

# EUROPE'S SOUTHEASTERN GATEWAY: ROMANIA'S PUBLIC POLICY RESPOSE TO CHANGING PATTERNS OF WORLD SHIPPING

Roger E. HAMLIN

**Roger E. HAMLIN**

Professor, Urban and Regional Planning Department,  
School of Planning, Design and Construction,  
Michigan State University, East Lansing, USA  
Tel.: 001-517-353.8743  
E-mail: hamlin@msu.edu

**Abstract**

This article is a follow-up to one published in December of 2012 (Hamlin and Lazar, 2012). Global trade and related transportation are changing dramatically. Trends are difficult to follow, but important in the effect on cities, countries and continents. Over the past two decades, rising energy prices, rising wages, environmental concerns and other factors have produced a shift back to ocean shipping as an important transportation mode. While slower than other modes, ocean freighter transport can be lower in cost and create lower carbon emissions. These advantages continue to improve as container freighters are becoming larger. The purpose of the article is to look more closely at the public and private sector response in the key Romania port of Constanța. The first part will lay out the current situation. The second will update and evaluate the Eastern European responses to the current situation, looking closely at the Port of Constanța.

**Keywords:** containers, port of Constanța, shipping industry, transportation modes, canals and sea routes.



## 1. Introduction

This article is a follow-up to one published in December of 2012 (Hamlin and Lazar, 2012). Global trade and related transportation are changing dramatically. Trends are difficult to follow, but important in the effect on cities, countries and continents. As indicated in the previous research, few countries are on top of what is happening even though these trends are critical to their economic future. The public policy response to these trends is difficult because infrastructure costs are high and the immediate benefit to the general public is not always clear to them.

Over the past two decades, rising energy prices, rising wages, environmental concerns and other factors have produced a shift back to ocean shipping as an important transportation mode. While slower than other modes, ocean freighter transport can be lower in cost and create lower carbon emissions. These advantages continue to improve as container freighters are becoming larger. Some container ships now carry 20,000 standard shipping containers (TEU) per ship, more than double the volume of just a few years ago.

These advantages are only available to some countries. Even affluent countries that had good seaports are finding that their facilities are rapidly becoming out of date. Just a few seaports are able to accept the largest ships. Only a few ports in North America and Europe accept the next smaller-sized ships, and those ports are often congested. The two most important canal systems of the world, Panama and Suez, are upgrading but behind, and some of the great inland waterways, such as the St. Lawrence Seaway and Danube River require improvement just to handle 'handoff' traffic. Not keeping up with this ship size escalation could cause a country or a whole continent to fall behind economically, and could be the basis for the redistribution of world wealth (Hamlin and Lazar, 2012).

The 'Great Recession' of 2008-9, the large drop in oil prices in 2014, and economic slowdowns in several large economies including China, Brazil and Russia during 2015 have created shockwaves in the shipping industry. These shocks have made large infrastructure investments more difficult for both the public and private sectors. Total shipping volume dropped dramatically, came back slowly and changed in composition. However, ship sizes continue to increase and long-term trends may still strongly influence the world economic balance of power. Where does Romania stand in the new global shipping war?

The purpose of this article is to update the information found in an article published in 2012 and follow-up on the implications of changing trends. It will also look more closely at the public and private sector response in the key Romania port of Constanța. The first part will lay out the current situation. The second will update and evaluate the Eastern European responses to the current situation, looking closely at the Port of Constanța.

## 2. The current situation

The first step is to describe general shipping trends. Then the article will look in more detail at trends in the components of the maritime shipping industry. The current status of containerization will be followed by a discussion of current ship characteristics and the shipbuilding industry. Then we must look more closely at the canals, ports, inlandwaterways and other hinterland infrastructure needed to handle those big ships.

### 2.1. Global shipping industry

The maritime shipping industry has been growing steadily for decades, largely the result of containerization. Growth has consistently exceeded world GDP growth. In the years just prior to the financial crisis of 2008-09 the shipping industry was expanding rapidly along with global trade. The economic and financial crisis of 2009 dramatically effected total shipping volume. Since then, 'the slow global economic recovery has continued to impact the overall shipping industry' according to Svein Engh, Group Head and Managing Director, CIT Maritime Finance.' Broadly speaking, global trade is not growing at the same level that it had been growing for the last number of cycles. That means that time charter rates in the shipping sector have not improved dramatically'. Although he says, 'Certain aspects of the industry are doing better than others' (Javali, 2015).

Conflicting indicators portend the situation in 2015. Some claim the industry is making slow but solid gains but with shifting market emphasis, as well as changing financing and organizational structures. Some claim the industry is experiencing chronic over capacity that may last for some time<sup>1</sup>.

The slowing Chinese economy is seen as a major cause. According to official Chinese statistics, the economic growth rate for China has dropped from double-digit gains in GDP to 7.4% GDP growth in 2014. The first quarter year-over-year GDP growth rate for 2015 was officially 7.0%. So, as the world economy continues to struggle to recover from the global 2009 slowdown, China represents a new drag on those recovery efforts more than five years later. Perhaps more importantly, China trade is declining. China's monthly trade data for March of 2015 indicated that exports fell from a year ago by 15% in US\$ terms, compared to expectations for a rise of more than 8%. Imports meanwhile fell 12.7% from March of 2014. This negative trend continued in April of 2015 (China's Export Numbers, BBC, 2015).

Also important are the housing and infrastructure sectors in China. Housing prices have been falling in nearly every metropolitan area in China. Overcapacity is causing construction to slow down. Likewise infrastructure investment is slowing, much of that carried out by local governments who raise capital by selling land to develop-

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<sup>1</sup> In February 2015, for example, the Baltic Dry Index (BDI) dropped to its lowest level since the creation of the index in 1985. The BDI is the global benchmark for freight rates for ships carrying raw materials (Lakshmi, 2015).

ers and/or going into debt, much of the debt in the shadow-banking sector. A combined tightening of credit standards along with a national crackdown on corruption have caused local governments to be more cautious about investing in infrastructure. All of these factors lead to less steel production and less coal and iron ingots imported from places like Australia as the energy and raw materials for steel production.

The chief executive of the world's largest container-shipping group recently warned that global trade growth could slow this year in spite of low oil prices as Chinese, Brazilian and Russian economies disappoint. Milne (2015): 'I'm personally more towards the low end of that [estimates of global trade]'. Søren Skou, Maersk Line's chief executive, told the Financial Times on March 1, 2015: 'Growth from a historical perspective is quite sluggish'. His comments have weight as Maersk's predictions are seen as a good indicator of future global trade.

## 2.2. Containers

Inter-modal containers are large metal boxes used to transport freight. Built to standard dimensions, containers transfer easily between transport modes. Freighter or train capacity is often expressed in twenty-foot equivalent units or TEUs, referring to 20' long containers (Containerization, 2012; Container Standards).

Containerized shipping has existed for more than 60 years (World Shipping Council, undated) but grew rapidly in the 15 years prior to the global slowdown. Containerization grew over the decades because of the substantial reduction in cost it allows at the break-of-bulk point. This growth has been cited as a cause of long-term growth in world trade.

Historically, oceans and waterways were the preferred mode of transportation, particularly for heavy freight. The break-of-bulk point, where men carried goods from one mode of transportation such as ships to another mode on land, was so labor intensive that the world's great cities typically formed near good harbors. And, routes of internal land transport often developed to feed into those points. As world wage levels rose, these labor-intensive methods of transferring goods between modes became too expensive. Containerization has released the shipping world from this impediment, while liberalization of longshoremen labor contracts has allowed containerization to accelerate.

Goods not regularly containerized include dry bulk goods such as corn and coal, and liquids such as oil. Even these categories are experiencing increased containerization with the advent of tanker containers and inflatable rubber liners for containers called bladders (Global Security.org, undated).

A variety of types of containers make up the world inventory. Historically, dry containers comprised about 93%. The other 7% is split between insulated refrigeration containers and tank container (different from tanker ships). Reefers make up approximately 6.25% of the global fleet. Tank containers, for transporting various liquids, occupy the remaining 0.75% (Drewry Maritime Research, 2014).

Increases in terrorism and other security issues have also improved the relative cost advantage of containerization. Containers can be inspected and sealed at their

origin and remain sealed, electronically monitored and tracked until they reach their destination (Lick and Hamlin, 2012). A disadvantage is the weight of the container, but use of new composite materials can reduce container weight. A second disadvantage is the need to dead-head empty containers or just to dispose of or reuse containers for other purposes.

Demand for container shipping dropped dramatically after the Great Recession, and has been slow to recover. Container demand rose by about 4 per cent in both 2013 and 2014 (Milne, 2015). Maersk Line, the Danish group that ships about 15 percent of the world's seaborne freight, expects it to increase 3 to 5 percent in 2015 (Milne, 2015). Container demand used to expand at up to 10 percent a year before the financial crisis, but Mr. Skou, CEO of Maersk, said those days were behind the industry. He said, in a recent interview, that increase in demand would more closely mirror global GDP growth in the future, much like shipping volume in general (Milne, 2015).

### **2.3. Ships**

Container ships are described in terms of their container capacity. Container ships are divided into seven major size categories: (1) small feeder, (2) feeder, (3) feeder-max, (4) panamax, (5) post-panamax, (6) new panama, and (7) ultra-large (Hayler and Keever, 2003). The word 'panamax' refers to the maximum size of a ship that is able to pass through the Panama Canal. As can be seen by the listing, several categories are too large to fit in the existing canal, and cannot dock at many existing ports.

In 2000 the global container ships fleet numbered over 6,800 vessels (Global Security.org, undated, Container Types). More than 70 percent of these were built to carry ocean-going containers. This world-wide fleet had a capacity of about 6 million TEUs in 2000. According to Drewry Maritime Research, prior to 2009 annualized fleet growth had been more than 10% (Drewry Maritime Research, 2014).

Despite the slowdown in trade, the global container fleet reached 32.9 million TEU in 2012, or nearly five times the 2000 figure. Continued growth in the fleet is, in part, an issue of lag time. Ship orders take so long to fill that levels of commitments continued after the financial crisis.

Growth in the overall container equipment fleet was under 5% in 2012 and slower in 2013, ultimately reflecting the impact of weaker trade growth and liner efficiency gains in overall equipment demand (Drewry Maritime Research, 2014).

In terms of the number of containers each can hold, ship size has grown rapidly in the last decade and a half. Nearly 3/4th of the fleet in 2000 consisted of ships with under 1,000 TEU capacity. But, Super Post-Panamax vessel of 4,500 TEU, were already growing rapidly as a portion of the total (Global Security.org, undated, Container Types).

At the end of 2003 about 100 container ships in use already had a capacity of 8,000 TEU. The Samsung shipyard was building a container ship with a capacity of 9,200 TEU for use in 2005. Samsung delivered a 9,600 TEU ship in 2006. That size increased to 15,000 in 2010 and the maximum size is now 20,000 TEUs (Schumacher Cargo.com, undated).

Korea's Daewoo Corporation built the world's largest ship for Mærsk line. The ship cost about US\$190 million, and holds 18,000 TEU containers. The ship design is called the Triple E. To understand how much is carried by a single container ship of this size, if the same number of containers were loaded on a train, the train would be 110 km long (Martin, 2011; Hamlin and Lazar, 2012). The claim is that superior economies of scale enable the new ships to exceed the record for both fuel efficiency and CO2 emissions. In 2012, Maersk planned to put ten such ships into service between 2013 and 2015 (Martin, 2011). However it did not order any new ships after 2011. Despite Maersk CEO Mr. Skou's recent warning of slow economic and shipping growth, Maersk recently ordered from Daewoo new ships for the first time since 2011 when it bought 20 Triple E's from Daewoo in May 2015. The 20 new ships are Triple Es modified to hold 20,000 TEUs (Wilmington, 2015).

World trade and shipping volumes have fluctuated in the last decade, but one trend remains clear. New container ships are getting much larger. It seems that in good economic times freighter lines are willing to use excess cash to invest in bigger ships to improve capacity. In difficult economic times, they want to use bigger ships to increase efficiency (Kremer, 2013).

#### **2.4. Canals and sea routes**

The advent of the mega-ship also affects shipping routes. Most container shipping is within Asia. There, ship size and port capacity are growing rapidly. The greatest volume of intercontinental shipping, historically, has been between North America and Europe. Yet, the shipping routes from Asia to the North American west coast are expanding in volume with a high percentage of that trade being one-way from Asia.

Shipping from Asia to Europe can follow one of two routes, depending on the capacity of the world's two most important canals, Panama and Suez. Both canals have challenges. The only alternatives are (1) to pass around the southern tips of South America or Africa, which can add weeks to the journey, or (2) a much more expensive overland route, typically by rail.

*Panama.* The Panama Canal is still the preferred route for East Asians but this is being challenged as ships get larger. The Panama Canal has been so important that, as mentioned earlier, ship size categories are based on whether they can pass through that canal. However, an ever increasing number of ships are larger than the old Panamax size. The size of a panamax vessel is limited by the size of the Panama Canal's locks. The 'post panamax' category has historically been used to describe ships with larger hulls.

The Panama Canal is currently being enlarged at an expense of over \$US 6 billion. The multi-billion dollar project will expand the canal's capacity, both in volume and ship size. Completion of the project was projected for approximately 2014 (Panama Canal Authority, 2006). While the project has been delayed and is over budget, it is now expected to be completed in 2016.

Panama is so important that the expansion project is causing some changes in terminology. The 'new panamax' size category indicates the ship-size that will be able to pass through the new third set of locks currently being built (United Nations Conference on Trade and Development, 2010). The new locks can accommodate a ship with approximately 12,000 TEUs (Panama Canal Authority, 2006).

The Panama project may also greatly impact trade patterns. Not only will East Asian ships be more likely continue to use Panama rather than Suez to get to Europe, they may also want to ship directly to customers on the U.S. East Coast rather than to the West Coast with a rail transfer. However, the New York/New Jersey port is congested and needs upgrading of transfer capacity. Other ports such as Halifax, Norfolk and Baltimore are looking for ways to get in the big-ship game (see ports below) (Financial Times, 2015).

Nevertheless, when the Panama Canal project is completed, it will still not accommodate the largest ships currently in use. Even this multi-billion dollar expansion will only accommodate ships 1/2 to 2/3rds the size of those soon to be built. Some say that the new Panama Canal will be out of date the day it opens.

*Suez.* For the growing economies of South Asia, the Suez route to Europe is most likely. Suezmax is also a term describing ship sizes. It refers to ships capable of passing through the Suez Canal. The term is primarily used to classify tankers. Since the canal has no locks, the most serious limiting factors are the maximum depth below waterline, and height due to the Suez Canal Bridge. A few supertankers filled to capacity are too deep to fit through. They have to transfer part of their cargo to other ships or to a pipeline terminal before passing through (Hamlin and Lazar, 2012).

The Suez might have limitations with respect to the new mega container ships. Also, once ships get to the Mediterranean Sea, they may face a 10 to 20 day trip around Europe to the west and north to get to ports that can handle the larger ship size and cargo volume.

The 'New Maritime Silk Route' proposed by China would also increase East Asian shipping volume going west to Europe. In a speech in 2013, Xi Jinping of China announced the intention to create a maritime silk road, along with the Asian Infrastructure Investment Bank (AIIB) (Yale, 2015). These initiatives have gained traction as well as controversy in the succeeding years but clearly represent a 'look west'- attitude on the part of the Chinese and the initiative's partners. The Indian Ocean and the Suez are destined to become more important for transport to Europe (Want China Times, 2015).

## **2.5. Ports**

Obviously, with ship size increasing rapidly sea ports must be built to accommodate the larger ships. And, with the increase energy and cost efficiency offered, servicing larger ships could be important to a city or country's competitive advantage. The costs and time lags associated with building port facilities is much greater even than for the ships themselves.

Container ports are dominated by Asian ports, with 7 of the top 11 in China. Western nations are far behind in both port capacity and amount of trade. European ports that make the list are Rotterdam (#10), Antwerp (#14), Hamburg (#15) and Bremen/Bremerhave (#23). North American entries are Los Angeles (#17), Long Beach (#18), and New York/New Jersey (#20). Other North American and European ports in the top 50 are: Valencia, Spain; Flexstowe, UK; Algeciras, Spain; GioiaTauro, Italy; Savannah, US; and Vancouver, Canada.

Listed ports can handle the Panamax ships, but not necessarily the newest mega-ships. Going farther down the list, ports might only be able to deal with smaller ships. Norfolk, VA has low TEU volume but deepwater larger ship capacity (Allen, 2012). Halifax is developing its deep water port to handle 18,000 TEU ships, but does not currently make the top 10 in volume.

'All of the consequences of [ship] size might not be immediately obvious for naval architects looking for optimum carrying capacity or for ship owners seeking to reduce costs', says Diana Illing, IHS Maritime & Trade Consultant. 'Not only must ports upgrade the size of their ship bays, but other preparations must be made. One issue plaguing many ports is draught. At Hamburg, for example, one of Europe's most active and influential cargo hubs, restricted draught has always been a limiting factor – 12.8 meters (about 42 feet) during low tide and 15.1 meters (about 50 feet) during high tide' (Illing, 2015). Air draught, the height of the ship and its antennae above the water is also a limitation. Bridges that cross the mouth of a bay are sometimes too low for the big ships. This is somewhat of a problem in Halifax and Baltimore, for example (Allen, 2012). Halifax, one of the deepest ports on the North American east coast can handle 18,000 TEU ships, but must increase the height of the bridge crossing the mouth of the bay to allow full access (Illing, 2015).

The breadth of ultra large container ships creates another limitation. The combined beam of two ships plus a safe separation zone between them represents the required channel width to allow two ships to pass in a channel. Ships carrying 18,000 TEU's are too wide for two-way traffic on the Elbe Channel that serves Hamburg, for example. Requiring one-way traffic while a large ship passes down the channel would create long waiting times and congestion for other port users (Illing, 2015).

Variability of delivery volume is another problem faced by ports. This means that when mega ships arrive, servicing them can overtax local facilities. Unloading a mega ship creates demand for sufficient intermediate storage space, for example. This refers not only to space for containers but also plug-ins for cooling and refrigerated containers, and tank storage for liquid bulk or dry bulk storage (Illing, 2015).

Investment in more freight handling equipment will be necessary. Onward forwarding and distribution of cargo becomes a logistical challenge. The capacity to load so many containers on to trains and trucks is a concern, and moving freight into the hinterland may require additional rail and road capacity in and out of a port. One train can only carry about 240 40-foot containers. About 20 double-stacked trains of maximum size would be required to move the containers from one 18,000 TEU ship. The



larger the container ship, the more time is required to load or unload, but the time schedule for a container ship is tight (Global Security.org, undated, Container Types).

An additional issue is 'handoff' capacity to feeder ships, smaller ships that transport containers from the big ports to smaller coastal or up-river ports. The speed of the inter-ship transfer is critical. Ships must line up side-by-side and have cranes sort and transfer containers. If only a few ports on a continent are able to handle the biggest ships, they may become hubs and will need to transfer containers to feeder ships in much greater volumes. Some ports that have a long history of being major ports may not be able to upgrade facilities to accept the largest ships. Such ports might find increasingly that they are sending and receiving containers to/from other ports on feeder ships. The new mega-hubs must have more and better handoff facilities.

These transfers require not only physical facilities but also other technologies to maintain internal security, track inventory and deal with border-crossing bureaucracies related to customs, immigration and terrorism threats. These soft infrastructures are both a significant part of port costs and a more ongoing issue requiring constant update. They also contribute to a demand for advanced technologies in the port city and the establishment of trade, transportation and communication technology hubs (Lick and Hamlin, 2012).

Mega-ships have an impact on the status of ports that can't handle them. Shippers might relocate their business to ports that can be served by mega-ships. With ultra large container ships arriving in Rotterdam, for example the most economic choice might be to send Hamburg-bound containers on a feeder ship or some of the traffic may be transferred by road or rail depending on the distance. This would challenge ports' top-tier status, their inclusion on a main haul itinerary, and their place in a hub and feeder networks, says Diana Illing.

Ports that have invested to prepare for the new vessels stand to benefit. The APM Terminals facility at Pier 400, Los Angeles, handled three mega-ships simultaneously between Feb. 22 and March 7, 2015, representing a combined total of 34,465 moves in that period, and filling 28 double-stacked railroad trains. This author witnessed many of those containers crossing the Mojavi Desert by rail in early March. Intermodal container rail traffic for inland destinations is a major component of West Coast containerized cargo volumes (Illing, 2015).

'Trade volumes are forecast to continue growing, and the global new building order book includes a substantial number of mega-ships. This has implications for port infrastructure in approach channels, quayside handling, and hinterland infrastructure and logistics. Ports need a clear vision of trade developments, equipment and staffing issues, and hinterland infrastructure in their communities. It is likely that port authorities will be pushed towards mergers to achieve the scale needed to meet the demands of mega-ships' predicts Diana Illing<sup>2</sup> (Illing, 2015).

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2 Diana Illing, an IHS Maritime & Trade consultant, can be contacted at [diana.illing@ihs.com](mailto:diana.illing@ihs.com). This commentary was originally published in IHS Maritime Fairplay, a sister publication of JOC.com within IHS Maritime & Trade.

In the early history of urban development break-of-bulk points at seaports lead to the location of many of the world's great cities. More recently, the airport has become a catalyst for both industrial development and high-tech 'aerotropolis' services. Now, the elevated importance of sea freight in modern trade is providing an impetus for modern technological development and local economic growth near seaports again, including high-tech logistics centers, often with a closely associated aerotropolis (Lick and Hamlin, 2012).

### **3. Europe's Southeastern gateway**

Southeastern Europe has the advantage of a long coastline with many natural harbors (Notteboom, 2012). Southeastern Europe also has many port cities that are competing for the distinction of gateway to Europe. In the port of Rijeka, Croatia, for example, the Adriatic Gate Container Terminal (AGCT) recently serviced a 10,000 TEU container ship. The vessel is part of the 2M Alliance of two of the world's largest shipping companies, Maersk and Mediterranean Shipping. The alliance connects Rijeka and the Far East, deploying fifteen vessels with capacities of 9,600 to 11,300 TEUs. Other gateway ports include Italian ports in the North Adriatic and the Thessaloniki region of Greece (Notteboom, 2012). The North Adriatic Region has established the North Adriatic Port Association (NAPA), for example, to try to become a gateway region. In addition to Rijeka, this association includes Trieste, Italy, which has a port 18 meters deep and able to handle very large ships. But, at 1.8 million TEUs in 2012, NAPA members still only handle a fraction of the volume of the multi-port gateway region of Hamburg-Le Havre (Poledica, 2014).

Some would argue that one single port would have difficulty becoming a continental gateway. They might argue that the economics favor a multi-port region, with each port playing a specialized role. One port might handle the largest ships and hand off cargo to smaller ships and rail lines that operate between member ports. Some ports in the system might specialize in dry bulk or tanker shipping and each would have a different configuration of access to the hinterland (Notteboom, 2010; Gilman and Williams, 1976).

#### **3.1. Constanța: favorable location**

Constanța Seaport in Romania is an example of a port city that has the potential to increase its importance because of the shifting patterns of trade and transportation (Hamlin and Lazar, 2012). Constanța is located at the western end of the Black Sea. With a natural harbor, Constanța has welcomed ships since at least the sixth century B.C. (Bloomberg.com, 2014).

Constanța's attributes facilitate the connection of other Black Sea ports to Central European markets using Pan European corridors. As such, the Port at Constanța hopes to be Europe's link to the Black Sea basin that also serves the Ukraine, Georgia, Bulgaria, Russia, and Turkey. And, with growing Asian-European trade and im-

provements to the Suez, Constanța might be well located to connect European and Asian markets. It could be a key link between Europe and the rapidly growing economies of south and East Asia through the Suez Canal, saving shippers the multi-day trip around Europe to North Sea ports like Rotterdam and Bremenhaven. Furthermore, with the expanding Panama Canal, Constanța could be a Black Sea hub, providing access between East Asia and the Black Sea basin through the Panama Canal (Hamlin and Lazar, 2012).

The port city is at the junction of major trade routes, including routes connecting the Transcaucasus, Central and Eastern Europe and Asia and the Far East. Constanța might also be a gateway to Western Europe saving time and fuel compared to routes going from the Suez to Northern European ports. According to the 'CO2 Reduction' report issued by the European Gateways Platform, significant savings in CO2 emissions would be achieved if goods destined for Central and Eastern Europe entered through Constanța, rather than northwestern Europe. Constanța port's favorable geographic position is emphasized by its connection with two Paneuropean transport corridors, as defined by the European Commission.

'Its position as a "core port" in the revised EU Ten-T network, its pro-active implication in the Strategy for the Danube Region, and its favorable location make Constanța port more and more attractive to investors', says Valeriu Nicolae Ionescu, CEO of N.C. Maritime Ports Administration S.A. Constanța, (in Forward of 2013 Annual Report: Port of Constanța). TEN-T network is the Trans-European Transport Network policy and program (European Commission, Mobility and Transport, 2015). According to European Commission policy, Constanța is a part of two TEN-T corridors, the Orient/East-Mediterranean Corridor that connects the German ports Bremen, Hamburg and Rostock via the Czech Republic and Slovakia, with a branch through Austria, further via Hungary to the Romanian port of Constanța's, and the Rhine-Danube Corridor, that connects Strasbourg and Mannheim via two parallel axes in southern Germany, one along Main and Danube, the other one via Stuttgart and Munich, and with a branch to Prague and Zilina to the Slovak-Ukrainian border, through Austria, Slovakia and Hungary to the Romanian ports of Constanța's and Galati (European Commission, 2014). TRACECA (Transportation Corridor of Europe Caucasus and Asia) – is a policy linking Europe to the Caucasus and to Central Asia (2013 Annual Report, Constanța Port).

The 21<sup>st</sup> century 'Silk Route' policy has been a name for a loose set of ideas and projects to connect Asia and Europe. One part of it sees Constanța as an end point of a transportation link between East Asia and Central and Eastern Europe. TRACECA is a key link both conceptually and physically in a Silk Road policy. More recently, China has added more specificity and perhaps money to a 21<sup>st</sup> century Silk Road with two connected initiatives, (1) the Asian Infrastructure Investment Bank and (2) China's Belt and Road Initiative. The China Belt and Road initiative has two parts, (a) the Maritime Silk Road and (b) the overland transportation link.

The 21<sup>st</sup> century Maritime Silk Road, officially announced March 28, 2015, is designed to go from China's coast to Europe through the South China Sea and the Indian Ocean in one route (Shaohui, 2015). The overland link includes the world's longest rail route, 13,000 kilometer from Yiwu, China to Madrid, Spain (Ridgewell, 2015; Yale, 2015).

Certain other attributes of Constanța recommend it as a hub port for the Black Sea and beyond. First, the port has three elements of effective intermodal transportation (inland waterways, (Black Sea Danube Canal), railways and roads/motorway infrastructure). Also, the facilities for servicing all type of vessels, containers, tankers and others are in place<sup>3</sup>.

### ***3.2. Can Constanța take advantage of its locational and other advantages?***

The European Gateway Project has plans, looking at the port at Constanța as a Black Sea-Danube River handoff point to feeder containerships and to other modes that could carry goods to inter-modal terminals in countries such as Romania, Serbia, Hungary, Austria and Germany. According to some, Constanța already has the largest throughput volume of dry bulk, primarily grain, from Eastern Europe to the Middle East (Bloomberg.com, 2014). In 2020, the shipping volume is forecasted to be 1.47 million TEUs. However, dry bulk shipping volume represents only about 10 percent of the total volume destined to or from Central and Eastern Europe. And while the dry bulk capacity is important, some claim that Constanța is lagging in containerization.

Important container shipping lines are utilizing Constanța Seaport as a distribution port for the Black Sea region. In the past decade, Constanța Seaport has been serving freight flows from Austria, Bulgaria, Hungary, the Republic of Moldova, Slovenia, Slovakia, Ukraine and Serbia. According to Romanian authorities, the Port of Constanța offers the largest terminal handling capacity in the Black Sea Basin. Based on 2010 statistics, the container throughput approximated 600,000 TEUs. Constanța ranked 25<sup>th</sup> among the European ports in this regard and, in the top 10, in Eastern Europe. This volume increased between 15 and 20 percent during 2011 to approximately 700,000 TEUs<sup>4</sup>. Total traffic increased 9% in 2013 compared with 2012 or 55.138 million tones (Annual Report, Port of Constanța, 2013). Yet, the percentage increases described above come off of a very slow year in 2009-2010. In fact Constanța has been slower than other ports such as the North Adriatic cluster to come back from the slow years of the Great Recession.

The largest container vessel calling on the Constanța port has a capacity of approximately 9,000 TEUs. This is smaller than the ships using the North Adriatic and only half of the size of the largest ships now in use world-wide. The largest container terminal, located in the southern part of the Port of Constanța, operated by DP World,

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<sup>3</sup> Information provided by the Romanian Ministry of Transportation and Infrastructure, 2011.

<sup>4</sup> *Ibidem*.

has an area of approximately 60 hectares with an estimated annual capacity of 1.5 to 2 million TEUs<sup>5</sup>.

Constanța's location is a disadvantage in two ways. First, the overland distance to the center of Europe is much greater than it is for the North Adriatic ports. And, the rail and highway systems in Romania need substantial up-grading to act as an effective link to the center of Europe. Second, its geopolitical location makes Constanța a more isolated port. It is not a part of a major gateway cluster such as the North Adriatic or those of Northwest Europe. According to the multiport theory mentioned above, this could be a long-term disadvantage.

### *3.3. The Constanța gateway plan*

While Constanța has many natural advantages, it faces many challenges. This attempt at an Eastern gate to European trade and transportation hopes to create a new competitive advantage for the region and promote manufacturing and trade in general. Yet, success requires careful planning and the capacity to move forward with local and Romanian funds and private money, not just waiting for EU funds. Also a part of the project would be a high-tech logistics hub for the east side of Europe. Creating an advanced multi-modal freight facility and logistics hub requires a multi-faceted plan.

Basic questions to be answered are: What do Constanța and Europe need to do to accomplish this lofty goal? What is the status of the Constanța Port as it relates to the new larger ships and changing pattern of global trade? What is the status of the hand-off facilities at Constanța? What work needs to be done to the canal shortcut through the Danube delta? What expansion of the Danube's capacity is required? What is the quality of the rail and highway connections between Constanța and the center of Europe? Can Constanța become a high-tech logistics hub?

A Joint Taskforce presented a White Paper in April of 2010 to the Romanian Government that was to act as a roadmap and work plan to guide implementation. The Joint Taskforces consisted of experts from representative Romanian ministries and other public entities (e.g., Constanța Port Authority) and experts from the European Gateway Platform foundation<sup>6</sup>.

In order to accomplish the targets and goals, Port of Constanța, with consistent support from Romanian Ministry of Transportation and Infrastructure, must elaborate a strategy for future developments which should integrate with the national transportation strategy. So far only some of the proposals of the white paper have been implemented.

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<sup>5</sup> Information provided by the Romanian Ministry of Transportation and Infrastructure, 2011.

<sup>6</sup> The Dutch-Romanian Chamber of Commerce established the Romanian Gateway Association which developed a white paper with recommendations. The degree to which the Romanian Gateway Association continues to be active is not clear.

### **3.4. Current projects**

Several projects are either in progress or to be started in the near future. The port can accommodate the current Panamaxships, but, as mentioned previously, ship sizes continue to increase rapidly, and the Panama Canal is increasing its ship size capacity. The port of Constanța strives to secure better alongside-access conditions for most of its inner port basins to promote efficient intermodal transfer (truck and rail). One of the important projects in railway traffic is the enhancement of railway capacity in the river-maritime area of Constanța Seaport and the connections to the rest of Europe. The local project consists of the construction of a systematized railway complex. In the first phase, the railway lines serving current operators will be executed based on traffic estimates for the year 2020. The project costs an estimated 17.6 million Euros. As a part of TEN-T several projects effecting Constanța port or its hinterland are being funded. The Budapest – Arad – Timișoara – Calafat rail upgrade and the Arad – Brașov – București – Constanța rail upgrade are key projects connecting the port to the hinterland (European Commission, Mobility and Transport, 2014). Also, the rail bottleneck between Timișoara and Sofia is being addressed (European Commission, Mobility and Transport, 2014).

Projects to improve port transportation infrastructure are also in progress including work to improve inter-modal connections at Constanța port (European Commission, Mobility and Transport, 2014) as well as the development of roads and bridges connecting port operation areas with national transportation systems. The limited access highway from Bucharest to Constanța has been completed. The Danube River – Black Sea canal is operational and being maintained at its current level. Projects designed to provide better sailing conditions on the Danube all through the year are also in the works. The 2012 blockage of the Danube’s freight transport illustrated a severe problem.

Equally important are several projects expanding Constanța’s role as a logistic hub. Creation of a state-of-the-art information and logistics hub is a complicated entity that showcases the interaction of science-based technologies with human systems. Governments are involved because of concerns at such locations for both security and taxation. Private systems must track inventories, time and related costs, and billing and shipping instructions, to name a few. The interaction of real time data bases, government policy, law and profit orientation are all areas that cross sectoral and technical lines. A major maritime port can fall behind quickly if it does not employ the latest information-age technologies as a part of a high-tech port and logistics hub.

## **4. Summary, conclusions and policy implications**

The shipping industry is recovering slowly from the global Great Recession of 2009-2010, in part, because the world economy is recovering slowly. Container shipping has been one of the slowest segments of maritime shipping to recover. Tanker shipping has done better.

Despite the respite, global trends both inside and outside the shipping industry are in place. Long-term energy price trends, improved handoff infrastructure and technologies, and security concerns are elevating ocean shipping as a more important transportation mode.

Notwithstanding the deep drop-off of container volumes and the slow recovery, ships are still increasing in size rapidly. As has been said, in poor economic times ships become bigger to gain efficiency and in good economic times they grow to increase capacity. Maersk, the world's largest maritime shipper, is continuing to buy Triple-E's, the world's largest ship, and is often modifying them to hold up to 20,000 TEU's.

This trend is having far reaching effects on all aspects of global transportation. The trend has implications for the major cities of the world and can dramatically impact the economies of whole countries and continents with implications for the world economic order. Few countries are in tune with what is happening. Not keeping up with this ship size escalation could cause a country or a whole continent to fall behind economically.

The two major canal systems of the world, Panama and Suez, are in need of the major upgrades, some of which are underway. Major canals are expanding to accommodate larger ships at enormous cost in time, money and environmental impact. Yet, even after a multi-billion dollar investment, the Panama Canal will be far too small for the largest ships when it is complete in 2016. Nicaragua has given permission to a Chinese investor to build a competing canal designed to accept larger ships. The status of the Panama and Suez Canals has great effect on the shipping routes and therefore selection of ports. The status of the Central American canal connection has strong influence on East Asia to Europe shipping as well as ports on the East Coast of the US.

At present, mainly Asian seaports are able to accept the largest ships being built. Halifax, Nova Scotia can now accept a ship of 18,000 TEU's. Only a few other ports in North America and Europe such as New York, Los Angeles/Long Beach and Rotterdam are able to handle the next sized ships, and those ports are congested. Many ports are attempting to deepen their approaches and expand quays, cranes and storage capacity to accommodate mega ship arrivals. Electronics and communication infrastructure are also in need of modernization. Advanced communication is critical to tracking cargo, dealing with customs, improving safety and maintaining security.

Some of the great inland waterways, such as the St. Lawrence Seaway and Europe's two major rivers require expansion just to handle 'handoff' traffic, and rail lines, highways and other hinterland transport are often inadequate to handle the load of a mega-ship.

The concept of continental gateway also becomes salient with the renewed importance of ocean freight. Secondary cities can emerge as major players in global trade if, (1) they are located on the edge of a continent, (2) they have a good deep-water port, (3) they build good inter-modal transfer facility, and (4) they obtain the technological expertise to develop a logistics hub. One place in Eastern Europe that has that poten-

tial is Constanța, Romania. Currently the largest port on the Black Sea, Constanța is effectively near the mouth of the Danube River, and has rail and highway connections to the rest of Europe. By using the port at Constanța ships coming from Asia, through the Suez can save more than ten days travel time and cost and CO2 emissions by unloading in Constanța rather than Rotterdam.

Has Constanța risen to the challenge of becoming the southeastern gateway and hub for Europe? Constanța is doing very well as a port link for grain shipment to the Middle East and as a hub for Black Sea traffic. But, it can only handle container ships ½ the size of the largest vessels, and the rail and highway links from Constanța to the rest of Europe are underdeveloped.

To take advantage of the significant locational advantage, Constanța and other similar gateways must rapidly upgrade quays to handle larger boats, improve cranes for transfer to Black Sea ships, river vessels, rail and truck. They must develop state-of-the-art information and logistics hubs that effectively interface the real time information concerns of government, regional security, inventory, safety, large-scale physical infrastructure. They must also improve storage capacity at the port.

All of this is extremely costly. Who will pay for it? (Drew Maritime Research, 2015). Private sector sources must be part of the picture. Shipping lines that are buying or leasing the mega ships will want and need the port facilities and associated infrastructure required to handle them. Rail lines also have a major stake, and private investment capital can be attracted if they see a growth opportunity. But with their money they will make the decision as to which ports receive the attention. An enlightened public sector should also be involved to promote the interests of its citizens and to insure that facilities are developed that enhance the community. The cost of port upgrades is so expensive that a partnership between the public and private sectors is necessary. Global transportation is changing rapidly. How well this situation is handled could have consequences for the economic status of an entire nation for decades to come.

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