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## FOREWORD

The Ports of Stockholm, Tallinn, Helsinki, Turku and Naantali play key roles in the accessibility of cargo and passenger traffic to the Central Baltic Region. The role of the ports is crucial for interconnectivity, economic growth and sustainability in the region; they enable both cargo and passenger mobility. This report focuses on the liner traffic between the five so-called PENTA ports: Stockholm, Tallinn, Helsinki Turku and Naantali. The economic situation and foreign trade in each county – Estonia, Finland and Sweden – provides the context for the analysis.

The report points out key factors driving the demand for cargo and passenger traffic in each port. The results show that the companies operating the sea routes between these ports have developed different profiles. However, the unifying factor and strength for all of them is RoRo-traffic. Current supply chain management characteristics – JIT, lean supply chain management and product postponement – would not be possible without efficient transport and frequent port-to-port liner connections. Even though manufacturing in low-cost countries has increased and new forms of supply chain management have altered cargo routes, the PENTA ports have actually benefitted from these changes.

The report was written as a part of the PENTATHLON project which is coordinated by the University of Turku, Centre for Maritime Studies. The project is financed by the Central Baltic INTERREG IV A Programme 2007-2013 of the European Union Regional Development Fund, the Ports of Stockholm, the Port of Helsinki, the Port of Turku, the Port of Naantali and the Estonian government. The purpose of the project is to explore alternatives and develop measures for better comprehending and facing current and future challenges and increasing their competitiveness. The research was carried out and the report written by M.Sc. Anssi Lappalainen and supervised by Ph.D. Johanna Yliskylä-Peuralahti. Project partners Maria Mustonen (Transport Research Institute TFK), Tõnis Hunt (Estonian Maritime Academy) and Reima Helminen (University of Turku/CMS) conducted the interviews in Sweden and in Estonia.

The University of Turku, Centre for Maritime Studies expresses its gratitude to the author and to all those who took part in the interviews and surveys and contributed to making this report. A special thank you is extended to the PENTA ports for providing data for this research and for their active guidance.

Turku October 4th, 2012
Sakari Kajander
Head of Unit
University of Turku, Centre for Maritime Studies

**ABSTRACT**

Maritime transport moves around 6 billion tonnes of freight every year. The freight consists of liquid bulks (45%), dry bulks (23%) and general cargo (32%). Freight traffic and transports chains vary according to region, commodity and the origin and the destination of freight. In the European Union the ports sector handles over 90% of the trade with third countries. The share of intra-EU trade is approximately 30% of the total transportation and the number of passengers is over 200 million every year. The Baltic Sea has more than 50,000 vessels a year pass the Skaw at the northernmost tip of Denmark on their way into or out of the Baltic. Roughly 60% to 70% of these vessels are cargo vessels and 17% to 25% tankers. Ports and maritime transport play a crucial role in global commerce today.

Today's business environment is changing rapidly, and the constant changes create challenges for the transport industry and maritime traffic. Ports have to adapt to continuous changes in economic structures, logistics demands, and people's travel and leisure patterns. In order to ensure the competitiveness of sea connections, the ports need to fully enhance multilateral cross-border understanding and cooperation. In this report the focus is on liner traffic between five ports in the Central Baltic Region: Stockholm, Tallinn, Helsinki Turku and Naantali. The report defines the drivers of the demand for cargo and passenger traffic and highlights the most important factors. The economic situation and foreign trade of each county are elaborated on with detailed information about the flows of traffic between the five ports. Based on expert interviews, the main characteristics of each port, including strengths and weaknesses, are presented.

The report is based on primary and secondary data. Primary data was received through interviews and mail surveys. Secondary data was attained through a literature research, statistics, data given by the PENTA ports and webpages. The report is divided into two main parts: the drivers creating the demand for transport and the results of current cargo and passenger flows between PENTA ports.

## TIIVISTELMÄ

Meriliikenne kuljettaa vuosittain noin 6 miljardia tonnia rahtia ja sen on arvioitu koostuvan 45 % nestemäisestä irtolastista, 23 % kuivasta rahdista ja 32 % muusta kuivasta rahdista. Rahtiliikenne vaihtelee alueittain, hyödykkeittäin ja tuotteiden lähtö- ja määränpään mukaan. Euroopan Unionissa satamasektori käsittelee yli 90 % kaupankäynnistä unionin ulkopuolisten maiden kanssa. EU:n sisäisessä kaupankäynnissä osuus on noin 30 % ja matkustajien määrä vuosittain yli 200 miljoonaa. Itämeren alusliikenteessä yli 50 000 alusta ohittaa vuosittain Tanskan pohjoisimman kärjen joko matkalla Itämerelle tai pois sieltä. Suunnilleen 60 % – 70 % näistä aluksista on rahtilaivoja ja 17 % – 25 % tankkereita. Satamat ja meriliikenne ovat täten merkittävässä asemassa globaalia maailmankauppaa.

Tämän päivän liiketoimintaympäristö muuttuu kiivaasti ja tämä luo haasteita kuljetusalalle ja meriliikenteelle. Satamien on sopeuduttava taloudellisten rakenteiden jatkuvaan muutokseen, logistisiin tarpeisiin ja matkustuskäytäntöihin. Meriyhteyksien kilpailukyvyn varmistamiseksi satamien tulee kasvattaa valtion rajoja ylittävää monenkeskeistä tietämystä ja yhteistyötä. Tässä raportissa keskitytään viiden Keskisen Itämeren sataman linjaliikenteeseen, joita ovat Tukholma, Tallinna, Helsinki, Turku ja Naantali. Tutkimus määrittelee rahti- ja matkustajavirtojen kysyntään vaikuttavia tekijöitä sekä nostaa esille tärkeimmät vaikuttimet. Maiden taloudellinen tilanne sekä ulkomaankauppa käydään seikkaperäisesti läpi jonka jälkeen satamien välisiä kuljetusvirtoja tarkastellaan yksityiskohtaisemmin. Jokaisen sataman tunnusmerkit, sisältäen vahvuudet ja heikkoudet, esitellään asiantuntijahaastatteluihin perustuen.

Tämä tutkimus on kirjoitettu hyväksikäyttäen sekä ensi-, että toissijaista aineistoa. Ensisijainen aineisto kerättiin suorittamalla haastatteluita sekä lähettämällä sähköpostikyselyitä. Toissijainen aineisto saatiin kirjallisuuskatsauksella, yritysten www-sivuilta, sekä keräämällä tilastoja. Raportti on jaettu kahteen pääkappaleeseen. Ensimmäinen osio keskittyy kysyntään vaikuttaviin tekijöihin ja toinen osio esittelee tulokset PENTA satamien välisistä rahti- ja matkustajavirta-analyysista.

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# 1 INTRODUCTION

## 1.1 Background

Today's business environment is creating new challenges for the transport industry and maritime traffic. Ports have to adapt to continuous changes in economic structures, logistics demands and shifting travel and leisure patterns. In order to ensure the competitiveness of sea connections, ports need to fully enhance their multilateral cross-border understanding and cooperation.

The Ports of Stockholm, Tallinn, Helsinki, Turku and Naantali play key roles in making the Central Baltic Region accessible for cargo and passenger traffic. Effective and competitive port procedures and sea transportation solutions between the five cities are of major importance for trade between the regions of the port and also on the wider international scale. Specifically, the ports serve as the main gateways for international trade between Estonia, Finland and Sweden as well as a transit route. Sea routes between the five cities are also significant for the mobility of individuals. Frequent ferry connections facilitate tourism and business connections, enabling cross-border working and family visits. For the interconnectivity, growth and sustainability of the port regions and countries, these ports are critically important.

This report is a part of the research project PENTATHLON – the Ports of Stockholm, Helsinki, Tallinn, Turku and Naantali (PENTA), which is managed and coordinated by the University of Turku, Centre for Maritime Studies. The partners carrying out the project are TFK Transport Research Institute from Stockholm and the Estonian Maritime Academy from Tallinn. The purpose of the project is to explore alternatives and develop measures so that the five ports can better comprehend and face current and future challenges and increase their competitiveness. The PENTA project is divided into four work packages; this report belongs to work package two "Passenger and cargo flows and their future estimates". The report reflects the view of the author. The Managing Authority of the INTERREG Central Baltic IV A Programme cannot be held liable for the information published in this report.

## 1.2 Purpose of the study

The purpose of this study is to present the cargo and passenger flows between PENTA ports and the development of these traffic flows post year 2000. In addition, it analyses the drivers of demand and points out common factors at the ports. It especially focuses on liner traffic between the five ports since the majority of the interviewed companies represent the transport industry. The results will be used in a second report that will make scenario-based traffic forecasts.

## 1.3 Structure of the report

This report is based on primary and secondary data. Primary data was obtained through interviews and mail surveys; secondary data from relevant literature, statistics, and information available on webpages. The report is divided into two main sections. The first focuses on the drivers of demand. The drivers were identified by conducting interviews and literature-based research. The second presents the results of current cargo and passenger traffic between the PENTA ports.

## 1.4 Carrying out the interviews

Interviews, as a method of obtaining information, were chosen due to the wide range of companies and stakeholders in the transportation industry. Conducting personal interviews was considered to be the best way to attain the knowledge required for the scenario-based forecasts. The personal interview also allows the conversation to move beyond the questions set, which is more effective than sending out questionnaires. The interviews also supported the assumptions that were made based on the statistics.

The goal of the interviews was to identify the key drivers of demand at each port as well as create a vision of future cargo and passenger flows between the PENTA ports in 2020. The interview contained seven themes (Appendix 1):

1. Key factors for demand and drivers affecting port-to-port flows
2. Cargo traffic
3. Unitized traffic
4. Transit traffic
5. Passenger traffic
6. Vessel traffic
7. Other arguments concerning essential and possible future developments in cargo or passenger traffic between PENTA ports

In total, 29 interviews were conducted for this report. The interviewed companies included PENTA ports, shipowners, international logistics companies in each country, and one tourism agency (Appendix 2). These companies were chosen due to their considerable involvement or connection to the cargo or passenger traffic between the PENTA ports. Special knowledge of each company and a willingness to participate in the project also influenced the selection process. The interviewees consisted of CEO's, directors, board members and managers with several years of expertise. The interviewees were approached by email and phone calls. Interviews were conducted by the author in Finland, by Maria Mustonen and Janni Jensen (Transport Research Institute) in Sweden, and by Tõnis Hunt (Estonian Maritime Academy) and Reima Helminen (Centre for Maritime Studies) in Estonia. Some interviews were recorded but mainly notes were taken. Interview duration was approximately one hour.

The material gained through the interviews is mainly very comprehensive apart from some minor restrictions. Questions regarding the future development of liner traffic

were seen as difficult to answer, even though some factors affecting the development process are known. Also the upcoming sulphur-directive divided opinions over whether or not it will increase or decrease traffic between PENTA ports. Most of the interviewed companies handle freight, which is why the emphasis of this report is on cargo traffic. Information regarding passenger flows is provided by the shipowners and the tourism agency.

# 2 DRIVERS OF DEMAND

Maritime transport moves around 6 billion tonnes of freight every year. Nearly half (45%) of this freight is liquid bulk, 23% dry bulk and 32% general cargo. Freight movements vary according to region, commodity in question, and the origin or destination of the freight. Within the EU, the ports sector handles over 90% of the Union's trade with third countries. Approximately 30% of the intra EU trade is transported by sea and the EU ports handle over 200 million passengers annually (Mangan et al 2008). More than 50,000 vessels pass annually the Skaw, at the northernmost tip of Denmark, on their way in or out of the Baltic. Between 60% and 70% of those vessels are cargo vessels and 17% to 5% tankers (Baltic Master 2006). Ports and maritime transport play a crucial role in global trade and mobility.

The emphasis on the role and efficiency of ports has increased in recent years. The role of ports as a part of a supply chain can vary from a simple transhipment hub to an important logistics node, depending on who the users of the ports and what their supply chain strategies are. During recent decades, transportation costs per unit have decreased while unit inventory costs have increased. The imbalance between transportation and storage costs has led to the use of the just-in-time (JIT) concept, which decreases inventory levels and increases delivery frequency. Technological developments in production facilities and supply chains have facilitated demand-driven production, especially lean production and postponement manufacturing. Lean production means the flexible production of semi-manufactured goods, whereby the production facility can be reconfigured within hours instead of days to switch between products. Postponement manufacturing means the production of semi-manufactured goods according to a demand forecast at a central production facility, after which they are shipped to assembly facilities near the market. This results in very short lead times and quick fulfilment (van de Riet et al 2008). All these developments have an effect on the traffic between PENTA ports.

## 2.1 Cargo traffic

Cargo traffic is a basic component of the worldwide economy. After decreasing in 2009, international shipping experienced a rise in demand in 2010. With a brightening world economic situation, cargo traffic recorded a positive turnaround, especially in the dry bulk and container trade segments (UNCTAD 2011). The increase in cargo shipments alone does not explain the increase in maritime transport. Changes in supply chain operations and management, including increasing freight distance with global sourcing and the trend towards smaller and more frequent deliveries of goods, have also had an effect. In order to identify the drivers of demand in cargo traffic, one must understand the demand choices made by several decision-makers that are involved in the transport chain. These include shipment choices, mode choices, time-of-day choices and route choices. In the PENTA project where the focus is on regular liner traffic between PENTA ports, the demand choices and options are limited. Figure 2.1 illustrates the drivers of demand in cargo traffic and the demand choices. The main drivers are Gross

Domestic Product (GDP), Consumer Demand, Economic Structure, Logistics System and Mode Characteristics. These are presented more thoroughly below.

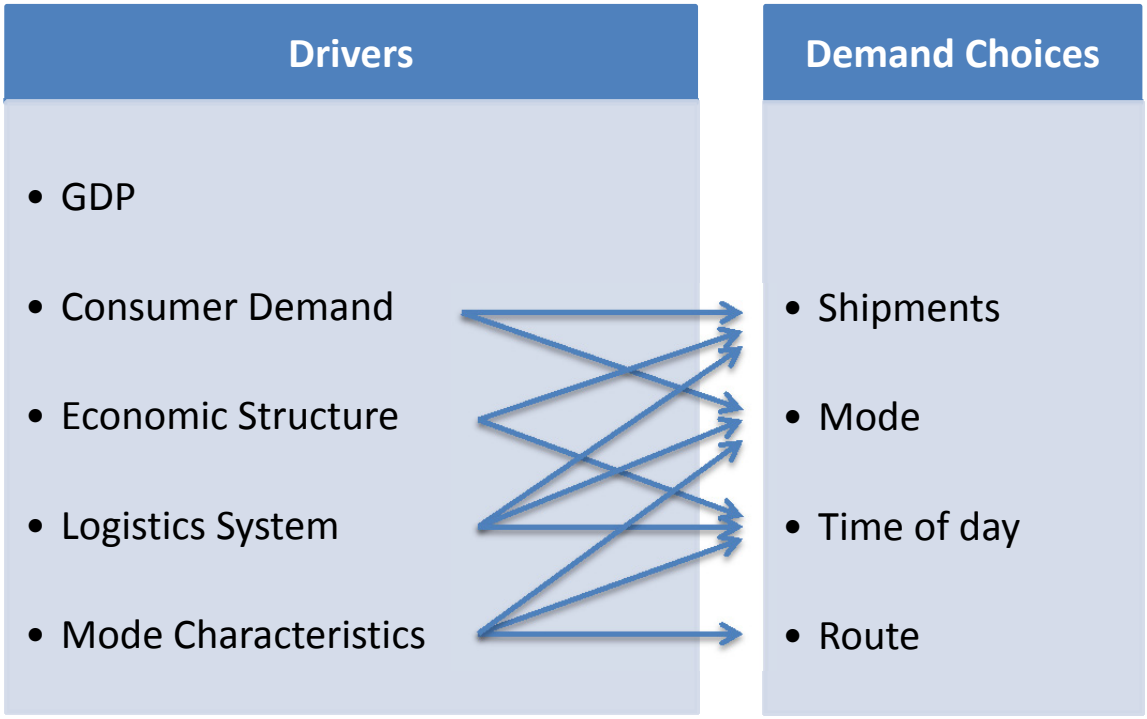


*Figure 2.1. Drivers of Freight Transport Demand. (van de Riet, de Jong and Walker 2008, edited by author)*

### 2.1.1 Gross domestic product

GDP has traditionally been considered one of the key indicators for explaining the changes in cargo traffic demand. The World Bank has conducted a study based on data from the 1980's to investigate the relationship between GDP and traffic demand. One of the results of this study was that the variation in GDP measured by purchasing power parity (PPP) alone explained 81% of the variation in total tonne-kilometres by road, rail and water (Bennathan, Fraser & Thompson, 1992). The interviews conducted for the PENTA project support the assumption that GDP and economic conditions are considered the most important drivers of cargo traffic. A growing economy has an effect on trade and future freight between countries. On the other hand, immaterial commodities and expensive small electronics do not require heavy transport, which is why economic growth is not generating as much traffic as previously.

### 2.1.2 Consumer demand

Although GDP is the primary driver when it comes to cargo transport demand, it is only an indirect driver. GDP growth drives demand through its influence on the size of consumer demand and on the sectoral structure of the economy. Consumer demand as a

driver of freight has three elements: the size, spatial concentration and the variety of the consumer population (van de Riet et al 2008). Helsinki, Stockholm and Tallinn are good examples of cities where a large population – and thus potential consumer demand – are concentrated close to ports. All RoRo shipping companies carry basically the same goods with only minor differences. However, neither the ports nor the shipowners have any detailed information on the commodity groups which are shipped. A general idea of the goods being transported can be obtained by making a cross-section of all trade between the countries by looking at foreign trade statistics for each country. Detailed information about consumer demand, however, would be very useful for ports in developing their business.

Ports and shipowners do not directly serve the cargo-owners or consignors (exporters, importers or wholesalers). For this reason it is hard for ports to define who the customers of a port actually are, what type of cargo is being transported and where the cargo is destined. Logistic companies serve cargo-owners who represent various industries which either manufacture or sell physical products (Figure 2.2).

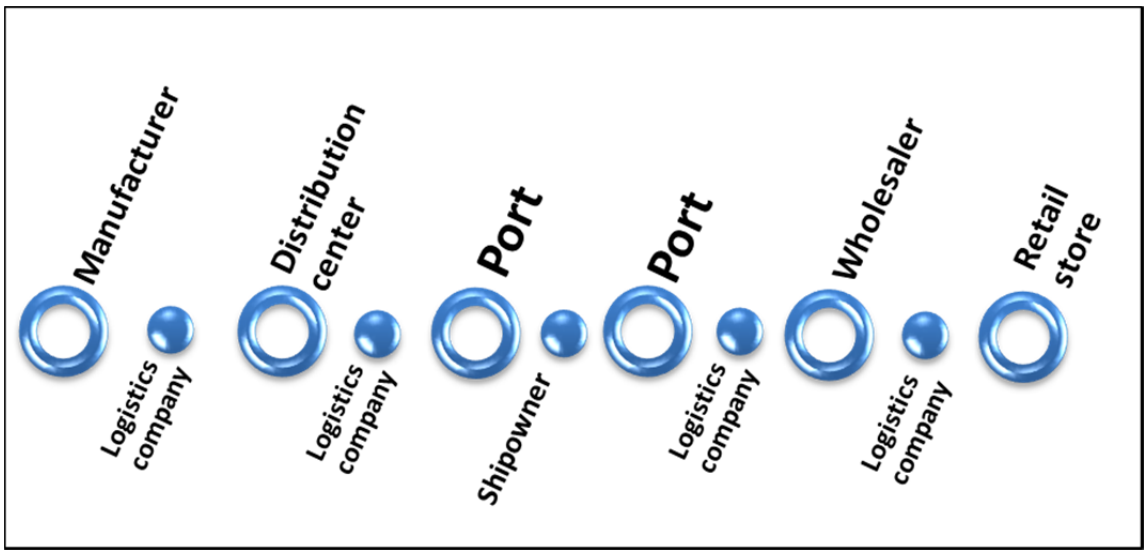


*Figure 2.2. Different parts in the sea transportation supply chain.*

Unitized cargo contains e.g. foodstuffs and other fast moving consumer products but also machinery, forestry products and other industrial goods. One truckload or shipment may include over hundred consignments, which further complicates the gathering of detailed information about the goods. Another reason why ports or shipowners do not have accurate figures for cargo is because they do not need to know. At the moment there is no obligation to declare any detailed information of the unitized cargo in intra-EU trade. In some cases there may not be even an interest to have statistics about the cargo on board. Ports, shipping and logistic companies do have a general awareness about the nature of the cargo, but for them the first priority is that all operations are legal and conducted according to rules and regulations.

### 2.1.3 Economic structure

Economic structure as a creator of the demand for cargo traffic can be divided into four elements: sectoral structure, trade patterns, communication patterns, and time routines (Figure 2.3).

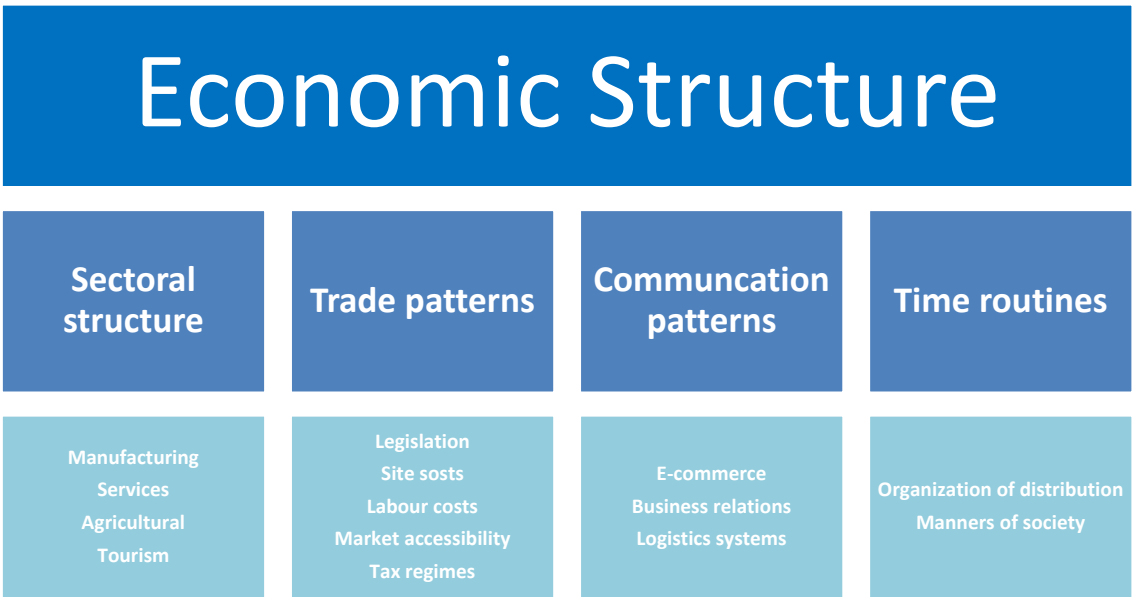


*Figure 2.3. Economic structure as a creator of cargo traffic (van de Riet, de Jong and Walker 2008, edited by author).*

Sectoral structure refers to the structure of an economy. The subject of the study is the sectoral share which adds value. Different sectors include, for example, services, tourism, the manufacturing sector and the agricultural sector. Trade patterns are currently changing rapidly. The globalisation effects of the world market mean that businesses tend to seek comparative advantage by arranging facilities in different ways than they have previously, so as to benefit from low labour costs, tax regimes, site costs, market accessibility and flexible legislation. Communication patterns refers to the way logistics systems and business relations are maintained. In this context it also includes e-commerce, which has been increasingly adopted for both B2B and B2C communications. According to recent studies, B2B accounts for 85% to 90% of all e-commerce. Time routines in this context refer to how a society organises time. Traffic and distribution may be organised over certain time periods to avoid traffic jams and noise pollution. Because of this, there can be only certain hours per day or certain days per week when moving cargo is allowed. Night traffic may also be banned if it disturbs people. The number of stops allowed can be limited and the cumulative effect of the above can be to force truck operators to use their equipment and personnel in suboptimal ways (van de Riet et al 2008).

One of the most important drivers of cargo traffic is the macro-economic situation in each country. The persons interviewed for this report stressed that freight traffic is dependent on the state of the market and economic development, which in turn can be influenced e.g. by the EU or a member state's financial policy. Governments can

influence the business environment e.g. by regulating the level of taxes, which in turn influence general price levels. Regarding trade patterns and time routines, the interviewees stated that evening departures between Monday and Wednesday are the busiest for cargo traffic between Finland and Sweden. Viking Line and Tallink Silja are even willing to offer cheaper prices for morning departures, especially for truck drivers. When shipping to Germany, Mondays and Tuesdays are least favoured because it is economical to load cargo on Thursday or Friday and keep it in stored on board over the weekend. According to the interviewees Poland, the Czech Republic and Estonia are volume-wise becoming very important manufacturing countries. Estonia delivers semi-finished and prefabricated products. Poland delivers goods for further upgrading whereas the Czech Republic usually delivers ready-to-sell products.

### 2.1.4 Logistics systems

The logistics system used affects the number of freight shipments, trip lengths and mode choices. A system includes three elements: inventory management, supply chain management and the spatial organisation of supply. The just-in-time concept, lean production and postponement manufacturing – as parts of the inventory management and supply chain management – have had a strong influence on sea transportation. The importance of the reliability of deliveries, predictability and the sharing of information regarding shipments has increased. Companies' aspiration to decrease inventory costs has created a need for more frequent deliveries which in turn has increased the demand for transports in general (van de Riet et al 2008).

Another development in supply chain management is the increased use of distribution centres and hub-and-spoke systems to reduce the costs of distribution facilities, transportation, warehousing and inventory. Inventory centralisation results in longer routes in general but it also leads to the use of larger vehicles, which are more economical in terms of cost per tonne. Furthermore, it makes non-road, long-haul transport more attractive, even though road transport remains necessary (van de Riet et al 2008).

Hub-and-spoke systems have become part of harbour networks. However, for sea transport and related road transport the new operational logic is not unproblematic. The most important thing from a logistics company's point of view is to provide fast and reliable deliveries for customers, which is why the frequency of vessel departures is high. The interviewees stated that getting a place for a truck on a ferry is a constant problem as cargo traffic works on a logic first-come, first-served basis. Advanced bookings for the vessels cannot be made, thus trucks must be on the move extremely early in order to secure a place on a vessel. Due to that problem, freight often has to wait in a port area a long time before departure. Such goods transportation is not very reliable. Sometimes logistics companies even have to refuse assignments because there is no room for their customers' cargo on the vessels. This problem could be solved with better freight planning or better co-operation between participants in a transport chain. In addition, trade imbalances between different countries create problems for shipping companies and their customers. For example, the route between Tallinn and Stockholm

has a capacity problem but only when shipping from Estonia to Sweden. The route from Paldiski to Kapellskär shares the same problem but when returning the ship is half-empty. The imbalance in exports and imports cannot be solved by transport operators alone and they must co-operate with cargo-owners from all industries – metal, paper, technology, etc.

### 2.1.5 Mode characteristics

Mode characteristics include the availability of transportation modes, vehicle capacity, travel costs and travel time. As a driver of demand it is small compared to GDP, economic structure and logistics systems. Mode characteristics primarily affect the choice of mode; a consequence of which time-of-day and route form the demand choices (van de Riet et al 2008). According to the interviews, logistic infrastructure and pricing are often the important factors when choosing the port and operator. Around 40% of the unitized cargo in Viking Line and Tallink Silja are trailers without trucks. This requires services from stevedoring companies, which is expensive because the services are labour intensive. The dependence on a workforce to maintain the service makes the loading and unloading of RoRo-cargo vulnerable – as the strikes of the Finnish Transport Workers' Union have proved. Conversely, the interviewees considered the possibility to leave a trailer in a port's area an advantage.

Although the spatial concentration of population and consumer demand account for many of the differences in average freight transport distance, variations between facility locations can also be a factor. The locations of raw materials needed in a production process tend to be fixed; as is the location of the end-users of the products in question. However, there are a number of other operations and processes which are not site specific and which can have various locations. These "footloose" industries are often responsive to economic incentives (van de Riet et al 2008). In general the market determines the size of the freight and the urgency of the delivery. Service between the PENTA ports is fast, comfortable and reliable. From a logistics company's point of view there are not many options when choosing the port and usually the closest or most convenient will be selected. Demand for cargo shipments is occasionally higher than available capacity. Investment in new vessels is very high but, on the other hand, freight shipments do not require entertainment on-board, which is why the first step would be to increase the utilization of older vessels. According to interviews the number of transported trucks and trailers will increase in future as the gap between price levels of Finland, Sweden and Estonia narrows. The demand for a new shipowner, with a similar concept to Finnlink but a different kind of capacity, thus exists.

Industrial production requires raw-materials and energy thus the transportation of cargo will always exist. Centralised manufacturing is a current trend that will further increase the need for transportation. For a logistics company transporting goods, the cheapest route is usually selected. For the PENTA ports this usually means the shortest route, but in Europe the calculation changes as road tolls, labour costs, the use of rail and the cost level of the country have to be taken into consideration. Origins and destinations in one shipment may be hard to determine because cargo is picked and left along the whole

transport route. However, accurate information about cargo traffic is not usually available, which is a disadvantage from the transportation industry's perspective. Thus, the companies in the industry would obviously appreciate more and better information to develop the services they offer. Nevertheless, very detailed information that is easily accessible could be harmful for companies already working in the transport sector because it would ease the market entry of rival companies. Hence, detailed information can be compared to confidential trade secrets.

## 2.2 Passenger traffic

The economics of the ferry business are complex. Large companies generally operate ferry services because of the large amount of marketing required and the expense of the ships. There is intense competition with other ferry operators serving the same destinations and routes. The level of on-board accommodation and services, the speed of the vessel and its frequency of service are all key issues when factors affecting demand are studied (Stopford 2009). Figure 2.4 presents the drivers of demand for passenger traffic.

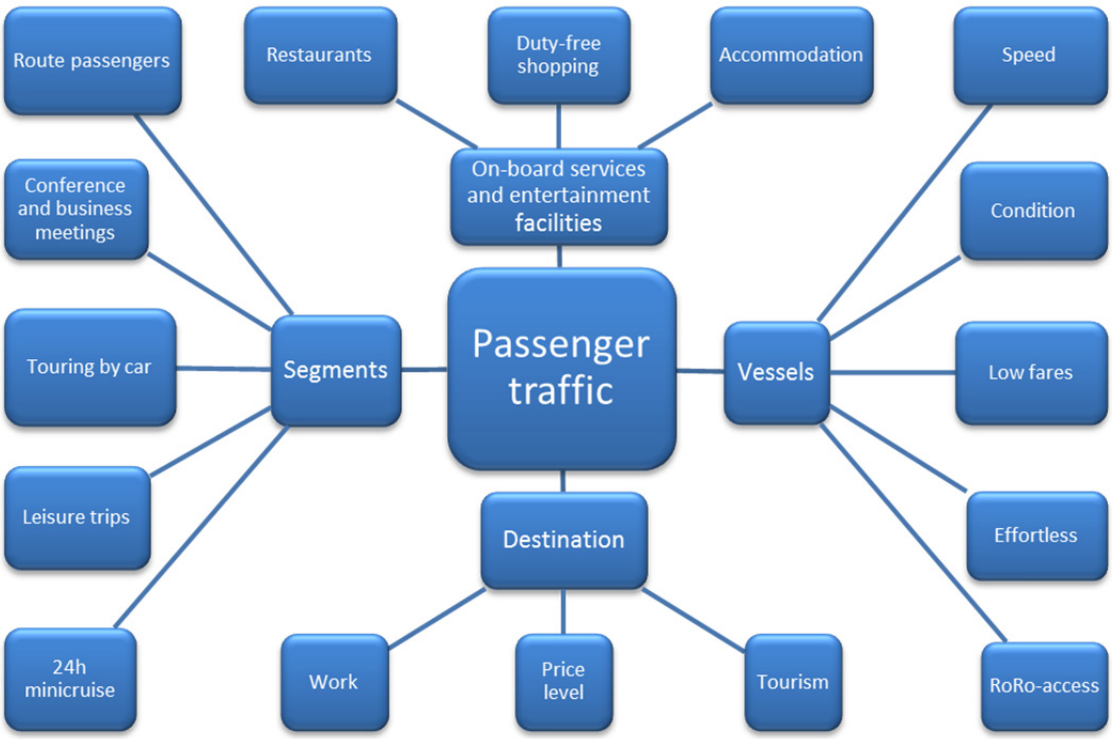


*Figure 2.4. Drivers affecting passenger traffic between PENTA ports.*

The vessels used in the passenger traffic share many common characteristics such as RoRo-access, vehicle decks, accommodation for passengers and entertainment facilities. However, ferry fleets are extremely diverse and there are several sub-segments within the global ferry business. The design of a ferry depends on the service for which the ferry is intended and this is where the ferry and entertainment businesses overlap. Ferries used in the Baltic Sea transport people, goods and vehicles over short distances.

They are usually very large RoRo-ferries which carry up to 3,000 passengers and 650 vehicles. The opportunity to entertain passengers during their journey generates a profitable income stream and it is one of the main motivations for the shipping companies involved in the ferry business in general, especially with ferries operating on the Baltic Sea. On short sea crossings, such as the two-hour crossing between Helsinki and Tallinn, the services offered for passengers typically focus on restaurants, shopping facilities and seating areas. On longer voyages, such as on a route from Turku to Stockholm cabins are provided and passengers are offered a 24h mini-cruise with a variety of entertainment (Stopford 2009).

A large proportion of the population in Estonia, Finland and Sweden is concentrated close to PENTA ports. Due to this, the demand for passenger traffic is very high since going on a ferry-trip is relatively effortless. However, a key factor which separates passenger and cargo traffic is that companies can market and promote to increase passenger traffic volumes. In contrast, cargo traffic is almost entirely reliant on world economics and there is not much the transport industry can do except offer new attractive routes. According to the interviewees, passengers that make leisure trips would prefer it if ships built in the future could carry more cars instead of trucks. Allowing more passenger vehicles to enter ferries would facilitate the growth of tourism, especially on the route Via Baltica. Touring by car is a significant and growing form of tourism in Europe – partly because of the downturn in world economics and the willingness of people to travel independently – and PENTA ports and cities could be part of that. Vessels operating between Helsinki and Tallinn could also expand their selection of on-board activities to attract new customers and keep existing customers satisfied. For example Tallink Silja has done much promotional work in Sweden and Finland to promote Estonia as tourism destination as well as creating service packages: ferry trips including hotel, taxi transport and spa services.

Passenger traffic between Finland and Sweden is substantially dependent on a permanent exemption from the European VAT rules. The selling of duty-free products on the routes via Åland plays an important role in its seaborne transport, contributing to economic sustainability for the whole area. Although shopping between Helsinki and Tallinn is not tax-free, passenger flows are still very high primarily due to the lower price of alcohol in Estonia (Mikołajczyk 2012). According to the interview information, the largest driving force behind passenger traffic is the tax free system or the already low prices on board. Marketing related to passenger trips between the three countries is very intense and prices for the ferry trips are already low. This drives demand up even further. According to shipowners, passenger traffic between Finland and Sweden has been steady for twenty years and there is still demand. However, changes to the tax-free policy and vessel condition could make a difference.

Ferry traffic in the Central Baltic Sea Region can be divided into four business areas: passenger and car transportation, short cruises, freight, and conference or business meetings. The demand for passenger and car shipping is highest during summer but cargo transportation complements business during autumn and winter. This flexibility, together with high frequency of departures enables traffic on the main sea routes all year round. The tax-free supported logistical system further assists with maintaining low

fares and high capacity. The possibility for duty-free sales on board is key to the success of this ferry segment (Mikołajczyk 2012). The customer segment travelling between the PENTA ports varies a lot. In 2005, Viking Line reported that half of the passengers travelling between Helsinki and Tallinn were tourists and the other half were business travellers, commuters and cruise visitors. Linda Line reports that although the share of business travellers and commuter is growing, it will never outnumber the share of tourists (Helsingin Sanomat 2005). A large customer group is passengers travelling with their own cars. In September 2010, Tallink Group reported that the company's passenger traffic increased 9.1% and at the same time the number of cars increased 17% (Tallink 2010). In addition, other customer groups include regular passengers and group passengers. Other important passengers segments travelling between the PENTA ports are conference passengers and people travelling onto further destinations with tour-operators.

As with freight transport, departures at the beginning of the week are the biggest challenge for shipowners carrying ferry passengers. Senior citizens are a potential group which could be interested in these departures. Due to the large amount of passengers travelling by car in the summertime, separation into ferries transporting only passengers or freight could be a good solution for solving capacity problems on routes to and from Stockholm. This applies especially to Värtahamnen during summertime. Both tourism and transportation industries could benefit from this idea. When considering future demand, there is also a need for a new passenger route between Turku and Tallinn. The distance should not be the issue since the Turku-Tallinn route is actually shorter than the Turku-Stockholm route. However, the new line would undoubtedly decrease existing traffic between Turku-Stockholm and Helsinki-Tallinn. Therefore, for shipowners who operate the existing ferry routes, establishing a new ferry route is not an economically feasible option. The establishment of a totally new operator for this route would not be easy either, since it would requires much capital and the ports would prioritize their old customer relationships. A good example of a recently established line is the route between Helsinki and Saint Petersburg operated by St. Peter Line. The driving forces behind this line are Finnish interest in visiting Saint Petersburg and the willingness of Russians to gamble on board, which is mostly illegal in Russia.

# 3 CARGO AND PASSENGER TRAFFIC BETWEEN PENTA PORTS

This chapter presents the structure of the economy and foreign trade in Estonia, Finland and Sweden, and presents detailed traffic flows between PENTA ports. An overview of each country is given in order to explain the nature of the different traffic volumes at the ports.

A country's most important trading countries are usually its neighbouring countries – and this applies to the PENTA countries. Only trade between Sweden and Estonia is an exception as their population sizes and national economies are so different. Sweden has a bigger population, more natural resources and economic activities, which naturally reflects the relationship between domestic demand and exports. The importance of the trade between the neighbouring countries is emphasised by the great amount of liner-traffic between the PENTA ports. Also, Tallinn, Helsinki and Stockholm, as the capitals of each county, serve the metropolitan areas and the biggest population and company concentrations. The ports of Turku and Naantali serve freight traffic which is directed to Scandinavia and Central Europe. PENTA ports thus represent main arteries in the handling of both unitized cargo and passenger traffic.

## 3.1 Economy and foreign trade

The value of the trade between Finland, Sweden and Estonia is remarkable. In 2011, Finland imported goods from Sweden worth over 6 billion euros and exported nearly 7 billion euros worth. For Estonia imports and exports amounted to around 1.5 billion euros; imports from Estonia were a little higher in value than exports (Finnish Customs 2012). From the Estonian perspective, Finland is its most important trading partner (measured by total trade turnover) and Sweden is in the second place. In the first half of 2010, Estonia was 26$^{th}$ among Sweden's export partners, receiving 478 million euros or 0.7% of Sweden's exports. In the first half of 2010, Estonian exports to Sweden were worth 557 million euros, placing Estonia in 21$^{st}$ place among the countries Sweden imports from (Estonian Embassy in Sweden 2011).

### 3.1.1 Estonia

The capital region, Tallinn is the core of the Estonian economy. Approximately one third of all Estonians live in Tallinn. The majority of the foreign direct investments and industrial activity in the country are also concentrated there causing social imbalance (Eurostat 2004). Besides Tallinn, many other cities are important in economic terms. Their attractiveness is partly based on their lower cost of living. Tartu, for example, is the centre for education and research in Estonia (Baltic Maritime Outlook 2006). However, the economic differences between the different regions inside the country are still rather large.

The economy of Estonia is liberal and market-based, and the government has pursued balanced budgets and low public debt. After regaining independence from the Soviet

Union in 1991, markets in Estonia have been among the most advanced emerging from Central and Eastern Europe (Estonian Chamber of Commerce and Industry 2010). The main field of economic activity in Estonia is real estate, renting and related business activities, which have a share of 20.1% of total GDP. They are followed by manufacturing, which has a share of 16.8%; third is wholesale and retail trade with 12.4%. Transport, storage and communication is fourth with 11.4%, and other industries have less than 10% each (Estonian Embassy in Helsinki 2011).

The Estonian economy benefits from strong telecommunications and electronics sectors. It is also greatly influenced by developments in Finland, Sweden and Germany, which are most important trading partners for the country. Estonia has a strong food processing and textile industry. The country is characterised by small enterprises and diversified production. However, it is dependent on imports for energy and raw materials (Baltic Maritime Outlook 2006).

The main ports of Estonia are located in the northern part of the country. In combination with the well-developed rail connection to Russia, Estonia serves as a major transit corridor between East and West (Estonian Chamber of Commerce and Industry 2010). In the middle of global economic recession in 2009, the export of Estonian goods was worth 6.5 billion euros and 8.5 billion in 2008 (Estonian Chamber of Commerce and Industry 2010). The main fields of export include machinery and appliances (22.6%), mineral products (15.7%), and agricultural products and food preparations (9.6%). Other important commodity groups are wood and wood products (9.1%) and metals and metals products (9.1%). In 2010, Finland was the most important export partner with a share of 17%, followed by Sweden with a share of 15.7% (Estonian Embassy in Helsinki 2011).

In 2009, the value of exports to Estonia decreased from 10.9 billion euros to 7.3 billion. The main Estonian imports were machinery and appliances (23.5%), mineral products (17.4%) and agricultural products (11.0%). Metals and metal products, chemical products and transport equipment were next with a share of less than 10% each. Finland is the biggest exporter with a share of 14.9%. Germany and Sweden (10.9%) are second and third, respectively (Estonian Embassy in Helsinki 2011).

### 3.1.2 Finland

The highly industrialised economy of Finland is based on manufacturing. The economic concentration in Finland is very similar to Sweden, where rapid growth has favoured urbanised areas since the end of the 1990's recession. The production of food is concentrated in the Western parts of the country and the forest industry is concentrated in the east and centre of the country. The electronics, technical and telecommunications clusters have been based in Salo (southwest Finland) and Oulu (northwest Finland). The metal and mechanical engineering sectors are most strongly represented in northern Finland and the Helsinki area has unquestionably the largest economic concentration in Finland (Baltic Maritime Outlook 2006). Industry and trade are the largest sectors in Finland when measured by turnover. The share of industry as a part of total turnover is

approximately 40%, while trade is 30%. The share of other branches is less than 10%; the largest is building followed by transportation and storage (Statistics Finland 2009).

The biggest industries in Finland are the machinery and metal industry, and electronics and the electrical industry. The technology industry as a whole produces nearly half of the total volume of the manufacturing industry sector. The share of the chemical industry accounts for a little over 20% of the total industrial output and the paper industry approximately 19%. The structure of industrial production in Finland is much changed. The relative share of the electronics and the electrical industries within total industrial output has increased strongly over the last twenty years. The share of the chemical industry has also increased over the recent years. Correspondingly, the paper and food industries have lost their shares (Elinkeinoelämän keskusliitto 2010).

The total value of the Finnish export of goods was about 52.4 billion euros in 2010. Exports increased by 16% over the previous year, which indicates that the economy is recovering from recession. The industrial structure of the exports has followed the changes taking place in industrial production. Products from the electronics and electrical industry accounted for approximately 15% of all Finnish exports in 2010. The forest industry share has fallen distinctly in the past 50 years. In the 1960's forest industry products accounted for 75% of all exports but only 20% nowadays. The share of investment goods within exports was 31% in 2010, while raw materials and capital goods accounted for nearly 51% of all Finnish exports. The share of consumer goods is close to 10% and energy products 8%. More than half of all Finnish exports go to EU countries 30% to the Euro Zone. In 2010 Sweden was the most important export destination for Finland with a share of over 11% (Elinkeinoelämän keskusliitto 2011).

According to Finnish Customs the value of imported goods was 51.1 billion Euros in 2010. Imports increased by 18% over the previous year. In 2010, roughly 19% of Finnish imports were energy products. The share of raw materials and capital goods was nearly 36% and consumer goods 25%. One fifth of the imports were investment goods. Russia is the biggest exporter to Finland due to large energy exports. Germany is second and Sweden third (Finnish Customs 2012). Finnish trade is fairly well balanced and a large part of the trade is so called crosswise-trade. The technology industry is the most prominent in terms of both imports and exports: its share covers nearly half of all volumes. Imports for the forestry industry and the export of energy products are fairly minor (Elinkeinoelämän keskusliitto 2011).

### 3.1.3 Sweden

Industrial production in Sweden is concentrated in sectors which use domestic raw materials, such as timber, iron and other metals. Besides these, the other important production sectors are wood pulp, paper and metal production, car manufacturing, the production of machinery, telecommunication and pharmaceutical products. The largest economic concentrations in Sweden are located in the three largest metropolitan areas; Stockholm, Gothenburg and Malmö, and also within and around cities and towns with higher education institutions. The common features for all these regions are favourable

labour market and employment opportunities. Therefore these regions attract inhabitants (Baltic Maritime Outlook 2006).

The relatively versatile economy of Sweden is very dependent on exports to foreign countries. Industrial production and building are responsible for 30% of the GNP, and the service branch accounts for about two thirds. The share of agriculture and forestry is minor – about 2% of GNP (Sveriges Ambassad Helsingfors 2011). Swedish ports handled 180 million tonnes of goods in 2010. Compared to 2009, the volume of goods increased by 11%. The total amount of foreign goods traffic in the Swedish ports was 115 million tonnes in the same year (Trafikanalys 2011).

According to the Swedish Trade Council, the export of goods in 2010 was approximately 126.6 billion euros (Swedish Trade 2011). The primary export commodities in 2011 were machinery and transport equipment (46.6%), minerals (12%), chemicals (11.4%), wood and paper products (10.6%), and energy products (7.9%). Sweden's biggest export partner is Germany with a share of 9.9%. Finland is the sixth biggest export partner with a share of 6.1% and Estonia is 24$^{th}$ with a share of 0.9%. Sweden's primary import commodities include machinery and transport equipment (42%), energy products (14.3%), chemicals (12.3%), and minerals (9.3%). The biggest exporter to Sweden is Germany with a share of 18.3%. Finland is the seventh biggest exporter with a share of 5.3% and Estonia is 14$^{th}$ with a share of 1.7% (Statistics Sweden 2012).

## 3.2 PENTA ports

The analysis of the PENTA ports presented in this chapter is based on a statistical survey and personal interviews. The purpose of the survey was to get detailed quantitative data about current and past traffic flows between PENTA ports. The interviews helped to explain certain patterns and trends which would have been difficult to understand otherwise. Strengths, weaknesses and drivers of demand were also discussed with the interviewees. In this study the emphasis is on liner traffic and RoRo-vessels. However, small-scale, irregular traffic and possible dry and liquid bulk are included in the original statistics as part of the total cargo. Detailed statistics can be found in Appendix 3.

While gathering the information on cargo traffic, a problem appeared – the data on current and previous cargo traffic is limited, scattered and varies depending on the source. This problem is most severe regarding cargo traffic statistics, whereas statistics regarding passenger traffic are more reliable. There are many reasons explaining the discrepancy in cargo statistics:

- Cargo traffic is the outcome of a series of choices made by various parties involved in the transport chain. These actors include e.g. forwarders, carriers, intermediaries, drivers and the recipients of cargo or consignees. Several of these are often involved in the same shipment.

- Cargo movements are measured in a variety of units. The most common are the monetary value of the cargo and the weight, length and quantity of the containers, trucks or trailers.
- Different organisations may have different definitions; sometimes a truck can be viewed as a van or vice versa.
- Different organisations also measure different things; shipowners sell lane-meters but the ports' main interest is the weight of the cargo.
- Comparable data may not be available because the compiling of statistics varies from country to country and by year.
- Data related to commercial operations is often confidential.

Due to the reasons mentioned above, the traffic figures can vary depending on the source, thus they should be viewed with caution.

In general, the geographical location of the port is the main factor when it comes to the demand for port services. A short distance between a port and an end customer often means low costs for the transportation companies which use the port's services. However, the eventual evaluation of a port's performance becomes complicated since a port normally provides space and infrastructure for operations. Other functions are operated by shipowners, terminal operators and other similar companies. Even though the performance of each of the individual companies located in the port area has a direct effect on the efficiency of other companies and their operating times, nobody is in charge of the transport chain they form together. Since multiple independent companies act in a port without common coordination, improving port performance is a difficult task for a port authority.

### 3.2.1 Stockholm

The Ports of Stockholm Group includes ports in Stockholm, Kapellskär and Nynäshamn. The central harbours in Stockholm – Stadgården, Frihamnen and Värtahamnen – handle both goods and passengers travelling between Finland and the Baltic countries. The ports of Kapellskär and Nynäshamn are outports that provide complementary services to the more centrally located ports. The Port of Kapellskär, located 90km north of Stockholm, plays a major role in the rapid transport of freight transported between Finland and Estonia. The Port of Nynäshamn, located 60km south of Stockholm, is a mainland port for traffic to the island of Gotland, and it serves ferry traffic operating on routes to ports in the Central and Southern Baltic Sea areas (Stockholms Hamnar 2011).

In 2010, the total freight traffic in the Ports of Stockholm amounted to 8,455,000 tonnes. From this amount the share of RoRo-traffic was 73.8% which equals 6,245,000 tonnes. Ports in Finland are the most important; receiving 70% of freight volumes. Baltic countries are also important and the markets are growing (Stockholms Hamnar 2011).

In Sweden the Ports of Stockholm serve traffic which mainly comes from the south of Europe. According to interviews, around 60% of the cargo transported from the Port of Stockholm to the Port of Turku is Swedish transit traffic. Regarding the routes between PENTA ports, the route between Stockholm and Turku is fast and highly utilized and evening departures are especially popular. Ships also arrive early and two departures per day are enabled. Figure 3.1 illustrates the cargo traffic of the Port of Stockholm showing the Port of Turku as the main destination by volume.

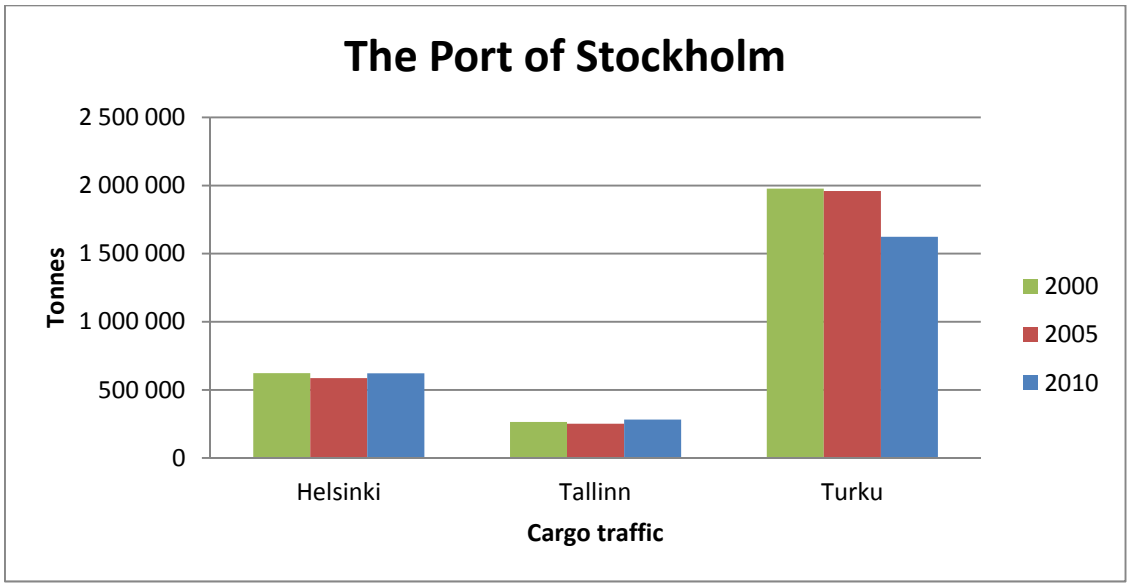


*Figure 3.1. Cargo traffic between the Port of Stockholm and other PENTA ports.*

A significant part of the freight departing from Sweden goes to the Helsinki region. The Stockholm to Helsinki route is generally used to avoid driving trucks on the roads in Finland. Road transportation is expensive and this is one of the main reasons why this route is used. The departure of the ferries from Stockholm is early in the evening and arrival time in Helsinki is quite late in the morning. Due to the timetable, using this route is fairly challenging for transportation companies. It does not help that the vessels of both shipping companies, Viking Line and Tallink Silja, depart at approximately the same time. However, this decision is made by the shipping companies, not ports. Part of the cargo arriving from Helsinki to Stockholm continues onwards to Norway, with, for example, fish going in the opposite direction. Cargo traffic volumes transported between Stockholm and Tallinn are lower and mainly include imports from Estonia.

Cargo traffic between Kapellskär and Naantali is very heavy, and traffic between Kapellskär and Paldiski is increasing. This is mainly because of the increasing amount of exports coming from Estonia. In figure 3.2, Paldiski represents both the privately owned North Harbour, while the South Harbour is part of the Port of Tallinn.

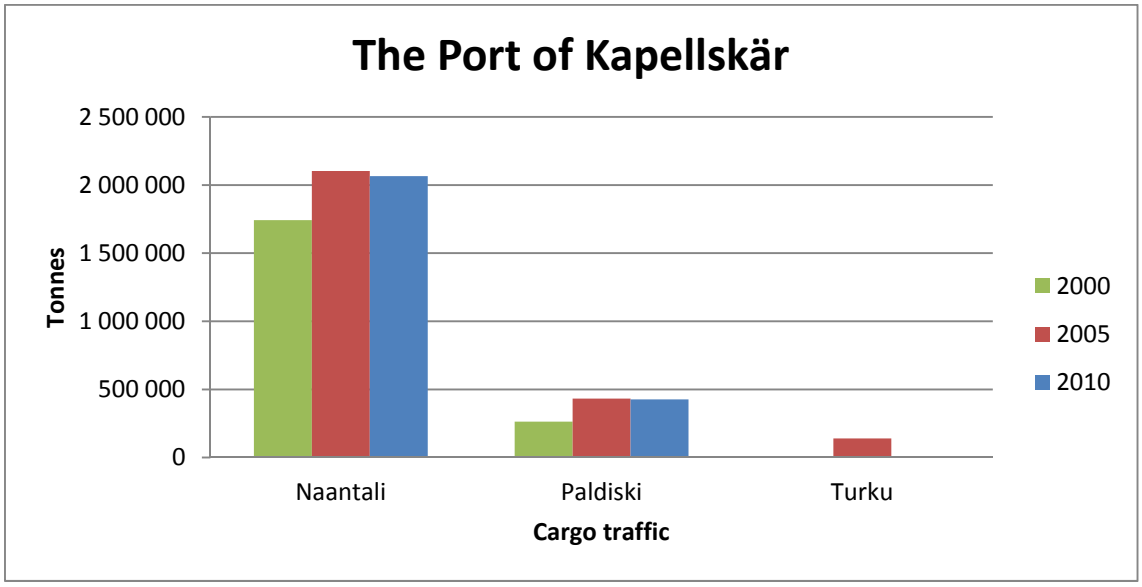


*Figure 3.2. Cargo traffic between the Port of Kapellskär and other PENTA ports.*

Based on the interviews the main strengths of the Ports of Stockholm Group are the ports of Kapellskär and Nynäshamn. The strength of Kapellskär is its geographical location to the north of Stockholm. However, it may be located even too far for traffic coming from the south. The location of a truck in Sweden is the determining factor when transportation companies choose between the ports of Stockholm and Kapellskär. Logistics companies decide, case by case, which port will be the most suitable when time of delivery and costs are taken into consideration. When shipping to Estonia, the route between Kapellskär and Paldiski is used more compared to the route between Stockholm and Tallinn. The choice is made on the basis of the shortest route and cheapest price. The route between the Port of Kapellskär and the Port of Naantali has heavy traffic with frequent departures and capacity is always guaranteed. Vessels do not stop in Åland which makes the line even faster. This route is also much shorter compared to the route between the Port of Stockholm and Turku. Truck drivers can easily avoid the traffic jams of Stockholm by driving around it. The line to Paldiski shares some of the same characteristics. It is also cargo only, which enables a better timetable and late departures. And, as with Naantali, the transportation of dangerous goods is also possible.

Even though the cargo volume shipped between the Port of Stockholm and the Port of Turku has decreased over time, the quantity of trucks and trailers has not changed. As can be seen from figure 3.3, those quantities to all destinations have actually increased between 2005 and 2010.

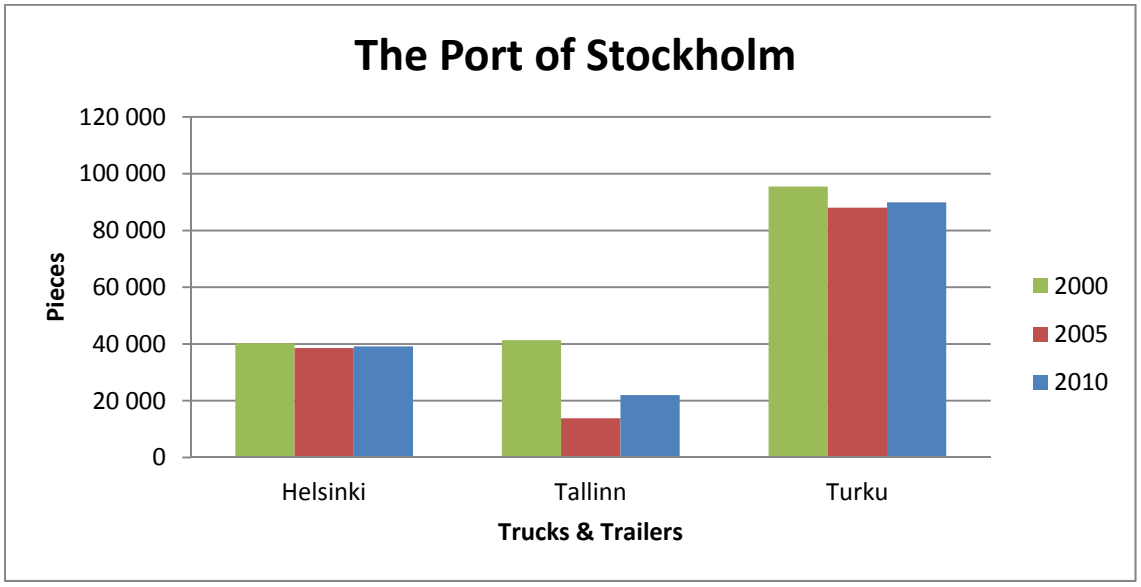


*Figure 3.3. Trucks and trailers between the Port of Stockholm and other PENTA ports.*

One of the drivers of demand at the Port of Stockholm is the close proximity of many consumers. Another is the railroad connection to Gothenburg, which is the main gateway for Swedish cargo traffic. On the other hand, the location of a port in the middle of the city is also a disadvantage. The city of Stockholm has far too much traffic combined with varying road infrastructure to and from the port. Its main weakness is the time getting in and out of the port. However, performance is improving due to road works, although interviewees consider Stockholm to be too crowded with heavy traffic. Stockholm's geographical location is also challenging. Furthermore, in the future, constraints related to speed limits may not allow the current timetable. Long waiting times at the dock are also expensive for shipowners. Hence, the Port of Stockholm has changed its working hours to reduce night shifts. From the point of view of a transport company, this is negative because trailers cannot be left in the port during the evening or night-time. The interviewees gave a variety of opinions on the future of this port. It was noted that a port located even more south than Nynäshamn would be useful for the Ports of Stockholm. On the other hand the Ports of Stockholm is currently planning a new port for rolling goods and container traffic at Norvikudden in Nynäshamn. The main reasons for this are an expanding Stockholm, larger ships and environmental benefits.

The quantity of trucks and trailers passing through the Port of Kapellskär has increased greatly between 2000 and 2010. Figure 3.4 shows the growth in traffic, of which traffic to Naantali is dominant.

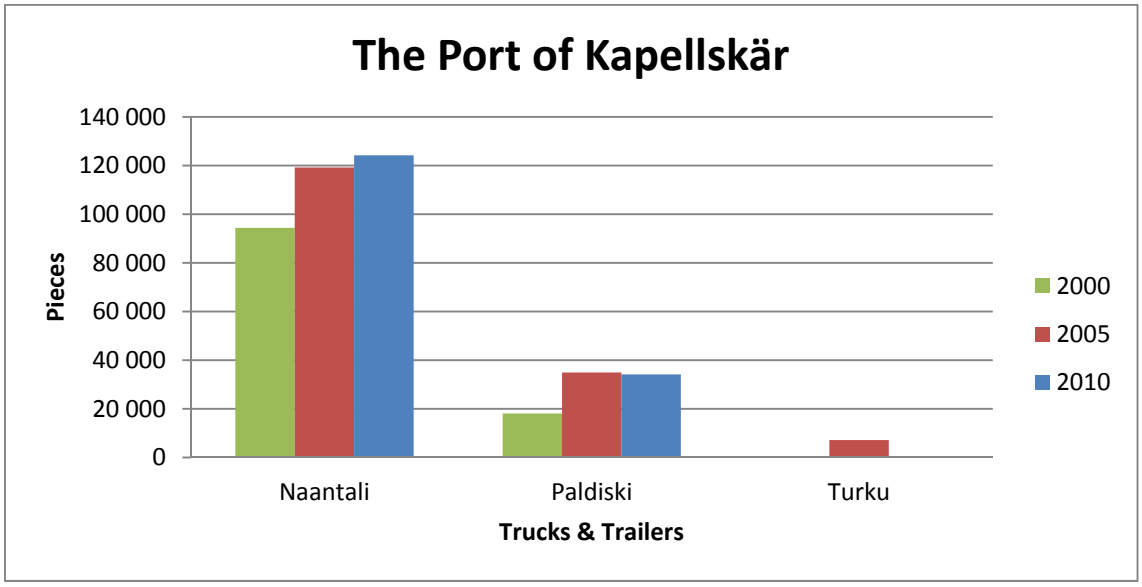


*Figure 3.4. Trucks and trailers between the Port of Kapellskär and other PENTA ports.*

With over eleven million passengers annually, the Ports of Stockholm is the busiest passenger harbour in the PENTA project. In 2010, Port of Stockholm had 9.1 million passengers travelling on ferries. Kapellskär and Nynäshamn had 0.9 million and 1.4 million passengers respectively. Passenger traffic between the Port of Stockholm and Finnish ports was 7.6 million and traffic between the Ports of Stockholm and The Baltic countries was almost 1.5 million. Travellers using regular ferry traffic account for over 95% of the passenger numbers while the international cruise sector is also showing rapid growth. Shipping companies such as Birka Cruises, BSL, Destination Gotland, FinnLines, Polferries, Scandlines, Tallink Silja, Viking Line and Ånedlinjen are the regular ferry traffic operators (Stockhoms Hamnar 2011). Figure 3.5 shows the development of passenger traffic between the Port of Stockholm and other PENTA ports. In 2005, ferries were operating between Turku and Kapellskär. This explains the decreased amount of passenger traffic between the Port of Stockholm and Turku as the traffic was then divided between two Swedish ports.

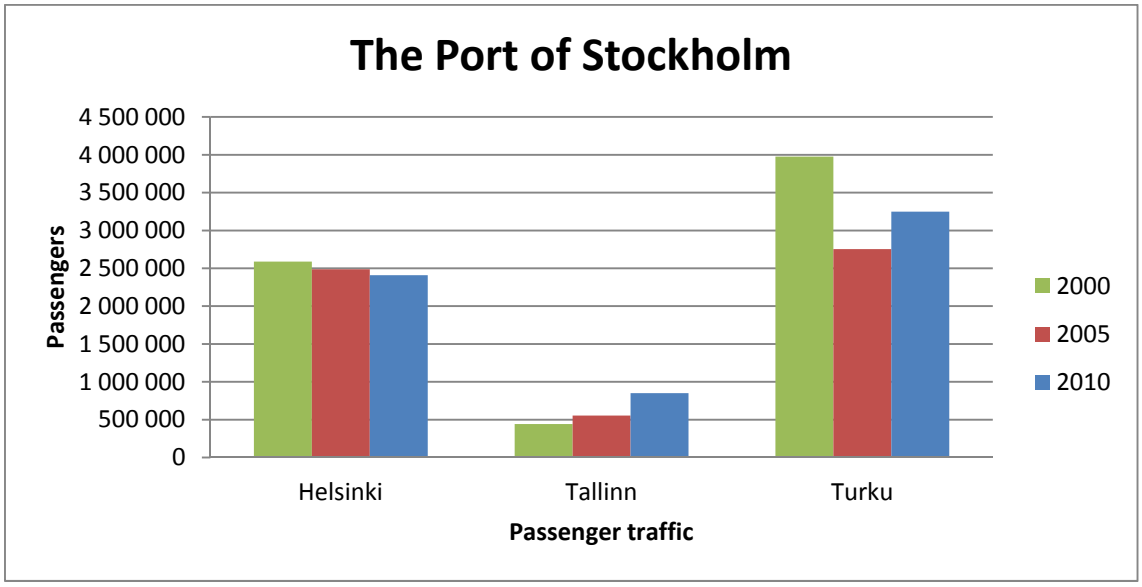


*Figure 3.5. Passenger traffic between the Port of Stockholm and other PENTA ports.*

Based on the interviews, passenger traffic is essential to the Port of Stockholm because without passenger traffic, some cargo would be directed elsewhere. Even though it takes time to go via Åland, the slower speed equals cost savings for shipowners. On the other hand, customers benefit by having tax-free prices, and the longer trips further assist on-board consumption. Figure 3.6 represents passenger traffic between the Port of Kapellskär and other PENTA ports. Most of these passengers are truck drivers.

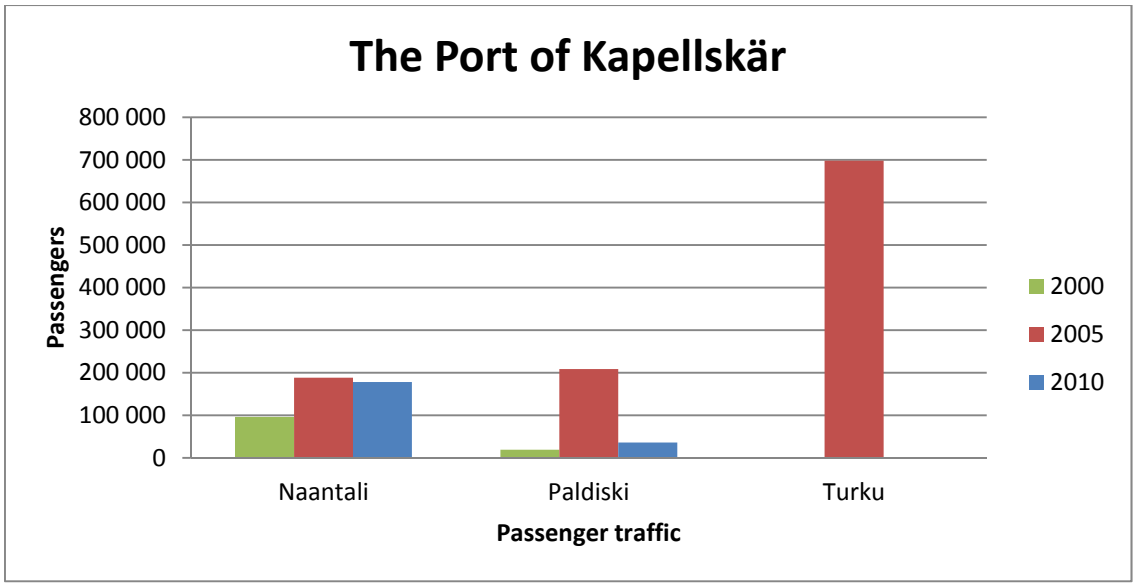


*Figure 3.6. Passenger traffic between the Port of Kapellskär and other PENTA ports.*

### 3.2.2 Tallinn

The Port of Tallinn consists of five constituent harbours. The old City Harbour is predominantly a passenger harbour where RoRo-cargo is carried by passenger liners and RoRo-vessels. Muuga Harbour handles containers, solid and liquid bulk goods, and general- and RoRo-cargo. Paljessaare Harbour is a cargo harbour which handles break bulk cargo, coal and oil products as well as timber and perishables. The strategic focus of Paldiski South Harbour has shifted to the handling of rolling stock goods and to the processing of Estonian import-export goods passing through Estonia in transit. Saaremaa Harbour has been designed for passenger vessels only (Port of Tallinn 2011).

In 2010, the total cargo handled by the Port of Tallinn was 36,650,000 tonnes. The import and export volumes were 3,774,000 tonnes and 3,228,000 tonnes, respectively which means that approximately 80% of all cargo is transit traffic. Liquid cargo is by far the biggest type of bulk that the Port of Tallinn handles – a volume of 25,731,000 tonnes. There were 151,969 TEU containers in 2010 (Port of Tallinn 2011).

Tallinn, as the capital of Estonia, has a very high demand for cargo and passenger traffic. The continual increase in freight traffic began with trade between Finland and Estonia but has spread to Eastern and Central Europe, including Latvia, Lithuania, Romania, Bulgaria, Poland, the Czech Republic, Slovakia and Austria. Finland is still the biggest foreign trade partner. Estonian companies often work as subcontractors for Finnish companies, which further boosts traffic. Finland exports raw materials to Estonia where manufacturing is cheaper and finished goods are shipped back to Finland. Figure 3.7 presents cargo traffic between the Port of Tallinn and the other PENTA ports. In this context all traffic to the Port of Kapellskär is operated from Paldiski South Harbour.

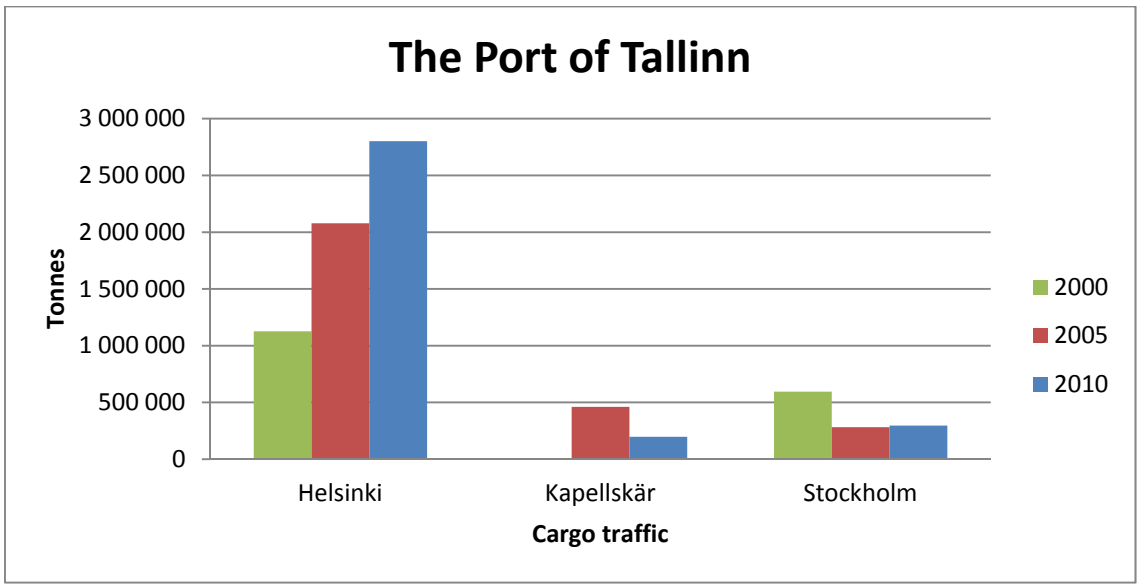


*Figure 3.7. Cargo traffic between the Port of Tallinn and other PENTA ports.*

According to the interviewees, the location of the Port of Tallinn is challenging because freight is delivered straight to the city centre and the road infrastructure there is not suitable for heavy truck traffic. However, the port is able to offer a wide range of sea traffic services – a factor which is highly valued by large logistics companies. Figure 3.8 shows the increasing quantity of trucks and trailers being shipped between Tallinn and Helsinki.

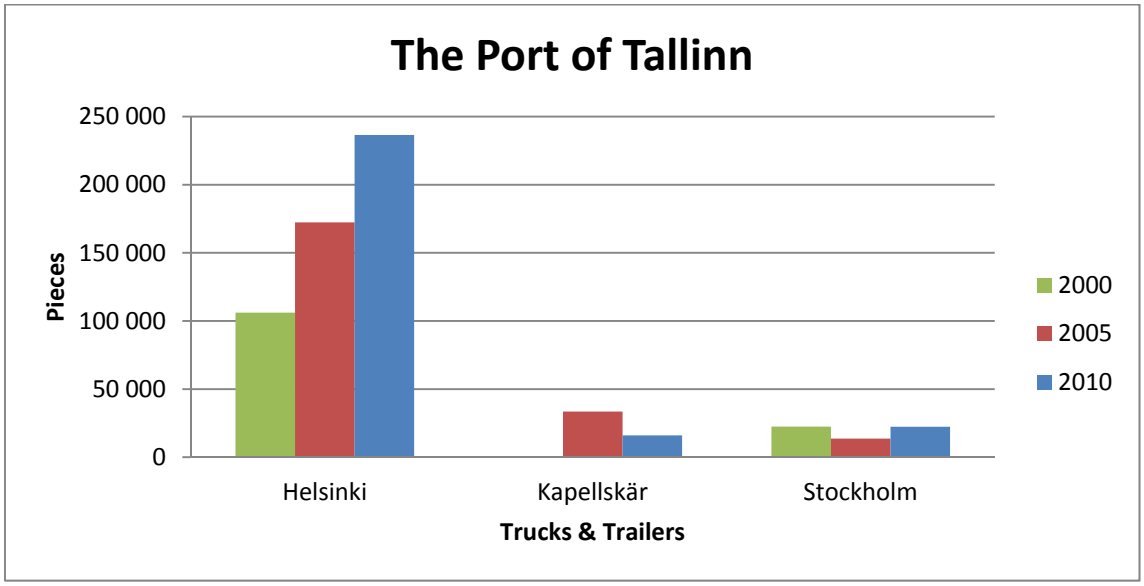


*Figure 3.8. Trucks and trailers between the Port of Tallinn and other PENTA ports.*

The port of Tallinn has two harbours, Old City Harbour and Saaremaa Harbour, where passengers are served. Regular ferry traffic moves between Tallinn and Helsinki, Tallinn – Mariehamn – Stockholm, and St. Petersburg – Stockholm – Tallinn. In 2010, 7,915,000 passengers passed through the Port of Tallinn's passenger terminal (Port of Tallinn 2011). The share of passengers between Tallinn and Helsinki accounts for approximately 90% of all passenger traffic in the Port of Tallinn (Figure 3.9).

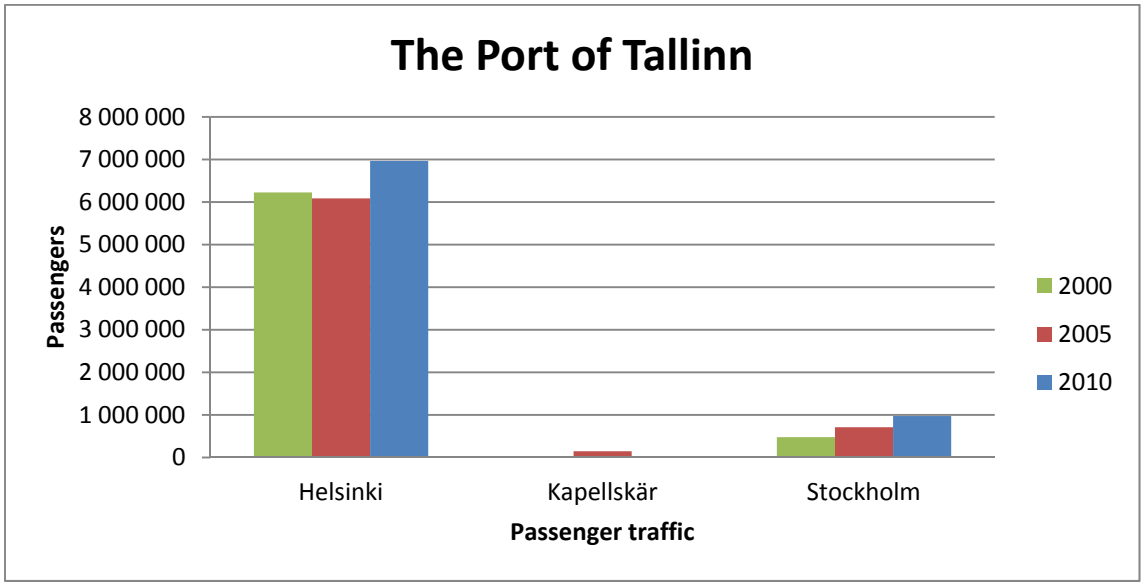


*Figure 3.9. Passenger traffic between the Port of Tallinn and other PENTA ports.*

According to the interviews short distances and modern ships are some of the drivers that have a positive effect on port-to-port flows. Price differences in commodities and services are nevertheless the main factors behind demand when travelling to Estonia. Work related trips to Helsinki have also increased in recent years and Finns are increasingly taking their cars to Tallinn. Because of the short distance between Tallinn and Helsinki, the ferry is considered more as a means of transport rather than something people are waiting to experience. The location of the passenger terminal in the middle of city is challenging. It is good for passengers who walk but during the rush hour there are traffic jams. In summertime, there is not always room for cargo on the ferries destined to Stockholm. For that reason the route between Paldiski and Kapellskär is better but the vessels are older. For the providers of logistics services, it would be beneficial if the Paldiski-Kapellskär route had more vessels sailing in the opposite direction. This would help the planning of freight shipments and enable a more flexible service. However the trade imbalance discussed earlier in chapter 3 between Sweden and Estonia makes it difficult to develop the Paldiski-Kapellskär route.

The line from Tallinn to Stockholm increasingly attracts families and groups which are interested in having a city break. It is the shortest way to Scandinavia but the line from Paldiski to Kapellskär is cheaper compared to the Tallinn-Stockholm route and making 24 hour trips is possible for vessels. According to the interviews, the performance of the Port of Tallinn is either good or fair. The infrastructure does not meet today's requirements, which is why the port may run into trouble in the future due to increasing amounts of cargo. Furthermore, Estonia is relatively small nation and political issues with Russia have caused a minor decrease in transit volumes. Despite that, Estonia has a large transit-share – compared with Finland – regarding transport to Russia, though this share is still relatively small for containers.

According to the interviewees, the development of Muuga Harbour is one of the main strengths in the Port of Tallinn. Rail Garant will start operating by the end of 2013,

customs operations are flexible, and the rail gauge is the same as in Russia. Nevertheless, the operation of the Port of Tallinn was considered to be too business-oriented. The interviewees are of the opinion that the Estonian state (as the owner of the port) concentrates too much on making short-term profits from operations instead of developing the port over a long-term period. This is a large contrast compared to Finland and Sweden where ports are municipal and regional development is more balanced.

### 3.2.3 Helsinki

The port of Helsinki is the main port of Finland. The value of the cargo traffic represents approximately 30% of the value of the entire Finnish foreign trade and 40% of the foreign trade transported by sea for all of Finland. The port is specialised in providing unitized cargo services for Finnish companies engaged in foreign trade. The majority of cargo traffic consists of goods transported in containers, trailer trucks, trailers or similar units. The main imports handled at the port are consumer durables and foodstuffs, as well as raw materials and semi-finished goods for industry. Forestry and metal industry, foodstuffs, textile products and glassware form the main exports (Port of Helsinki 2011).

In 2010, total goods traffic in the Port of Helsinki was 10,921,000 tonnes and the share of unitized cargo was about 90% and bulk cargo 10% of the total. The container volume handled was 399,903 TEU and there were 488,772 lorries and trailers. Vuosaari Harbour serves RoRo and container traffic. South Harbour and West Harbour serve RoRo-traffic transported by passenger ships (Helsingin Satama 2011).

The city of Helsinki and the surrounding metropolitan area is a place of departure or destination for many types of transport. The Port of Helsinki is a major import centre due to its proximity to customers and logistics centres. Roughly half of the population in Finland lives relatively close to the port, although this creates traffic jams and the road infrastructure is not up-to-date. This is one of the main reasons why cargo has been redirected to Vuosaari harbour. Road and rail connections are good outside the city centre. Figure 3.10 reveals the rapidly growing cargo traffic between Helsinki and Tallinn and the steady traffic between Helsinki and Stockholm.

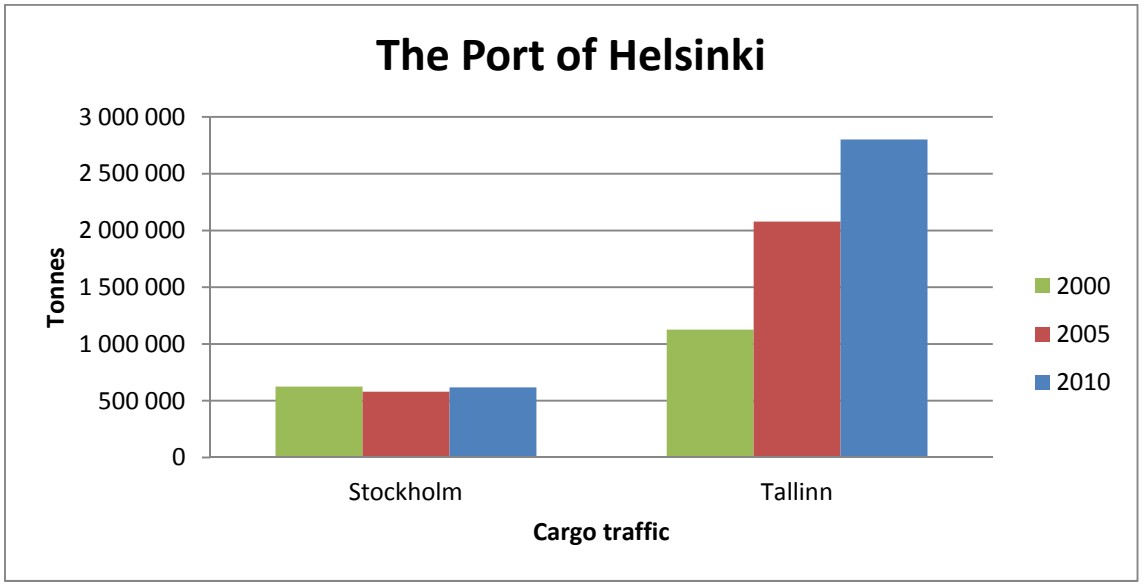


*Figure 3.10. Cargo traffic between the Port of Helsinki and other PENTA ports.*

According to interviewees, logistics companies around the Port of Helsinki mainly handle cargo traffic from Central Europe, Poland and the Baltic countries. Roughly 40% of the traffic is transported to and from the Baltic States and countries in Eastern Europe, and 60% goes to Western Europe. Figure 3.11 shows the quantity of trucks and trailers passing through the Port of Helsinki and other PENTA ports.

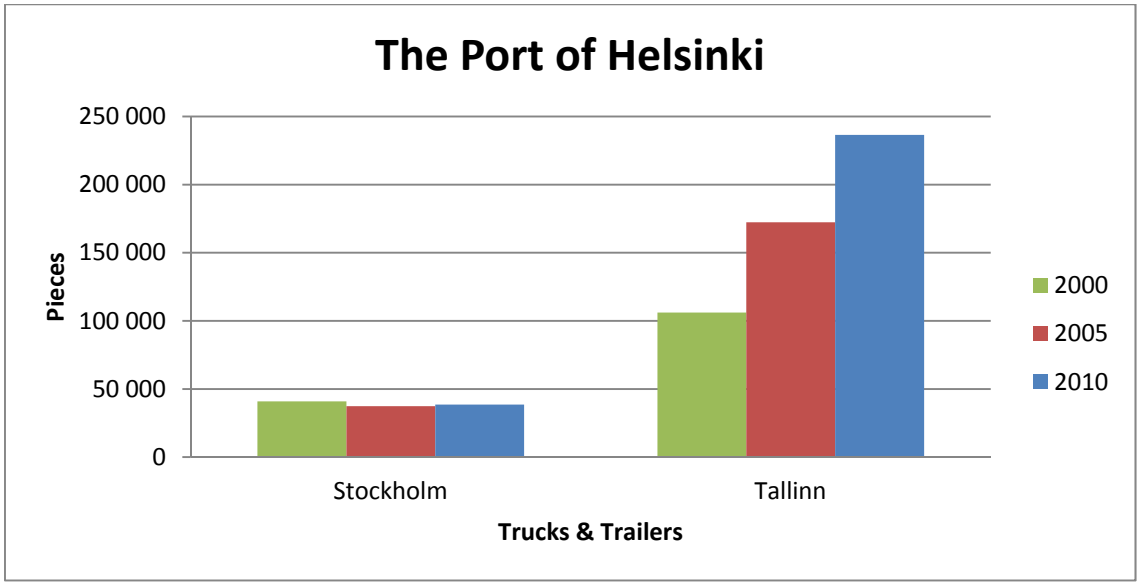


*Figure 3.11. Trucks and trailers between the Port of Helsinki and other PENTA ports.*

The route between the Port of Helsinki and the Port of Stockholm is well established because trade with Sweden has always been significant for Finland. The timetable of the ferries is regular and well-known, mainly because of Viking Line and Tallink Silja. It is sometimes more economically efficient to ship straight to Helsinki from Stockholm rather than go via Turku, because in the latter case more road transportation is required.

The shipping companies know the worth of their services and pricing is made with respect to the alternatives. Traffic between Sweden and Finland is very heavy but the share of Russian goods transported via Helsinki to Stockholm is minimal. While price competition for cargo traffic on the route between Helsinki and Tallinn is fierce, the distance between Helsinki and Stockholm is problematic. A long route with high bunker costs and vessels staying in port all day makes the route economically less competitive compared to other routes. Two departures per day for one shipowner do not improve economic profitability either. The future of the business is challenging.

The Port of Helsinki is the busiest passenger port in Finland and in 2010 it had 10,102,000 passengers. There are connections to Stockholm, Tallinn, Travemünde, Rostock, Gdynia and St. Petersburg. During the height of the summer season, there are 17 departures daily to Tallinn (Port of Helsinki 2011). Figure 3.12 presents the high passenger traffic on the Helsinki-Tallinn and Helsinki-Stockholm routes.

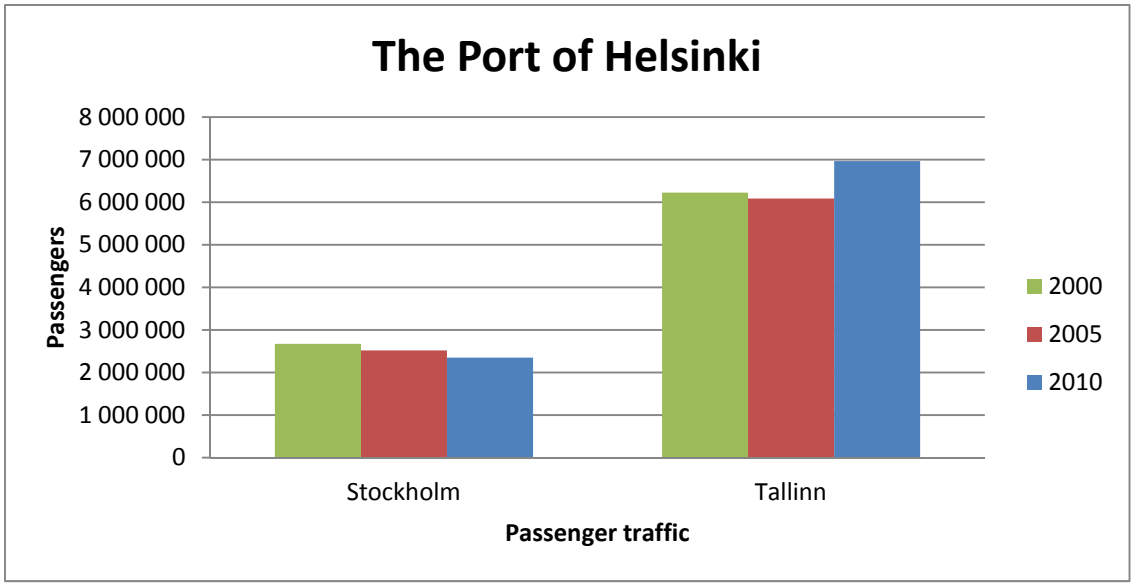


*Figure 3.12. Passenger traffic between the Port of Helsinki and other PENTA ports.*

According to the interviewees, ferries going between Helsinki and Tallinn have three types of passengers: work-related, leisure travellers visiting Tallinn, and tourists travelling through Tallinn to other destinations. Due to the variety of passengers, the traffic will not change rapidly. Nevertheless, cheap alcohol and low prices in Estonia are the main drivers explaining leisure passenger traffic between Finland and Estonia.

The performance of the Port of Helsinki, without external organisations and port operators, was considered to be fair. However, the performance drops immediately if labour market organisations are included. Port operating costs are also higher compared to the Port of Turku. Most of the large port operators are located further from the port. Because of this the removal of cargo from the docks to the terminals takes time. The interviewees are of the opinion that West Harbour is too far away and that traffic congestion builds up easily. They think South Harbour is not optimally placed for cargo

traffic, either. Vuosaari is a modern harbour with lots of space and its road network and traffic connections are improving.

### 3.2.4 Turku

The port of Turku is the second most important in Finland for general and unitized cargo after the Port of Helsinki. It was the only train ferry harbour in Finland until 2011, so the whole of Finland belonged to the port's hinterland. In 2010 total cargo traffic in the Port of Turku was 3,210,382 tonnes, foreign goods traffic was 2,957,026 tonnes and domestic traffic 253,356 tonnes. The volume of the total transit traffic was 88,380 tonnes, of which the share of export traffic was over 67%. The total quantity of unitized traffic was 124,217 pieces. Almost 90% of it was trucks and trailers and a little over 3% was rail wagons. The total quantity of containers was 10,318 pieces, which equals 13,808 TEU (Port of Turku 2011).

According to the interviews the strengths of the Port of Turku include good road connections and a port located close to its customers. It serves as a major gateway for Nordic freight, and 80% of the total traffic in the port is traffic between Nordic countries – mainly Sweden. Figure 3.13 highlights the importance of cargo traffic between the Port of Turku and the Port of Stockholm.

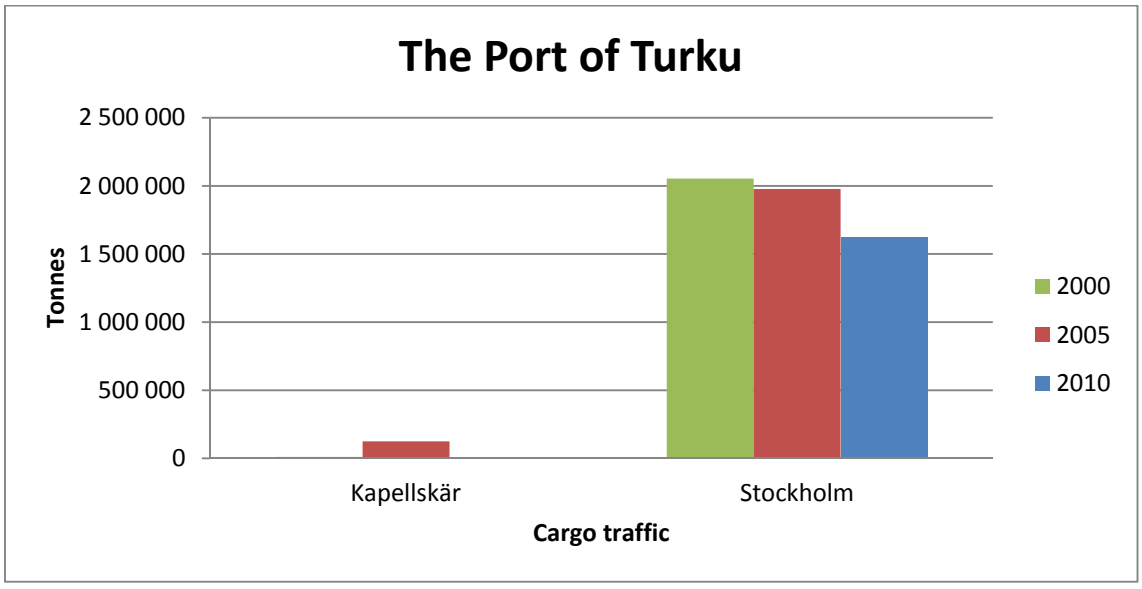


*Figure 3.13. Cargo traffic between the Port of Turku and other PENTA ports.*

The Port of Turku has five departures daily to the Port of Stockholm. These connections are operated by Tallink Silja and Viking Line. The route is very stable and current operators have become very important business partners for the port. Based on the interviews, these two companies were considered to be even too powerful, making it hard for competitors to enter the market and be profitable. The availability and suitability of the cargo service is one of the most important demand factors. Even though the cargo volumes between the Port of Turku and the Port of Stockholm have

shown a minor decrease, the amount of trucks and trailers passing through the docks remains unchanged (Figure 3.14).

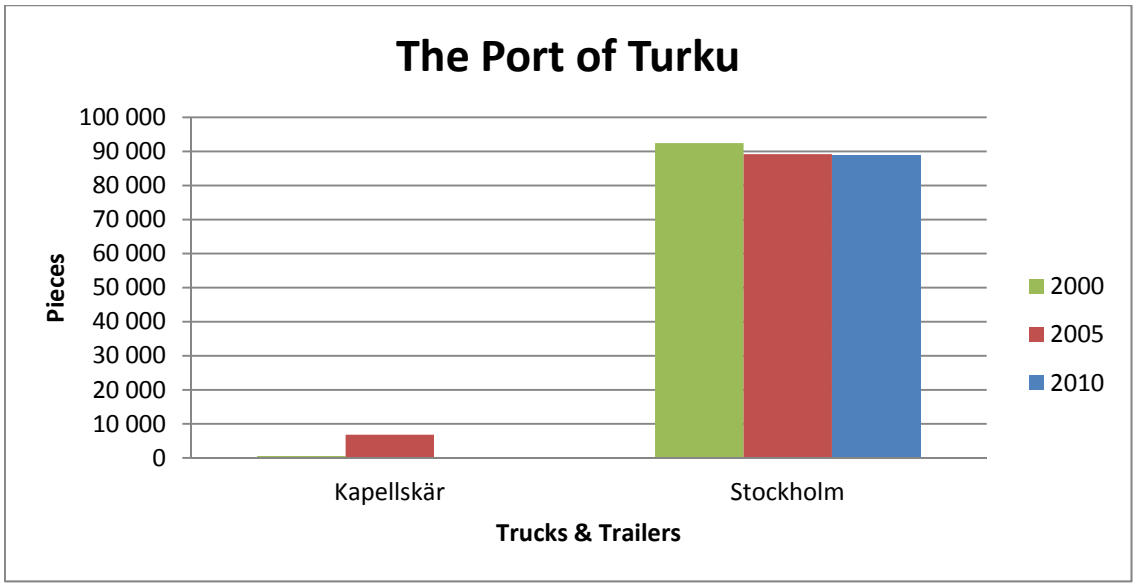


*Figure 3.14. Trucks and trailers between the Port of Turku and other PENTA ports.*

The main factor creating demand at the Port of Turku is the short distance to Stockholm. However, the timetable between Turku and Stockholm was not considered to be optimal for cargo traffic by the interviewees. Approximately 40% of the cargo shipped from Stockholm to Turku was originally manufactured in Sweden and the rest comes from further afield.

In 2010, the Port of Turku had 3,566,185 passengers. Figure 3.15 shows the importance of passenger traffic between the Port of Turku and the Port of Stockholm.

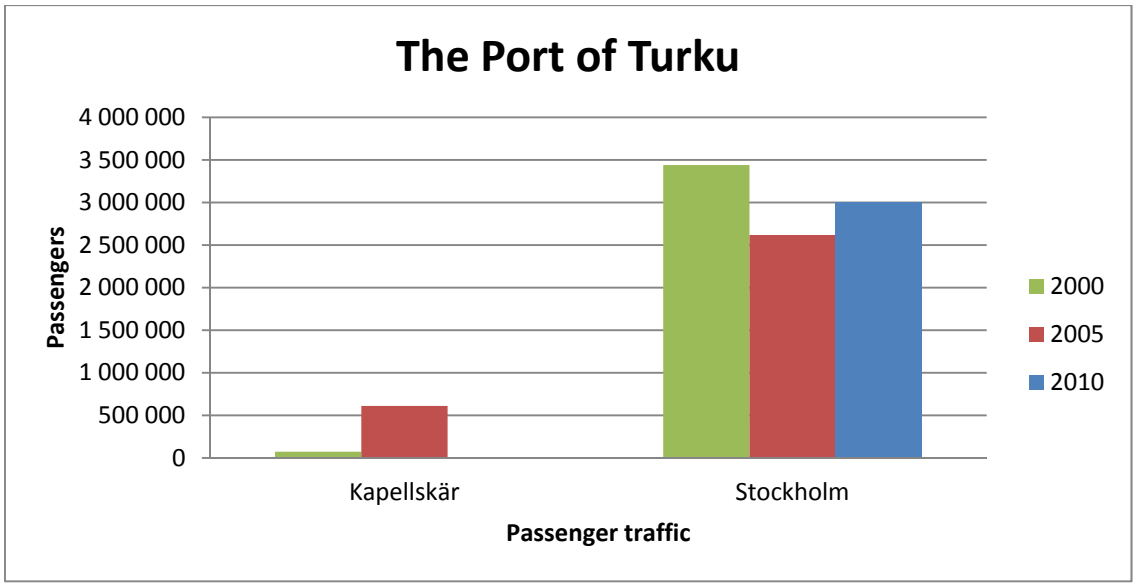


*Figure 3.15. Passenger traffic between the Port of Turku and other PENTA ports.*

A quarter of the ferry passengers between Turku and Stockholm have only a one-way ticket which means that for this group the ferry is primarily a means of transport rather than a leisure activity. Russians are also increasingly travelling to Stockholm and they would rather go through the Port of Turku than Helsinki. Currently they arrive in Turku by bus to make a short city tour before the departure of the ferry.

According to the interviewees, the Port of Turku has a good performance. The distance between Turku and Stockholm is not too long so sufficient frequency and high utilisation are fulfilled by ferry transportation. Turku has a good road infrastructure and the city is much easier to drive through compared to the city of Helsinki. The onwards distribution of cargo is also manageable. Turku has all the prerequisites to grow into a large distribution centre serving all of Scandinavia, Northern Europe, the Baltic States and Russia. The future of the port looks very bright: A new Viking Line ferry will operate between the Port of Turku and the Port of Stockholm in 2013 and is considered a galvaniser for the whole ferry industry. However, the future of transit traffic in Port of Turku was seen as debatable, since transporting through it does not currently create enough value-added. Regarding the future of the ports, some of the interviewees wonder why Turku and Naantali are two separate ports since they have good co-operation. These interviewees are of the opinion that they should merge to better develop their operations in Southwest Finland, or specialise in niche areas and accept more cargo straight from Europe, easing traffic in the Port of Helsinki.

### 3.2.5 Naantali

The port of Naantali is the leading harbour in Finland for freight traffic of Scandinavia. Approximately half of all seaborne lorry transportations on ferries between Finland and Sweden is transported via Naantali. A third of the total traffic through Naantali is unitized cargo traffic carried in RoRo- or RoPax-vessels. Approximately, two-thirds of the total traffic in the port is bulk: crude oil, oil processed products, cereals, and coal (Naantali 2010).

In 2010, total goods traffic through the Port of Naantali was about 8,120,000 tonnes, and 80% of this traffic was foreign trade. Unitized cargo traffic has increased its relative share of total traffic most when compared to the previous year. The volume of lorries and trailers carried by RoRo- and RoPax-vessels was 2.2 million tonnes in 2010. The quantity of trailer lorries and trailers was 147,132 pieces, the volume of liquid bulk transported through the docks or waters of the Port of Naantali was nearly 4.68 million tonnes and dry bulk was 1.23 million (Naantali 2011).

The port of Naantali is in a good geographic position. The route to Kapellskär is shorter, and ferry frequency is also higher compared to the route between the Port of Turku and Port of Stockholm. Naantali differs from other PENTA ports because cargo traffic is a vital part of its operation. In other PENTA ports Tallink Silja and Viking Line consider it only an addition to their passenger traffic, but for Finnlink cargo traffic is essential. Figure 3.16 shows cargo traffic between the Port of Naantali and the Port of Kapellskär.

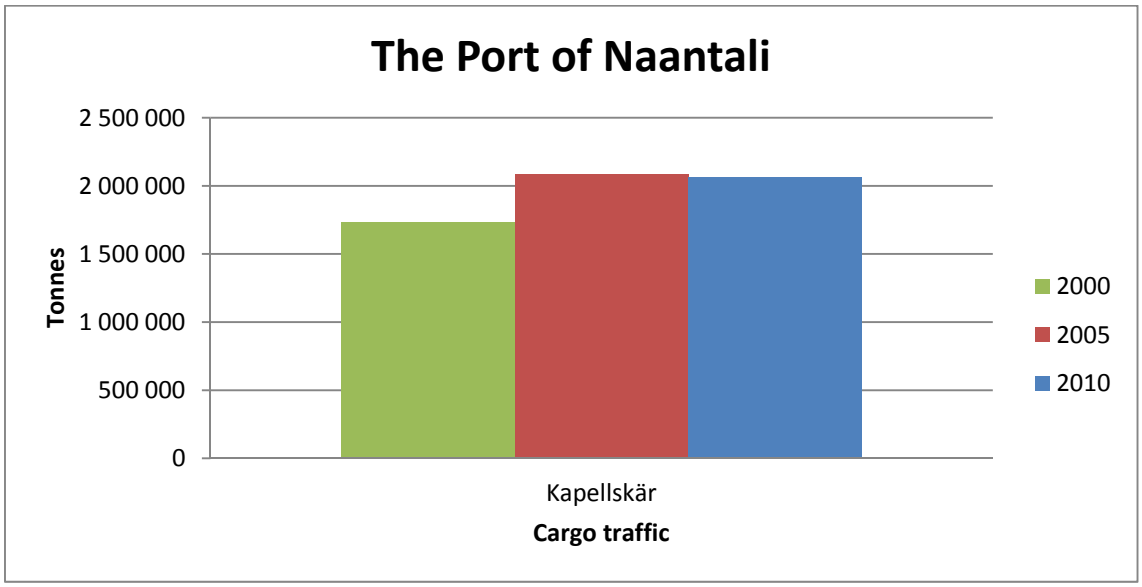


*Figure 3.16. Cargo traffic between the Port of Naantali and other PENTA ports.*

Time spent in port, including stevedoring, costs money for shipowners which is why they try to minimize the time the vessel stays in port. In the Port of Naantali, almost 95% of the cargo on board is moved with trucks and drivers whereas the share of trailers in Tallink Silja and Viking Line is around 40%. Finnlink-vessels can take up to 120 to 130 trucks on board and boarding takes only an hour and a half. The market-share of Finnlink carrying trucks and trailers between Finland and Sweden has varied from 42% to 55% which makes the company a market leader. In some cases the manufacturing of a product starts in Finland but the final assembly is done in Sweden. After completing the product it may be shipped back to Finland which further increases the traffic. In addition, 95% of Ålands maintenance traffic is also shipped from the Port of Naantali. Figure 3.17 illustrates the quantity of trucks and trailers passing through the Port of Naantali annually.

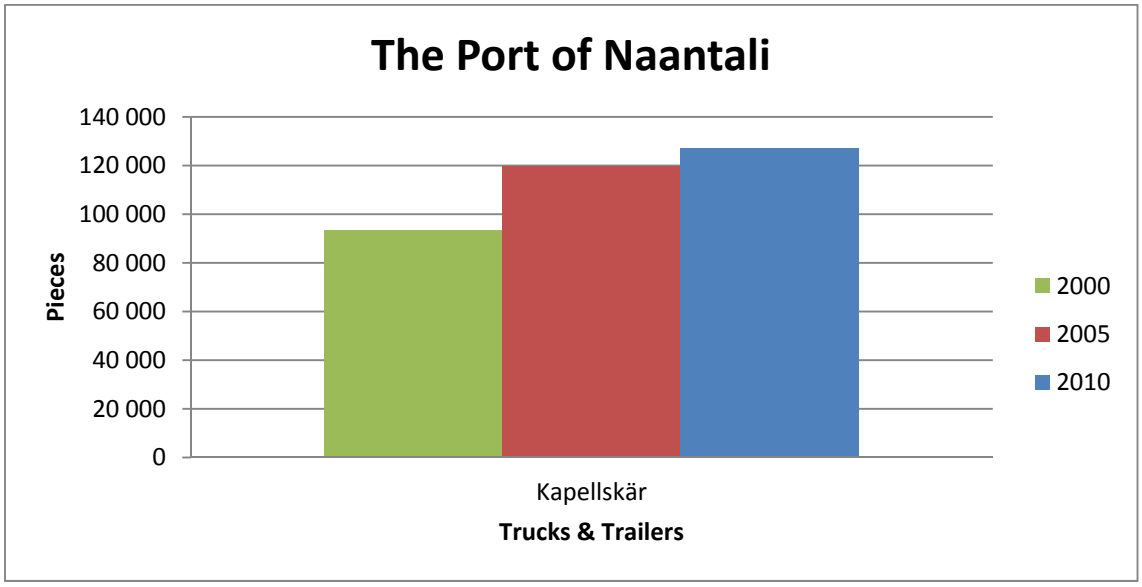


*Figure 3.17. Trucks and trailers between the Port of Naantali and other PENTA ports.*

Passenger traffic through the Port of Naantali is rather small. In 2010, 179,575 persons travelled through the Port of Naantali, of which only 49,742 were not work related (Naantali 2011). Besides truck drivers the Naantali-Kapellskär route attracts people who travel by car. This group consist mainly of families who value high frequency, capacity and a short crossing-time. However, the possibility to become a larger passenger port exists; Viking Line discontinued operating in the Port of Naantali in 1996. Figure 3.18 presents passenger traffic between the Port of Naantali and the Port of Kapellskär.

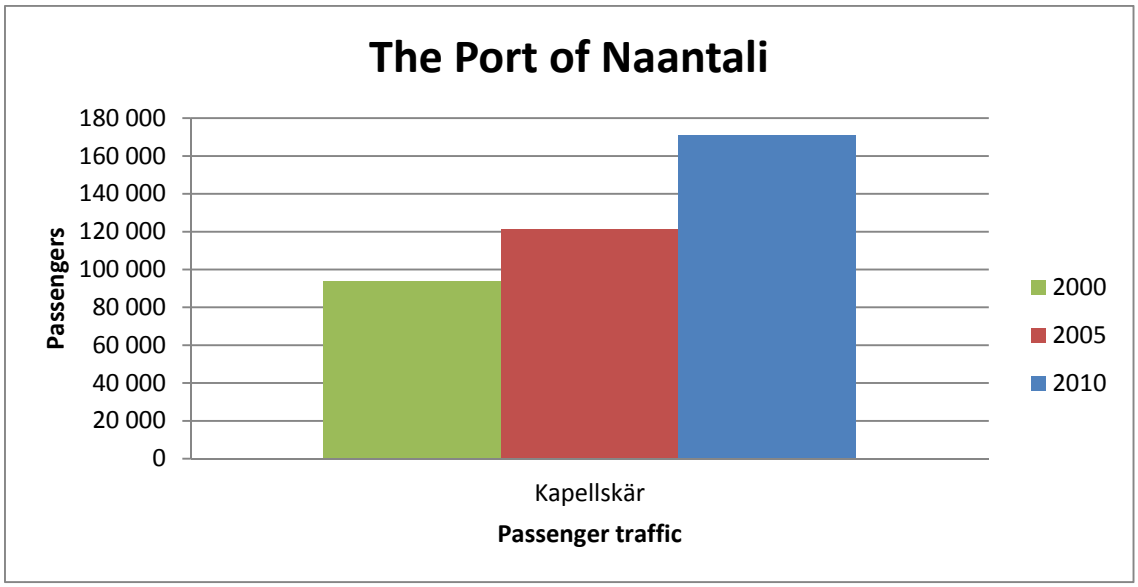


*Figure 3.18. Passenger traffic between the Port of Naantali and other PENTA ports.*

According to the interviewees, the Port of Naantali is traditionally a good port when it comes to the shipping of goods to Sweden. The road network is mainly excellent, except for the road infrastructure heading north, mainly to Pori and Tampere, which is

outmoded. Turku shares the same problem and some drivers even avoid using it. There are speed limits, not enough exits to side-roads, and trees grow close to the road hindering visibility.

Due to the high frequency of its departures, the utilization rate of Finnlink is lower than Viking Line and Tallink Silja. But the key issue for the company is that capacity is always guaranteed. The short distance to Kapellskär also creates a future threat: legislation related to driving hours and rest periods for truck drivers is likely to tighten in the future and the crossing to Kapellskär does not last long enough. Competition on the routes to the centre of Stockholm is already sufficient. The demand for a new route between the Port of Naantali and the Port of Nynäshamn exists, but the distance is too long for it to be economical for high frequency departures.

# 4 CONCLUSIONS

The purpose of this study is to present cargo and passenger flows between PENTA ports and the development of these traffic flows since 2000. In addition, it analyses the drivers behind demand and points out common factors. The conducted interviews focused on cargo traffic, which is why a more thorough research of passenger traffic and factors affecting its demand is in place in the future. The gathering of statistics on cargo traffic is problematic. The data on current and previous cargo traffic is limited, scattered and varies according to source. Different parties also measure different things: shipowners sell lane-meters but the ports' main interest is the weight of the cargo. In order to develop future business, each participant in the supply chain requires reliable and relevant information about traffic flows. Data related to passenger traffic is clearer.

The emphasis on the role and efficiency of ports has increased in recent years. The role of ports as a part of a supply chain can vary from being a simple transhipment hub to an important logistics node. Ports are therefore very dependent upon those cargo owners whose cargo is transported through their port, and the supply chain strategies of companies. PENTA ports play key roles in the accessibility of the Central Baltic Region and in trade between the three countries. Effective and competitive port procedures and sea transportation solutions are important for the interconnectivity, growth and sustainability of the regions the ports are serving. Cargo traffic, as a basic component of the worldwide economy, has increased rapidly during recent decades and this trend is expected to continue in the future. The general economic situation is the most important factor determining demand for transportation. GDP as an indirect driver affects consumer demand, which determines the need for the transportation of goods. The economic structure of a country creates a trade and transport infrastructure base and also determines the scale of products for demand. Increased manufacturing in low-cost countries and new forms of supply-chain management have altered the routes of cargo. Densely packed service-traffic makes a divided manufacturing process possible for companies operating in different countries. Due to these new production methods all forms of transportation have increased. Thus, the new methods and supply chain management further emphasise the importance of ports. Altered communication patterns, including e-commerce, have been increasingly adopted by the transport industry, especially supporting the rise of intermodal container-traffic.

In addition to cargo, PENTA ports enable passenger mobility. Passenger flows between PENTA ports have been stable despite increasing traffic on the route between Helsinki and Tallinn. Entertainment and tax-free shopping on board, low prices in Estonia and the ease of travelling, even with a car on-board, encourages people to travel and attracts customers to ferries. The most noteworthy difference between passenger and cargo traffic is the fact that ferry companies carrying passengers can do marketing and promotion in order to increase their customer numbers. A high demand for both cargo and passenger traffic combined with a high frequency of departures enables flexible transport solutions.

When asked about the drivers of demand, all interviewees had fairly similar opinions. However, small differences, depending on the area of the company in question and the

role of the interviewee in the company, were clearly visible. The geographical location of a port is the main driver of demand in both cargo and passenger traffic since the location determines many of the transport or delivery costs. The performance of a port is not a priority since ports act only as parts of a supply chain and an attempt is made to keep the time spent in port as short as possible. The scope for future activity and a spacious port areas are highly valued as are road connections in the hinterland. The economic situation affects both cargo and passenger traffic and usually the most affordable or suitable route at any given time will be chosen.

Each port has special characteristics which either further increase or decrease demand. The port of Stockholm has a fast and highly used route to Turku. Ships arrive early and 24 hour round trips are enabled. The Stockholm-Helsinki route is used in order to avoid road transport in Finland. One of the drivers of demand at the Ports of Stockholm is the close proximity of a large amount of consumers. Passenger traffic is essential for the port, since some cargo would be redirected without it. The geographical location of the Port of Kapellskär on the north side of Stockholm is among the port's main strengths. Cargo traffic between Kapellskär and Naantali is very heavy and traffic between Kapellskär and Paldiski is also increasing. The route between Kapellskär and Naantali is busy as capacity is guaranteed and the frequency of departures is high.

Tallinn, as the capital of Estonia, has a very high demand for both cargo and passenger traffic. Manufacturing in low-cost countries has increased flows via Tallinn. The location of the Old City Harbour is not favourable for transporting both passengers and cargo because freight is delivered straight to the downtown area. Nevertheless, passenger and cargo volumes are rising. However, from the perspective of passenger traffic, the short distance to the city of Tallinn from the Old City Harbour and the modern ships have a positive effect on the port-to-port flow. Work related trips to Helsinki have increased greatly in recent years and Finns increasingly take a car with them to Tallinn. The line to the Port of Stockholm is also attracting more and more families and groups interested in city breaks.

The different PENTA ports and the companies operating the sea routes between the ports have developed different profiles. The port of Helsinki is the main gateway for shipping unitized traffic in Finland. In general, Helsinki is important for importers due to its closeness to customers. While price competition for cargo traffic on the route between Helsinki and Tallinn is fierce, no such competition exists on the route between Helsinki and Stockholm because the longer distance makes it hard for the shipping company to cut operating costs. The lower price level in Estonia and the short crossing time are the main drivers explaining the high amount of passenger traffic between Finland and Estonia. The port of Turku is seen as a good port to deliver to due to its proximity to customers and good road connections. The main factor creating demand is the short distance to Stockholm, thus a shipping company can maintain a sufficient frequency and high utilisation rate on the route. The port of Naantali has a line to the Port of Kapellskär, and cargo traffic is essential for Naantali and Finnlink, the company operating the route. In contrast, Tallink Silja and Viking Line consider cargo traffic an addition to their passenger traffic. The route from Naantali to Kapellskär has a competitive advantage for cargo transportation: it is shorter, faster and has a higher

frequency compared to the route between the Port of Turku and the Port of Stockholm. Time spent in port is minimized at both ends.

Demand for the ports will not diminish in the near future. Even though shifts in consumer demand and production networks can alter cargo routes, the countries will always need ports. Each of the PENTA ports has a somewhat unique profile, though collectively their strength mainly lies in RoRo and passenger traffic.

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# APPENDICES

## Appendix 1: Interview form

PENTA

PENTA Project - WP2 interview

**Date:**
**Time:**
**Venue:**
**Interviewee:**
**Interviewer:**

**The goal is to create a vision of the upcoming cargo and passenger flows between PENTA ports in 2020**

1. Key factors for demand and drivers affecting port-to-port flows (PESTE Methodology)
    a. Stockholm
    b. Tallinn
    c. Helsinki
    d. Turku
    e. Naantali

2. Cargo traffic
    a. Most significant commodity groups in general cargo
    b. Customers and branch structure (Industry/Trade/Consumer)
    c. Future development of cargo traffic between PENTA ports

3. Unitized traffic
    a. Most significant commodity groups in unitized cargo
    b. Customers and branch structure (Industry/Trade/Consumer)
    c. Future development of unitized traffic (Containers, Trucks & Trailers, Rail waggons) between PENTA ports

4. Transit traffic
    a. Most significant commodity groups in transit cargo
    b. Customers and branch structure (Industry/Trade/Consumer)
    c. Future development of transit traffic between PENTA ports

5. Passenger traffic
    a. General development of passenger traffic in PENTA ports
    b. Future development of passenger traffic between PENTA port
    c. The most significant changes in passenger traffic between the best known port for the interviewee and other PENTA ports

6. Vessel traffic
    a. General development of vessel calls in PENTA ports
    b. Future development of vessel traffic between PENTA ports
    c. The most significant changes in vessel calls in the best know port for the interviewee

7. Other arguments of essential and possible future developments in cargo or passenger traffic between PENTA ports
    a. Role of St.Petersburg
    b. The number of liner shipping companies operating between PENTA ports
    c. Changing timetable while operating between PENTA ports
    d. Other issues

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## Appendix 2: Interviewees

| Person | Company | Position | Date | Place | Interviewer |
|---|---|---|---|---|---|
| Ain Tulvi | PROLOG | Member of the Board | 12.3.2012 | Tallinn | Reima Helminen |
| Alvar Tõruke | DSV Transport AS | Logistics Director | 12.3.2012 | Tallinn | Reima Helminen |
| Andres Hunt | AS Tallink Grupp | Member of the management board | 29.3.2012 | Tallinn | Tõnis Hunt |
| Anne-Marget Niemi | Turku Touring | Director of Tourism | 15.8.2011 | Turku | Anssi Lappalainen |
| Bjarne Karlsson | Schenker Oy | Director, International Land Transport | 11.10.2011 | Helsinki | Anssi Lappalainen |
| Christer Backman | Finnlines Plc | Executive Advisor | 9.9.2011 | Naantali | Anssi Lappalainen |
| Christian Ramberg | Port of Turku | Managing Director | 1.7.2011 | Turku | Anssi Lappalainen |
| Erik Ringmaa | Port of Tallinn | Chief Commercial Officer | 3.2.2012 | Tallinn | Tõnis Hunt |
| Eve Tuomola | Port of Helsinki | Office Manager | 30.8.2011 | Helsinki | Anssi Lappalainen |
| Göran Palsson | DHL Freight (Sweden) Ab | Head of Nordics | 11.1.2012 | Telephone | Maria Mustonen |
| Hannu Lakso | DSV Road Oy | Division Director, Central Europe | 19.10.2011 | Vantaa | Anssi Lappalainen |
| Harri Tamminen | Viking Line Abp | Freight Director | 2.9.2011 | Turku | Anssi Lappalainen |
| Henrik Widerståhl | Ports of Stockholm | Head of Marketing | 11.11.2011 | Stockholm | Janni Jensen |
| Jarmo Lilja | Suomen Kaukokiito Oy | Regional Director | 7.9.2011 | Turku | Anssi Lappalainen |
| Kari Peltonen | Oy FinnLink Ab | Line Manager | 24.8.2011 | Naantali | Anssi Lappalainen |
| Kim Södeström | Tallink Silja Oy | Area Director | 9.9.2011 | Turku | Anssi Lappalainen |
| Krister Sigfrids | SeaRail Oy | Executive Director | 1.9.2011 | Turku | Anssi Lappalainen |
| Kristo Vrager | Schenker AS | Director, Air and Ocean | 29.3.2012 | Tallinn | Reima Helminen |
| Lennart Stjärnström | Stjärnströms Int. Ab | Operations Manager | 17.1.2012 | Telephone | Maria Mustonen |
| Marina Hasselblatt | Tallink Silja Oy | Sales Manager, Cargo Services | 9.9.2011 | Turku | Anssi Lappalainen |
| Markku Onniselkä | Eckerö Line Ab oy | Freight Director | 16.9.2011 | Helsinki | Anssi Lappalainen |
| Markus Nyman | Oy Kuehne + Nagel Ltd | Managing Director | 5.12.2011 | Vantaa | Anssi Lappalainen |
| Meelike Paalberg | Itella Logistics OÜ | Country Manager | 15.2.2012 | Tallinn | Tõnis Hunt |
| Mihael Hagström | Schenker Oy | Director, Sales and Marketing | 12.9.2011 | Turku | Anssi Lappalainen |
| Patrik Larsson | DSV Road Ab | Business Area Manager Baltic | 11.1.2012 | Telephone | Maria Mustonen |
| Pekka Stenqvist | DHL Freight (Finland) Oy | Head of West Europe Traffic & National Production | 17.11.2011 | Vantaa | Anssi Lappalainen |
| Roland Forssman | Kuehne + Nagel Ab | Traffic Manager Stockholm | 19.1.2012 | Telephone | Maria Mustonen |
| Thomas Käll | DSV Road Ab | Business Area Manager, Finland | 11.1.2012 | Telephone | Maria Mustonen |
| Yrjö Vainiala | Port of Naantali | Port Director | 31.8.2011 | Naantali | Anssi Lappalainen |

# Appendix 3: Traffic between PENTA ports

| Stockholm - other ports | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | | | | 2005 | | | | 2000 | | | |
| **CARGO TRAFFIC** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** |
| Cargo traffic in total (including transit traffic) | | | | | | | | | | | | |
| Export | 313 856 | 0 | 116 444 | 820 012 | 285 069 | 0 | 78 108 | 951 872 | 288 527 | 0 | 117 140 | 967 315 |
| Import | 307 707 | 7 319 | 165 073 | 804 392 | 300 877 | 460 | 173 497 | 1 007 821 | 334 818 | 14 194 | 147 042 | 1 009 985 |
| **In total** | **621 563** | **7 319** | **281 517** | **1 624 404** | **585 946** | **460** | **251 605** | **1 959 693** | **623 345** | **14 194** | **264 182** | **1 977 300** |
| Transit traffic | | | | | | | | | | | | |
| Export | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Import | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **In total** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| | | | | | | | | | | | | |
| **UNITIZED TRAFFIC** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** |
| Unitized traffic in total (including transit traffic) | | | | | | | | | | | | |
| Export | 313 856 | 0 | 116 444 | 820 012 | 285 069 | 0 | 72 226 | 951 872 | 288 527 | 0 | 117 140 | 967 315 |
| Import | 307 707 | 0 | 127 135 | 804 392 | 300 877 | 0 | 70 053 | 1 007 821 | 334 818 | 0 | 126 615 | 1 009 985 |
| **In total** | **621 563** | **0** | **243 579** | **1 624 404** | **585 946** | **0** | **142 279** | **1 959 693** | **623 345** | **0** | **243 755** | **1 977 300** |
| Containers (Pcs) | | | | | | | | | | | | |
| Export | 141 | 0 | 0 | 0 | 10 | 0 | 0 | 225 | 10 | 0 | 0 | 174 |
| Import | 56 | 0 | 0 | 110 | 9 | 0 | 0 | 526 | 0 | 0 | 0 | 190 |
| **In total** | **197** | **0** | **0** | **110** | **19** | **0** | **0** | **751** | **10** | **0** | **0** | **364** |
| Trucks & Trailers (Pcs) | | | | | | | | | | | | |
| Export | 19 438 | 0 | 10 811 | 46 673 | 19 329 | 0 | 5 837 | 44 714 | 19 464 | 0 | 19 328 | 47 742 |
| Import | 19 710 | 0 | 11 167 | 43 200 | 19 265 | 0 | 7 959 | 43 299 | 20 799 | 0 | 22 036 | 47 738 |
| **In total** | **39 148** | **0** | **21 978** | **89 873** | **38 594** | **0** | **13 796** | **88 013** | **40 263** | **0** | **41 364** | **95 480** |
| Rail waggons (Pcs) | | | | | | | | | | | | |
| Export | 0 | 0 | 0 | 1 968 | 0 | 0 | 0 | 5 263 | 0 | 0 | 0 | 4 874 |
| Import | 0 | 0 | 0 | 1 944 | 0 | 0 | 0 | 5 226 | 0 | 0 | 0 | 4 886 |
| **In total** | **0** | **0** | **0** | **3 912** | **0** | **0** | **0** | **10 489** | **0** | **0** | **0** | **9 760** |
| | | | | | | | | | | | | |
| **PASSENGER TRAFFIC** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** |
| Passengers (Pcs) | 2 408 556 | 0 | 849 938 | 3 247 709 | 2 487 817 | 0 | 554 369 | 2 754 506 | 2 587 793 | 0 | 442 659 | 3 976 115 |
| | | | | | | | | | | | | |
| **VESSEL TRAFFIC** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** | **Helsinki** | **Naantali** | **Tallinn** | **Turku** |
| Vessel calls | 724 | 3 | 355 | 1 729 | 720 | 1 | 348 | 1 846 | 725 | 1 | 386 | 2 309 |
| | | | | | | | | | | | | |
| Sources: The Ports of Stockholm, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency. | | | | | | | | | | | | |

| Kapellskär - other ports | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2010 | | | 2005 | | | 2000 | | |
| **CARGO TRAFFIC** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** |
| Cargo traffic in total (including transit traffic) | | | | | | | | | |
| Export | 1 036 215 | 173 112 | 0 | 1 097 086 | 213 415 | 80 713 | 881 112 | 138 168 | 0 |
| Import | 1 029 102 | 253 911 | 0 | 1 009 677 | 219 550 | 59 004 | 860 831 | 125 140 | 0 |
| **In total** | **2 065 317** | **427 023** | **0** | **2 106 763** | **432 965** | **139 717** | **1 741 943** | **263 308** | **0** |
| Transit traffic | | | | | | | | | |
| Export | N/A | N/A | 0 | N/A | N/A | N/A | N/A | N/A | 0 |
| Import | N/A | N/A | 0 | N/A | N/A | N/A | N/A | N/A | 0 |
| **In total** | **N/A** | **N/A** | **0** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **0** |
| | | | | | | | | | |
| **UNITIZED TRAFFIC** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** |
| Unitized traffic in total (including transit traffic) | | | | | | | | | |
| Export | 1 036 215 | 173 112 | 0 | 1 097 086 | 213 415 | 80 713 | 881 112 | 138 168 | 0 |
| Import | 1 029 102 | 253 911 | 0 | 1 009 677 | 219 550 | 59 004 | 860 831 | 125 140 | 0 |
| **In total** | **2 065 317** | **427 023** | **0** | **2 106 763** | **432 965** | **139 717** | **1 741 943** | **263 308** | **0** |
| Containers (Pcs) | | | | | | | | | |
| Export | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Import | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **In total** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Trucks & Trailers (Pcs) | | | | | | | | | |
| Export | 66 561 | 13 544 | 0 | 65 243 | 16 698 | 4 516 | 50 535 | 9 441 | 0 |
| Import | 57 641 | 20 594 | 0 | 53 971 | 18 229 | 2 684 | 43 890 | 8 634 | 0 |
| **In total** | **124 202** | **34 138** | **0** | **119 214** | **34 927** | **7 200** | **94 425** | **18 075** | **0** |
| Rail waggons (Pcs) | | | | | | | | | |
| Export | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Import | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **In total** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| | | | | | | | | | |
| **PASSENGER TRAFFIC** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** |
| Passengers (Pcs) | 178 364 | 36 008 | 0 | 188 463 | 208 760 | 698 272 | 96 450 | 19 109 | 0 |
| | | | | | | | | | |
| **VESSEL TRAFFIC** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** | **Naantali** | **Paldiski** | **Turku** |
| Vessel calls | 1 013 | 544 | 0 | 995 | 662 | 233 | 1 017 | 308 | 0 |

Sources: The Ports of Stockholm, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency.

NB: Figures of Paldiski include both Paldiski South Harbour (member of the Port of Tallinn) and Paldiski North Harbour (private-owned).

| Tallinn - other ports | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | | | | | 2005 | | | | | 2000 | | | | |
| **CARGO TRAFFIC** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** |
| Cargo traffic in total (including transit traffic) | | | | | | | | | | | | | | | |
| Export | 1 455 250 | 122 252 | 9 469 | 178 512 | 6 763 | 857 789 | 230 900 | 95 227 | 200 527 | 283 | 430 298 | 0 | 235 855 | 321 980 | 32 665 |
| Import | 1 346 414 | 75 347 | 44 640 | 118 287 | 34 | 1 220 921 | 229 825 | 8 399 | 81 561 | 8 544 | 695 751 | 0 | 41 706 | 272 852 | 2 |
| **In total** | **2 801 664** | **197 599** | **54 109** | **296 799** | **6 797** | **2 078 710** | **460 725** | **103 626** | **282 088** | **8 827** | **1 126 049** | **0** | **277 561** | **594 832** | **32 667** |
| Transit traffic | | | | | | | | | | | | | | | |
| Export | N/A | 0 | 6 355 | 50 229 | N/A | 95 800 | 0 | 53 962 | 118 712 | N/A | 43 174 | 0 | 231 230 | 30 630 | 1 068 |
| Import | N/A | 0 | 0 | 0 | N/A | 0 | 0 | 0 | 0 | N/A | 0 | 0 | 0 | 0 | 0 |
| **In total** | **N/A** | **0** | **6 355** | **50 229** | **N/A** | **95 800** | **0** | **53 962** | **118 712** | **N/A** | **43 174** | **0** | **231 230** | **30 630** | **1 068** |
| | | | | | | | | | | | | | | | |
| **UNITIZED TRAFFIC** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** |
| Unitized traffic in total (including transit traffic) | | | | | | | | | | | | | | | |
| Export | 1 371 468 | 122 252 | N/A | 128 283 | 215 | 729 551 | 230 900 | N/A | 81 815 | 86 | 380 351 | 0 | N/A | 291 350 | 325 |
| Import | 1 345 829 | 75 347 | N/A | 118 287 | 0 | 1 204 582 | 229 825 | N/A | 81 561 | 120 | 677 437 | 0 | N/A | 272 852 | 0 |
| **In total** | **2 717 297** | **197 599** | **N/A** | **246 570** | **215** | **1 934 133** | **460 725** | **N/A** | **163 376** | **206** | **1 057 788** | **0** | **N/A** | **564 202** | **325** |
| Containers (Pcs) | | | | | | | | | | | | | | | |
| Export | 1 439 | N/A | N/A | N/A | 8 | 1 302 | N/A | N/A | N/A | 0 | 1 282 | 0 | N/A | 1 655 | 48 |
| Import | 1 017 | N/A | N/A | N/A | 0 | 711 | N/A | N/A | N/A | 55 | 761 | 0 | N/A | 2 090 | 0 |
| **In total** | **2 456** | **N/A** | **N/A** | **N/A** | **8** | **2 013** | **N/A** | **N/A** | **N/A** | **55** | **2 043** | **0** | **N/A** | **3 745** | **48** |
| Trucks & Trailers (Pcs) | | | | | | | | | | | | | | | |
| Export | 117 676 | 10 150 | N/A | 11 350 | N/A | 81 147 | 17 606 | N/A | 7 658 | 17 | 51 539 | 0 | N/A | 11 726 | 49 |
| Import | 118 847 | 5 880 | N/A | 10 922 | N/A | 91 274 | 15 928 | N/A | 5 932 | 0 | 54 541 | 0 | N/A | 10 730 | 0 |
| **In total** | **236 523** | **16 030** | **N/A** | **22 272** | **N/A** | **172 421** | **33 534** | **N/A** | **13 590** | **17** | **106 080** | **0** | **N/A** | **22 456** | **49** |
| Rail waggons (Pcs) | | | | | | | | | | | | | | | |
| Export | N/A | N/A | N/A | N/A | N/A | 7 | N/A | N/A | N/A | N/A | N/A | 0 | N/A | N/A | N/A |
| Import | N/A | N/A | N/A | N/A | N/A | 0 | N/A | N/A | N/A | N/A | N/A | 0 | N/A | N/A | N/A |
| **In total** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **7** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **0** | **N/A** | **N/A** | **N/A** |
| | | | | | | | | | | | | | | | |
| **PASSENGER TRAFFIC** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** |
| Passengers (Pcs) | 6 967 055 | 15 097 | N/A | 973 355 | N/A | 6 086 919 | 146 226 | N/A | 709 240 | N/A | 6 227 349 | 0 | N/A | 479 579 | N/A |
| | | | | | | | | | | | | | | | |
| **VESSEL TRAFFIC** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** | **Helsinki** | **Kapellskär** | **Naantali** | **Stockholm** | **Turku** |
| Vessel calls | 3 903 | 272 | 13 | 461 | 53 | 7 734 | 598 | 6 | 430 | 74 | 5 915 | 0 | 60 | 434 | 58 |
| | | | | | | | | | | | | | | | |
| Sources: The Port of Tallinn, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency. | | | | | | | | | | | | | | | |
| NB: In this context the route between Tallinn and Kapellskär is the route between Paldiski South Harbour and Kapellskär. | | | | | | | | | | | | | | | |

| Helsinki - other ports | | | | | | |
|---|---|---|---|---|---|---|
| | 2010 | | 2005 | | 2000 | |
| **CARGO TRAFFIC** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** |
| Cargo traffic in total (including transit traffic) | | | | | | |
| Export | 1 346 414 | 305 862 | 1 220 921 | 298 532 | 695 751 | 333 075 |
| Import | 1 455 250 | 311 793 | 857 789 | 281 403 | 430 298 | 291 128 |
| **In total** | **2 801 664** | **617 655** | **2 078 710** | **579 935** | **1 126 049** | **624 203** |
| Transit traffic | | | | | | |
| Export | 2 767 | 1 644 | 7 917 | 2 122 | 6 951 | 2 884 |
| Import | 39 987 | 10 554 | 1 405 | 13 290 | 1 608 | 8 636 |
| **In total** | **42 754** | **12 198** | **9 322** | **15 412** | **8 559** | **11 520** |
| | | | | | | |
| **UNITIZED TRAFFIC** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** |
| Unitized traffic in total (including transit traffic) | | | | | | |
| Export | 1 345 829 | 305 726 | 1 204 582 | 298 377 | 677 437 | 330 563 |
| Import | 1 371 468 | 311 067 | 729 551 | 280 524 | 380 351 | 287 486 |
| **In total** | **2 717 297** | **616 793** | **1 934 133** | **578 901** | **1 057 788** | **618 049** |
| Containers (Pcs) | | | | | | |
| Export | 1 017 | N/A | 711 | 9 | 761 | 0 |
| Import | 1 439 | N/A | 1 302 | 10 | 1 282 | 10 |
| **In total** | **2 456** | **N/A** | **2 013** | **19** | **2 043** | **10** |
| Trucks & Trailers (Pcs) | | | | | | |
| Export | 118 847 | 19 429 | 91 274 | 19 024 | 54 541 | 20 667 |
| Import | 117 676 | 19 116 | 81 147 | 18 387 | 51 539 | 20 246 |
| **In total** | **236 523** | **38 545** | **172 421** | **37 411** | **106 080** | **40 913** |
| Rail waggons (Pcs) | | | | | | |
| Export | N/A | N/A | 0 | N/A | N/A | N/A |
| Import | N/A | N/A | 7 | N/A | N/A | N/A |
| **In total** | **N/A** | **N/A** | **7** | **N/A** | **N/A** | **N/A** |
| | | | | | | |
| **PASSENGER TRAFFIC** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** |
| Passengers (Pcs) | 6 967 055 | 2 350 405 | 6 086 919 | 2 517 759 | 6 227 349 | 2 675 106 |
| | | | | | | |
| **VESSEL TRAFFIC** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** | **Tallinn** | **Stockholm** |
| Vessel calls | 5 291 | about 720 | N/A | about 720 | N/A | about 720 |
| | | | | | | |
| Sources: The Port of Helsinki, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency. | | | | | | |

| Turku - other ports | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2010 | | | 2005 | | | 2000 | | |
| **CARGO TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Cargo traffic in total (including transit traffic) | | | | | | | | | |
| Export | 0 | 802 406 | 34 | 53 546 | 1 014 868 | 8 544 | 6 053 | 1 048 837 | 2 |
| Import | 0 | 820 392 | 6 763 | 70 853 | 962 384 | 283 | 4 171 | 1 004 807 | 32 665 |
| **In total** | **0** | **1 622 798** | **6 797** | **124 399** | **1 977 252** | **8 827** | **10 224** | **2 053 644** | **32 667** |
| Transit traffic | | | | | | | | | |
| Export | 0 | 6 028 | 0 | 2 069 | 8 354 | 1 | 13 | 3 439 | 0 |
| Import | 0 | 6 298 | 44 | 7 790 | 45 776 | 0 | 187 | 16 815 | 2 |
| **In total** | **0** | **12 326** | **44** | **9 859** | **54 130** | **1** | **200** | **20 254** | **2** |
| | | | | | | | | | |
| **UNITIZED TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Unitized traffic in total (including transit traffic) | | | | | | | | | |
| Export | 0 | 801 716 | 0 | 53 544 | 1 014 383 | 120 | 5 157 | 989 049 | 0 |
| Import | 0 | 805 156 | 215 | 70 853 | 929 430 | 86 | 3 961 | 936 048 | 325 |
| **In total** | **0** | **1 606 872** | **215** | **124 397** | **1 943 813** | **206** | **9 118** | **1 925 097** | **325** |
| Containers (Pcs) | | | | | | | | | |
| Export | 0 | 105 | 0 | 2 | 526 | 55 | N/A | 190 | 0 |
| Import | 0 | 48 | 8 | 0 | 225 | 0 | N/A | 174 | 48 |
| **In total** | **0** | **153** | **8** | **2** | **751** | **55** | **N/A** | **364** | **48** |
| Trucks & Trailers (Pcs) | | | | | | | | | |
| Export | 0 | 42 694 | N/A | 2 816 | 43 629 | 0 | 337 | 44 718 | 0 |
| Import | 0 | 46 292 | N/A | 3 990 | 45 556 | 17 | 228 | 47 742 | 49 |
| **In total** | **0** | **88 986** | **N/A** | **6 806** | **89 185** | **17** | **565** | **92 460** | **49** |
| Rail waggons (Pcs) | | | | | | | | | |
| Export | 0 | 1 952 | N/A | N/A | 5 290 | N/A | N/A | 4 760 | N/A |
| Import | 0 | 1 983 | N/A | N/A | 5 276 | N/A | N/A | 4 757 | N/A |
| **In total** | **0** | **3 935** | **N/A** | **N/A** | **10 566** | **N/A** | **N/A** | **9 517** | **N/A** |
| | | | | | | | | | |
| **PASSENGER TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Passengers (Pcs) | 0 | 3 003 146 | N/A | 611 768 | 2 619 023 | N/A | 73 374 | 3 440 438 | N/A |
| | | | | | | | | | |
| **VESSEL TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Vessel calls | 0 | 1 735 | 47 | N/A | 2 090 | 64 | N/A | 2 118 | 55 |
| | | | | | | | | | |
| Sources: The Port of Turku, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency. | | | | | | | | | |

| Naantali - other ports | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2010** | | | **2005** | | | **2000** | | |
| **CARGO TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Cargo traffic in total (including transit traffic) | | | | | | | | | |
| Export | 1 029 233 | 1 416 | 44 640 | 981 189 | 2 345 | 8 399 | 855 803 | 9 637 | 41 706 |
| Import | 1 034 195 | 0 | 9 469 | 1 104 973 | 0 | 95 227 | 878 051 | 2 553 | 235 855 |
| **In total** | **2 063 428** | **1 416** | **54 109** | **2 086 162** | **2 345** | **103 626** | **1 733 854** | **12 190** | **277 561** |
| Transit traffic | | | | | | | | | |
| Export | N/A | N/A | N/A | N/A | N/A | N/A | 0 | N/A | N/A |
| Import | N/A | N/A | N/A | N/A | N/A | N/A | 1 245 | N/A | N/A |
| **In total** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **1 245** | **N/A** | **N/A** |
| | | | | | | | | | |
| **UNITIZED TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Unitized traffic in total (including transit traffic) | | | | | | | | | |
| Export | 1 022 523 | N/A | N/A | 973 149 | N/A | N/A | 846 582 | N/A | N/A |
| Import | 1 032 957 | N/A | N/A | 1 103 628 | N/A | N/A | 865 631 | N/A | N/A |
| **In total** | **2 055 480** | **N/A** | **N/A** | **2 076 777** | **N/A** | **N/A** | **1 712 213** | **N/A** | **N/A** |
| Containers (Pcs) | | | | | | | | | |
| Export | N/A | N/A | N/A | N/A | N/A | N/A | 2 | N/A | N/A |
| Import | N/A | N/A | N/A | N/A | N/A | N/A | 0 | N/A | N/A |
| **In total** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **2** | **N/A** | **N/A** |
| Trucks & Trailers (Pcs) | | | | | | | | | |
| Export | 58 502 | N/A | N/A | 53 575 | N/A | N/A | 43 655 | N/A | N/A |
| Import | 68 602 | N/A | N/A | 66 095 | N/A | N/A | 49 797 | N/A | N/A |
| **In total** | **127 104** | **N/A** | **N/A** | **119 670** | **N/A** | **N/A** | **93 452** | **N/A** | **N/A** |
| Rail waggons (Pcs) | | | | | | | | | |
| Export | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Import | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| **In total** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| | | | | | | | | | |
| **PASSENGER TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Passengers (Pcs) | 171 054 | N/A | N/A | 121 301 | N/A | N/A | 94 102 | N/A | N/A |
| | | | | | | | | | |
| **VESSEL TRAFFIC** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** | **Kapellskär** | **Stockholm** | **Tallinn** |
| Vessel calls | 1 012 | 0 | 18 | N/A | N/A | N/A | N/A | N/A | N/A |
| | | | | | | | | | |
| Sources: The Port of Naantali, MARTINA-database, Finnish Maritime Administration, The Finnish Transport Agency. | | | | | | | | | |

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