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**Analysis of the Economic Importance of the Maritime
Transport Industry in Guatemala**

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Declaration:

I hereby declare that I am the sole author of the thesis entitled “**Analysis of the Economic Importance of the Maritime Transportation Industry in Guatemala**”. I duly marked out all quotations. The used literature and Sources are stated in the attached list of references.

In Prague on

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Objectives of the Thesis:

- Explore the place of the maritime industry in the Guatemalan Economy and the possibility for its growth
- Analysis of the maritime industry background in the country emphasizing the role of the public actors focusing on the main ports management (Puerto Quetzal, Puerto Barrios y Puerto Santo Tomas de Castilla) its present trends and methods of operation.
- Analyze the stage of development of the maritime industry in Guatemala comparing it with neighbor Central American Countries such as El Salvador and Honduras making emphasis on the main ports of the region and comparing their handling and management.
- Explore the frequency and volume of use of the most important ports in Guatemala both for the Pacific and the Atlantic Coasts, for the four ports in Guatemala the Guatemalan National Ports Commission collects the data of the types and volumes of cargo handled by each port, this data allows a study of the cargo that was handled through the ports in the year 2013 by the different types of cargo and by the origins and destinations of the cargo providing an overview of the facilitation of the maritime transportation industry to international trade in Guatemala. Accompanying this research on the characteristics of the cargo handled by the main ports, an analysis is made on the current performance of the ports in Guatemala and recommendation are drawn based on the characteristics found in this study and in literature that field experts such as Jean Paul Rodrigue have derived for the development of the maritime industry and logistics performance in Latin America.

1. Introduction

This research focuses on the importance that the maritime transportation sector has in the country of Guatemala, this idea rises from the importance of maritime transportation in international commerce, since it is the gateway for goods most implemented and used by many countries which possess access to the sea. The globalization of international trade has started a trend in which the volumes of cargo that are traded increase each year, therefore there is a higher demand for the port services that operate such goods. The characteristics of performance including deficiencies and policies for port development in Latin America has been studied in other literature, (Doerr & Sanchez, *Indicadores de Productividad para la Industria Portuaria. Aplicacion en America Latina y el Caribe*, 2006) (Doerr, *Políticas Portuarias*, 2011), This thesis focuses on the case study of Guatemala which has access to both Atlantic and Pacific oceans and it counts with four ports, each of which is analyzed in this research with the objective of using the key factors of previous literature about development for ports in Latin America and to evaluate the current status and if possible develop recommendations for the future development of the ports. To develop an understanding of the operations of the port an analysis is made in Chapter II using the data from the traded goods collected by each port and processed by the Guatemalan National Ports Commission (Comision Portuaria Nacional, 2013). It is the idea to provide a comprehensive work that represents the current state of the industry and the level of capacity the maritime facilities have to support international commerce. From the analysis of the Port operations of the four ports in Guatemala the objective is to find the main key areas in which the port have opportunities to grow and for which recommendations can be deducted for the policy makers to have in mind when designing the future policies for development of the ports, it is the objective to find areas in which the port authorities as well need to focus to implement the services offered by the ports, literature such as the study of Latin American logistics services (Rodrigue, 2012) is used to find areas in which the services in Guatemala will benefit from such projects as mentioned by field expert Jean Paul Rodrigue.

2. Chapter I – The Maritime Transportation Industry in Guatemala

This Chapter provides an Overview of the main subjects of research in this thesis which are the four main Ports in Guatemala, the ports are located in both Pacific and Atlantic Coasts in Central America, an overview of the Ports operations main characteristics will be provided and the roll that main actors have in the handling of the Ports such as the Public Sector in Guatemala.

2.1. Overview of the Guatemalan Maritime Industry and It's Relevance for the Economy of the Country

The maritime industry has vital importance for the economies of Central American countries; the region maintains a quite strong movement of goods through the sea transportation ways.

El Salvador is the only country in the Central American region that has access only to the Pacific Ocean while Guatemala as it is shown in Figure 1 has access to both Pacific and Atlantic Coasts like other countries in Central America such as: Honduras, Nicaragua, Costa Rica and Panama.

Figure 1: Map of Guatemala



Source: (World Port Source Maps, 2015)¹

¹ http://www.worldportsource.com/images/maps/guatemala_sm00.jpg

Most of the foreign trade activity of Guatemala is done with the United States, Central American countries and more recently with a growing strong partner the European Union.

Guatemala is a country that has focused mainly on agriculture in the past; however new trends are moving the economy to depend strongly on the services sector. The maritime industry remains however very important for the country, Guatemala's consumption of imported goods is very high and enjoys a lot of trade benefits with many countries, it has a free trade agreement with the United States, Table 1 offers an overview of the trade relations between Guatemala and the United States of America from 2011 until 2014. This relationship has a direct impact on the importance of the maritime industry of the country since the main ports are in constant movement thanks to the flow of goods to the country.

Table 1: Trade Between Guatemala and the USA

	2011	2012	2013	2014
Total Market Size	422	395	406.3	418
Total Exports	23	25	25.7	26.4
Total Imports	399	370	381.1	392.5
Imports from the U.S.	134	132	136.9	141

Source: (SIECA, Banco de Guatemala)

Guatemala counts with a total area of 108890 square kilometers from which 460 square kilometers are territorial waters, the country counts as well with maritime ports infrastructure both on the Pacific and the Atlantic coasts, this fact also makes Guatemala a platform for alternative logistics to enter neighbor countries through Guatemala's road and highway infrastructure (Proexport Colombia, 2011). There are two main highways in Guatemala, one that intersects both Atlantic and Pacific oceans and a Pan-American highway that joins Mexico with Panama. The ports infrastructure of Guatemala comprises 4 ports which are distributed in both oceans, these ports are Puerto Barrios, Puerto Quetzal, Puerto Champerico and Santo Tomas de Castilla, these mentioned ports comprise 80% of the total maritime traffic and because of Guatemala's access to both oceans about 90% of the total cargo that enters the

country does so by maritime transportation, reinforcing the idea that maritime transport plays an important role for the economy of the country (ISDE, 2011).

Guatemala has many advantages which help in developing their logistics services:

- Geographical Location
- Port Terminals in both Atlantic and Pacific Oceans
- High Volume in movement of goods in the region (Guatemala is second after Panama)

one of them is the close distance to one of his biggest and most important trading partners, the United States of America and Mexico. To that we can add that Guatemala's location in between North and South America and also Atlantic and Pacific Oceans, making Guatemala a transport route which many merchant shippers go through (ISDE, 2011).

There are three main reasons that affect the performance of the Logistics services operating in Guatemala, they are first: maritime transportation that lacks appropriate and efficient loading and unloading infrastructure for goods, second: ground transport for trucks transporting goods is not adequate for the transportation of heavy goods vehicles and third: the airport facilities have only two facilities for the transportation of goods, according to the Logistics Performance Index Guatemala is ranked number third in Central America and following the best two performers El Salvador and Panama as it can be seen in Table 2.

Table 2: Central America Logistics Performance Index 2014

Country	Year	LPI Rank	LPI Score	Customs	Customs	Infrastructure	Infrastructure
Panama	2014	45	3.19	40	3.15	52	3
El Salvador	2014	64	2.96	51	2.93	72	2.63
Guatemala	2014	77	2.8	63	2.75	88	2.54
Costa Rica	2014	87	2.7	110	2.39	99	2.43
Nicaragua	2014	95	2.65	72	2.66	130	2.2
Honduras	2014	103	2.61	67	2.7	124	2.24

Source: World Bank Report, Logistics Performance Index 2014. (World Bank, 2015)

Between the most important challenges that the logistics sector faces we can find that there is a comparable high price for security of the transportation of goods, there is a lack of training and preparation for the drivers of the heavy goods vehicles and finally the age of the fleets of heavy goods vehicles affects the performance of the transportation (ISDE, 2011).

The transportation services in the country have gone through many changes in the past decade in Guatemala, the main aspect has been the growth of integration of transportation services, previously in Guatemala the transportation of goods was provided by companies focusing specifically on one type and on one mean of transport such as maritime, air or ground transportation, separately different companies provided services for customs and warehousing but there was a lack of companies who offered full logistics services, that has changed recently. It is important to mention that another development in the industry is the management of container space where goods from different customers are transported in the same container that reduces the expenses of customers since they don't need to fill a full container to be able to use the transportation services of the carrier (Ordóñez, 2004).

We can recognize as well that part of this evolution was the service called “door to door” which has been part of the services of global companies that focus in transport however it was integrated into the Guatemalan transportation industry only in the last decade. According to the Agency of Transportation Companies in Guatemala more than 70% of the companies still offer only transportation services without providing customs clearance warehousing and other services that included in the “door to door” service, from these percentage of companies it is important to mention that more than half operate from Miami being one of the strongest locations of origin of goods (Ordóñez, 2004). Having in mind the importance of globalization in international business, the case of Guatemalan companies providing transportation and logistics services cannot be left out of this framework, therefore managers of logistics services in Guatemala have the need to think globally and be mindful of the potential customers that can be found outside of the country. Table 3 shows data from 2000, 2010 and a projection for 2020 of containerized exports with important trading partners in Central America and neighboring countries.

Table 3: Containerized Exports in TEU from Guatemala to Central America, Dominican Republic, Colombia and Mexico

	2000	2010	2020	2000-2010	2010-2020
Mexico	728	1660	2245	8.60%	3.10%
Belize	1841	1545	2784	-1.70%	6.10%
Honduras	12613	28111	45138	8.35%	4.80%
El Salvador	27133	44807	70016	5.10%	4.60%
Nicaragua	6179	11151	18289	6.10%	5.10%
Costa Rica	5309	9662	15463	6.20%	4.80%
Panama	1903	5913	9368	12.00%	4.70%
Colombia	691	1819	2253	10.20%	2.20%
Dominican Rep.	887	7546	7546	22.10%	1.50%
Total	57284	111179	173102	6.90%	4.50%

Source: (INECON, 2013)

Exports are considered important for the economy of Guatemala, however Guatemala still exports more than it imports the growth has been dominated by imports rapidly catching up to the volume of exports, more than half of their exports are composed of traditional products such as coffee, sugar, bananas and cardamom.

Guatemala has a free trade agreement with Taiwan, with Central America and the Dominican Republic as well, if we analyze the growth of exports in Guatemala with the Region of Central America and other trading partners such as Mexico, Colombia and Dominican Republic we can see that containerized exports in TEU of Guatemala have grown the most in terms of what it is exported to Dominican Republic and Colombia as is shown in Table 1.

Guatemala is the most populated country in Central America with approximately 14 million inhabitants, Central America is a zone without trade customs, and the flow of goods in this region is efficient, distances from Guatemala to Nicaragua are approximately 750km, and there is a good degree of ground connectivity between the countries. For instance containerized cargo with origin in Europe would arrive to the Atlantic coasts of the country and be redistributed by ground for which is important the existence of good east to west

connectivity. Thanks to the study of the Interamerican Bank for Development in which the infrastructure of 18 ports in the Central American Region was analyzed, there are 5 ports which lack cranes to unload goods, which means that they can only receive ships which have a crane on board, between these 5 ports we find Puerto Barrios in Guatemala. The study also recognizes 5 from the 18 ports in Central America which are able to receive feeder ships that require a minimum depth of 10.7m, two of this ports are Guatemala: Puerto Santo Tomas de Castilla and Puerto Barrios.

Only six from the 18 ports in 4 different countries are able to receive ships Panamax exclusively with depth between 10.7m and 12.5m, just one of this ports is located in Guatemala: Puerto Quetzal. For Post-Panamax ships there is only Panama ports of: Balboa, CCT, Cristobal, Manzanillo and PSA which are equipped accordingly to handle the type of ships, there are no others in Central America (Banco Interamericano del Desarrollo, 2013). The recommendation that comes out of the analysis of this 18 ports is focused on the improvement of efficiency in the operations that occur after the cargo has been unloaded, this means that efficiency in most of the ports in the region can be improved by addressing the connectivity between ports and customs and such public agencies in order to optimize the entry and exit of containers from their shipyards. The example is given of Puerto Limon with very limited yard space and infrastructure however it moves close to one million TEU.

2.2. Study of the Maritime Industry with emphasis on the public sector, focusing on the main Guatemalan ports

In the previous section a brief overview of the maritime industry and logistic services was given, in this section the emphasis is applied to the role of the institutional infrastructure of maritime services that are provided when importing and exporting goods in Guatemala, focusing on the ports infrastructure of the country and their management by the local institutions. Until the 1970's the principal ports in Guatemala were functioning independently from a national ports authority, the authorities of the port of Santo Tomas de Castilla were the principal initiators of the idea of forming a national maritime ports authority, and supported by the general director of the port, a formal proposition to create the National Ports Authority was given to the government, this proposal was also supported by the cooperation of other port authority directors and the governmental institution in charge of two ports Puerto Barrios and

Puerto de San Jose called FEGUA (Marroquin, 2009). An important development was that rising from the proposal of creating the national maritime ports authority a commission was created integrated by the directors of ports Santo Tomas de Castilla, port of Champerico and FEGUA, together they developed an idea to create an institution intermediary between the national ports authority and the separate ports, the main motivation was to create a plan for development of the ports which would guide the growth of the ports in a cohesive manner instead of each port growing and developing separately.

From this initiative the National Ports Commission (Comision Nacional de Puertos) was created. The creation of the National Ports Commission was also supported by the National Chamber of Commerce of Guatemala which provided participation and point of view from the private sector.

Between the functions that the National Ports Commission had after its creation was providing training and capacitation for staff working on the ports, unifying the growth strategy for the main ports in Guatemala and also representing the country on an international level, together with the National Ports Commission the creation of the Central American Commission of Ports Authorities (COCAAP) was also created and the CNP represented Guatemala at the Central American level.

The National Maritime Ports Authority was never created but from the proposal rose the organization that now has adopted the recognition of representing the maritime ports authority in Guatemala, the vision that the institution has incorporated is to develop a competitive network of maritime ports that will support international business and commerce, to achieve this goal is important to improve the national ports system in Guatemala by promoting competition in the different economic sectors that are involved in the ports activities.

The National Ports Commission of Guatemala coordinates its functions directly with the Ministry of Communications and Infrastructure. Between some of the functions that it currently performs are: cooperating with ports and other institutions that are connected with the transportation sector by providing assessment, technical support, capacitation and training and fundamentally supporting the improvement of efficiency in different operations that are needed in international commerce. (Marroquin, 2009) The strength of this institution relies in the human resources that integrate it, with a recognized professional preparation in the areas of

organization, direction, administration and operation of ports and ports capacitation and training the institution is able to provide the appropriate guidance and support to the ports that operate in Guatemala, to achieve this it makes use of the logistics infrastructure that enables the institution to be present permanently in each of the ports in the country providing capacitation, training and technical support.

2.3. The Guatemalan National Ports Commission and it's functions

The National Ports Commission of Guatemala is also the entity that collects statistical data from all the maritime ports activity in the country, this data is important for many purposes as are to understand the movement of goods in the maritime industry, the statistical data is used by international organizations, financial agencies and governmental institutions interested in the economic sector and international trade. The Commission also uses this data for analysis and implementation of the ports strategy in order to develop a clear plan for the improvement of the ports system, the Commission produces a report each 2 months with statistics of the ports in graphs which makes it easier to visualize the movement of cargo that passes through every port in the country, in the annual report of the Commission the function that ports perform with respect to the support of international commerce is analyzed and it also shows the support that the Guatemalan Ports System gives to the international trade of neighboring countries in terms of goods that transit through Guatemala (Comision Portuaria Nacional, 2013).

The most recent report by the Commission published in June 2014 will be address in this research with the purpose of the research analysis of the Guatemalan maritime industry, this report provides important tools such as the possibility of using comparative analysis for the ports in the country, as well as the demonstration of how the latest financial crisis affected the movement of cargo and how it has positively developed since 2009 and finally to analyze new important trends in the maritime industry in short term. The figures that are used in the report to represent the value of exports and imports are in thousands of dollars and the same figures are used in this research for means of simplification.

According to the report the movement of cargo through the maritime ports in Guatemala represented an important change in 2013 with relation to the previous year, there was an increase going from 16,624,456.1MT(metric tons) in 2012 to 18,404,227.0 MT in 2013, the

financial crisis impacted the movement of cargo strongly in 2008 when the total amount of cargo handled by Guatemalan ports was 14,601,646.8 MT and in 2009 the total cargo handled was 14,933,154.4 MT since then the reports for the following years show substantial recuperation in the movement of cargo (Comision Portuaria Nacional, 2013).

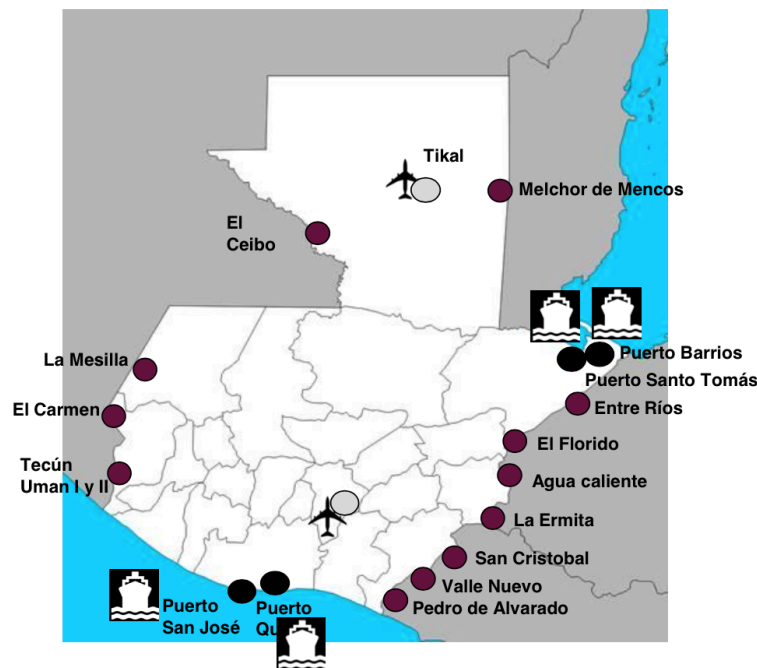
The total international trade of goods for Guatemala in metric tons was 23,689,519.9 MT and shows an increase of 1,784 MT an 8.1% increase and almost twice the increment registered in the years 2011 and 2012, the report indicates as well that the maritime ports handled a total of 77.7% of such trade in goods and in terms of value the maritime industry handled 64.6% of the value of such international trade, ground transportation handled 25.1% and air transportation 10.3%, the total value of imports and exports for 2013 including maritime, air and ground transportation amounted for 27,580,022.1 US dollars (Comision Portuaria Nacional, 2013).

In the 2013 report of the Guatemalan Ports Commission it is also evidenced that there is a difference between total value CIF that represents value of imports and a total value FOB that represents the value of exports, from the imports side there was a variation of +3.1 (imports in 2012 = 16,991,772.8 thousands of US\$ and imports in 2013 = 17,514,147.0 US\$) and exports had a variation of -0.6% (exports in 2012 = 10,126,084.0 US\$ and exports in 2013 = 10,065,875 US\$) (Comision Portuaria Nacional, 2013). This figures are compared to the results in 2012 where there was a variation in imports of +2.3% and a variation of exports of -2.6% and it can be seen that 2013 was an improvement from the side of exports in the economy.

2.4. Overview of the Guatemalan Ports, value and volume analysis of the movement of goods based on the 2013 Guatemalan Ports Commission Report

The movement of goods by each of the four Ports in the country represents important data to the economy of the country, the movement of cargo in terms of value and volume gives an important indicator on the status of the economy, Figure 2 shows an infrastructure overview of the four main Ports in Guatemala including the two airports and the different ground frontiers that exists to exit the country.

Figure 2: Infrastructure Map of Guatemala



Source: (ISDE, 2011)

2.4.1. Puerto Quetzal

Puerto Quetzal started to be built as a necessity identified by the Guatemalan government in 1979, through the ministry of communications there was a decree to develop the port, the construction started in 1980 and the port services started to be offered by 1983 however still in a limited way due to the ongoing construction state of the port, by 1985 the first stage was completed, the communications ministry had created an entity UNECPA in charge of the construction of the port, by 1985 the Puerto Quetzal Company was created and all the functions of UNECPA were transferred to the Puerto Quetzal Company for its administration

(Marroquin, 2009). At the moment Puerto Quetzal is included into the top ports in Central America and often considered the most important port and it counts with modern facilities that are able to provide adequate services that ease the process of importation and exportation of goods, to achieve this the port has joined the efforts of the government and the private sector.

From the National Ports Commission report for the year 2013 it is possible to classify the four main ports in Guatemala in terms of the value of its imports and exports, with the highest value of both exports and imports the newest port in the country located in the Pacific Ocean is Puerto Quetzal and can be identified with a total of CIF imports and FOB exports for the year 2013 = 9,350,540.2 thousand US\$ (The source for the Commission's report in the case of CIF and FOB figures is the customs declaration from the ports and in the case of Puerto Quetzal they include the value for the adjacent second port in the Pacific Ocean Puerto San Jose, for which custom forms are processed in the customs office in Puerto Quetzal). The total value of imports that can be documented by Puerto Quetzal in 2013 = 6,950,090.8 million US\$ and for exports in 2013 = 2,400,449.4 thousand US\$. The value of goods that are handled by both ports in the Pacific Ocean if compared to the previous year 2012 has increased in total with exports and imports of 298,822 thousand US\$, the case for exports is an increase from the figure of 2,181,86825.7 US\$ in 2012 to 2,400,449.4 US\$ in 2013, this shows an important increase in exports that leave Guatemala through the Pacific Ocean and is the highest increase in value recorded since 2006 on a yearly report (Comision Portuaria Nacional, 2013).

For Puerto Quetzal we can also analyze the volume using the figures provided by the Guatemalan Ports Commission report for the year 2013, in terms of metric tones MT that were handled in total for Puerto Quetzal and it is important to make clear that for the case of volume it is possible to separate the figures from Puerto San Jose unlike the case of the value statistics. Puerto Quetzal for the year 2013 handled a total of 9,422,714.0 MT making it the port with the highest capacity in the country and in the Pacific Coast as well. However it can be clearly seen when we differentiate the volume of imports for Puerto Quetzal in 2013 which is 6,348,233.6 MT and the volume of exports which is 3,074,480.4 MT that this port which has the highest capacity in the country receives much more imports than the amount of cargo that is exported, this amount of exports is still the highest in Guatemala but followed closely by port Santo Tomas in the Atlantic Coast with 3,000, 711.1 MT in the year 2013. Puerto Quetzal and San

Jose in the Pacific coast both handle significantly more imports than exports and the case is the opposite for both ports in the Atlantic coast that handle more exports than imports.

2.4.2. Puerto Boyas de San Jose

Puerto de San José, is located in south-central Guatemala, situated along the Pacific Ocean. Originally it was opened in 1853, passengers and cargo are transferred from ships anchored 1 mile (1.6 km) offshore. It served as Guatemala's principal Pacific port until the early 1980s, when Puerto Quetzal, which was better prepared to handle cargo took on this role. San José still handles exports of molasses, coffee, cotton, sugar, lumber, and honey. The port also called Boyas de San Jose is however mainly utilized recently for transport of petroleum and products derived from petroleum due to the other products have been take over mainly by the more capable and modern Puerto Quetzal, the terminal uses buoys to hold the bulk ship and uses a hose system to load and unload cargo from 1 mile offshore. It can be analyzed from the data on the 2013 report of the Guatemalan National Ports Commission that exports for 2013 = 256,816.3 MT have grown 45% compared to the figures recorded in 2012 = 177, 020.0, this has supported the trend for more positive trade balance in 2013 but for Puerto San Jose is still below the figures it has had previously, for 2010 it had recorded 324,669 MT and for 2011 it had recorded handling 337,257.0 MT (Comision Portuaria Nacional, 2013).

2.4.3. Puerto Santo Tomás de Castilla

Since 1946 there was a necessity in Puerto Barrios in the department of Izabal in the Caribbean coast of Guatemala to improve and develop the condition of current port Puerto Barrios, on a presidential expedition to Puerto Barrios President Juan José Arévalo had the initiative to create another port in the bay of Santo Tomás. Later during the government of president Jacobo Arbenz established a contract with the company Morrison Kundson in 1953 to begin the construction of the port, the port was inaugurated in 1955. To administrate the port a semi-private company was created to manage the operations of the port, the name of the company was Empresa Portuaria Nacional Santo Tomás de Castilla. (Empresaria Portuaria Nacional Santo Tomas de Castilla) The distance from the capital city is 295km, the ports facilities and personnel have traditionally belonged to the state however because of the success of the port it has been allowed to private companies to provide some services. The pier facilities are capable of handling container ships, general cargo, dry and liquid bulk, tankers,

barges, refrigerators, roll on and roll off ships and others. Using the report from the Guatemalan Ports Commission it is possible to appreciate the value and volume that was handled by the port in the year 2013, in terms of the value the sum of exports and imports in the year 2013 for Port of Santo Tomás were 6,561,725.2 US\$ this can be divided into the value of imports CIF of 3,883,999.5 US\$ and the value of exports FOB of 2,677,725.7 US\$. In terms of value of imports the port shows a decreasing trend since 2011 where the total amount of both exports and imports were 7,276,291.0 US\$ and later in 2012 the value for the exports and imports were 7,155,014.2 US\$. From the rounded exports and imports number the trend shows only a decrease in general but by looking at exports separately it shows that exports declined from 3,395,295.3 US\$ in 2011 to 3,226,572.3 US\$ in 2012 and this shows the decline to the figure that was actually obtained by the port in exports for 2013. In terms of value of imports the report shows stability since 2011 where the figures recorded were 3,880,995.7 US\$, which are very similar to the value recorded in 2013 and 2012 displays a modest growth with a figure of 3,928,441.9 US\$.

2.4.4. Puerto Barrios

This port is the oldest located in Guatemala, it was created in 1880 the company in charge of building the port was a company under the name of Anderson & Cesionarios, The United Fruit Company originally from the United States made an agreement with the government in 1924 in which it allowed the company to make use of the port in exchange of taking charge of the reconstruction and modernization that the port needed. In 1976 there was an earthquake in Guatemala which affected the port in such a way that was left inoperable, all the port operation were moved to Santo Tomas de Castilla. (Terminal Ferroviaria Puerto Barrios) In the year of 1988 the company that specializes in banana production and exportation under the name of COBIGUA started operations in Puerto Barrios but due to the bad state of the port it was needed again to switch operation to Puerto Santo Tomas, by 1990 Puerto Barrios opened its doors to the public again, due to the growth of fruit exportation and the saturation of the port of Santo Tomas COBIGUA proposed to the Government to reopen the port under a contract of usufruct the company COBIGUA and it took charge of the reconstruction of the port and was able to start operations again. Puerto Barrios today offers its services to people, cargo ships institutions and customers interested in the services of the port and it is able to handle

containerized cargo, vehicles, roll on - roll off ships, it is capable of handling cargo in pallets, it has option to store refrigerated pallets cargo, it counts with electricity sockets to offer for refrigerated containerized cargo, it also offers navigation support for ships in the shape of buoys, lighthouses and a control terminal. Previously it has been declared by the Guatemalan Ports Commission as being the most efficient port in the Country (Terminal Ferroviaria Puerto Barrios). According to the results we can find in the report of the Guatemalan National Ports Commission the terminal of Puerto Barrios received a total sum of both imports CIF and exports FOB for the year 2013 of = 1,902,444.2 US\$ which shows the highest increment in value handled by a port in Guatemala in one year, the total import export value figure for 2012 was = 1,160,613.9 US\$. Other significant factors concerning the performance of the port can be identified when the imports and exports in 2013 are analyzed separately, in terms of imports the figure for 2013 = 1,004,894.5 US\$ which was an increment from the results of 2012 of 750,126.9 US\$ and from 2010 with results = 829,516.1 US\$. In the case of exports the increment observed was even higher and the highest improvement in value of goods that are exported from a port in Guatemala, the results of the year 2012 where = 410,486.9 US\$ and in 2013 the value of exports handled by Puerto Barrios rose to = 897,550.1 and this result is the highest since 2006, the second highest was in the year 2007 with export value of = 596,391 US\$ and the lowest result since 2006 was the year 2010 with only 349,333.8 US\$ (Comision Portuaria Nacional, 2013, p. 13).

In terms of the amount of cargo that was handled by Puerto Barrios the report shows results including both exports and imports for the year 2013 of 2,254 MT this can be considered a substantial increment when considering a yearly comparison, for the year 2012 the result of both exports and imports handled were = 1,849,651.2 MT. When analyzing the volume of imports separately the report shows an increment as well in the results for the year 2013 with = 941,949.3 MT and of 823,138 MT in 2012 and also the highest documented result was achieved since the year 2006, the second highest was in 2007 with 933,994.6 MT of imports handled by Puerto Barrios. In terms of exports handled by the terminal of Puerto Barrios which has always focused in export of fruit mainly, taking into account that it has a contract with COBIGUA and represents a great source of economic development for not only for the region but for the Country as a whole, the amount of exports that are handled from this port are a good source and indicative of the state of the industry, the report shows that for 2013

Puerto Barrios handled an amount of 1,321,030.8 MT which represents an important improvement comparable with the total exports handled in 2012 = 1,026,513.2 MT. This results are consistent as well with the results of imports in terms that it has been the best performance recorded since 2006 and the second place being again the year 2007 before the crisis with 1,260,678.7 MT (Comision Portuaria Nacional, 2013).

2.5. Areas of Development of the Maritime Transportation Industry in Guatemala

This part of the chapter will continue with the analysis of the maritime transportation industry, focusing on the development of maritime transportation industry in Guatemala, as a point of focus in the previous section the value and volume recorded by the main maritime ports in Guatemala was made, the tool used was the yearly report from the Guatemalan Ports Commission. The data provided on the yearly report shows us that the maritime ports handle products of international commerce, products of importation and exportation which were analyzed and compared to previous years and between the ports in the country in the previous section. The report also provides interesting facts that have to do with the amount of products that are not of international commerce, this in fact means that the products are in transit to other neighboring countries, opening the possibilities for Guatemala to develop further into a modern logistics services provider in the region. The idea that there is a possibility for Guatemala to develop as a logistics provider also has to do with the fact that the maritime transportation industry is handling bigger amounts of cargo in a constant increasing trend since the global financial crisis, as it was stated briefly in the previous section since 2010 the amount and value of trade that goes through the ports has been growing increasingly. Proof of this statement can be found in the same report as well by analyzing the results for imports and exports for the country and comparing that amount to the total amount of cargo handled by the ports. The difference from those two values provides us with an insight of the amount of cargo that Guatemala is currently handling as a logistics provider to other countries, for the year 2013 the annual report shows a total difference of 10.7% (Comision Portuaria Nacional, 2013). The fact that Guatemala is able to provide services to other countries is a positive signal of a developing logistics system in the country, this idea is promising as well because in recent years the most impressive case of development in the area of Central America has been the

case of Panama, its economy has been triggered by its professionalism and dedication to services, the flagship of the expertise in Panama are maritime transportation services and it has been the gateway for Panama's success.

When analyzing the case of Guatemala as a logistics provider to neighboring countries, the Guatemalan Ports Commission Report shows what amount of cargo is being moved to other countries. In the case of Puerto de San José Boyas there is no cargo in transit to other countries since this maritime port terminal is specialized in the handle of only international trade of Guatemala. The case of Puerto Barrios is different, this terminal is involved in much of the services to neighboring countries, from the total amount of Guatemalan trade the port handles an additional 44.1% that is in transit to other countries that is almost half of its services are being performed as a logistics provider, the percentage means that Guatemala moves about a million metric tons that have their destination in El Salvador and Mexico going through this port (Comision Portuaria Nacional, 2013, p. 17). Guatemala is a developing country which after the world financial crisis as many others is experiencing growth in the level of trade that is moved into and outside the country, as trade is starting to develop more and more in Latin America and in this case we can appreciate that Guatemala is one of those cases, the maritime transportation services, industry and ports are increasingly growing in importance. Specially because the amount of international trade that a certain country is able to handle highly depends on the capacity and modernity of the infrastructure that is involved in the logistics supply chain and are important for the long term plans of growth and competitiveness.

To analyze the current areas of development of Guatemala's maritime transportation industry, the case of Puerto Quetzal can be examined, the port is one of the most important terminals in the region of Central America, from data presented in the previous chapter it was concluded that is the most active port in terms of value and volume and the infrastructure of the port is also considered to be the best in the Country and among the best in the region also being the newest in Guatemala. Ports located in the Pacific Ocean have some advantages not only in the case of Guatemala but in many Latin American countries the case has been observed, one of the important reasons being the deepness of the water which determines which ships are able to use the terminal.

The data that supports the increase in trade is consistent in many Latin American countries, in the region of Latin America most countries are developing and the case of Guatemala's

maritime industry development repeats in many countries for similar reasons, specially trade is growing and the infrastructural investments and development need to grow with it, the need for those investments is appreciated however not many countries are able to invest in infrastructure but it has been seen as in the case of Nicaragua with the upcoming Canal plans that will compete with the Panama Canal. Those type of investments coming from Asia can be attractive and open new opportunities for the country, specially because this type of projects can be a motor for new employment in a country like Nicaragua which is the second poorest nation in Central America (UNCTAD, 2013, p. 96).

Together with the project of the Nicaragua Canal there is the scheduled 2015 opening of the newly extended Panama Canal, this development projects have consequences to the Central American region because they signal the expansion of trade and its mobility making an important case for port development, in Guatemala the ports in the eastern coast are not able to handle the same amount of cargo than their counter parts in the Pacific coast, even when the data in the previous section shows that Puerto Santo Tomas de Castilla competes in amount and value with the newer Puerto Quetzal in recent years.

2.6. Comparative Analysis of Central American Maritime Ports

There are many different aspects that can be identified inside the analysis of the maritime industries in neighboring countries in Central America, for the purposes of this paper a strong point of focus will be the infrastructure of the maritime industry and its influence on the performance of the maritime industry in order to find accurate prospects for developments and areas of opportunity for Guatemala which is the main subject of this study. The comparative analysis should also serve to widen the perspective from which the analysis of Guatemala is provided and as well as a starting point for comparison with more developed economies later in this study. Starting by naming the most important points of study when analyzing the infrastructure there are two main areas that affect multimodal and maritime transportation, these are the ports terminals and the highways that connect the ports with the main city centers, centers of commerce and areas of interest. When analyzing the infrastructure of the port terminal the capability of the port to receive different types of ships affects the opportunities of maritime transportation. Shortly in previous sections two factors that are common determinants on the type of ship that the port can handle, these are if the port counts

with cranes then is able to receive ships without a crane, otherwise it will be limited to receive cargo only from ships with a crane on board, next is the port draft that delimits the type of ship that is able to be received, to this it is possible to add the amount of cargo that can be stored in the port area because this delimits how many containers can be received by the port in a day until the cargo is released.

In the area of Central America only the two ports of Panama are able to receive ships within the category of New-Panamax which require a draft of at least 15 meters and carry from 12,500 TEU, besides the port of Panama in the Pacific coast there is only one more port with a draft capable of receiving New-Panamax ships and this is port Acajutla in El Salvador. Unfortunately in the case of Acajutla the port lacks crane infrastructure and due to this limitation is only capable of receiving ships with a crane on board, with no expectation that the required investments have been planned.

The class of Post-Panamax is not found under the capabilities of other ports in Central America, the next category that we can find is Panamax, this type of ship requires a port draft of between 10.7 and 12.5 meters and the ships of this type usually carry about 5,100 TEU, in Central America the following ports are able to receive this category of ships: In Costa Rica located in the Pacific Coast Puerto Caldera and in the Atlantic Coast Puerto Limon-Moín, In Guatemala located in the Pacific Coast and the only in the country is Puerto Quetzal and in Honduras located in the Atlantic Coast Puerto Castilla (Banco Interamericano del Desarrollo, 2013).

The next category of ships that other ports in Central America are able to handle is a feeder vessel, the draft requirement for the port in order to receive this type of ship is 10.7 meters and this type of ship is able to handle usually about 2800 TEU, the following ports are able to receive up to feeder vessel size of ships: in Guatemala in the Atlantic Coast: Puerto Barrios and Puerto Santo Tomas de Castilla, in Belize: Port of Belize, in el Salvador: Port La Union and in Honduras: Puerto Cortes.

From 18 ports in Central America the following ports are limited by not having a crane on the port and are able only to receive ships with a crane on board: Both ports in El Salvador, Puerto Acajutla and Puerto La Union, The only Port in Nicaragua Puerto Corinto, Puerto Castilla en Honduras and Puerto Barrios in Guatemala.

This facts have implications of great importance for the regions international trade, this due to the fact that New and Post Panamax ships originating from Asia, Europe and North America can only make transshipment in Panama and then a feeder vessel would deliver the goods to the rest of the areas in Central America.

The type of crane is another factor that determines how the determined port performs, in Central America the port of Balboa in Panama counts with cranes of the type Super Post Panamax STS and ports of Caucedo and Manzanillo in Panama as well have cranes of the type CCT, also all the ports in Panama count with cranes of the type RTG which are cranes with wheels that are able to move cargo to operation yards. The type of crane has a determinant impact on the amount of cargo the port is able to handle, an indicator is the average productivity per ship and time on the port, based on the study of the Inter American Bank for Development we have that the lowest rate of productivity corresponds to the port of Acajutla in El Salvador, the productivity they have is of 10.7 TEU per hour, the best performance in Central America is in Panama, the port of Manzanillo which has a rate of 72.15 TEU per hour according to the data collected by the Interamerican Development Bank (Banco Interamericano del Desarrollo, 2013). The case of the Port of Limon Moín in Costa Rica from the report shows very interesting results, since the port does not count with adequate infrastructure compared to other ports in the area however the handling of the Port has very high performance, its average is of 50 TEU per hour and makes a case of high class performance which compared to other ports shows opportunities for development in the modes of operations (Banco Interamericano del Desarrollo, 2013).

The main factor determinant for this type of performance in Limon Moín is that it counts with areas outside the port in which the transportation agencies rent the areas located next to the port facilities, then this allows the movement of the containers from these facilities by trucks directly next to the ship and they can be loaded right away. The case for terrestrial or ground connectivity development is made strongly in this report, it allows a comparative analysis of the performance that each port has in the Central American Region, ideally each port should have good connectivity from the area where the port services are provided with the main commercial areas in each specific country.

The connectivity between the ports and the commercial areas or other ports is often mentioned as one of the areas in which multimodal and maritime transport has the biggest deficiencies in many parts of Central America, after analyzing in the previous section how important it is the performance of the port in terms of the amount of cargo the port can handle in a day, the ports with the highest performance also present deficiencies in terms of connectivity, the first example can be taken from the port of Limon-Moín in Costa Rica, the road that connects the capital city San Jose with the port can be up to 5 hours in a road which is mostly curves and has only two lanes, specially in winter or rainy season the road can turn very heavy for the driver. Panama presents a similar case, even though the development in the area of transportation and services that Panama has shown the connectivity between ports of Balboa in the Pacific Ocean and Port Colon in the Atlantic Ocean as deficient and causes that most of trans boarding activity is handled by railway.

Important factors in the performance of maritime and multimodal transportation in Central America are:

- The security in the Port areas should have non stop surveillance, this is not the case in most of port terminals in Central America
- The need for better capacitation of personnel is still a reality, in the case of capacitation in Guatemala the National Maritime Ports commission has programs dedicated to train personnel, at the level of Central America, COCATRAM is the regional body that has provided an integrated framework for capacitation through the Center of Maritime Ports Capacitation for Central America with a program created in the 1980's under TRAINMAR which was launched by the United Nations UNCTAD.
- The need for investment in Central American Countries in the maritime ports sector is evident to improve the infrastructure and access to port terminals and achieve better timing for the services that are provided and improve the different lines of services provided.
- The need to improve technological and electronic systems that allow the tracing of containers and their location in real time which plays an important roll in a global perspective, this aspect is one of the key elements for the C-TPAT (Customs-Trade Partnership Against Terrorism)

- The need to improve the loading and unloading processes of containerized cargo and the access from the truck to the port facilities.

In the case of Guatemala there are clear areas in which the public sector should focus to improve the growth and development of this industry which shows relevant opportunities for the growth of the economy of the country.

2.7. Public Sector Support for the Guatemalan Maritime Transportation Industry

As noted in the previous section there is an evident need in Central America for investment in infrastructure, the aim of this last section of the chapter is to analyze the areas in which the public sector in Guatemala can provide solutions to the mentioned areas that present opportunity to grow, the infrastructure of a country is a determinant factor that conditions the ability of private persons and companies to develop their economic activities (Mayora, 2011). In the case of Guatemala beginning in the decade of the nineties there was a reform that consisted in a promotion of the private sector to participate in infrastructure projects in the country. This reform started by allowing deregulation and decentralization of many important industries such as the energy, telecommunication, post sectors between others. Additionally the first measures to liberalize foreign direct investment in the country were taken in this period, these events had important meaning for the economy of Guatemala and also for its development in infrastructure however they were only the first steps on the way to achieve a path to sustainable development. With the introduction of this measures focused on decentralization and liberalization the public sector started a series of initiatives that went from a situation where the public sector owned and operated facilities to allow the involvement of the private sector to take responsibility of the operational modes of many sectors that were state owned previously. In the same period there were important steps in the transportation industry in infrastructure and the services provided between which can be mentioned the important establishment of Puerto Quetzal, however Guatemala still faces great restrictions and the costs of services are expensive compared to other countries with similar development level (Mayora, 2011). Table 4 shows the logistics performance index from the years 2007, 2010, 2012 and 2014 which allows an analysis of recent performance in the logistics services industry, the results are generally below the average of the region in Central America and

Table 4 shows that one of the areas that are the most challenging for the logistics performance and these directly affect performance of ports are infrastructure and customs, even though the year 2014 historically shows improvements in customs performance infrastructure has performed even lower than in previous years.

Table 4: Guatemala Logistics Performance Index 2007 - 2014

Country	Year	LPI Rank	LPI Score	Customs	Customs	Infrastructure	Infrastructure
Guatemala	2012	74	2.8	68	2.62	81	2.59
Guatemala	2014	77	2.8	63	2.75	88	2.54
Guatemala	2010	90	2.63	91	2.33	84	2.37
Guatemala	2007	75	2.53	87	2.27	104	2.13

Source: World Bank Report, Logistics Performance Index 2014. (World Bank, 2015)

According to the World Bank's Logistics Performance Index showed in Table 5, Guatemala has maintained its logistics performance overall score with 2.8 in the latest report of 2014, this score also corresponds to the third place at the level of Central American countries, the best performance in the Region is achieved by Panama with an overall score of 3.19, although Guatemala has maintained its scored achieved in 2012 it has dropped three places in the logistics performance index world ranking from 74th in 2012 to 77th in 2014.

Table 5: Central America Logistics Performance Index 2014

Country	Year	LPI Rank	LPI Score	Customs	Customs	Infrastructure	Infrastructure
Panama	2014	45	3.19	40	3.15	52	3
El Salvador	2014	64	2.96	51	2.93	72	2.63
Guatemala	2014	77	2.8	63	2.75	88	2.54
Costa Rica	2014	87	2.7	110	2.39	99	2.43
Nicaragua	2014	95	2.65	72	2.66	130	2.2
Honduras	2014	103	2.61	67	2.7	124	2.24

Source: World Bank Report, Logistics Performance Index 2014. (World Bank, 2015)

What concerns the level of infrastructure, Guatemala also has a third place when it is compared to the region of Central America, with an overall world ranking of 88th and an infrastructure score of 2.54 as it can be seen in table x. The main areas of concern that reflect negatively in the Logistics Performance Index are:

- Guatemala's performance in road transportation.
- Quality of the road infrastructure
- Quality of the Ports infrastructure
- Capacity of the Ports to handle ships of great capacity

The entity responsible for the coordination and planning of the infrastructure projects in the Public Sector is the Ministry of Communication, Infrastructure and Dwelling. However the Ministry acts only as rector and has departments in charge of different sectors.

Dirección General de Caminos (General Directorate of Roads): responsible for the strategic planning, supervision in construction of roads, rehabilitation, improvement and maintenance of roads.

COVIAL (The Unit for the Conservation of Roads): in charge of administrating the resources that come from the fund for the maintenance of road infrastructure.

In the sector of Maritime Transportation and Ports which is under the authority of the Ministry of Communications Infrastructure and Dwelling as well the Ministry counts with the **National Ports Commission** (CPN) with functions such as to aid the Ports authorities and other institutions concerned with maritime transportation with assessment, capacitation, technical support, capacitation, coordination and any action in support for international commerce and trade. The commission itself is divided into two departments that have each a more specific focus of their services, the first department called Directorate for Human Development treats all aspects involved with information and knowledge about the National Ports System, the second department is the Directorate for Assessment and Studies

In terms of the importance that Guatemala has in the region, Guatemala is situated in the second place according to the amount of cargo load it handles, that is 19% of the amount of cargo that is moved in Central America. Even though Guatemala is important in the region in the amount of cargo it handles, as it was seen by the numbers in logistics performance the

country is not performing up to its maritime ports potential, the biggest deficiencies that have been found in previous literature (Mayora, 2011) involve underperformance in operations capacity of the ports, lack of capacity to receive ships of the largest scale and the size of the cranes in place lacks the capacity needed for the ports as well.

The administration model of the ports in Guatemala is the same, the ports run under the “tool-port” model, this means that ownership of the ports belongs to State property and an amount of services are given to private actors in concession. The case of Puerto Barrios shows that as it was previously mentioned in this chapter is fully operated by a private company in a concession signed for 25 years, the productivity levels exceed by four times those of Puerto Quetzal, the latter is own and mostly operated by the state and just some services are given in concession to private actors. Puerto Barrios also exceeds in production by eight times to Puerto Santo Tomas de Castilla which is operated mainly by the public sector, showing that the services provided by private actors allow better production when they are present.

According to the infrastructure analysis by (Mayora, 2011) the main areas in which the ports facilities have deficiencies include: The operational expenses incurred by the ports are excessive, Restrictions for the entrance of Foreign Direct Investment, Lack of incentives, Excessive bureaucracy.

3. Chapter II – Guatemalan Ports Operations and Their Facilitation to International Trade

Ports operations analysis has the potential of providing valuable insights to the understanding of the economy of a Country and also provides characteristics of international trade relations, this Chapter provides a research and analysis on the types of products and their origins and destinations of the cargo that was handled by each of the ports in Guatemala, this study will provide the opportunity to study how Guatemalan Ports facilitate International Trade for the Country and main characteristics of the trade relations such as the study of the main trade partners by destination on imports and exports, also the overview of main products of importation and exportation and an analysis of port performance based on the volumes of cargo handled by lineal meter of dock in the ports.

3.1. Type Cargo Handled by Guatemalan Ports

The goal of this chapter is to utilize the statistical data provided by the National Ports Commission of Guatemala, to make an analysis comparatively in terms of the different variances for the exportations and importations that have taken place through the ports in the country. A comparative analysis of the type of cargo can be made with respect to the previous year is used in this chapter to analyze how the ports in Guatemala have developed so far, the main tool used for this analysis is the statistical data provided by the Guatemalan Ports Commission in their latest yearly report for 2013. This provides the possibility of analyzing which type of cargo has had the highest growth and to find conclusions in support of international commerce.

The data shows that the type of cargo that had the highest level of growth in a comparative analysis between 2012 and 2013 is solid bulk cargo which consists of minerals and grains, this type of cargo represented an increase of 22.3%, the next type of cargo with highest variation in the same period of time corresponds to an increase of 6.4% of liquid bulk cargo and containerized cargo increased by 6.1% in the same period of time. This data represents the combined amount of cargo of loading and unloading cargo (Comision Portuaria Nacional, 2013, p. 23).

By analyzing in a comparative way the loading and unloading rates it is shown in the report as well that there was a positive change of +2.8% which is an improvement for the years 2012 - 2013 while this relation was negative in the years 2011 - 2012 with -3.2%. In terms of loading and unloading cargo when it is analyzed separately it shows that unloading of liquid bulk cargo which also means importations to the country mainly of fuels and derivatives increased 1.4% which can be compared to the increase of loading activities which was a +25.6% that represents exportations mainly of rope and molasses.

In terms of the solid bulk that was unloaded there was a small decrease in 2013 of 5.7% in relation to 2012 which was 6.4%, the solid bulk in terms of what can be considered importations consists mainly of mineral coal and grains, corresponding to exportations however the increase in 2013 was substantial with positive 68.6% which for 2012 was only +28.9% of exportations (Comision Portuaria Nacional, 2013, p. 24).

The previous analysis showed characteristics of exportation and importations in general terms in all ports that operate in Guatemala, continuing with an analysis by port individually there are important trends and characteristics that can be named according to the data provided by the study from the National Ports Commission. By type of cargo for the year 2013 it is possible to appreciate according to Table 6, which of the ports was most successful in the different types of cargo that are moved in the Country, in terms of disembarking, by type of cargo it is possible to rank the Ports in Guatemala.

With respect to containerized cargo the port that has the highest amount of movement for disembarking in 2013 was Santo Tomas de Castilla, the movement of containerized cargo for this port was 1,558.94 thousands of metric tons. The next best performer for 2013 in terms of disembarking of containerized cargo was Puerto Barrios with a movement of 1263.66 thousands of metric tones and thirdly Port Quetzal had a disembarking movement of 1134.12 thousands of metric tones which amounts for a total for the country of 3,956.72 thousand of metric tones in 2013 for containerized cargo.

Table 6: Port Statistics of Disembarking and Embarking 2013 (Thousands of Metric Tons)

Disembarking			Embarking		
Port	Type of Cargo	2013	Port	Type of Cargo	2013
Santo Tomas de Castilla	General	44.87	Santo Tomas de Castilla	General	426.94
	Containerized	1558.94		Containerized	1680.1
	Ro-Ro	0		Ro-Ro	0
	Liquid Bulk	606.97		Liquid Bulk	688.57
	Solid Bulk	287.02		Solid Bulk	653.42
	Total	2497.8		Total	3449.03
Puerto Barrios	General	20.92	Puerto Barrios	General	111.03
	Containerized	1263.66		Containerized	1699.06
	Ro-Ro	0		Ro-Ro	0
	Liquid Bulk	105.28		Liquid Bulk	0
	Solid Bulk	50.42		Solid Bulk	0
	Total	1440.29		Total	1810.09
Quetzal	General	718.21	Quetzal	General	4.65
	Containerized	1134.12		Containerized	1373.74
	Ro-Ro	0		Ro-Ro	0
	Liquid Bulk	1148		Liquid Bulk	165.09
	Solid Bulk	3378.46		Solid Bulk	1468.84
	Total	6378.78		Total	3012.33
Boyas San Jose	Liquid Bulk	1531.28	Boyas San Jose	Liquid Bulk	256.82
Total Disembarking	General	784	Total Embarking	General	256.82
	Containerized	3956.72		Containerized	4752.9
	Ro-Ro	0		Ro-Ro	0
	Liquid Bulk	3391.53		Liquid Bulk	1110.48
	Solid Bulk	3715.9		Solid Bulk	2122.26
	Total	11848.15		Total	8528.26

Source: (Comision Portuaria Nacional, 2013)

The case of Boyas San Jose is a Port dedicated only to specific movement of liquid bulk and for that reason it has no data for movement of containerized cargo. Another exception found for the year 2013 was the elimination of Ro-Ro type of cargo from the movement of the ports, it had been recorded in previous years but 2013 was the first year when roll on, roll off cargo was not supported anymore in Guatemala. The next type of cargo that can be analyzed from table x is Liquid Bulk, this type of cargo is it has been stated earlier in terms of disembarking means importations of fuels and derivatives into the Country, the port that has the most movement in terms of liquid bulk cargo is the specialized terminal Boyas de San Jose with a movement in 2013 of 1531.28 thousands of metric tons. In second place the most movement of liquid cargo in the country was Port Quetzal with 1148 thousands of metric tons disembarked, followed by Santo Tomas de Castilla with 606.97 and finally Puerto Barrios

with only 105.28 thousands of metric tons disembarked in 2013. The last next and last type of cargo that is possible to analyze from the set of data by the National Ports Commission is solid bulk cargo, this is the type of cargo that contains mainly mineral coal and grains, in the case of disembarking, the ports have ranked in the following order for the year 2013, the port that had the most disembarking of solid bulk was Port Quetzal with a total of 3378.46 thousands of metric tons, secondly with significantly less was Port Santo Tomas de Castilla with only 287.02 thousands of metric tones disembarked and thirdly Puerto Barrios with 50.42, Port of Boyas de San Jose is not capable of receiving such type of cargo, which is the reason why it does not record any amount of movement.

From this analysis the conclusion can be drawn that differentiating the type of cargo points that Port Quetzal is the focus of the majority of the reception of solid bulk cargo in the country this type of cargo is important because in its majority consists of exportations of raw sugar from the country which is also one of the main exportation products, solid bulk represents 51.6% of the cargo movement in Port Quetzal in 2013 and there was exportation of sugar of 904,687 metric tons representing an improvement from 767,567 metric tons in 2012 (Comision Portuaria Nacional, 2013).

For liquid bulk cargo the focus relies mainly in Port Boyas de San Jose, both of this ports are located in the Pacific Coast of Guatemala and the reception of solid bulk and liquid bulk cargo in the Atlantic Coast of Guatemala falls behind. In terms of Containerized cargo however the ports of the Atlantic region amount for a total of 2822.6 thousands of metric tones of containerized cargo in terms of disembarking, on the Pacific Coast in terms of containerized cargo disembarking is carried only by Port Quetzal.

In terms of Embarking of cargo which is the cargo that is classified in terms of leaving the Country and can be considered the exportations from the Country in its majority, the port that had the most movement of exportations in 2013 was Puerto Barrios, with an embarking movement of 1699.06 thousands of metric tons is the highest containerized embarking port in Guatemala, this port is focused on exportations carried out by the United Fruit Company which has a contract to operate the port and involves exportation of fruits in its majority. Closely following embarking of containerized cargo is port Santo Tomas de Castilla, with an embarking containerized cargo for 2013 of 1680.1 thousands of metric tons, also this port has

the most combined movement of cargo in containerized form in the Country. However the case of port Quetzal in 2013 for embarking containerized cargo is also notable falling just behind the Atlantic Ocean Ports with 1373.74 thousands of metric tons.

By differentiating the Ports in Guatemala by coast, we can find that the movement of cargo in 2013 was handled in 54.9% by the Pacific Coast and the complementary 45.1% by the Ports in the Caribbean, there is also a preference for importations that can be seen as the disembarking in the Pacific coast which was 66.8% or the total from the maritime ports system. Caribbean Ports on the other hand have the preference for embarking and exportation, through them 61.7% of the total movement of the system. In terms of type of cargo there is also possible to find preferences by analyzing each Coast separately, in 2013 the amount of containerized cargo mobilized by the Caribbean Ports is two and a half higher than the counter part in the Pacific Coast, on the contrary in terms of liquid and solid bulk the majority is handled by the Pacific Coast Ports, with the exception of the exportation of liquid bulk cargo that is embarked in the Caribbean, this represents mainly exportations of oil from Port Santo Tomas de Castilla. In terms of solid bulk cargo the movement was 389% handled by the Pacific Coast Ports (Comision Portuaria Nacional, 2013).

3.2. Origin and Destination of Cargo Mobilized through the Ports of Guatemala

The description of origin and destination of cargo that is mobilized by two Guatemalan Ports is provided here based on the found on the yearly report from the National Ports Commission for the year 2013, it was obtained only for Santo Tomas de Castilla and Puerto Quetzal because Puerto Boyas de San Jose is an specialized liquid bulk terminal for which the data was not available and Puerto Barrios because of being privately operated did not make the this type of data available for the National Ports Commission.

3.2.1. Santo Tomas de Castilla

The statistical data recorded by the National Ports Commission in terms of the origins and destinations of the cargo that is mobilized through the Ports System of Guatemala allows an analysis in importance of international partners in trade, in Table 7, the statistical data allows an analysis of one of the main Ports in Guatemala, in the Atlantic or Caribbean Coast the data could only be recorded for Port Santo Tomas de Castilla, as it was stated earlier the data for Puerto Barrios was not possible to obtain for the National Ports Commission since the port is operated by a private entity with a concession contract, although it is known that the port operates 90% of trade with destination in the East Coast of the United States of America and involves in its majority exportation of fruit. In terms of the data available Table 7 shows that the international trade for Port Santo Tomas de Castilla has the main destination in the East Coast of North America, it is the major destination both in terms of importation of goods, in exportation of goods and in total trade.

Europe has become an important partner for Guatemala, mainly in terms of exportation in recent years, this fact is supported by the data collected by the National Ports Commission for 2013 as the table shows it has become the second most important partner in exportation of goods that leave Guatemala through the port Santo Tomas de Castilla, this amount of exports are 4.9 times the amount of imports from Europe into Guatemala through the same port.

It could also be considered as being a near total amount of imports from Europe if we consider that Puerto Barrios has 90% of trade with the United States exclusively and that the Pacific Coast will not be as relevant in terms of trade with a distant Europe, as the later analysis of Port Quetzal will show. Following Europe the West Coast of South America has ranked as the third place in terms of trade for goods that are moved through Port Santo Tomas de Castilla, the main determinant for this fact are the high amount of importations, which represent one and half times greater imports than those with origin in Europe and in terms of exports this destination is one of the least relevant ones it would represent a place in exportation just below Asia and above Africa, it is also important to keep in mind as it has been indicated in previous sections of the first chapter, most of the cargo moved through Santo Tomas de Castilla involves containerized Cargo.

The following region according to Table 7 in total of movement of international trade for 2013 corresponds to the region of the Caribbean, this region has a significant aspect in the level of exportations that leave Guatemala with destination in the Caribbean countries, one of the countries in this area that has had the fastest growing trade relationship with Guatemala is the Dominican Republic (INECON, 2013), this has been thanks in most of its trade to the amount of exportations to the region of the Caribbean, which would belong in terms of exportation alone to the third place in our table just below Europe, the amount of imports however is one of the areas with very low movement and is ranked below Asia and just above Africa in our table. Following the Caribbean the next are with the most movement of international trade through Port Santo Tomas de Castilla is the Eastern coast of South America, even though it's proximity to the Port in Guatemala it is ranked below its counter part in the West Coast, even when the cargo with origin in Santo Tomas de Castilla has to through the Panama Canal and the costs implied in this would become higher. A hypothesis to explain this matter can be that the partner countries that have strong exportations in South America to Guatemala have an easier access to their ports in their West Coasts, one of the reasons being that important Partners in exportation such as Peru and Chile have maritime transportation Access through the Pacific Ocean only. The level of trade with the East Coast of South America however still represents the same trend of more exportations than importations as it can be seen in table x, if ranked by region it would deserve a fourth position in terms of importations and a fifth place in terms of exportations.

Central America is a region that has been historically a third place in terms of international trade for Guatemala, in the case of analysis by port, what the data shows for the year 2013 is that this region has had a lower positioning in the rankings between the most important international commercial partners for Guatemala, in terms importations, Central America is ranked below the East Coast of the United States, Europe and both the East and West Coast of South America. In terms of exportations Central America would be ranked forth as well but in this case it would be behind the East Coast of North America, Europe and the Caribbean Region. Following Central America the next region that can be found on the ranked table is Asia which is the last region with movement just above sixty thousand metric tons per year, the table is completed by the regions of Africa, Australia and the West Coast of North America with less than five thousand metric tons per year.

Table 7 Port Santo Tomas de Castilla, Total Movement of Cargo by Region for 2013 in Metric Tons

Region	Importation	Exportation	Total
East Coast of North America	1,722,693.46	1,995,514.44	3,718,207.90
Europe	179,448.33	876,546.34	1,055,994.67
West Coast of South America	278,609.67	23,128.84	301,738.51
Caribbean	38,043	202,906.91	240,949.50
East Coast of South America	80,553.77	48,321.88	128,875.65
Central America	66,842.78	49,291.88	116,134.64
Asia	38,103.25	23,723.00	61,826.25
Africa	1,281.75	2,636.71	3,918.46
Australia/Oceania	864.54	1,669.55	2,534.09
West Coast of North America	218.87	90.75	309.62
Total	2,406,659.01	3,223,830.28	5,630,489.29

Source: (Comision Portuaria Nacional, 2013)

3.2.2. Port Quetzal

Continuing the analysis of the international trade classified by regions, now Port Quetzal situated in the Pacific Coast is analyzed using the table obtained from data found in the 2013 yearly report of the National Ports Commission. Starting with the region that had the most movement of cargo through Port Quetzal as a first ranked overall destination when analyzing both imports and exports together is the West Coast of North America, the amount of imports are predominant when compared to the amount of exports which are about two times smaller,

which represents a uneven trade balance and different of the trade which as it was seen in the analysis of Santo Tomas de Castilla, in terms of trade with the east coast it recorded slightly higher exports than imports. A more even situation can be found when looking at the region that is ranked in second place overall and with more somehow even balance of trade, this is the region of Asia with importations of just above one million metric tons and exportations just bellow a million metric tons as well.

The following region is one that represents again uneven balance of trade in terms of what is moved by the port in trade internationally, this region is the West Coast of South America which has a second place even above Asia if only importations are considered, however there is a very low amount of exports to this region which represent only 12.3% and this amounts for a trade deficit in terms of the cargo that the port handles and also means that it is an overall third place behind Asia in terms of both imports and exports.

The next region in place for examination is Europe, the amounts of cargo that are traded internationally with the European partner follows the same trend with higher imports than exports as in the previous regions examined except for Asia which is the only region in the top five of table x that does not follow this trend. It is possible to indicate that the total amount that is exported from Port Quetzal is very similar to the amount that is exported from Santo Tomas de Castilla, however Port Quetzal is a newer port with more capacity and it appears to be employing this capacity as a receiver of goods more than as an exporter as it is the case with Port Santo Tomas de Castilla.

Also with strong importations through the Port Quetzal in the Pacific Coast the next most important regions are the East Coast of both North and South America and relatively similar low levels of exportations as well they constitute the fifth and sixth place on Table 8 respectively.

The next region in place for analysis is the case of international trade handled by Puerto Quetzal with its neighbors in Central America, this region represents important movement of goods with destination in Central America, in terms of exports only, it amounts for being the forth place in our table with over two hundred thousand metric tons exported and over four times the amount of cargo exported through its counter part in the Caribbean Coast, Port Santo Tomas de Castilla.

By analyzing what the data for next region shows, it can be appreciated that Africa represent a destination that is quite important for Guatemala, in terms of exportations only it is ranked in our table as number third and in the same way as in Central America, Africa was a destination in 2013 in which exports were higher than imports, together with Australia this are the only three regions that have a trade surplus, which supports the trend for Port Quetzal in the Pacific Coast which is a port mainly dominated by its importations which are about double of the exportations from this Port.

Table 8: Port Quetzal, Movement of Cargo by Region in 2013 in Metric Tons

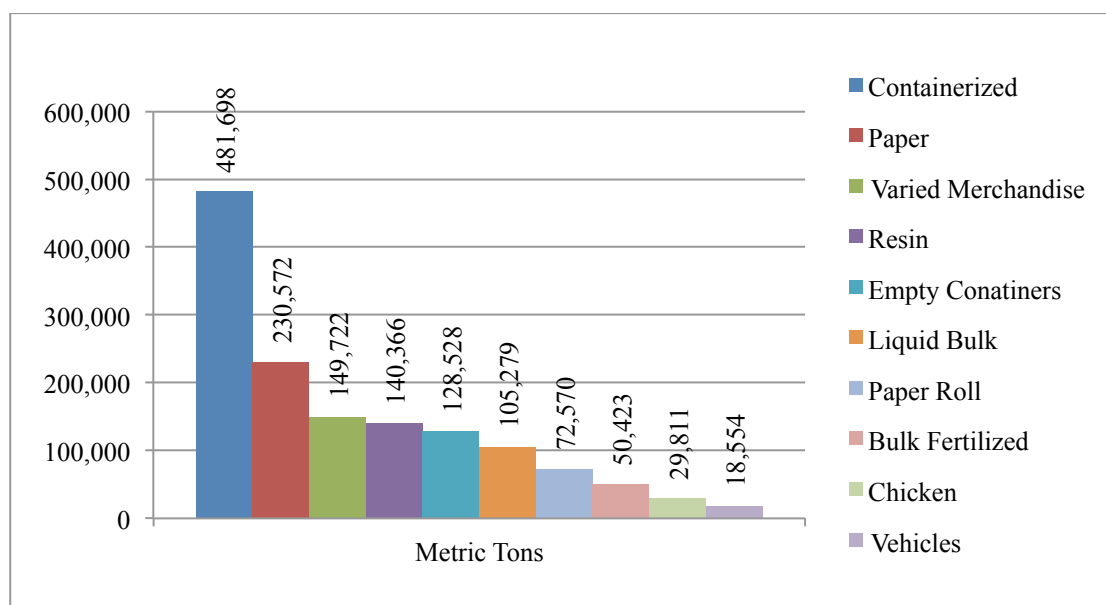
Region	Imports	Exports	Total
West Coast of North America	1,668,193.84	853,790.95	2,521,984.79
Asia	1,162,283.67	957,680.42	2,119,964.09
West Coast of South America	1,256,681.13	154,865.88	1,411,547.01
Europe	796,852	192,974.41	989,826.48
East Coast of North America	632,220.71	64,641.39	696,862.10
East Coast of South America	491,321.28	89,775.33	581,096.61
Central America	85,979.41	233,570.22	319,549.63
Africa	947.15	278,690.50	279,637.65
Caribbean	176,558.34	60,608.01	237,166.65
Oceania/Australia	6,706.65	26,530.81	33,237.46
Total	6,277,744.25	2,913,127.92	9,190,872.14

Source: (Comision Portuaria Nacional, 2013)

3.3. Analysis of Importation and Exportations by Products Handled by Guatemalan Ports

In this section a more detailed analysis is made for the international trade of products that each of the ports in Guatemala facilitates, starting with Puerto Barrios in Figure 3 there is more detailed description of the various different products that are trade differentiating the types of products. In terms of importations as Figure 3 shows the type of products that was imported the most in 2013 through Puerto Barrios was containerized cargo, the second most popular import consists of paper, followed by varied merchandise and resin, it is also important to appreciate that empty containers represent 128,528 metric tons of the products that are imported, in the case of Puerto Barrios since 90% of the trade is conducted with the East Coast of the United States, most of this empty containerized capacity is coming back from the United States.

Figure 3: Importations by Types of Product 2013 - Puerto Barrios

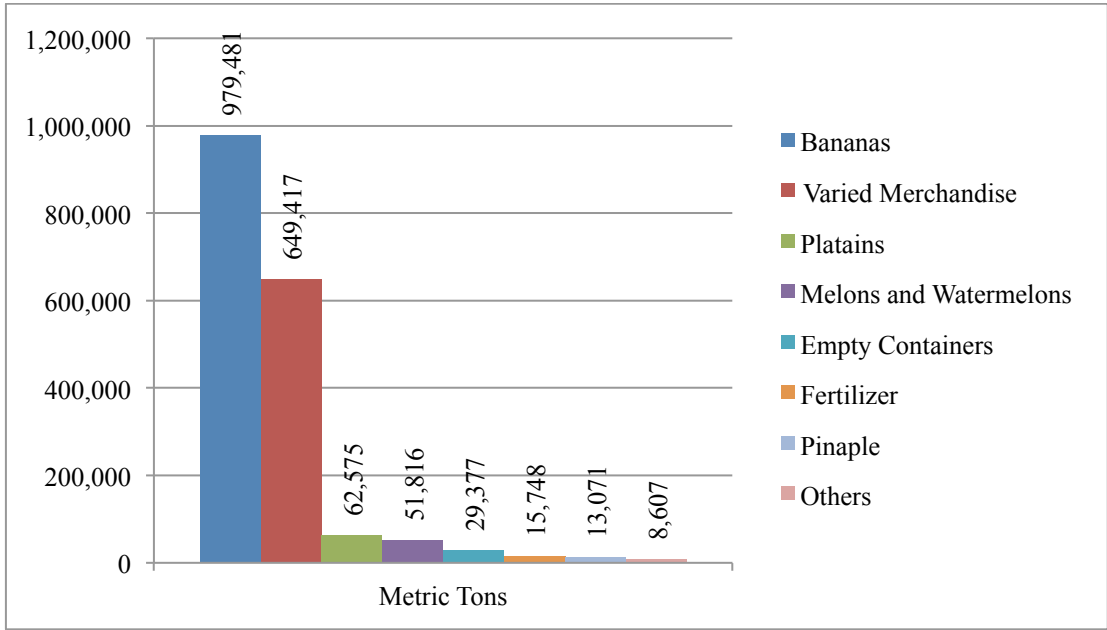


Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

When Analyzing exportations from Puerto Barrios, it is possible to appreciate the amount of cargo that is traded, this data provided shows that the mayor product of exportation from the Port is bananas with a total of 979,481 metric tons in the year 2013 and is represented in Figure 4, it was followed by varied merchandise with over six hundred thousand metric tons. Other products of exportation from Puerto Barrios consist of other types of fruits but that amount for less than 10% of the amount of bananas that are exported, between other fruits of

exportation that exit the country through Puerto Barrios are found platains, melons, watermelons and pineapples.

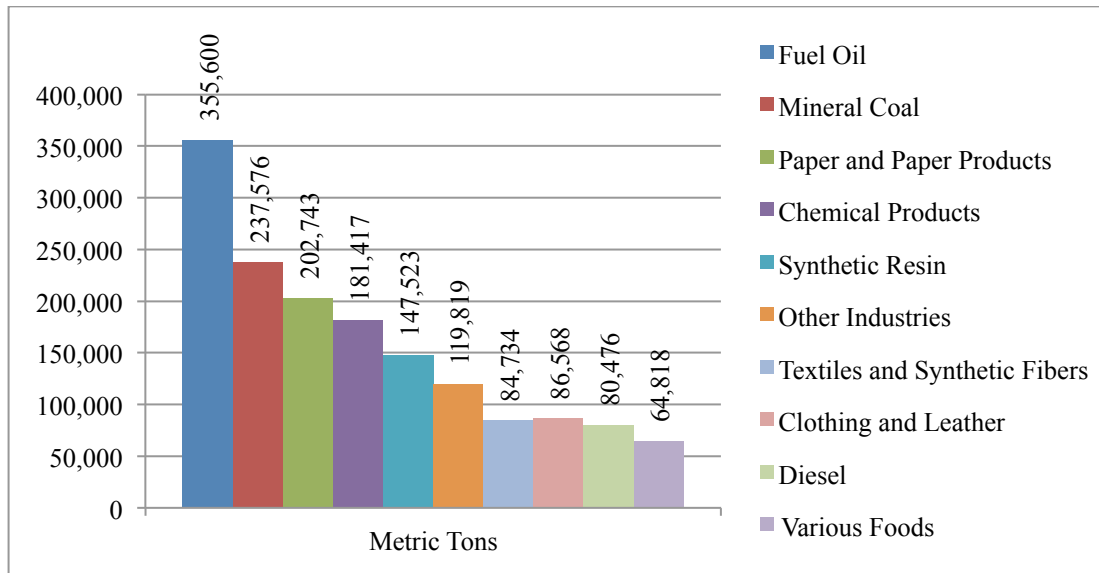
Figure 4: Exportations by Types of Product 2013 - Puerto Barrios



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

The next port in the Caribbean coast is Santo Tomas de Castilla for which the data is provided by the National Ports Commission for the year 2013 which as well allows a more detailed analysis of which of the products that are traded in Guatemala are the most relevant, in terms of importation the main product of reception of this port was fuel oil which amounted for 355,600 metric tons with a graphic representation in Figure 5, followed by mineral carbon which has importance mainly for the industry of energy production. A third place in importance of importation products in Guatemala for the year 2013 was paper and other products derived from paper, followed by chemical products, synthetic resin, textiles and diesel between the most notable ones. In terms of handling the importation of the two most received products, both are usually transported in bulk, in the case of fuel oil it is transported in bulk through pipelines and then are moved to immediate areas to the port facilities to be put into cisterns to store the fuel oil in until is picked up, in the case of mineral carbon it is also transported in bulk and as the previous case it is moved as well to yards where is stored next to the port (Comision Portuaria Nacional, 2013).

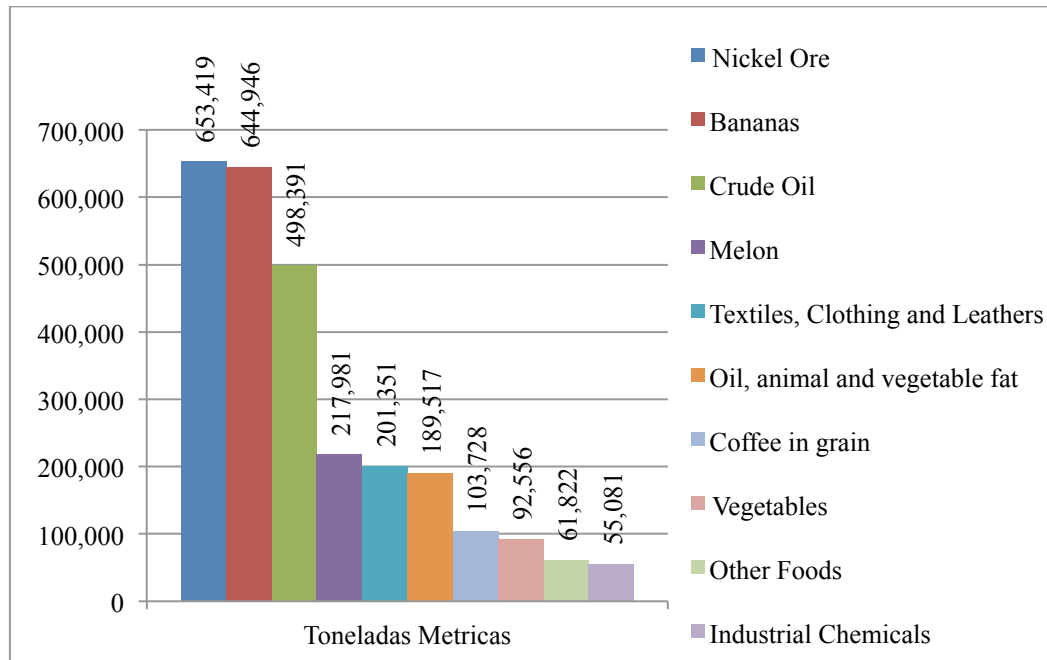
Figure 5: Importations by Types of Product 2013 - Santo Tomas de Castilla



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

In terms of exportation products, the data for Santo Tomas de Castilla shows a very promising trend since the most relevant product in terms of exportation with an amount of 653,419 metric tons is a fairly new production of Nickel Ore as it can be seen in Figure 6, it was only in 2012 when this product started being handled in Guatemala, the second product of importation and with history of being repeatedly the strongest export product in the country are bananas. Crude Oil represented a strong third place in terms of what is exported from Santo Tomas de Castilla almost reaching half a million metric tons of exportation, under half of this amount of tons exported there is a group of three products that were exported in similar amounts, these were: as a first group melons, as a second group textiles, clothing and leather and as a third grouping oils, animal and vegetable fats; for the three groups the level of exportation of products in 2013 was of about two hundred thousand metric tons. In the following category with a lot less amount of tons in exports but in change with much name worldwide is coffee in grain, a product that has been known over the world for its quality but however that is not exported with a goal of achieving high quantity but for it to conserve its name as a quality coffee, the exportations of this product are about one hundred thousand metric tons, closely followed by vegetables and at the end of the ranked products by type there are other foods and chemical products that complete the analysis of the most relevant products.

Figure 6: Exportations by Types of Product 2013 - Santo Tomas de Castilla



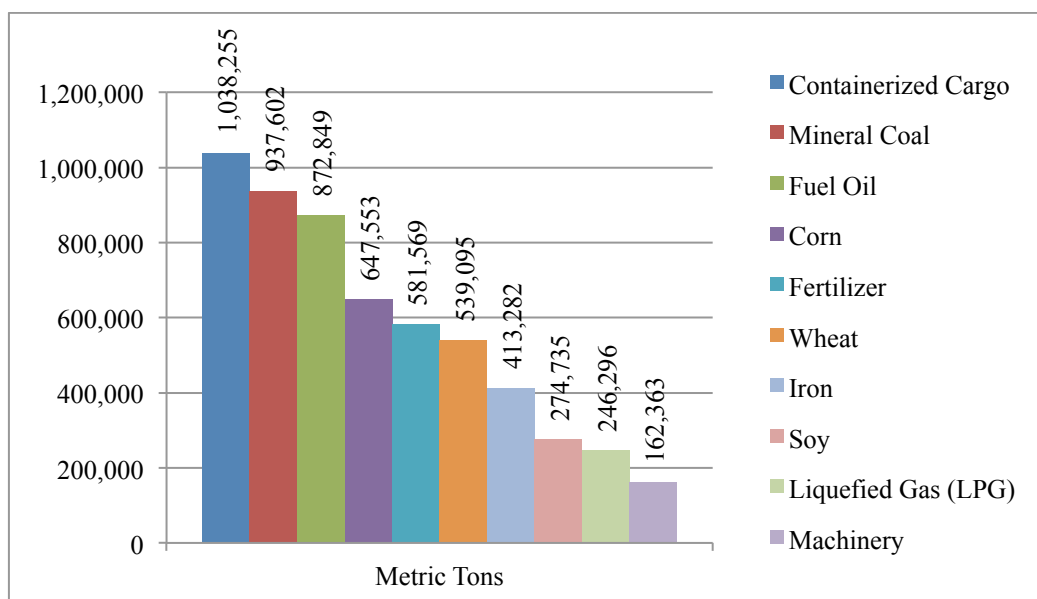
Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

With the previous analysis, both ports in the Caribbean coast have been described in terms of its most important products for international trade, it is possible to recognize that there are mainly big differences and one dominant product present in both ports in terms of exportation the strongest product that is exported through both ports in terms of quantity are bananas, also that port Santo Tomas de Castilla has a wider variety portfolio of exportation categories, while Puerto Barrios concentrates on the exportation of fruits, this is however a result of the port being operated under concession to COBIGUA which uses the port in 90% for private business operations.

Moving forward to an analysis of the type of products that are traded in the Coast of the Pacific Ocean through Guatemala's most modern port and one of the strongest terminals in Central America. The data provided by the National Ports Commission for 2013 shows different groups of products and their specific amount for exportation and importation just as it has been shown in the previous analysis, for Puerto Quetzal the most important product in terms of the importations that are handled by the port is containerized cargo as it can be seen in Figure 7, this amounted for over one million metric tons of cargo in 2013, the following product with the most importations into the country consists of mineral coal the amount of

importation was 937,602 metric tons, for mineral coal there is an specialized system for disembarkation, the coal is unloaded in a specific area focused to this product, then special transporting bands are used to mobilize the product and it is then placed on a dedicated storage facility with open air (CNP). Following the importation of mineral coal in third place with an importation of 872,849 metric tons as it can be seen in the Figure 7 it is fuel oil for the year 2013, this amount of fuel can be contrasted with the previous information from Port Santo Tomas which had as a most important importation fuel oil however the importation in Puerto Quetzal more than doubles that of Puerto Santo Tomas de Castilla in the Caribbean. As it is possible to appreciate on the graph providing the main importation products for Puerto Quetzal in 2013, it is possible to identify two trends, the first one being that containerized cargo of importation is strong in both of the coasts of Guatemala, also fuel oil represents a product that has an important level of importation for the country specifically in 2013. Having stated the similarities between the most traded products in both ports, there is also a wide variety of products that are traded in each coast only, in the case of Puerto Quetzal after fuel oil the next most traded products are: corn, fertilizer, wheat, iron, soy, liquefied gas and machinery. These products are also imported in a much higher amount than the group that is imported from Port Santo Tomas de Castilla, where the most traded product is in comparison ranked just above the importation levels of soy which is one of the least imported products by Puerto Quetzal.

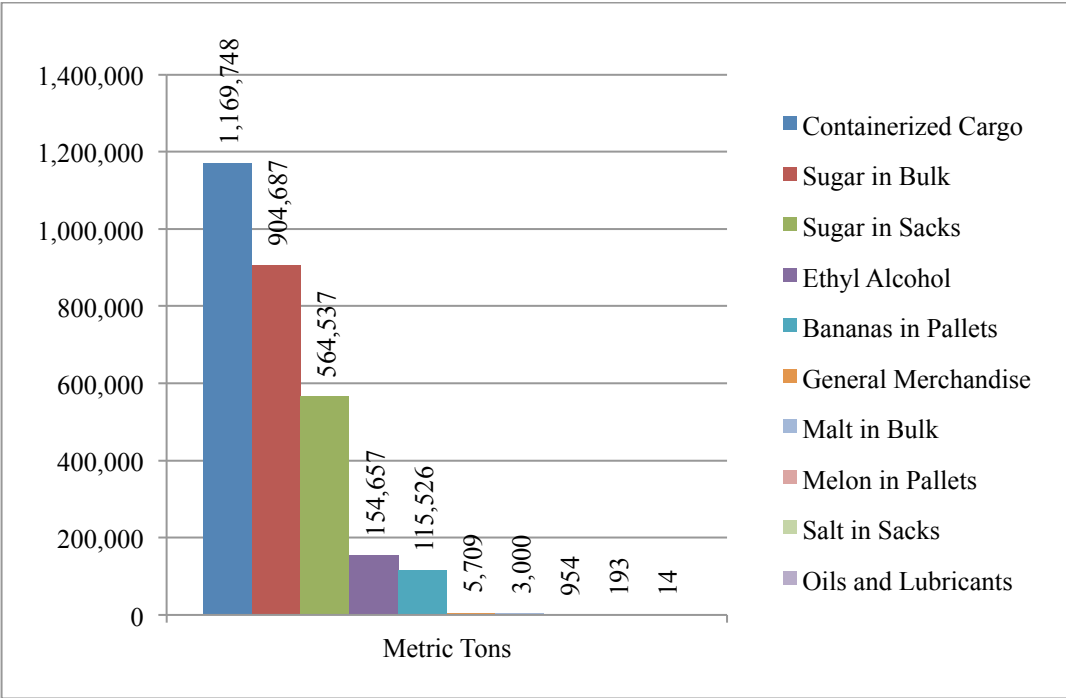
Figure 7: Importations by Types of Product 2013 - Puerto Quetzal



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

In terms of exportations the type of product that was traded can be analyzed as well for Puerto Quetzal 2013, as a product of the highest importance in Guatemala the exportation of sugar both in bulk and in sacks represented 48.8% of the total amount of cargo exported through Puerto Quetzal as it can be seen in Figure 8 both second and third most important exportation types of product are sugar in bulk and in sacks. With respect to the type of cargo ranked as a number one corresponds to containerized cargo. The following arrange of products do not show such importance, since their levels of exportation are very low, in comparison ethyl alcohol and bananas in pallets are 154,657 and 115,526 respectively, after the arrange of products that consisted of : general merchandise, malt in bulk, melons in pallets, salt in sacks, oils and lubricants; this group of products represented less than 10% of the exportations from Puerto Quetzal.

Figure 8: Exportations by Types of Product 2013 - Puerto Quetzal



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

3.4. Analysis of the Movement of Containerized Cargo by Port

Following the analysis of the families of products that are traded by Guatemala with foreign partners, in this section an analysis is made of the current trends of the most dominant type of cargo that is mobilized in Guatemala: Containerized Cargo. In the year 2013 the percentage of containerized cargo reached 42.7% (Comision Portuaria Nacional, 2013), the data from the following table provides an overview of the historic development of the movement of containerized cargo by port and classified by TEU from the year 2006 until the year 2013.

Table 9 shows that containerized cargo has had a growing trend when the historical data is compared in general for the whole National Ports System there are however some differences when the ports are considered separately, considering first the port that has had the highest movement of TEUs in the past 10 years Port Santo Tomas de Castilla, has had the second slowest growth in the last two years and Port Quetzal has had the slowest. Based on the data in table x also that the amount of TEUs that has been handled with the highest volumes belong to port Santo Tomas de Castilla, even though the percentage growth per year is positive only in 2007, 2010 and 2011 its volume of TEUs surpass Port Barrios by 106,024 TEU in 2013 and Port Quetzal by 173,070 TEU.

Table 9: Guatemalan Ports, Total Containerized Cargo by Year in TEU

Port	2013	2012	2011	2010	2009	2008	2007	2006	2005
Santo Tomas de Castilla	495,760	494,780	494,908	431,002	375,824	410,048	416,019	313,777	316,474
Yearly Percentage Change	0.20%	-0.03%	14.83%	14.68%	-8.35%	-1.44%	32.58%	-0.85%	
Barrios	389,736	342,397	317,804	326,833	317,646	248,797	218,818	213,098	229,437
Yearly Percentage Change	13.83%	7.74%	-2.76%	2.89%	27.67%	13.70%	2.68%	-7.12%	
Quetzal	322,690	321,550	350,370	251,034	212,858	278,798	235,452	295,980	224,169
Yearly Percentage Change	0.35%	-8.23%	39.57%	17.93%	-23.65%	18.41%	-20.45%	32.03%	

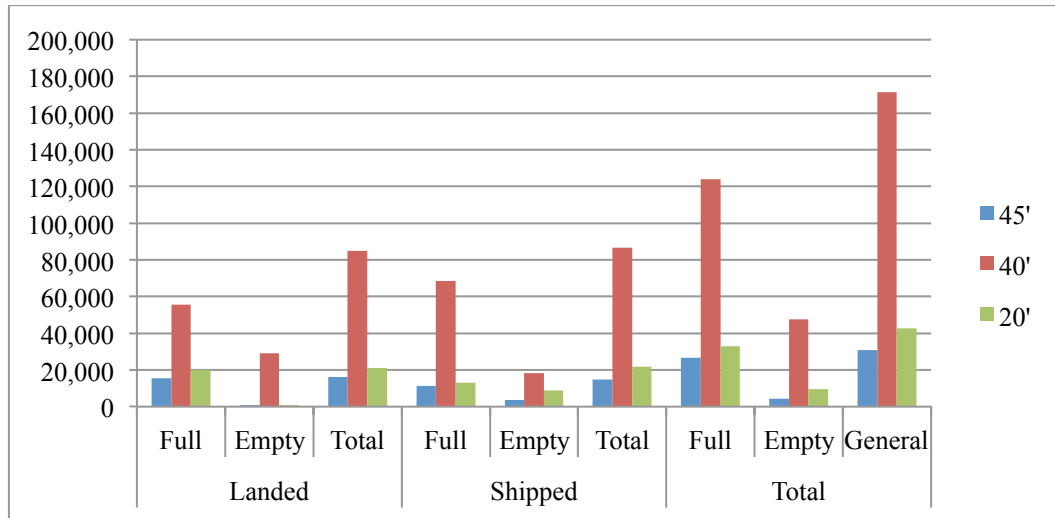
Source: Data Collected From Each Port Authority and Processed by the National Ports Commission of Guatemala (Comision Portuaria Nacional, 2013), Yearly Percentages Calculated by the Author.

In terms of growth the most consistency has been achieved by Port Barrios with an steady rate of growth recording negative growth of TEU only in the years 2011 and 2006. The growth of containerized cargo in Port Quetzal has not been consistent, from the years studied, it is possible to appreciate that two of the three highest yearly growth rates of TEUs handled

belong to Port Quetzal in the years 2006 and 2011, the third highest growth rate was recorded by Santo Tomas de Castilla in 2007. The volumes of TEU handled by the port does not depend solely on the capacity of the port to handle higher amounts but also on the supply and demand of International Trade in given year, therefore it is important to appreciate that high yearly rates of growth in TEU can represent the opportunity for the port to expand its services if chooses to invest in the improvement and further development in containerized cargo handling. In the terms of what it has been analyzed so far, Puerto Quetzal in Guatemala does not specialize as a priority on containerized cargo, it is known for being a port more oriented to handling other types of cargo such as solid and liquid bulk cargo which take great percentage of its handling operations. In the case of Santo Tomas de Castilla and Port Barrios, both are more focused on the exportation and importation of products and as it was shown in previous analysis most of the cargo that is handled is of containerized type.

Further analysis allows to consider and compare which of the sizes of containers are the most used, when analyzing each port separately with the data provided in the report of the National Ports Commission for 2013, from Figure 9 and Table 10, it is possible to note that there is a dominant size of container used in this port, the container of 40'. As it is shown in Figure 9 both by considering the landed containers which are going to represent the imports and the shipping containers that are going to represent the exports from Santo Tomas, in both cases the amount of full containers that are handled is bigger than the amount of empty containers. The gap however is smaller when considering importations or containers landing in the dominant category of 40' for which 34.50% of the containers that are received are empty as well. In the case of shipped containers the amount of empty containers handled is only about 21.16% of the amount of full containers handled and this also projects to the total of both shipped and landing containers for a 27.75% of empty containers handled by port Santo Tomas de Castilla in 2013 in its dominant size category of 40' containers. In terms of the two other sizes of containers that are handled by Santo Tomas de Castilla, these are 20' and 45' containers size, they represent 17.41% and 12.62% respectively of the total of containers handled by this port the rest of containers that was handled belongs to the dominant size category.

Figure 9: Port Santo Tomas de Castilla - Container Movement by Size of Container in 2013



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

Table 10: Port Santo Tomas de Castilla - Container Movement by Size of Container in 2013

Type of Container	Landed			Shipped			Total		
	Full	Empty	Total	Full	Empty	Total	Full	Empty	General
45'	15,339	696	16,035	11,351	3,542	14,893	26,690	4,238	30,928
40'	55,523	29,250	84,773	68,350	18,351	86,701	123,873	47,601	171,474
20'	20,047	890	20,937	12,981	8,757	21,738	33,028	9,647	42,675
Total of Containers	90,909	30,836	121,745	92,682	30,650	123,332	183,591	61,486	245,077
Total of TEUs	165,606	60,956	226,562	175,221	53,429	228,649	340,827	114,385	455,211

Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

In the case of Puerto Barrios the data for 2013 in terms of the most dominant size of containers handled in the operations of the port is the same as in Santo Tomas de Castilla where the 40' container was dominant. Puerto Barrios operates one more category of container size which is not present in the data for Santo Tomas de Castilla, this is the larger 43' container sizes, in the case of 43' the use was very minimal with only 80 containers operated in total for the year 2013 and 1,041 containers operated in the size category of 45' as it can be seen in Table 11. In

terms of the dominant category size of 40' containers it compares to Santo Tomas de Castilla in the amount of empty containers that were operated in 2013, for containers that landed on the port the amount of empty containers was 32.63% of the total of containers received, in terms of exportations or shipped containers Puerto Barrios for the year 2013 handled a very minimum amount of empty containers which was only 6.8% of the total of containers shipped in this year, as it can be seen represented in Figure 10.

Figure 10: Puerto Barrios - Container Movement by Size of Container in 2013



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

Table 11: Puerto Barrios - Container Movement by Size of Container in 2013

Type of Container	Landed			Shipped			Total		
	Full	Empty	Total	Full	Empty	Total	Full	Empty	General
45'	503	28	531	272	238	510	775	266	1,041
43'	10	1	11	11	58	69	21	59	80
40'	63,047	30,534	93,581	87,274	6,367	93,641	150,321	36,901	187,222
20'	4,361	1,994	6,355	5,617	806	6,423	9,978	2,800	12,778
Total of Containers	67,921	32,557	100,478	93,174	7,469	100,643	161,095	40,026	201,121
Total of TEUs	131,608	63,127	194,735	180,801	14,200	195,001	312,409	77,327	389,736

Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

In the case of Puerto Quetzal the operations of container are the lowest in comparison to the two ports in the Caribbean Coast of Guatemala, for Puerto Quetzal the data for the year 2013 shown in Table 12 shows that in this port the dominant size of container handled is as in the previous two cases the 40' container however in the case of Puerto Quetzal the category of 20' containers is operated in a significant amount, different than in the previous two cases, the total of containers including empty and full containers for both landed and shipped containers in the year 2013 the container size 40' was 63.06% of the total of containers handled, the container size 20' was 35.33% of the total of containers handled and as it can be seen in Graph 9 these two categories comprise the majority of the containers handled by the port in the year 2013. In terms of the performance of the dominant category with focus on the full and empty containers that were handled and how these compare to the previous ports in the Caribbean Coast it is possible to see that Puerto Quetzal has higher amounts of empty containers handled, as it can be appreciated in Figure 11. In terms of the empty containers for the category of 40' in terms of landed or containers imported the amount of empty containers handled was 30.8% of the total of containers handled. For the shipped containers or of exportation the amount of empty containers handled by Puerto Quetzal was 35.55% of the total amount of containers shipped. This figures can be compared to the other ports in the Caribbean, as the amount of empty containers that lands in the ports is similar in terms of shipping both ports in the Caribbean have significantly lower amounts of empty containers, which may suggest opportunities for improvement in the utilization of this empty space that is not being taken advantage of.

Figure 11: Puerto Quetzal - Container Movement by Size of Container in 2013



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

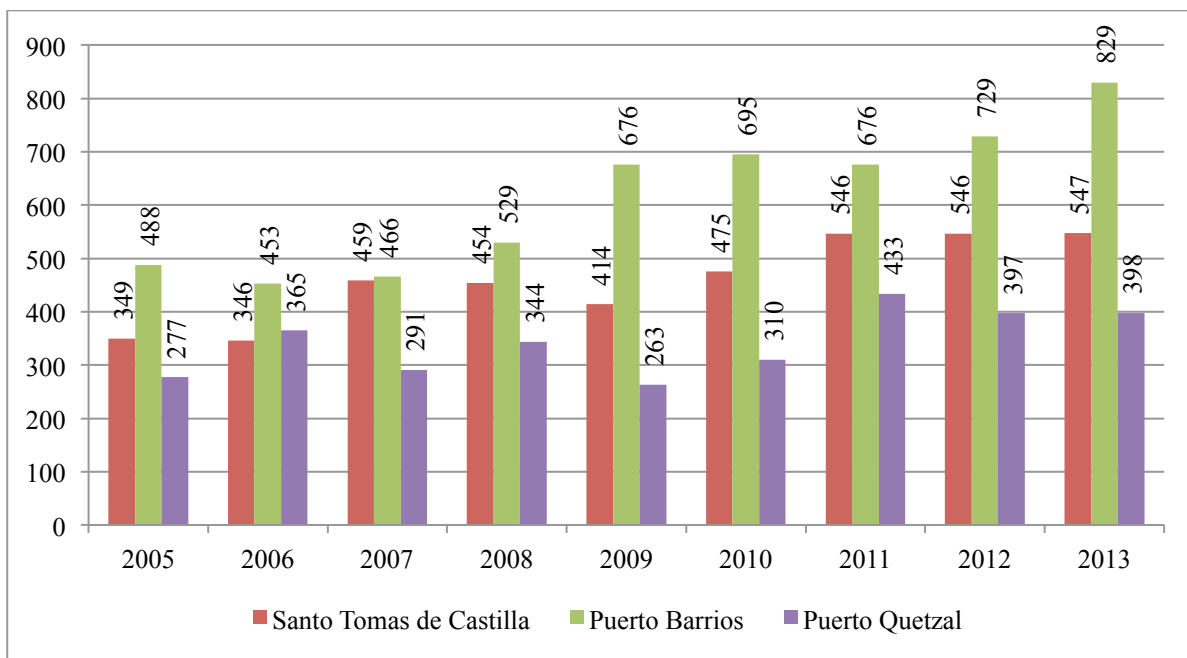
Table 12: Puerto Quetzal - Container Movement by Size of Container in 2013

Type of Container	Landed			Shipped			Total		
	Full	Empty	Total	Full	Empty	Total	Full	Empty	General
45'	1,189	102	1,291	930	911	1,841	2,119	1,013	3,132
40'	44,063	19,620	63,683	38,414	21,191	59,605	82,477	40,811	123,288
20'	28,136	6,443	34,579	23,195	11,293	34,488	51,331	17,736	69,067
Total of Containers	73,388	26,165	99,553	62,539	33,395	95,934	135,927	59,560	195,487
Total of TEUs	118,937	45,913	164,850	102,116	55,725	157,840	221,053	101,637	322,690

Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

With the objective of analyzing the performance of the ports in Guatemala, a significant indicator of how well ports perform is the yearly movement of TEUs by lineal meter of the Port's Dock, because ports just as any other company rely in the productivity of the service they provide, it is important for their clients, the user of the ports which are in this case the shipping companies. Generally productivity can be measured in terms of how much time the cargo stays in the port, however other indicators such as the yearly movement of TEUs show the historical performance of the port and development in by this indicator shows that the port has been able to utilize more efficiently the Docking operations since over time it has been able to handle higher volumes of cargo in the same amount of space to provide the services to the shipping liners, in Figure 12 it is possible to see the performance of the three ports in Guatemala that handle cargo that can be measured by TEU, it shows that the highest improvement in this indicator was achieved by Puerto Barrios because it has improved the quantity of TEU that is handled in the same are of the dock in previous years which shows an improvement in operations thanks to better skills, more efficient infrastructure and possibly better performance of the personal as well, a stable growth with slow increment in the last three years was achieved by Santo Tomas de Castilla and Puerto Quetzal has had the slowest often negative performance for this indicator.

Figure 12: Container Movement by Lineal Meter of Dock in TEU 2005 - 2013



Source: Data from Port Authorities Processed by CNP: (Comision Portuaria Nacional, 2013)

4. Chapter III – Productivity, Sustainability and Policies for Development of Guatemalan Ports

The final Chapter of this thesis evaluates factors of importance for the future development of the Ports in Guatemala, based in the research on the preceding Chapters an overview of the ports operations has been obtained and this Chapter evaluates the main areas in which the Guatemalan authorities of ports and the Public Sector have an opportunity to design policies that will be able to improve productivity, sustainability and development of the ports in the future years to come.

4.1. Productivity Indicators and Performance of Guatemalan Ports

In Chapter II a description and analysis of operations of the Ports of Guatemala was studied with the objective of finding main characteristics of the ports operations, this section focuses on the use of the main characteristics found and indicators of performance and productivity. Studying the productivity of the ports of great importance mainly because of the growing requirements of continually growing international trade, as it was shown by the data in the previous chapter it is clear that over time the operations of the ports in Guatemala have seen an increase in the volume of the cargo that is handled. This implies that the ports are forced to monitor their operations and improve them in any way that they find feasible. Productivity and performance have also a heavy influence on international commerce in terms of exportations, some of the main products of export still support the economy of Guatemala as it is the case of Sugar and Bananas as it was shown in Chapter II. As the data shows in the case of Guatemala for the Ports studied in this thesis the country has a segmentation in terms of the type of cargo that the port specializes in, this is shown with the case of Puerto Quetzal being a major operator of bulk and liquid cargo and the cases of Santo Tomas de Castilla and Puerto Barrios which are ports that show to be more concentrated in the operations of containerized cargo. This also reflects on the productivity of both Santo Tomas and Puerto Barrios which have been constantly increasing in terms of the amounts of the TEUs that are moved by year in the port, in this case since it it's a measure for containerized cargo movement it also corresponds that Puerto Quetzal has not experienced a general improvement over the years in this measure even

though the amount of TEUs was higher in 2013 it was very close to the data from 2006 showing a more deficient development than the counterparts ports in the Caribbean Ports.

In general terms the cargo that was handled by the ports in Guatemala in the period studied had growth in comparison to previous year, in terms of the productivity of the Ports it is positive, not only for containerized cargo but also for bulk and liquid cargo operations, sources for this behavior indicate as well the increment of exports to the European region specially from port Santo Tomas de Castilla. In terms of the Central American Region Guatemala still lags behind other ports in a comparative way, in terms of general logistics the performance of the Country is still average in the region of Central America.

As factors that affect productivity in (Doerr & Sanchez, Indicadores de Productividad para la Industria Portuaria. Aplicacion en America Latina y el Caribe, 2006) study of productivity in other ports in Latin America, they provide factors that affect the productivity of the ports, this can be inside or outside of the terminal operator's control. The first factor affecting productivity is the amount of wait that the ship has before being serviced by the port, this is later reflected on the measure that is the amount of time in the port of the ship and this is an important indicator for the shipping line when choosing the route for their operations. Additional factors that influence the productivity of the ports are the disposition of the equipment in the port like cranes which is one of the factors of high productivity in other ports. In Figure 13 it is possible to visualize the type of crane that the ports in Guatemala use, Puerto Quetzal counts with four of such cranes in the port, another type of crane that is used is gantry crane of which Puerto Quetzal does not have (INECON, 2013).

In a comparative way with the other two ports in Guatemala from (INECON, 2013) it is provided that Puerto Barrios doesn't have cranes to its disposition which seems to indicate as the operations of the port involve exclusively private business that this has been the strategy of the owner of the concession at the moment to receive only ships with cranes. In terms of Puerto Santo Tomas de Castilla it counts with three cranes and no gantry cranes as in the case of Puerto Quetzal.

Figure 13: Crane in Puerto Quetzal Used to Mobilize Containers



Source: (noticias.com.gt accessed 28/04/2015)²

In terms of comparison with the region of Central America, the highest equipment from a port can be seen in Panama where the Manzanillo International Terminal has 16 gantry cranes and Panama Ports Balboa has 18 gantry cranes. Port Colon has 10 gantry cranes and finally Ports Cristobal in Panama has six cranes. In the case of El Salvador Port Acajutla counts with three cranes and in Honduras Puerto Cortes counts with six cranes and two gantry cranes and Puerto Castilla none. For Nicaragua Port Corinto counts with one crane and Port Arlen Siu with two normal cranes. Finally Costa Rica counts with only two cranes in port Limon Moín and one in port Caldera.

Internal factors that affect productivity of the port then have to do with the disposition and the configuration of the terminal, (Doerr & Sanchez, Indicadores de Productividad para la Industria Portuaria. Aplicacion en America Latina y el Caribe, 2006) not only the amount of cranes is important but as well the characteristics of the cranes and the productivity they are able to provide and the intensity of the work load. External factors that affect productivity have to do with the commercial volumes of trade, if the trade in goods volumes are increasing or decreasing and also patterns related to the shipping liners industry for example the size and type of the ship can influence the economies of scale, in the case of the ports in Guatemala in

² <http://noticias.com.gt/files/2011/06/empresa-portuaria-puerto-quetzal-agn-400x266.jpg>

terms of the most used container size in the ports it was found that 40' containers are the dominant type of container used.

External factors are important because even if the port is taking the most advantage out of the factors that are inside of its control, external factors can be determinant up to the limit when it will affect the port productivity in a major way. This was the experiences that the Ports in Guatemala had during the global financial crisis in 2008, as it was showed in Table 9 of Chapter II, during this years there was a significant decrease in the amount of cargo in terms of TEUs, but quickly recovering in the immediate years, after that period with low economic volumes the productivity of the ports in Guatemala has been rising showing increase in the commercial volumes of cargo handled by the ports. When the commercial volumes are lower it is usually reflected in the shipping liners as well, with small commercial volumes the ship needs often to visit a higher number of ports in one route so that it can pick up more cargo and utilize better the transport capacity, this becomes more expensive than if it is possible to visit a smaller amount of ports and this factor can also have negative consequences if there is a delay in one port it will affect other ports in the route as it is noted by (Doerr & Sanchez, Indicadores de Productividad para la Industria Portuaria. Aplicacion en America Latina y el Caribe, 2006).

Not only volumes are important determinants for productivity but also the quality of the ship has a significant impact on the productivity of the port, with bigger, newer and better equipped ships the port is able to operate easier, this between other things is because they are able to work with more than one crane which results in a lower amount of time spent in the port.

Other important factors that can significantly affect the productivity are the space and location of the deposits which can determine how fast the containers or other cargo can be mobilized and stored before it leaves the terminal, if this areas are not appropriate it can also cause congestion and negatively reflect on the productivity of the Port. In the cases of Port Santo Tomas de Castilla and Puerto Quetzal both count with areas adjacent to the ports that allow the storage of containers, Port Santo Tomas de Castilla is the strongest in container movement and Puerto Quetzal counts with a open air area that is specialized for the storage of bulk cargo.

One of the measures that the ports influence for the result of Guatemala has to do with the productivity of the port, as it is shown in Table 13 Guatemala the second best score in Central

America in Timeliness behind Panama and Ahead of Costa Rica, in other factors of productivity that are important such as the ability to cope with IT tools can be reflected in the tracking and tracing abilities, Guatemala according to LPI in Table 13 it shows that is an area which needs improvement, its score is the fourth in the region and performs worse in this area than Panama, Costa Rica and El Salvador.

Table 13: Logistics Performance Index in Central America 2014

Country	Year	LPI Rank	LPI Score	Logistics competence	Tracking & tracing	Timeliness
Panama	2014	45	3.19	2.87	3.34	3.63
El Salvador	2014	64	2.96	3.16	3	2.75
Guatemala	2014	77	2.8	2.68	2.68	3.24
Costa Rica	2014	87	2.7	2.86	2.83	3.04
Nicaragua	2014	95	2.65	2.58	2.58	3.17
Honduras	2014	103	2.61	2.47	2.61	2.79

Source: World Bank Report, Logistics Performance Index 2014. (World Bank, 2015)

After having an idea of the main areas that the port needs to focus on in order to improve its productivity and to complete this section on the productivity of the ports, it is necessary to look at the quality and quantity of access to the ports through terrestrial way, it is found in the analysis of (Doerr & Sanchez, Indicadores de Productividad para la Industria Portuaria. Aplicacion en America Latina y el Caribe, 2006) that this factor can be crucial in case that the port is oriented to be a provider for a internal market that will be accessed by ground it can become restriction or bottleneck in case of high volumes of cargo movement.

4.2. Sustainability of Guatemalan Ports

The sustainability of the Ports is one of the most important aspects of the policies that are identified in the study for the development of ports for Latin America and the Caribbean by CEPAL (Doerr, Politicas Portuarias, 2011) sustainability of the ports is defined as how friendly the ports are with the environment. Continuing with the connectivity of the ports it is possible to imagine the kind of problems that arise when the access to the ports is poor, not only has an impact on the time that it takes for the transport to get to its destination but also with the amount of emissions that it exposes the surrounding areas to the port. Most of the trade in Central America between neighbors is as well done through ground transportation, a study for the analysis of a possible transformation of some of this trade to short distance

maritime transportation shows this fact (INECON, 2013) and combined with the facts that Central American road system is very poor and access by road to the ports are generally through roads built 50 years ago it becomes quite an important challenge for the governments to develop adequate policies that will support the growth of the ports together with improving the environmental conditions for the nearby port areas.

One of the biggest challenges in Latin America in general that has been studied by (Doerr, Políticas Portuarias, 2011) is the lack of integration of institutional models and policy legislation focused on accessibility to the ports, connectivity to the interior of the countries, the improvement of processes that would involve the whole port community and the integration of sustainable development for the ports. In the case of Guatemala and the data analyzed in Chapter II shows that even though the Ports of the country need to improve the performance in some key areas, the performance and mainly the support for international trade is growing in maritime transportation. Puerto Quetzal, Puerto Santo Tomas de Castilla and Puerto Barrios present increments in both volumes and values of the cargo that is being operated.

The growth of this international commerce and the effects that globalization has on this growth forces the expansion of the ports and their role becomes of higher importance to support the networks of international transportation. This situation poses many challenges for the ports in the world, between the biggest ones currently in Latin America is facing changes and needs in the infrastructure for ships, vehicles and being able to provide more efficient faster and technological solutions.

This challenge applies for the ports in Guatemala, as it was noted previously Guatemala still lags behind other countries in Central America when the LPI is used to show the results of the country in infrastructure of ports and also with the equipment of the ports.

But the policies for development of the ports cannot focus only on investments on infrastructure and equipment, the cases of other ports in the world for example in the European Union show that this policies are not sufficient anymore, (Doerr, Políticas Portuarias, 2011) explains that ports in Latin America need to focus on the local environment of the surroundings of the port terminal, the local communities are now important determinants of

the performance and growth possibilities of the ports in terms of the physical expansion and the sustainable development of the ports.

To confront the challenges that the ports in the region including Guatemala are facing it is necessary not only to design adequate maritime ports policies but also the government needs to be able to formulate processes and implement projects that will allow to bring to reality the objectives of the new policies. This is usually in itself a big challenge as well because it will need the involvement of various agencies of the government and this changes can bring conflicts where private interests may not comply with the common interest.

The government and the port authorities should have the willingness and be able to establish better options for the participation of the private sector, to define with them the necessary operational relations, regulatory actions and legal norms that are necessary for both the public and private parties. To develop good recommendations for Guatemala as it was done in (Doerr, Políticas Portuarias, 2011) it was proven useful to apply successful cases and international experience to develop some key factors that are going to be more practical recommendations.

In the case of the European Union the body that was in charge of designing and helping to confront these challenges was the European Commission, as it is in the case of Guatemala in terms of trade with neighbors there is an intense use of ground transportation, in the European Union this type of transport was as well heavily relied on and it was identified as one of the sources of great environmental impacts. The European Union recognized that there were main areas that needed support to help ports respond to these challenges, in terms of sustainability it was established that the any increase in capacity can be realized but it has to go attached with complying with legislation of the environmental protection of the European Union.

The sustainability for European Ports therefor was recognized already as being one of the most important challenges that needed to be included when designing policies for the development of ports, The General Assembly of the ESPO (European Sea Ports Organization) has released many codes of conduct designed to improve the sustainability of the ports (Doerr, Políticas Portuarias, 2011), this codes are directed to the different European Port Authorities. The first Code on Environmental Behavior was released in 1994 and a modification was released in 2003 which encourages the urgency of creating sustainable development that involves the

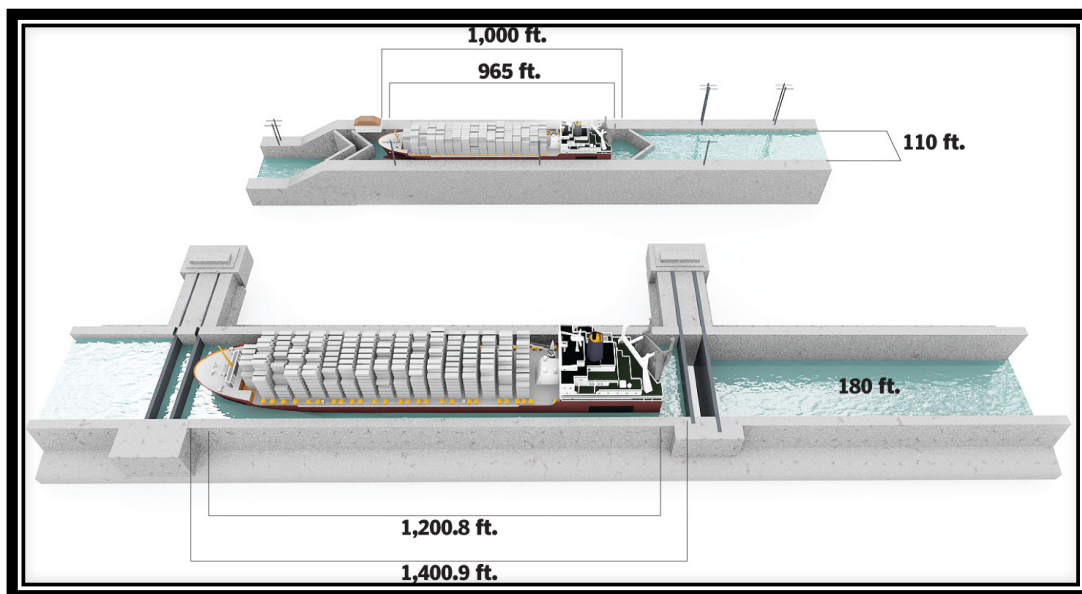
growth of the port integrated with the local economies in a way that supports the environmental behavior. By 2006 the ESPO had released a code with regards to Conservation of Birds and their Habitat which was aimed to the ports authorities, local regulators, ports developers and that addressed the important of conservation of the habitat when developing port infrastructure. In 2010 ESPO released the Code for Social Integration of Ports, this code evaluates that the ports are able to develop sustainably in the long term if they are well integrated with their social environment, this means that the social function of the port is met adequately, which means that the code provides guides to create cooperation with the cities, destined to improve accessibility and quality of access to the port zones and also promote a positive image to the Public in General.

The example given by the European Union shows that in the past decade integration of the European Countries has provided an answer for developing strategies for the ports in the region. In the case of Guatemala, a clear legal system with regard to the Ports is still missing, the National Ports Commission in Guatemala which was studied in Chapter I and the data that they processed studied in Chapter II shows the work they are doing and that they are involved in the study of what the ports of Guatemala will need in the future for its development, however the best recommendation would be for the Government authorities to create design legislations that will allow the National Ports Commission to design correct policies that will guide the port authorities in Guatemala in such a way as it has been achieved by the cases in the European Union. At the Central American level there is integration worth mentioning with the institution of COCATRAM which can be compared to ESPO in a Central American level, however the integration of the country does not provide the opportunity to create joint policies for Central American countries as in the European Case.

4.3. Policies for Development of the Ports

One of the most important successes of the region of Central America in recent time is the completion of the extension of the Panama Canal, this expansion opens new possibilities and suggests the possibility of even higher volumes growth in terms of cargo that is going to be mobilized, this has implications for Guatemala and the other member of the region. Before the expansion the canal had a capacity that supported 4,800 TEUs vessels after the expansion this figure will transform and the canal will be able to support up to 13,000 TEUs vessels (UNCTAD, 2013) Figure 14 shows graphically the comparison in size that the Panama Canal supported prior to the extension and the size that will be able to support after the extension, it not only meant higher requirements in with but also in depth of the channel.

Figure 14: Comparison of Vessel Size Before and After Panama Canal Expansion



Source: (The Boston Globe, 2015)³

The expansion of the Panama channel will have direct effects on the current characteristics of the cargo and maritime transport that were studied in Chapters I and II, it will have an impact on the whole region for which Panama already played a role as a trans boarding hub for many of the ports in Central America that were not able to receive vessels of bigger sizes. The

³ <http://www.bostonglobe.com/business/2014/03/15/panama-canal-expansion-have-major-impact-boston-worldwide-shipping/lqz3iuhcfpHWdTMS9ePDKO/igraphic.html>

growth of the Panama Canal and other investments in the region in the area of Maritime Transportation show that the region has important opportunities that can be explored by foreign investors. The case of Panama is not the only one that can be found, in Jamaica significant investments into the development of a trans-shipment port has brought the participation of the China Harbour Engineering Company Limited this program is part of the series of plans that Jamaica has in pursue of its desire to become a global logistics hub in the region (UNCTAD, 2013).

In the case of Guatemala it is possible to appreciate a better performance from the privately operated Puerto Barrios which is run on a concession contract, Puerto Barrios as it was shown in Chapter II it recorded the highest growth in terms of the amount of containerized cargo it operates by yearly rates than the other two state owned ports, Puerto Santo Tomas de Castilla and Puerto Quetzal are still operated by the state owned port authorities, the concessions given to private companies to run industry related business in the ports are minimal and the amount of investments that the ports receive from the governments are far from significant. One of the examples that can be found in the world is the case of India and the strategy that is being developed to attract foreign investments into the ports (UNCTAD, 2013), India has decided to pass a bill that will give significant decision making to the port authorities on what areas of the port to concede in contract for the operation of private companies, this is thought to be a promising strategy to attract direct investment and can become a high source of revenue for the ports since they usually have widespread land that is not being taken advantage of.

Traditionally the focus of investment of the governments and the public sector in general with respect to the maritime transportation industry and developments of ports in Latin America is concentrated on the modernization of physical infrastructure, Jean Paul Rodrigue in his study of Latin American Ports and the logistics industry in Latin America (Rodrigue, 2012) finds that it is important for the public sector to become aware of the importance that other projects have, projects that are connected with logistics performance because they will be able to bring benefits to the development. Because the capacity and efficiency of maritime transportation in countries in Latin America including Guatemala Rodrigue explains the public sector should encourage projects focused on the relationship between maritime and inland freight distribution and the logistics that support their interaction.

For the case of Guatemala, based on the data that has been studied in the previous chapters and with the proposals that are found in the studies about Latin America (Rodrigue, 2012), there are some areas of recommendation for Guatemala to improve their policies and investments in areas such as integration of the supply chains by supporting more efficient transport and logistics services to promote external and internal trade, the case of Guatemala is such that most of the trade done with its neighbors utilizes multimodal or only ground transportation and these interactions are heavily connected with the connectivity and accessibility of the ports, it is important to facilitate improvements in the private sector transport and logistics, with this objective (Rodrigue, 2012) points out that several corridor-based organizations have emerged to coordinate development projects in this area.

But is not solely a duty of the public sector but also the port authorities are able to benefit if apply necessary changes that can bring benefit to the logistics performance in Guatemala, globalization and deregulation are changing the roles of the port authorities already, traditionally the port authorities act landlord, regulator and operator of the terminal. (Rodrigue, 2012) points out that there is a new role developing for port authorities and is two dimensional, the first dimension is about concessionning, the port authority will increasingly see its role becoming more managerial, the role as an operator will become reduced because it will be taken over by more specialized terminal operators that rent the port area facilities, in Guatemala such is the case of Puerto Barrios. It is a process that came earlier in Europe, North America and Asia but that it has recently been catching up in Latin America and the Caribbean and in the area some of the biggest examples are Kingston, Freeport and Panama.

The second dimension that is part of the new transforming role of port authorities is Cluster Governance, this is an emerging trend which involves the port taking over leadership in activities that were outside its original jurisdiction, this activities are setting up inland terminals and logistics zones, developing strategies to increase performance of the supply chain, establishing port community systems, the promotion of environmental and social initiatives, being involved in training and education for port employees and facilitating relations with the surrounding areas (Rodrigue, 2012).

The case of Guatemala shows that where some of the areas that are talked about in literature of how to improve the logistics and port performance of services are being already treated by the government and port authorities like the training of employees with conferences in universities and training programs other areas such as deregulation, privatization, the facilitation of more concessions are not being fully taken advantage of, also the lack of investment from the private sector, the integration of sustainable development and integration with the society surrounding the ports are areas that the actors in the maritime transport industry in Guatemala will need to explore since there are opportunities for growth and development.

5. Conclusions

This study was elaborated with the objective of exploring and analyzing the current status and performance of the maritime transportation industry in the country of Guatemala, the focus of the thesis was to evaluate the support that Port Terminals in the Country give to international trade and also the evaluation of the involvement of the Terminals in the international trade that Guatemala has with external partners. In Chapter I a description of the current status of trade with external partners of Guatemala is made for this the use of data found in reports of external trade from the Guatemalan National Ports Commission (Comision Portuaria Nacional, 2013) and of the study of INECON of trade between Central America (INECON, 2013) is used to provide a description of the trade environment surrounding Guatemala. Guatemala counts with four port terminals of which three were studied in this thesis, concluding that in Guatemala there are two ports in the Caribbean Coast, these two terminals are the best in performance of containerized cargo movement while in the Pacific Coast there is one terminal that is specialized only in liquid cargo such as crude oil, this is Boyas de San Jose and a Second Terminal that had the highest volume of cargo in the Country which is Puerto Quetzal. Puerto Quetzal however it also provides services for container cargo movement the biggest volumes belong to cargo in solid bulk form, one of the most significant products of exportation that leaves the country from this port is sugar in grains. In the cases of the Caribbean Ports, Puerto Barrios is operated in concession to a Company called COBIGUA which has been operating mainly what is fruit of exportation with destination mainly in the East Coast of the United States of America. In the case of Santo Tomas de Castilla, it was found that this Port Terminal of the Caribbean Coast has the highest amount of containerized cargo movement in the country, however the growth in handling performance of containerized cargo has been greater in the case of Puerto Barrios. In Chapter II a more deep analysis of the type and destination of cargo was done by port with the goal of exploring characteristics of trade between Guatemala and its partners as well as current characteristics of the cargo operated by the Port Terminals. The study in Chapter II was based on the data from (Comision Portuaria Nacional, 2013) where an overview is provided of the main trading partners by port

in terms of what is traded via maritime transportation, concluding that Guatemalan Ports have a wide variety of products that are imported and exported through the four ports that operate in the country, the comparative results with previous years show opportunity and evidence that the volumes of cargo handled by the ports are growing each year and that the demand for higher operational capacity is likely to grow in the following years. In the last section of the thesis in Chapter III the objective was to provide some recommendations for the ports when the policies for development are designed, based on the background found in this research the ports in Guatemala need to focus on developing the ground transportation access to the ports which is one of the areas in which the logistics performances were the poorest, it will be very important as well that integration of logistics services are improved and for the future development of the port it is important to have openness to the possibilities of private investments into the ports and the possibility of the ports authority to become a managerial actor if possible providing concessions of some areas of the ports. Finally for the secure and sustainable development of the Guatemalan Ports it is important to integrate the ports with the communities that surround the ports because as it has been seen by experience of other developed ports for instance in Europe this is a key aspect of development, together with the design of policies and norms of behavior that will allow the ports to develop in an environmentally friendly manner.

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