

CONTAINERS AND THEIR EFFECT IN DURRES PORT

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Abstract

Since the introduction of containerization, container throughput in the world has continuously increased. Today more than 90% of the world cargoes are transported by sea, and containerized cargoes are increasing year after year. The above tendency of world container transportation has given a significant impact on Albanian ports as well and especially in the port of Durres. Durres port is the main gateway of Albania, where more than 85% of the seaborne cargoes go through this port. During the recent years, the volume of general cargo that has been handled in this port has been gradually reduced and instead, a continuous and rapid growth of containerized cargoes has been observed. In order to have an effective and productive terminal, a number of factors need to be studied, because the higher the terminal productivity, the higher the difference between the revenues and the costs will be. There are a number of factors to be considered like port congestion, traffic management and safety aspects in the terminal. This paper gives an overall picture of various operations in Durres port containers terminal. Since this port is very new in containers handling operations, and the container traffic forecast is optimistic, there are a number of issues to be addressed in order to make the Port of Durres an adequate port, able to handle the containerized cargo in the future as well as to be a competitive port in the region. Development of the container terminal, improvement of port facility and port performance, application of technology and information systems, increasing the quality of services are key factors for developing the Durres port container terminal on severe regional container port competition.

Keywords: globalization, container terminal, development strategy

JEL Classification: L 12, O15,

1. Introduction

Containerization since it first was presented in earliest 70's, is continuing to make an important role in the growing of international trade. Containerization has affected the international markets, shipping and ports industry, shipping lines, thus offering new transshipment opportunities. World container traffic has had a

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sustainable growth and has been accompanied by the globalization of container shipping market. Shipping lines always have been in search of cost reduction and faster transit times and that has resulted in the growth of “hubs” or loaded centers and the evaluation of feeder services. On the other hand severe competition has lead into construction of larger vessels. The following table 1 gives an overall picture on the evolution of the container vessels since they were first introduced in the shipping industry.

Very large carriers are emerging and lines are entering into various types of strategic alliance. Currently, 8000 – 12000 TEU vessels are in operation in major lines linking far-east to European or US ports. This tendency in increasing vessel size leads into demand for deeper access channels and ports, as well as ports equipped with proper infrastructure able to handle all this massive transportation of containers.

Table1. Technical characteristics of container vessels in years

Range	Class (TEUs)	Capacity	Year	Draft
TEUs		TEUs	Construction	Meters
1	Feeder (100-499)	322	1960	6,24
2	Feedmax (500-999)	735	1966	8,29
3	Handy (1.000-1.999)	1405	1968	10,60
4	Sub Panamax (2.000-2.999)	2254	1969	13,23
5	Panamax (3.000 +)	3075	1985	16,16
6	Post Panamax (4.000 +)	4625	1988	17,20
7	Post Panamax Plus1 (5.000 +)	5225	1995	17,58
8	Post Panamax Pus 2 (6.000 -)	6375	1996	18,13
9	Post Panamax Pus 3 (7.000 -)	7250	1997	18,92
10	Post Panamax Pus 4 (8.000 -)	8050	2001	19,50
11	P. Pan Flus 5 (Clement Maersk)	9600	2002	20,60
12	P. Pan Flus 5 (Axel Maersk)	9310	2003	20,99
13	Suez Max (Gudrum Maersk)	10150	2005	21,86
14	Post Suez Max (Emma Maersk)	15200	2006	23,70
15	Corea STX	22000	2012	26,79

source: container shipping yearbook

Globalization and containerization has already had an important effect on Albanian Ports, thus increasing the quantity of goods transported in boxes. This is reflected in the significant increasing of the number of TEU-s handled each year in Albanian ports and especially in Durres Port which is the main and the biggest port of Albania. With continuing growth in trade through Albanian ports and especially Durres Port, there is a clear vision for the port development strategy. This paper analyses the effects of world container market and globalization in liner shipping and the new role that Durres port will take as a regional port in container feeder services.

2. Review of the literature

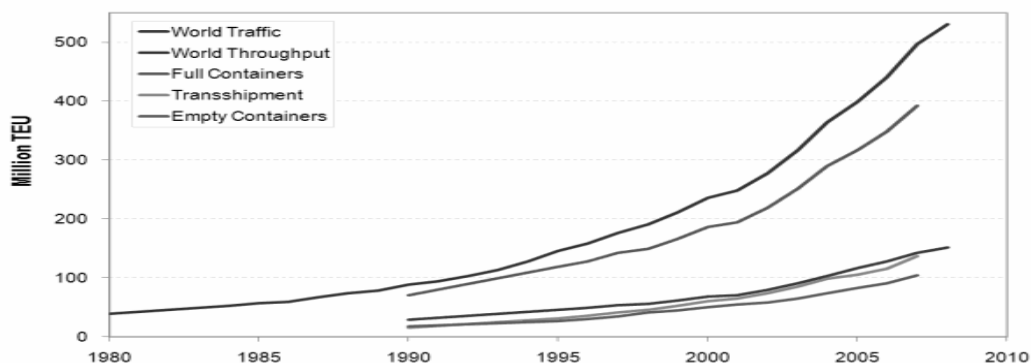
Port of Durres is the only Albanian port which is handling containers. Initially this port started with containers about 15 years ago. Initially this port could handle 500 – 800 TEU per year, and since then, containers started to take over the general cargo. Actually this port is handling around 100.000 TEU per year.

From the first containerized commercial services in the late 1950 until the design of the first container ship in the 1960's, the container was an unknown variable in global shipping. During 1970-1990 container became acknowledged as a transport product and investments in intermodal facilities accelerated. This involved the construction and reconversion of several container port terminals as well as the introduction of container ships.

Containerization began to seriously impact global trade patterns and manufacturing strategies, particularly with the entry of China in global economy. The emergence of new manufacturing clusters incited long distance container services. Additionally container started to go further inland with rail and barge services

Between 1990 and 2008 container traffic has grown from 28.7 million TEU to 152 million TEU which represent an increase of approximately 430%. This corresponds to an average annual growth of 9.5%. During the same period container throughput went from 88 million TEU to 530 million TEU, an increase of 500%, equivalent to an average of 10.5% annually. The trend underlines a divergence between throughput and traffic as global supply chains become more complex. Consequently the ratio of container traffic over the container throughput stood at 3.5 in 2008 and was around 3.0 in 1990. The surge of both container traffic and throughput is linked with the growth of international trade in addition to the adoption of containerization as privileged vector for maritime shipping and inland transportation. So far, the growth of container throughput behaves according to standard technological diffusion curve.

Chart 1. The world container traffic



Sorce: containerization international year book 2012

The maturation of container traffic will be linked with the maturation of global economy. This can be linked to a number of factors such as limits to the exploitation of comparative advantages in manufacturing as well as the associated trade imbalances and higher energy prices. Technical limits of the economies of scale both from the maritime and land side of containerization are also linked to play significantly for containerized traffic, but the maturity of containerization is likely to be more economic than a technical process. Already the global recession that began in 2008 has been associated with a significant reduction in containerized traffic.

3. Containerization of cargos in Durres Port

As we mentioned above there exist a strong tendency in increasing the world containers traffic. This tendency is observed in the traffic of the Durres port as well. Although the world wide trend is to increase the containerization of cargoes and of general cargo in particular, there will always be certain commodities which are less apt to be transported in containers. To express the share of general cargo that is transported in containers, the following equation is often used:

$$Cngc/Totgc = Cngc/Cnblgc \times Cngc/Totgc$$

Where: **Cngc** – containerized general cargo

Totgc – total general cargo

Cnblggc – containerizable general cargo.

The left side of the equation is often referred as the “Containerization Rate”. The first factor in the right side of the equation is often referred as the Containerization degree and it is the percentage of containerizable cargo that is actually transported in containers. The second factor on the right side of the equation refers to the containerisability - this dimension parameter refers to the share of the general cargo which could be transported in containers. It depends on the mix of commodities handled in the port(s) considered. In order to determine the share of containerizable cargo in the commodity mix of general import cargo in Durres port referring the statistics of the Durres port, the commodities shown in the following table can be transported in containers:

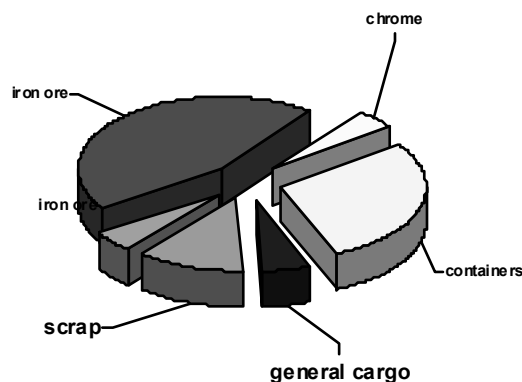
Application of these containerizability rates to the imports in Durres shows that about 90% of the general cargo can be containerized. In reality not all containerizable cargo will effectively be transported in containers. There will always be a part of the containerizable cargoes that will be transported outside containers, such as per example bagged cargoes. This means that the containerization degree will be lower than 100%.

Table 2. Containerizability of general cargo per class

Commodity	Containerazibility	Commodity	Containerazibility	Commodity	Containerazibility
Flour	100%	Chemicals	100%	Sugar	100%
Barit	100%	Rice	100%	Machinery	50 - 70%
Edible oil	100%	Animal food	100%	Bananas	100%
Glass	100%	Vegetables	100%	Cement (bags)	100%
Bricks/tiles	100%	Scrap/steel	100%	Steel	50%
Construction material	70%	Wine	100%	Nitrat/urea in bags	100%
Other general cargo	100%				

4. Data of Containers in Durres Port

The statistics show an impressive growth of containerized cargo that has been transported in containers during the recent years. Even though the containers traffic was introduced only a few years ago in the Durres port this traffic is gaining the biggest part of the cargoes that are being transported in containers. The following chart shows

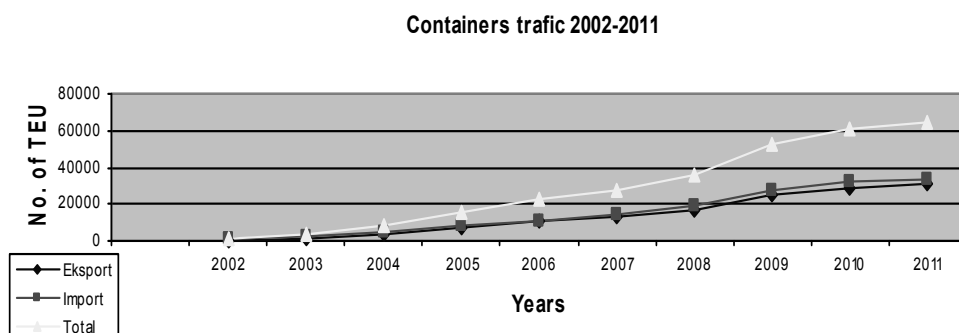
Chart 2: The distribution of the cargo handled in the port of Durres

Durres port has a short history in handling containers. Until 1996, only 20 feet containers could be handled in this port due to the lack of proper infrastructure. Actually Durres port Authority is managing the new containers terminal which is capable of handling all types of containers from 10 – 45 ft.

The development of the containers terminal in wharfs 6 & 7 made it possible to establish new markets for the Durres port and has dramatically reduced the handling of general cargo. Container ships are being handled in wharfs 6 & 7 which have an overall length of 465m and a backup area for storing containers of 56.000m².

In order to support the containers terminal in Durres Port on loading unloading the container ships, there are available a number of container handling equipments like reach stacker, forklifts of high tonnage, tugs and trailers, etc

Chart 3. Containers traffic in the port of Durres



It is forecasted that the containers trafic will be in a continuous increasement, consequently the efficient functioning of the terminal as well as the new investments in procuring the handling equipments of the containers is important. Actually in the port there are three regular liners from and to Kastellon – Spania, Pireaus Greece, and Rijeka Croatia making it possible to have container ships almost everyday in the terminal.

Referring to the figures of the container handled through Durres Containers Terminal, in 2009 has had a high rate of growth up to 140% compared to 2005. Certainly that the Global Crises has had its impact in the Albanian market. It is important to underline that while in the european countries all ports have suffered a negative growth of almost 15%, in Durres port the growth has been positive up to 5%.

Table 1. The total tonnage and number of TEU handled in Durres Port Containers Terminal during period 2005-2010

Years	Export			Volume in Tonne Export	Import			Volume in Tonne Import	Total number of Boxes	TEU Total	Volume in Tonne
	Number		TEU		Number		TEU				
	20"	40"			20"	40"					
2005	4,482	1,457	7,396	16,970	4,640	1,625	7,890	130,471	12,204	15,286	147,441
2006	5,797	2,445	10,687	26,443	5,898	2,647	11,192	188,178	16,787	21,879	214,621
2007	8,054	3,965	15,984	69,423	8,647	4,248	17,143	287,751	24,914	33,127	357,174
2008	11,450	5,405	22,260	157,185	13,518	5,510	24,538	424,942	35,883	46,798	582,127
2009	17,714	8,356	34,426	293,631	16,782	8,707	34,196	504,125	51,559	68,622	797,756
2010	18,040	8,820	35,680	460,823	17,664	9,135	35,934	507,678	53,659	71,614	968,501
2011	8,376	5,632	19,640	215,792	8,486	5,167	18,820	277,058	27,661	38,460	492,850

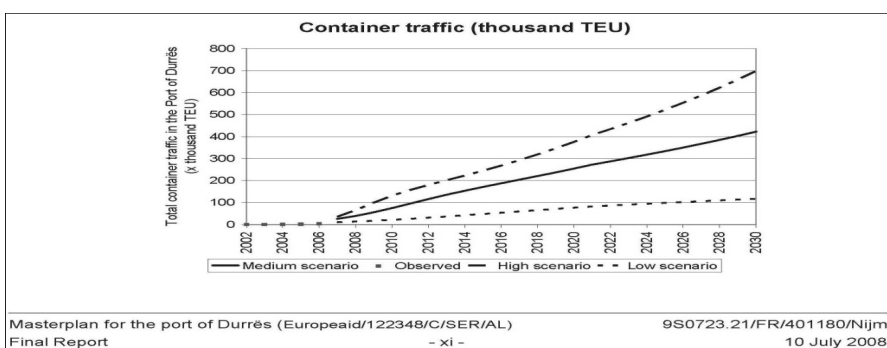
V.O. Year 2011 is 6/Months

Source: APD

The completion of the Nation's Road has established a new platform for the development of transport and logistics for both Albania and Kosovo. The impact of this road is very positive, but due to the limited time this impact has not been measured in real terms. There is an increased interest for the use of Durres Port for the transfers of containerized cargoes from/to Kosovo and Macedonia as well.

The company Royal Haskoning has calculated the traffic forecast of containers in the coming years as shown in the following chart:

Chart 2. The containers traffic forecast for Durres Port (Royal Haskoning)



This study (Royal Haskoning study) is carried out during 2007-2008 period of time where the global financial crises was difficult to be foreseen. In order to respond to this new trend on transporting maritime cargoes on containers, we have taken in to considerations two scenarios for the port of Durres:

Scenario A: the development of the existing container terminal in Durres port and expanding it within port premises

Scenario B: the building a new containers terminal in order to handel the fofrecasted containers traffic and to extend Durres port feeder services in regional level.

5. Discussion of Problems in Contaier Handling in Durres Port

• Poor port performance

There are many ways of measuring port performance/productivity, namely physical indicators, factor productivity indicators, and economic and financial indicators. Physical indicators generally refer to time measures and are mainly concerned with the ship. Berth occupancy rate is the percentage of time vessels are berthed at port. Turnaround time is total time between arrival and departure for all ships divided by number of ships. Following chart shows main port performance indicators for Durres port:

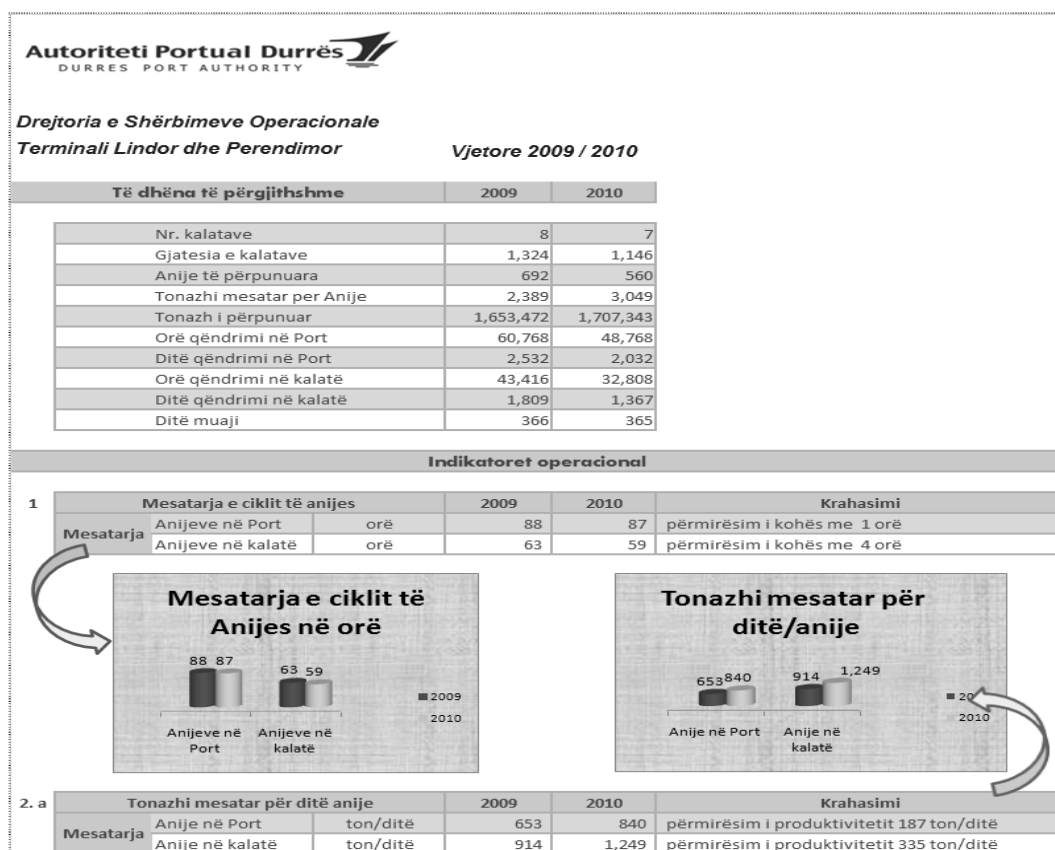
1. Physical constraints

Another major problem for Durres Port is the lack of proper infrastructure needed in container ports for proper containers operations. Port of Durres offer a

restricted water depth therefore the access channel is not suitable to access bigger vessels. The port itself offers a draft of 9.25m which composes another constrain for this port. Lack of specialised gantry cranes as well as the limited terminal areas compose serious constraints for this port. There are only two mobile gantry cranes and a few reachstackers in order to move and store the containers. Therefore the capacity of this terminal is so limited. In order to handle an increased forecast traffic an improvement of the overall port and terminal infrastructure need to be carried out.

2. Lack of free zones

The limited back area of the port is one of the main constraints of the port and terminal. Port of Durres is surrounded from the city and there hardly is any possibility for future expansion of the port. The existing area of the terminal is almost at the edge of the calculated capacity of the terminal. Therefore it is of vital importance for the terminal to search for new ways of increasing its handling capacity. For this purpose free zones are a solution. At present there is no free zone serving the port and therefore this is one of the future challenges for the port and terminal.



Source: Durres Port Authority

3. Technology and information systems

The continues growth in container traffic in the port of Durres appeals for a better management of the terminal operations, a better and more efficient usage of the yard area, thus making the port and the terminal more attractive for the port users and more competitive. The Port management Information system in Durres Port provides these benefits:

- Safety – Through the VTMS the port Authorities and Harbor Master Office monitor the maritime traffic in arrival and departure from the Port in order to avoid any maritime incidents in the maritime area under its jurisdiction.
- Security – a full insight to available information on ship's history and cargo, in accordance with ISPS rules,
- Efficiency – ensures that all resources to handle ships arrival are available in time for the shortest possible turnaround. This includes resources like berths, pilots, stevedores and linesmen.
- Sustainability- taking care of port environment. One of the things this entails, is checking ship's manifests for dangerous cargoes and making sure that ships with dangerous cargo are well separated from other ships.

Apart of these, Durres port lacks the appropriate technology and information systems. This is another constraint for the port and still remains a challenge for the future.

6. Conclusion

Globalization and containerization have a direct impact on Albanian Ports and in particular in the development of Port of Durres as the main and biggest port of the country. The poor port performance, physical constraints, lack of a logistical hub in the country are the main problems facing Durres port. Increasing of existing capacities of containers terminal is one of the developments Durres port has to undergo in the coming years in order to remain a competitive port, and increase its hinterland. Without improving port performance and eliminating all physical constraints, port of Durres will remain solely a port with local effects, and out of being a regional port. Privatization of services and increasing the private sector participation, improving physical parameters of the port as deepening the access channel, increasing the terminal storage area, founding free zones will be some of the near future challenges of the port. If we have to refer to the optimistic scenarios of the containers traffic in the future, a new and modern terminal construction should be considered. These will make port of Durres able to survive on severe regional and global container port competition.

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