IEREK PRESS
Academic Research Community

http://www.press.ierek.com

ESSD

CrossMark

ISSN (Print: 2357-0849, online: 2357-0857)

International Journal on:

Environmental Science and Sustainable Development

DOI: 10.21625/essd.v2i2.168

The Dry Port as a Holistic Approach for the Relocation of City Gateways

Mourad S. Amer[1]

[1] *PhD Candidate, Faculty of Fine Arts, Alexandria University, Egypt*

Abstract

Alexandria city has several types of gateways that are not fully supported with connections and corridors that maximize their efficiency, thus, creating additional pressure on metropolitan areas. In addition, the marine gates of Alexandria and Dekheila face a lack of efficiency in their capacity as a port. The aim of this study is to relocate the city gates and to find a mechanism of change, which is necessary for promoting the globalization of Alexandria through strengthening inter-city freight transport.

Keywords

Freight transport; gateways; dry ports

1. Introduction

With an increase in product specialization and globalization, cities need well-connected transportation networks, however, cities tend to neglect freight transport. Although freight transportation benefits the urban economy through offering a number of jobs and services, it has been overlooked and hardly ever included in transport surveys, transport strategies, and regional planning (Lasalle, 2015).

The capability of transporting goods to nearby cities has, therefore, put a critical situation. The transport system in general and the intermodal transport terminals, in particular, have now been relocated or redesigned in many cities. However, such expansion may face some constraints; for example, a city gate must be relocated in the middle of the city rather than at the edge for any possibility of the city's expansion. The demand for land in central areas, stresses on the need to relocate large-scale internal dry gates or ports to less central city locations.

The study should adopt a strategy of directing cities to benefit from their gateways as a method of improving their freight transportation system which can lead to the reduction of traffic congestion in urban regions and making them more livable. This category of urban transport should be regulated by road transport policies on an economical basis in an attempt to decrease the difficulty that excessive congestion places upon both travelers and urban dwellers along the urban road network.

The goal of this study is to find the most suitable location of the dry port that will assist the sea-ports in Alexandria as well as control the congestion in the inland transport network. The criteria of choosing the dry port location shall be applied using Geographic Transport System GIS. A new action to activate the role of inland port in finding strategies of creating an effective freight network at national and local levels, especially when infrastructure and

services are sufficient.

1.1. Purpose of Study

The purpose of the study is to enhance the freight transportation at the city gates, which is necessary to solve the traffic problems and congestion. In that light, the city could reach a level of globalization which will boost the economic situation as well.

The study will analyze the potentials of Alexandria sea ports, their capacities and their effects on the daily traffic flow. It aims to activate the dry port concept and therefore, the study will present the most suitable location to construct the dry port.

1.2. Aim and Objectives

The aim of this study is to employ the concept of dry ports in order to assign a new role and function to the city gateways; as the mechanism for change, which is necessary to promote the globalization of Alexandria city through strengthening the infrastructure of both the network of freight transportation corridors and an intercity transportation system.

The study aims to find the most suitable location of the dry port in order to solve the city inland transport system, thus, the movement could be directly transferred from the sea port to the dry port and then to the demanded location without the need to enter the city center or the high-density areas. This movement transfer will minimize the pressure on the inner network, which suffers from high-density congestion. The study also fulfills a number of objectives, such as:

1. Solving the traffic jams and congestions,
2. Enhancing the intercity movement with increasing the possibility of economic investment and encouraging a lot of Small Medium Enterprises (SMEs) in Alexandria as well as in neighboring cities.
3. Rebalancing the existing development patterns.
4. Empowering Alexandria to be a nodal global city with a an international connection and movement corridors for people and commodities, which can connect the city to the global economy system.

The study hypothesizes that relocating the city gates to inland dry port, as a result, there will be an increase in connectivity, proximity, and accessibility between the dry port and all destinations without any additional pressure at the inland transport. Moreover, the dry port should re-balance the existing travel patterns, orient the freight movement into a direct and sufficient transport system, find new economic potential and form the spatial policy of freight transport in Alexandria. Alexandria will then be declared a nodal and global city to the global economy system. The reform and development of this issue can lead to discovering a lot of Small Medium Enterprises (SMEs) in Alexandria as well as in Mediterranean Cross- borders and thus create a balance to the social class and recent inequalities.

2. Alexandria's Gateways Types

Alexandria is considered as the second capital of Egypt, one of the most important vital transport centers as it is considered as the Northern Egyptian gateway, and it connects the Western Region and Egypt's core. With the steady rise in the urban growth and traffic density of the city of Alexandria, it was necessary to make a detailed study describing the status and offering future proposals on the level of the internal and external movement of the city.

The study is focused on the relationship between the city of Alexandria and the province Alexandria, which consists of (the city of Alexandria- Behera Governorate- Marsa Matrouh Governorate). The province of Alexandria is divided into three levels, depending on the density, which is inversely proportionate to the area.

The Delta Region (Behera Governorate): Despite its small area compared to the Desert Region (Marsa Matrouh), it has the higher density, figure 1a. The city of Alexandria has a linear urban form expanding to the Southwest and bordered by the Mediterranean Sea to the North, which is currently considered as one of the main traffic arteries of the city. It is also parallel to one of the main perpendicular roads which penetrates the vertical urban fabric of the city, determining the current gateways of the city, figure 1.

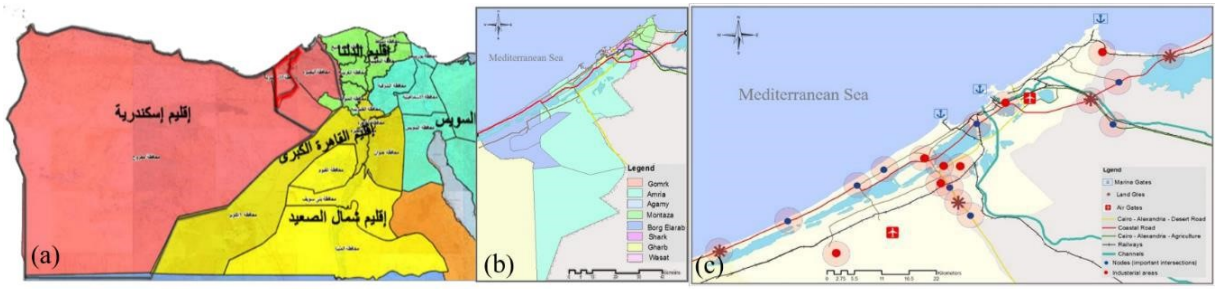

Figure 1. Alexandria region between Egyptian regions at fig 1a, Alexandria districts at fig 1b, and main nodes and intersections at 1c.

Alexandria city contains different types of gates; as they are:

a. Air gateways: the air gateways in Alexandria are Nozha airport and Borj El Arab airport; Nozha airport, with time, has merged with the inner city fabric, which has negative effects on the movement and has negatively affected traffic, causing congestions. Borj El Arab airport is located outside the city in a moderate location, and it serves Alexandria and Marsa Matrouh Governorate, but its location is far to serve Behera Governorate, which needs direct access to this gate, figure 2. b. Land gateways of the city contain official gateways. They are the main entry points laying in the administrative division places such as the Desert Road gateway, Maadia area in the Eastern direction and Elhamam at the western direction. The Desert Road gateway is located in Kilometer 39, and it functions as the official gate of the city, connecting it to the desert road linking to the capital. There are also unofficial gateways, such as the access nodes at the entrance of Smouha district, the intersection between 45 Road and Costal road and Sidi Krir node, figure 2.

Figure 2. Alexandria high ways and important nodes.

c. Marine gateway: Alexandria contains three harbors, the most important of which is the Alexandria harbor. The second important port is Dekheila harbor; however, both harbors are located near to the city center, which causes negative effects on the movement in the city. The third harbor is located at Abou kir, this area has very limited access that isolated it from the main transportation arteries, figure 2.

3. Problem Statement: Alexandria's Gateways Problems

Although Alexandria has several gates, these gates has negative impacts on the city, rather than enhancing it to be a global one that lays a successful transportation network. Due to the lack of connectivity between Alexandria's city gates, all the movements either in the eastern or western directions have to pass through the city, which has added an extra burden to the city center. Moreover, this led to the fragmentation of the urban fabric such as:

a. Abou Kir district, which contains an important marine port; this area has become a closed and isolated district, and it suffers from the lack of sufficient movement axis and accessibility issues, figure 3.

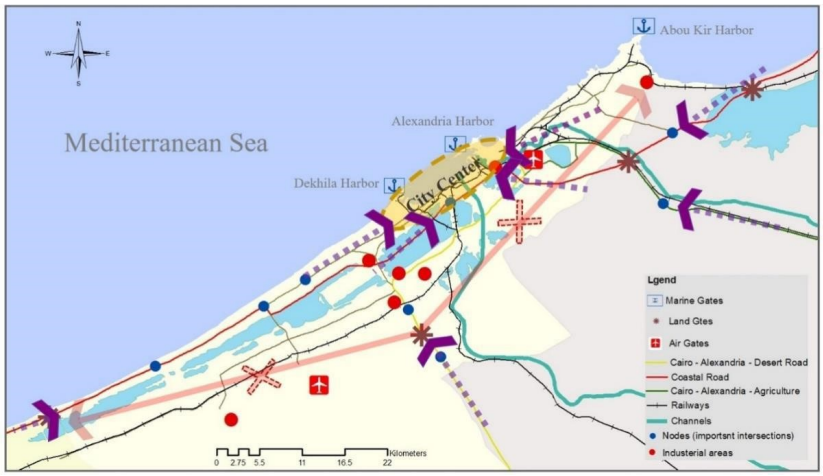

Figure 3. the transportation and connectivity problems in Alexandria

b. Down town: A compound and a complicated area, contains the airport entrance, the Agricultural road entrance, and the Desert road entrance. In addition, adjacent to the city center and Alexandria port entrance. Accounts for high traffic from all the directions leading to inadequate means of movement. It has also led to the degeneration of the urban fabric and the lack of clarity of access to the city center. The aforementioned issue goes in hand with the fragile link between the port and the means of rapid movement.

c. Dekheila port: In addition to its function as a port, it contains many factories that receive heavy-duty transport vehicles, which causes a difficulty in cargo transportation, and, consequently, bigger problems in traffic accompanied with the need for direct connection to highways.

d. Western zone: it contains Borg El Arab airport and the costal entrance from the west direction located at Hamam city. This area faces a lack of public transportation and is difficult to reach

Alexandria city needs to redistribute the movement capacity by reconnecting the isolated gateways and employing their role as the valve of internal and external movement. The study will present the hypothesis framework of the transportation network depending on the available feature in the city.The city of Alexandria contains two main harbors, the Alexandria and El- dekheila port, both of which suffer from an inefficiency in their capacities leading to the stagnation of the economic situation. This reflects on the social status of the city. According to the report of the Egyptian Port Capacity - the Maritime Transport Sector, El- dekheila harbor will reach its maximum capacity and will not be able to receive any more commodities, using the assumed rate of the annual Growth Domestic Product GDP of 6.9%, the import and the export should increase as seen in table 1 (”Egyptian Maritime Data Bank”, 2005).

Table 1. The expected capacity to be achieved during, 2017, 2022, 2032.

Port	Max. Capacity		Expected Capacity to be Achieved During 2017			Expected Capacity to be Achieved During 2022			Expected Capacity to be Achieved During 2032		
	Cargo Million Tons	Million TEUs	Cargo Million Tons	Million TEUs	Passengers Million	Cargo Million Tons	Million TEUs	Passengers Million	Cargo Million Tons	Million TEUs	Passengers Million
Alexandria	36.80	0.5	26.65	0.77	0.13	33.98	0.98	1.17	52.67	1.52	1.81
El Dekheila	22.10	0.5	30.98	1.02	0	39.50	1.30	0	61.23	2.02	0

Table 1 above depicts the expected achieved volume of cargo and TEUs during the years of 2017, 2022, and 2032. The chart in figure4 states that in 2012, the Dekheila port will have exceeded already its full capacity in receiving cargo and TBUs and the Alexandrian port will have exceeded its limit of receiving TEUs and then cargo soon in 2024 (“The Egyptian Port’s Capacity”, 2012).

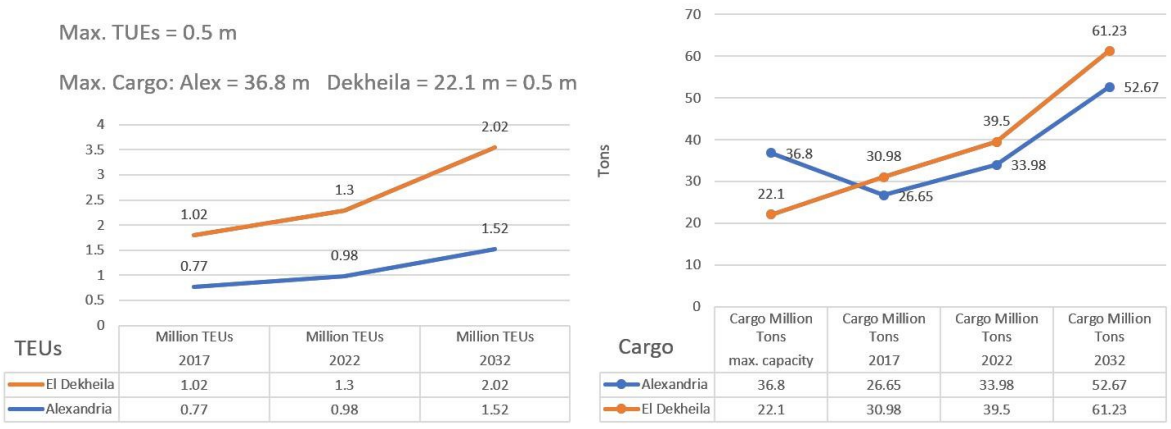

Figure 4. The expected capacity to be achieved at 2017,2022, 2032 for Alexandria and Dekheila ports.

This problem confirms the fact that Alexandrian gateways face an incapability of efficiently implementing economic development and playing its role of leading the city to better future properly. Therefore, Alexandria’s city gates are in need of a complete development plan that addresses the existing problem and provides its future needs.

4. The Dry-Ports

Dry ports, has been employed to organize the Trans- modal services of containers and dry cargo between the terminal to be distributed through using advanced logistical services. A “dry port” is defined as a terminal that is located inside the land connecting the main seaport with multi modes of transport. It plays the same role of the seaport in receiving, handling, forwarding, and distributing cargo and TEUs (Roso & Lumsden, 2010).

The benefits of the “dry ports” extend to the ability to configure the intercity freight transport network, and thus improving the process of distributing the supply chain, (Bergqvist, Wilmsmeier, & Cullinane, 2013). The most important feature of a “dry port” appears when it can exploit its connectivity with different inland modes of freight transport as well as a logistics hub, (Veenstra, Zuidwijk, & Asperen, 2012; Monios & Bergqvist, 2016).

As for the characteristics of dry ports, the illustration made, reflects different development levels, the definitions and the procedures taking place in the terminals mentioned above. Moreover, a composite diagram that illustrates the services that could be offered by a dry port and the capabilities of all facilities could be seen in the figure, 5 below.

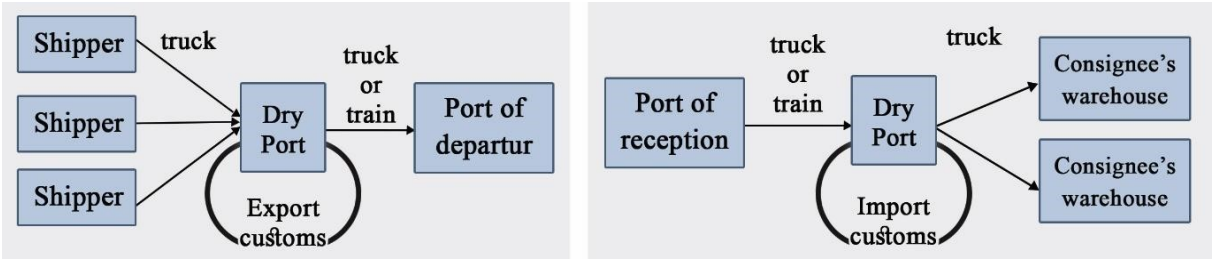

Figure 5. The procedures and services in terminals and dry ports.

The optimum functions of a dry port when compared to the other sites is characterized with many functions such as; loading, interchange, forwarding, and administrative buildings that contain customs logistics services, and the ports authority. The connectivity with the seaports should be through a well-conditioned and safe rail line, trucks corridors.

However, most endeavors for developing dry ports were futile and thus were falling, because most of them were under the supervision of local authorities. As in most dry port developments, there is a kind of governmental intervention that lets the government always be a partner with the private section (Nguyen & Notteboom, 2016).

Hence, seaports engage the distant dry ports to encourage the shippers using it. Therefore, the pressure happens to the accessibility of the intercity as well as the congestion which stems from various and interrelated directions such as increasing the containerized transport.

4.1. The Fully Combined Dry Port

In regards to the dry port, a model of the three forms of the dry ports could be implemented in a full combined dry port as shown in figure 6. This combination offers flexibility to all kinds of shippers and will be convenient to the intermodal terminal to which the most suitable dry port according to the distribution plan and then to the regional distribution or to the intercity modes.

Furthermore, transferring activities, that are causing congestion to the main seaport, to the dry ports. The dry port can manage the customs clearance, handling, and some other activities.

However, the most important condition that meets the need of freight flows is that the dry port should be large enough to facilitate all operations and to satisfy the speed and frequency from and to the dry port. Finally, the close, mid-range and distant dry ports are the component of the fully combined dry port, which represents the full service with the maximum ability to add value through the provided services.

The whole process is possible through multi operational processes which are available in the dry port environ-

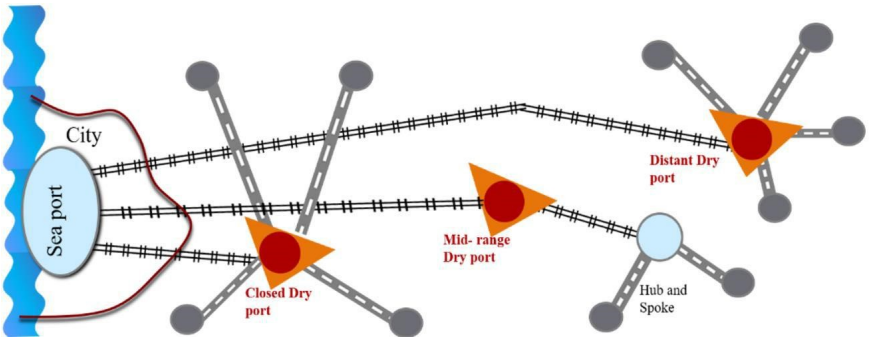

Figure 6. Fully combined dry port

ment, such as applying connections to all market sectors and acting collaboratively as the intermodal hub in the freight transport networks; handling different types of cargo; the diversity of services in intermodal operations and covering all different type of interests and distributing locations.

4.2. The Criteria of Choosing a Dry Port Location

A "dry port" works as an inland intermodal terminal that has a direct connection to the sea-port with multi transport means, considering that the full services exist, such as customs clearance; warehousing; consolidation; cargo handling and different transport modes should be available. The environmental aspect is the main criterion that should be taken into consideration when planning for a dry port's location. In addition to the available facilities and components that are necessary for the management process, like the information technology and labors.

Choosing the location of a dry port in the planning process requires a specific criterion that should follow multiple stakeholders' perspectives. The location has to increase the integration between the seaport and its hinterlands to endow the regionalization by extending the sea gate. The dry port facilities should meet the interests of all stakeholders such as dry port users, and the community to find a considerable value for them; and for investors, gains considerable revenue to enrich the economic condition.

The direct dry port stakeholders are shippers, logisticians, transport companies and freight forwarders as they are usually interested in the efficiency of transport system from different freight flows to the gateway port.

The location is the most important factor for investors when it includes all the services needed to operate the process of trading with minimizing the operating cost which is, in fact, the main factor for allocating all services to the project location. Many other criterions affect the cost factors considered, such as the land cost, energy cost, labor cost and the cost of relocating the rail lines to the rail network. Future demands and expected future expansion of the dry port must be considered along with an estimation of the needed area foreseen. Additionally, many other factors related to climate, the environmental context in general, and the support of certain municipalities are in need of reconsideration.

As a prerequisite, the site selection of a dry port shall depend on the efficiency of the transport network and accessibility of the site to the network. The community and public awareness, both, play significant roles in supporting the idea and are quite essential in that sense. Shipping companies, similarly, must provide their support to the project as it is a suitable chance to expedite their work and businesses. Governmental authorities and planners must also consider this idea in land uses and future proposals. This is necessary for considering the demographic statement needed to assign the employments and laborers to work on the project. As a result, it then becomes possible to avoid the pollution and noise generated from the port or from the industrial area nearby. The following presents some criteria abstracted in points that could be used as a checklist when comparing between selected sites:

1. Reduction of transportation cost and time.
2. Accessibility to road, railway and waterways infrastructure.

3. Range of services and other logistics platforms.
4. Proximity to the factories and production bases and Employment generation.
5. Demand for dry port services and opportunities for expansion.
6. Minimizing visual intrusion, noise and pollution.
7. Contribution to land use reorganization and proximity to the industrial areas.
8. Maximized value added services and return to the government.

The criteria above will be applied to compare which is the most suitable option between selected sites in order to get an ideal concept of a dry port to hopefully enhance freight transport between the city gates.

4.3. Alexandria Dry Port Project

In Alexandria, the dry port concept is still not effectively used since some frail attempts failed in Alexandria. Table 4 contains the list of all plans of dry port projects as well as the existing ones. The ones responsible were not taken seriously or planned in a proper manner such as Amria Free zone (Ragab) and El-Nobaria port, figure 7a.

Table 2. The planed and operated dry ports in Egypt ("Japan International Cooperation Agency", 2008b).

No.	Dry Port Name	Location	Status	Transport Mode
1	Bashtel	Bashtel railway triangle	Under	Railway/Road
2	Km 48	El-Wahat railway line	Plan	Railway/Road
3	Athar El Nabi	Old Cairo	Plan	River/Road
4	Abu Zaabal	Ismailiya	Plan	River/Road
5	Sakr	Suez Desert Road	Under	Road
6	El-Asher	10^{th} of Ramadan city	Operating	Road/Railway (future)
7	North West Cairo	Cairo-Alexandria Desert Road	Plan	Road
8	Suwesdi (SOSDI)	6^{th} of October City	Operating	Road
9	6^{th} of October Dry Port	6^{th} of October City	Operating	Road
10	El-Obour	El-Obour city desert	Partly operating	Road
11	Amria free zone (Ragab)	El-Amireya	Operating	Road
12	El-Nobariya	El-Nubariya	Operating	Road
13	El-Max	El-Max	Plan	Railway/Road
14	El-Sharkiya	Zagazig	Plan	Road
15	Dakahliya	Mansoura	Plan	Road
16	Damietta Free Zone	Damietta	Plan	Road
17	Ismailiya	Technology Valley at Ismailiya	Plan	Road
18	Al-Sadat	Sadat City	Plan	Road
19	Gharbiya	Tanta	Plan	Road
20	Matbous	Matbous Area	Plan	Road
21	El-Zahraa	Km. 14 Cairo – Ismailiya Desert Road	Operating	Road
22	El-Bida	Kafr El-Dawar Agricultural Road	Plan	Road

All of these previous initiatives are not considered as a smart approach, or properly used to increase the dry port functions, both seem to be only as warehouses for traders. The capacity of these ports is very low (452 containers) as shown in figure 7b. Moreover, they depend on truck access that means maintaining the same congestion problem. Another future initiative is to develop a real dry port in Max area which will be supported by railways.

For a successful dry port, it should depend on its distance from the seaport, the role of the dry port may vary and has to be directly connected to one or more seaports, and must be capable of handling intermodal operations and must carry out the main functions of a port such as storage, consolidation and distribution of the goods.

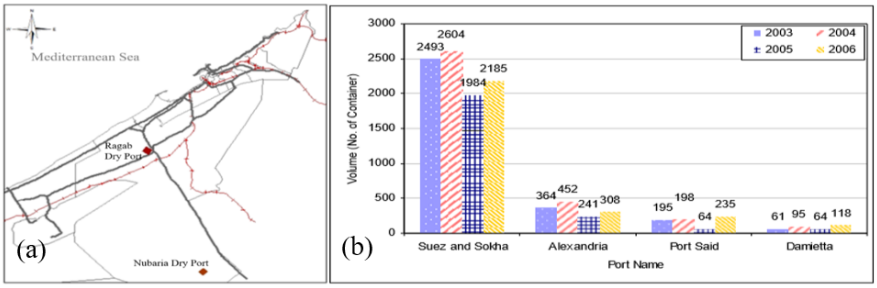

Figure 7. fig. 7a depicts the capacity of dry ports in Egypt from 2003- 2006, ("Japan International Cooperation Agency", 2008a), fig. 7b depicts the location of the previous initiative dry port in Alexandria.

A dry port will be needed to assist the two main harbors of the city of Alexandria, as the origin of several corridors exists at the same point. Great benefits can be attained from the usage of each dry port such as increasing the cost efficiency of the new freight transport systems, decreasing the time of transport and the possibility of higher frequencies of transport. This will also increase the labors and employment including the drivers and assistants who will be working in the port itself, as well as the delivery drivers who will travel from the dry port itself to the destination in the city. This is calculated by estimating the distance from the dry port to a random location in the city, estimating curvature factors for circuitous roads in the city, speeds, and loading or unloading time for the vehicles.

The first step for choosing the dry port site is using GIS in applying the previous criteria mentioned above. The location has to be close to the existing access (max = 0.5 km), figure 8a, close to rail lines (max = 0.5), figure 8b, proximate to inland waterways (max = 5 km), figure 8c, proximate to factories and production base (max = 5 km), figure 8d and range to service and logistic platform in the original port (10 km – 50 km), figure 8e.

The output of applying the criteria of site selection - in figure 8f- suggests many different locations that lie along on red indicators at the map to filter which location is most suitable for the dry port project; however, the remaining criteria should be applied. The site has to be outside the urban areas to minimize visual intrusion, noise, and pollution. It also has to own real opportunities for future and possible expansions, and if the project will be sponsored by a governmental entity, the site should avoid the private land ownerships. Through the final selection, the study suggests location P1(31°6'12"N, 29°50'27"E), P2 (31° 0'9"N, 29°51'2"E), or P3 (30°53'45"N, 29°58'31"E) for

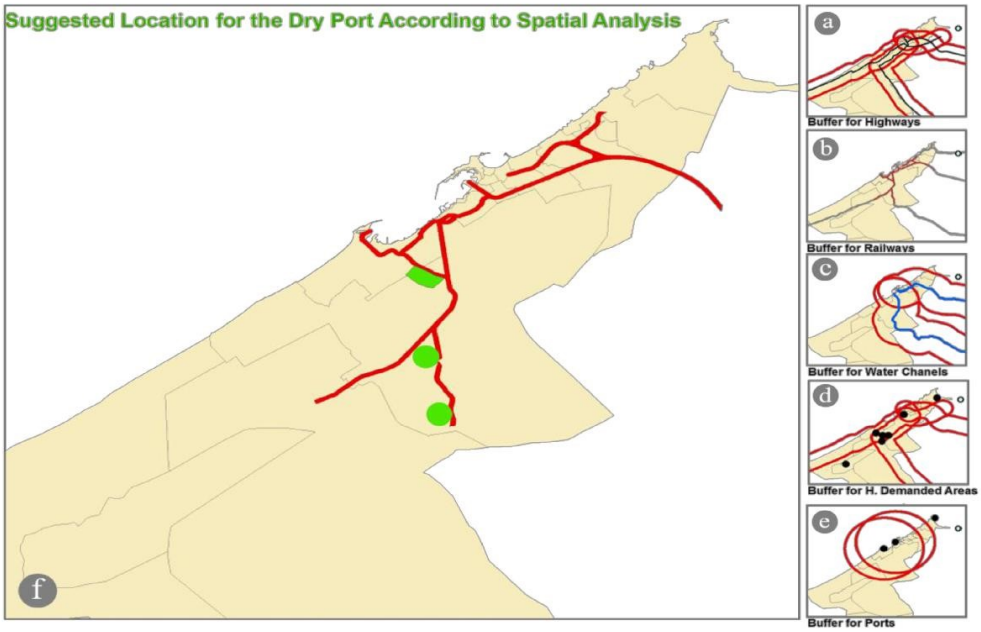

Figure 8. The suggested location for the dry port according to spatial analysis.

the dry port, where there is a great chance to offer an excellent opportunity for this site to be suitable supporter to both ports of Alexandria and Dekheila.

The aforementioned location provides a railway line for the transport of goods linking the network to the railway network as well as the passage of the canal Nubaria closely to the location. In addition, the availability of the main highways linking the location to the neighboring cities does exist, such as the international coastal road and the desert road. Finally, the location is adjacent to existing industrial areas such as Al Amria, Om Zegew, Herfeen, and the industrial city at Borj Alarab, figure 8f. All three sites could be chosen periodically as close, medium and distant dry port.

The study refers to the quite suitable locations to propose the dry port, which should also meet the preference of stakeholders when this location is presented to them in a participatory process.

Great influences could be mentioned because of the proposed dry port on the transport network especially in the metropolitan areas of the city, where the transfer of goods from seaports, which are surrounded by densely populated areas, will be carried out to the new dry port outside the central region. Accordingly, the dry port will contribute to the reorientation and organization of the movement of goods from and to the ports of Alexandria and Dekheila.

When the dry port works efficiently, the overloaded capacity at sea ports of Alexandria and Dekheila of PEUs, Dry Bulk and general cargo could be transferred by rail to the dry port yard for both import and export. This is so important to activate the role of the dry port as well as back to the maximum capacity of the sea ports. Table 3 depicts the influences of the dry port project and its role in decreasing the overload capacity occurred to Alexandria and Dekhiela ports as mentioned above, the table depicts the volume of TEUs and general cargo that be proceeded to the dry port in the three stages of applying the fully combined dry port.

Table 3. The role of dry port project.

	Port		Max. Capacity		Expected Capacity to be Achieved During 2017			Expected Capacity to be Achieved During 2022			Expected Capacity to be Achieved During 2032		
			Cargo Million Tons	Million TEUs	Cargo Million Tons	Million TEUs	Passengers Million	Cargo Million Tons	Million TEUs	Passengers Million	Cargo Million Tons	Million TEUs	Passengers Million
A	**Alexandria**		36.80	0.5	26.65	0.5	0.13	33.98	0.5	1.17	36.80	0.5	1.81
B	**El Dekheila**		22.10	0.5	22.10	0.5	0	22.10	0.5	0	22.10	0.5	0
C	**Sum**				58.9	1.00 27,6		58.9	1.00 27,6		58.9	1.00 27,6	
					86.5 m tones			86.5 m tones			86.5 m tones		
D	Equivalent daily Traffic Vol/ day from Dry port				55,449 veh/ day			55,449 veh/ day			55,449 veh/ day		
E	**Dry port**	Stage 1	-	-	8.88	0.92 27,6	0	-	-	-	-	-	-
					34.272								
		Stage 2	-	-	-	-	-	17.40	1.28 27,6	0	-	-	-
								52.73					
		Stage 3	-	-	-	-	-	-	-	-	55.00	2.54 27,6	0
											125.104 m tones		
F	Equivalent daily Traffic Vol/ day from Dry port				**21,969** Veh/day			**33,800** Veh/day			**80,194** Veh/ day		

Therefore, the minimum capacity of the dry port would be the transferred cargo (row F) from the two seaports to

reset the capacity limit of each seaport as shown in table 3 row A and B.

4.4. Challenges of Dry Port Implementation

Implementing a Dry Port project in Alexandria will definitely bring many advantages, but at the same time, it may face several major challenges for the following reasons:

Firstly, because Dry Ports are an extra transshipment point between two different transports modes that adds additional costs in the total transport chain expenses. Additional costs include plus risk costs will be added to the transportation costs.

Secondly, it would occur for the implementation of the Egyptian process, where the difficulty of planning and implementation due to the bureaucracy which halts the developmental projects. The importance of this project is highly recommended because it can solve the bottleneck problem of the congestion in the port, port city pollution or road congestion in the port city and access to the port area.

When the government owns the project, additional challenge may be added due to the complexity of land ownership that requires more time and fund.

5. Conclusion

The strength and density of a port's neighbor activities depend on the port capacity, the available transport modes, and the use of logistical technologies. Large ports always include all modes of rail lines, roads, and when available water vessels, the transit hubs of these modes are always located into the hinterland. Thus, large ports are more flexibles in assigning the suitable mode of transport. The most important area is the gate of the terminal because it contains all important units of administration and all procedures of import and export which could be achieved there. It is the coordination point between the port and shippers and all other services' companies. Therefore, controlling congestion as well as enhancing the trade starts from the port's gates, where different modes of transport and the opportunities of relocating the terminal gates by establishing a dry port to assist the main terminal. The importance of the dry port is to decrease the pressure on the terminal gate.

6. Recommendations

Being a popular and essential topic for discussion, many entities of the same interest are concerned with this development such as shipping companies, Port Authorities, ministries, such as the ministry of planning and commerce, and even the citizens themselves. The study encourages decision makers to adopt this project for sustainable economic development and the operation of a large number of labors. It encourages both Port Authorities to closely and meticulously follow and monitor phases of the project until desired results are reached. As for investors, the study highly encourages them to invest in similar and promising projects that can lead to a better future and enhance the economic conditions in Egypt. It similarly encourages exporters and importers to fulfill their duties as to increasing exports especially since it is a project that should provide the appropriate environment. Production companies should also work towards increasing their exports as the study discovers that the volume of export makes up a quarter of import volumes which is quite a small amount that should be increased. Retailers are required to use the shortest paths to transship their commodities at low costs and less time. The study, finally, encourages citizens to take the responsibility of reducing their own trips and using public transportation for a more sustainable life.

References

1. Bergqvist, R., Wilmsmeier, G., & Cullinane, K. (2013). *Introduction – A Global Perspective on Dryports*. Farnham, United Kingdom: Ashgate Publishing Limited.

2. Japan International Cooperation Agency. (2008a). *The Study On Multimodal Transport And Logistics System Of The Eastern Mediterranean Region And Master Plan In The Arab Republic Of Egypt* (Vol. 1, Rep.). Cairo, Egypt: Transport Planning Authority Ministry of Transport the Arab Republic of Egypt.

3. Japan International Cooperation Agency. (2008b). *The Study On Multimodal Transport And Logistics System Of The Eastern Mediterranean Region And Master Plan In The Arab Republic Of Egypt* (Executive summary). Cairo, Egypt: Transport Planning Authority Ministry of Transport the Arab Republic of Egypt.

4. Lasalle, J. L. (2015). *The Business of Cities* (Rep.). UK: JLL Cities Research Center.

5. Egyptian Maritime Data Bank. (2005). Retrieved from http://www.maritime-database.com/company.php?cid=246097

6. Monios, J., & Bergqvist, R. (2016). *Intermodal freight terminals: A life cycle governance framework*. London: Routledge, Taylor & Francis Group.

7. Nguyen, L. C., & Notteboom, T. (2016). A Multi-Criteria Approach to Dry Port Location in Developing Economies with Application to Vietnam. *The Asian Journal of Shipping and Logistics,32*(1), 23-32.

8. Roso, V., & Lumsden, K. (2010). A review of dry ports. *Maritime Economics & Logistics,12*(2), 196-213.

9. The Egyptian Port's Capacity. (2012). Retrieved from http://www.mts.gov.eg/en/content/275/1-83-The-Egyptian-Ports-Capacity

10. Veenstra, A., Zuidwijk, R., & Asperen, E. V. (2012). The extended gate concept for container terminals: Expanding the notion of dry ports. *Maritime Economics & Logistics,14*(1), 14-32.