activities contributes to the development of the concept of a “port–hinterland relationship” (Notteboom and Rodrigue 2005).

Container terminals are nodes that link with other inland transport modes such as highways, railways, and inland waterway systems (Lun et al. 2008). The role of container terminals has been evolving from a cargo handling point to a distribution centre with physical infrastructure serving as transport hubs in the container supply chain (Almotairi and Lumsden 2009). Hence, container terminals function as an interface between the areas of production and consumption servicing the players in shipping and transport-related areas (Ugboma et al. 2009). In container transport, a container terminal is a vital part of the transport infrastructure (Bichou et al. 2007).

3.4. PESTEL Analysis

Through PESTEL analysis, will identify opportunities and threats at the political, economic, social, cultural and technological levels that affect or will affect the development of Benghazi port or Libyan maritime transport, In addition to analyzing the specific environment (small environment), with an analysis of the five competitive forces porter.

3.4.1. Political and Legal Factors

Maritime transport is characterized by a high level of regulation, both at the national level and in community legislation. This is due to large economies of scale and barriers to entry, and the need to ensure the safety of users. However, Libya does not have a clearly defined port policy which allows the coordination of various management and administration systems for Libyan ports. Due to the nature of maritime transport, the State has issued a number of internal laws and regulations to regulate this area on the one hand, and on the other comply with international legislations

It is noted that these legislations do not keep pace with some of the maritime transport activities and ports currently and cancel the other.

With regard to the future, the struggle between Mediterranean ports is more obvious, with some retaining current trade and others in order to own current traffic. At the national level, Libyan ports are currently submerged in times of war and internal strife. This uncertainty about the next government and the current state of recovery from the economic crisis may lead to changes in legislation regulating state ports.

3.4.2. Economic Factors

Among the economic factors, the contraction in international trade is the result of the economic crisis and consequently the decline in imports and exports.

There is an impact of the economic crisis around the world.

We face a broad process of globalization, assuming the continued increase in trade by sea. Similarly, we are witnessing a sharp increase in competition because of the greater integration of new countries into world trade. This fact opens the possibility of new markets.

The globalization of the port industry has significantly changed traditional practices in which a country's traffic lines and transport companies favor some ports. Container access to global shipping has broken the traditional concept of scale. At present, there is only one acceptable standard for contractors and shippers,

which means that their trafficking moves in ways that provide the best results in terms of service delivery globally, particularly in economic terms. Other economic factors are the projected upward trend of shipping in the future.

3.4.3. Social Factors

They are also social factors the job creation projects in ports linked to renewable energies; the absence of a Community framework for job training, health and port safety; and trade unions for the fact of creating social and support networks among port workers, as well as for creating collective strength to demand their rights.

The ports are also a social factor in terms of the image and prestige that give to the city or town where they are located, what is called port-city relations. They may also have strong historical and cultural roots, as well as a role as an agent of social and business fabric development in the region.

3.4.4. Technological Factors

In the field of maritime transport, the growing use of ICTs is emerging. In addition, the widespread use of the Internet has become a major technological factor for shipping and port companies, which enable proper control and communication with customers, management and the port community. Technology has evolved in such a way that transport units are becoming larger when they try to respond to the container process, and this requires the development of ports. In the maritime sector, there is also considerable risk of obsolescence due to the frequent need to modernize the fleet of vessels, equipment, navigation systems, shore, machinery and technology for proper loading and unloading. This necessity arises not only to meet environmental and safety requirements, but also to maintain some levels of efficiency in order to remain competitive in the market.

3.4.5. Environmental Factors

In the past decade, there has been greater interest in the environment, and as a polluting means of shipping, environmental factors should be an important factor, and the introduction of eco-efficiency as a commercial value in this sector has been shown. While this is true, shipping is much less polluted than rail and land transport. In this type of transport, hazardous operations and dealing with hazardous goods may affect the environment, placing importance on standards and preventive measures for the proper development of such processes. In the shipping must be pollution, releases and residue controls. With this achieved, in addition to commitment and respect for the environment, increase the efficiency of operations.

3.5. The Factors Affect Architecture Design Study for Benghazi Port

In accordance with requirements of Libyan state to convert Benghazi port to a modern port consisting of two parts, the first part is old port and aims to divert to a passenger terminal, the second part and most important is new port aims to convert Container terminal.

To access study of architectural design of Benghazi port must site inventory (survey) and then analyze the site to find the development of project program and find development of concepts and thus get final design, to access the design, follow these steps:

1. Data collection briefing stage the stage of preparation of project requirements and studies involves identifying the problem and identifying variables (function, location, historical and social dimensions, etc.).
2. Data analysis (wind, solar, terrain, soil, noise, visibility, movement, access, etc.)
3. Generating the idea: concept (identifying project elements, developing the functional relations scheme)
4. Development of solutions: (drawings and shape determination).

In addition to the spatial survey of Benghazi, a proposal was made to design the port of Benghazi to try to simulate the proposal of the Libyan state so that the old port would be converted to private ports for passenger ships. The new port was designed as a private container and casting station.

3.6. The Factors Affect Achievement of civil works for Benghazi Port

One of the most important factors affecting the civil works of Benghazi port is study of land areas necessary for development of port should be explored because they meet requirements of port and can take following

factors into account such as necessary land, equipment that will be affected by development of port, power lines and energy in the region, Distribution of water and sanitation, local transport, adjacent traffic, maneuvering areas, docking or waiting outside the adjacent port, cargoes, quantities of existing and future cargo, forecasting land and sea transport in area, It is equipped to serve various activities in the region.

4. DISCUSSION

Here we will discuss requirements for future of Libya and its aspirations for Benghazi port :

4.1. Requirements of Libyan Economy

Libya could not be ranked in the 2018 Index because of the lack of reliable comparable data on all facets of the economy. Official government compilations of economic data are inadequate, and data reported by many of the international sources upon which Index grading relies remain incomplete.

The requirements of the Libyan economy in the study of the challenges of developing a strategic policy aimed at achieving the sustainable development of the Libyan economy, especially given the current official trends to restructure the Libyan economy by activating the role of ports in the economy.

Hit by the ongoing conflict, the Libyan economy continued to suffer from recession. It is estimated that GDP lost half of its pre-revolution level. Budget revenues and exports proceeds reached the lowest amounts on record because of low oil production and prices.

Compared to other coastal countries, including smaller ones such as Malta, Libya has paid little attention to the maritime transport sector and ports. There is no doubt that Libya is affected by the international sanctions that have left the country lagging behind in all aspects of its infrastructure, including ports. The lack of infrastructure has negatively affected the production of Libyan ports compared to other ports in North Africa, Overall , although Libya has a long coastline on the Mediterranean Sea and near international trade lanes, its commercial fleet consists of only 167 ships., It includes 19 oil tankers, nine general cargo ships and 139 other vessels, such as boats, pilot boats and other service vessels., It is surprising that Libya has only two specialized dock cranes, which were deployed at the port of Qasr Ahmed in Misurata. This indicates non-response to market requirements and trends, and act accordingly.

The lack of efficient ports in Libya ensures that shipping lines avoid Libyan ports and use European ports instead. Apart from port connectivity, port efficiency is associated with the technology of handling equipment used at that port. Taking container handling as an example, most container ports across the world, whether fully automated or semi-automated, use quay container cranes with different types and specifications to deal with ship operations at seaside.

In addition, shipping companies prefer to use fully automated container ports equipped with all approved equipment. However, this equipment is not present in Libyan ports. All Libyan ports still use traditional cargo handling equipment to handle containers.

The lack of efficient and sufficient handling equipment has had a negative impact on the number of ships calling into Libyan ports and the throughput of these ports.

Further, the largest container ships that can visit Libyan ports are from the third generation of ships of the Panamax class. Libyan ports cannot accommodate larger ships than this class due to water depth restrictions. Ports compete against each other to attract users, to handle more cargo and increase revenue. The main strategy of competition is to provide a good service quality, as required by port stakeholders, in less time and for less cost. This can be achieved if a port performs efficiently.

And therefore to enter the competition and to obtain a place in the market must be considered seriously to develop Libyan ports and increase efficiency

4.2. SWOT Analysis

the extended SWOT analysis consists in a cross-analysis of the four elements (strengths, weaknesses, opportunities and threats) and how they can contribute among each other for obtaining, in addition to the diagnosis, strategies "macro and micro integrated" and actions to be considered by the strategic direction of the Port of Benghazi. In this section each point of the extended SWOT table, will be explained, as well as its relevance for the internal and the subsequent strategic analysis of the port of Benghazi.

4.3. Strengths

There are a number of benefits that may arise from the development of Benghazi port, including Ship Congestion, Ship Operating Costs, Employment Generation (Direct and Indirect) and Land Value Enhancement

1. Strategic location of the port: The port of Benghazi has an enviable geographic location in the middle of the Mediterranean development zone.
2. Highlighting the importance of the port of Benghazi in the largest port in the eastern Libyan.
3. Benghazi port is close to the largest planned industrial zones in eastern Libya.
4. Libya and the African continent: Based on its privileged position, Libya is qualified to be the gateway to North Africa on the Mediterranean, Even though its commercial trade with Africa is low, has the potential to be a conduit for transit trade linking many African countries, especially those in the middle of the continent, which have no sea ports and the world.

4.4. Weaknesses

The most important weaknesses are potential environmental impacts and increased internal transport costs.

1. The absence of maritime shipping lines for some countries.
2. High bargaining power for port service providers, this factor of Benghazi port represents a threat and a weak, weak due to inability Companies in the port to negotiate with local port providers.
3. Possible lack of coordination of actions between different port operators.
4. Incomplete development of the Jilayana basin, the development of the Jilayana basin is incomplete, with a business currently occupying about 20% of the total area.

4.5. Threats

In principle, Libya probably has sufficient dry cargo port capacity within its existing gateway ports to meet the projected growth in trade over the project period. As a consequence, there is unlikely to be major port related congestion within the overall system, accepting short term geographical and seasonal peaks. If, however, Libya seeks to encourage the use of larger vessels the lack of suitable deepwater berths will become a significant constraint on trade, with a resulting generation of shipping demurrage costs for berth waiting time incurred, At present the existing gateway ports handle predominantly small to medium size vessels. This limits the ability of Libya to gain direct services from a range of markets where larger more economical vessels are utilised. Port developments and operations are increasingly capital, rather than labour intensive. It is unlikely therefore that the development of Benghazi Port would create significant direct employment opportunities

1. High level of competition between ports in the Mediterranean region.
2. High power and volume of traffic from direct ports, there is strong competition in the Mediterranean basin, where Benghazi port is considered to be one of the weakest ports in the southern Mediterranean because of the devastation caused by the war, as well as the weakness of the infrastructure and the great need for development to cope with competition.
3. Effects of the economic crisis on the port industry.
4. Improve the infrastructure of competing ports.
5. Lower expectations for State Sector investment.

4.6. Opportunities

There are several port development opportunities available in the vicinity of the existing Phase port development. The principal opportunities are summarised below:

1. The upward trend of Libyan exports and imports: In the years prior to the war in Libya, there was a positive development in national exports and imports with positive expectations of an increase in post-conflict exports and imports.
2. Diversification, The maritime trade and traffic diversification always offers a real opportunity, as Requirements and availability change in the global market.
3. Availability of space: The area of Benghazi port is 300 hectares, with land covering 43% of the total area, equivalent to 130 hectares with (3) basins.
4. Development of new information technologies in logistics, Information technology is one of the most important elements on which the competitive ability of any economic, commercial or

professional activity depends. In this respect, Benghazi port is a raw material for the use of information technology, and therefore this is an opportunity for the port.

5. The area of logistics activity, connection with the Mediterranean corridor, road and rail, The development of the logistics activity area in Benghazi port area, one of the Benghazi term projects, is an opportunity to determine the production environment and logistics of great importance, where the industrial activities, tourism and business.
6. The existing Phase port development represents an opportunity for expansion in several different directions
7. Reasonably flat topography is available to the west of the existing port development - for onshore port development
8. Deeper water is available with increasing distance offshore.
9. Existing highway access is available.

4.7. Possible Solutions to Develop Benghazi Port

Prospects for Benghazi Port there is a mixed response to the notion that Benghazi port has reached the end of their commercial life because they are hemmed in and the surrounding streets can no longer cope with port cargo. Also the Port needs rapid handling improvements.

Libya is located on the southern side of the Mediterranean basin, region where many ports compete to attract large volumes of transshipment traffic from the principal East-West container shipping lanes. Although Malaysia is located in South-East Asia, its main ports are similarly situated on the Malacca Straits, one of the busiest and most important areas of the world for international shipping. Both are developing nations with almost the same level of GDP, and then aims to transfer that experience by predicting the future of the "environment, strategy and structure of Libya" to achieve its objectives for the container port sector in the country; to enhance performance and transform Libya into a regional container centre.

4.8. Preliminary Architecture Design Study

the Sustainability Appraisal Process Sustainability Appraisal is a widely used assessment tool for reviewing the environmental, social and economic implications of new infrastructure projects and promoting sustainable development. The appraisal process has three main purposes.

1. Firstly, to identify any positive or negative environmental and social implications of a development action.
2. Secondly to ensure that any negative implications may be avoided, reduced or otherwise taken into account during planning and design.
3. Finally, to influence how it is subsequently managed during its implementation.

In order to reach development of design, a number of stages must be taken into account, including the stage of collecting the data. The preparation of requirements and studies of project in terms of identifying problem and determining variables (function, location, historical and social dimensions, etc.) and analyzing data affecting site (wind, solar, Noise, vision, movement, access, etc.) that follows the generation of the idea of development concept in terms of (identification of project elements, development of the functional relations scheme) So that it appears within schemes to develop solutions (drawings and shape determination). The Figure 3 shows basic data which what is the existing situations and what it could be improved.



Figure 3: Benghazi port.

According to studies conducted during the research and maps of the division of the city of Benghazi, as well as the spatial survey of the port, a proposal was prepared to design Benghazi port so that it tries to simulate proposal of the Libyan state so that the old port is converted to a private port of passenger ships. The new port is designed to be a special container and casting station in the Figure 4.

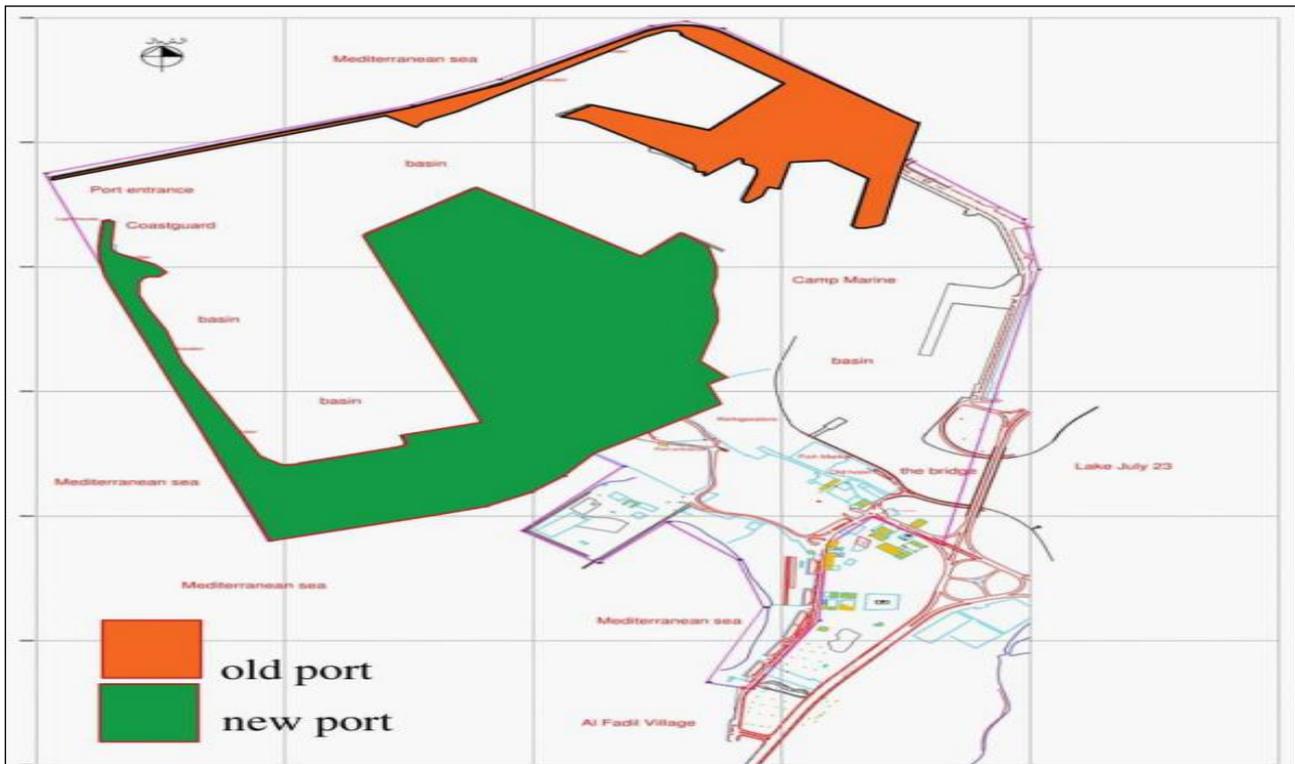


Figure 4: Benghazi port development proposal.

The development study of Benghazi port includes the old port for passenger and cruise ships with all its services including berths for border guards and passengers, the establishment of new berths and commercial berths, a network of roads inside the port with all administrative and service buildings, electricity, water and sewage networks, Mosques, underground and upper water tanks, roadways, guidance boards and security fences as shown in the Figure 5.

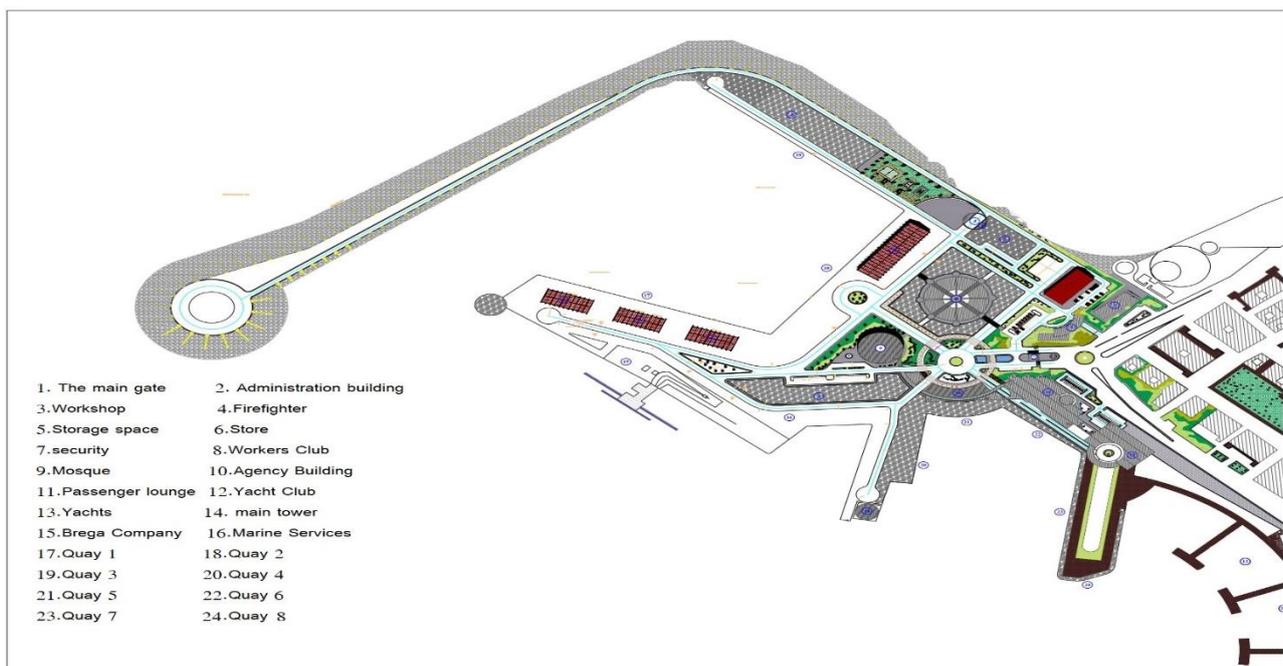


Figure 5-a: Benghazi port proposal (old port).

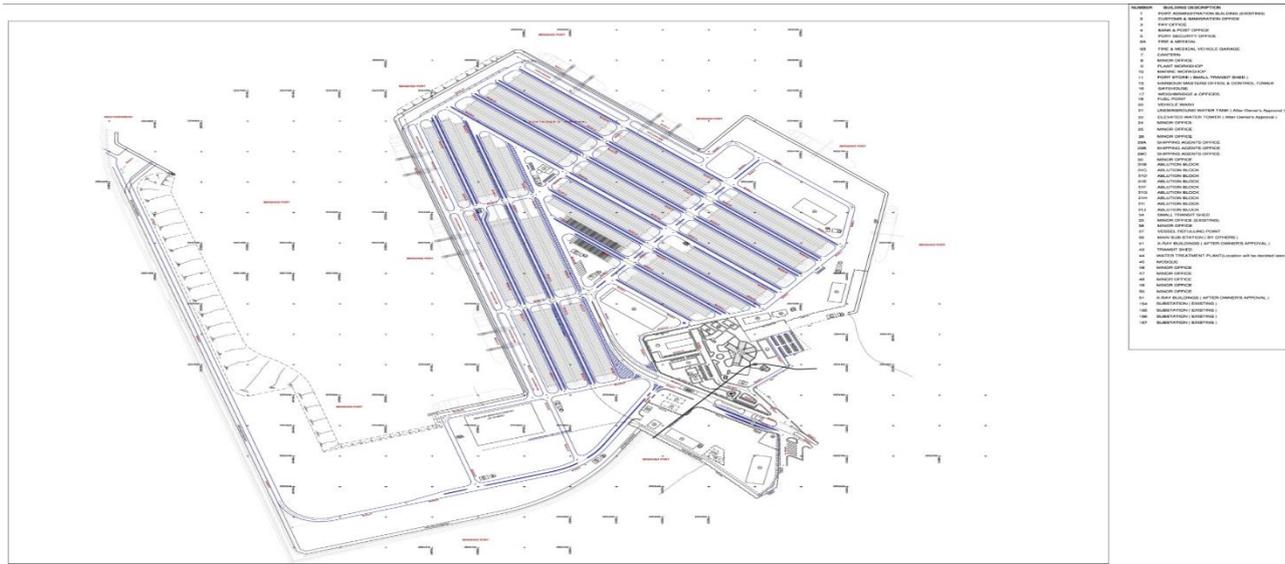


Figure 5-b: Benghazi port proposal (new port).

As for new port is planned to accommodate movement of goods imported through it, especially containers, in addition to several new facilities for some government departments operating in the port, construction of a container berth, the design of a container berth with a length of 550 meters and a depth of 15 meters, and a container terminal to accommodate about one million TEU Figure 5.

4.9. Required Civil Works to Complete the Architecture Design Study (ADS)

According to the factors that affect the civil works in Benghazi port and the study of the area necessary for the development of the port it became clear that the port is expandable and also possible bundle of all lines of power, electricity, water and sewage and found that the port is connected to a good road network connected to the neighboring areas and the airport in the city as well as stores in Qanfouda.

Buildings and services to include the internal circulation roads of port in addition to the buildings of typical container terminals such as administration centre, gate complex and workshops, Also, Drainage, potable water and electrical services and port lighting.

Marine equipment should include Harbour tugs and pilot launches, Mooring launches and aids for navigation. The cargo handling equipment contains harbour port mobile containers, rail mounted ship to the shore gantry container terminal cranes

5. CONCLUSION

The Libyan economy is mainly based on the export of Petroleum. The country requires approximately 80 % of consumables to be imported. The export of petroleum is made from Al-Huraika, Zuwaitina, Brega, Ras Lanuf, Sidra and Al-Zawia ports. The port of Benghazi is the second largest ports in Libya after the port of Tripoli and the advantage of the port it serves a wide and large area includes eastern and southern Libya. It is the only opportunity for Libya to be deployed as main import port.

Libya is still affected by political interests rather than economics. Essentially, economics must be primarily taken into consideration to settle political problems because it is proved that the economic relations would also cure political disputes. Libya should consider the establishment of an effective logistics flow imminently which also facilitate to overcome political disputes.

It is also important that improvement of the ports, railway and road transportation system will achieve the establishment of a perfect multimodal logistics which will facilitate the use of logistics connection points throughout the region in short term.

The logistics is derivative of the economy. The key element of the economy is the supply chain management which includes global manufacturers and supply and demand dynamics. The logistics activities are assumed as the “operational component” of supply chain management, including quantification, procurement, inventory management, transportation and fleet management, and data collection and reporting. Supply chain

management includes the logistics activities plus the coordination and collaboration of staff, levels, and functions (USAID, 2011).

REFERENCES

Notteboom T.E., Rodrigue J.P., (2005). Port regionalization: towards a new phase in port development, *Merit Policy Management* 32(3):297–31

Institute of Chartered Shipbrokers,(2012). *Logistic and Multi –Modal Transport, 2011-2012 Centenary Edition*, ISBN 978 1 85609 459 7.

Rantasila K., Ojala L., (2012). *Measurement of National-Level Logistics Costs and Performance Discussion Paper 2012-4*, OECD/ITF

Burnson P., (2012). *Slow and Steady, 23th State of Logistics Report, LM Exclusive –Supply Chain Management Review Management July 2012*,

Lun Y.H.V., Lai K., Cheng T.C.E., (2010). *Shipping and Logistics Management*, Springer, London ISBN 978-1-84882-996-1 DOI 10.1007/978-1-84882-997-8

Bichou K., Lai K.H., Lun Y.H.V., Cheng T.C.E., (2007). A quality management framework for the liner shipping companies to implement the 24 hour advance vessel manifest rule. *Transport Journal* 46(1):5–2

Lun Y.H.V., Wong WYC, Lai KH, Cheng TCE, (2008). Institutional perspective on the adoption of technology for security enhancement of container transport. *Transp Rev* 28(1):21–33

Ugboma C, Ugboma O, Damachi B (2009), A comparative assessment of service quality perspectives and satisfaction in ports: evidence from Nigeria. *International Journal of Shipping Transportation Logistics* 1(2):172–

193

Lun Y. H.V., Browne M, (2009), Fleet mix in container shipping operations. *International Journal Shipping Transportation Logistics* 1(2):103–118

Benghazi port interviews, documentation as well as the Libyan Ministry of Transport.

BIOGRAPHIES

Ergun Demirel is a professor of the Maritime Faculty of Piri Reis University, Istanbul, Turkey, Vice Dean of Maritime Faculty and an oceangoing master as well. He was born in Elazığ at 1951 and graduated as a naval officer from Turkish naval Academy in 1970. He received his MS degree from War Colleges and his PhD degree on Maritime Management from Istanbul University. He joined the academic world after 31 year of service in the Turkish Navy. His research interests include maritime policy and management and maritime scientific researches and issues. He is a member of ImarTECH and fellow of ImarEST (Institute of Marine Engineering, Science and Technology) of United Kingdom. Email: edemirel@pirireis.edu.tr, Tel: 90 216 581 00 21, Fax: 90 216 5810051 Address: Maritime Faculty of Piri Reis University, Postane Mahallesi, Eflatun Sokak No: 8, 34940 Tuzla/Istanbul-Turkey

Manal ABMDAS is a lecturer at High institute for engineering professions, Benghazi University holding MSc degree in Civil Engineering and about to complete his PhD studies on Maritime Transportation and Management Engineering studies at Piri Reis University. His research interests include maritime management, Port Engineering, Port Management issues. Email: manal.abmdas@gmail.com, Tel: +218910530213 Address: High Institute for Engineering Professions, Benghazi Libya