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FREIGHT POTENTIAL OF THE EASTERN FINLAND – EASTERN ESTONIA TRANSPORT CORRIDOR



Reima Helminen, Minna Alhosalo & Katrin Suursoo



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FOREWORD

Since the early 1990's European Union has been promoting multimodal transport corridor policy known as TEN-T policy. Corridor policy approaches has been adopted also on regional cross-border programmes to improve connectivity. This report has been made as a part of Reinforcing Eastern Finland-Estonia Transport Corridor (REFEC) which is an ERDF funded project under the Interreg Central Baltic Programme 2014–2020 in priority Well-connected region. The REFEC project supports the transport corridor by mapping the cargo potential and impact of the activated corridor, and most importantly, conducting different concrete activities that aim removing obstacles in the establishment of Loviisa-Kunda ro-ro connection.

The ro-ro traffic between Finland has been growing ever since the 1990's when Estonia restored its independence. The growth trend in volumes has raised the issue of alternative routings for ferry traffic. The study is based on statistical analysis, survey & interviews as well as workshop elaborations. It gives an overview of the current situation of Finnish-Estonian ro-ro transports and the cargo potential of the eastern Finland and northeastern Estonia and its future outlook which is affected not only economic but also political, social and technical developments. Besides the cargo potential, the commuter traffic as a need-based traffic is included in the analysis, while the tourism is omitted. The results form the basis for feasibility for Loviisa-Kunda ro-ro connection.

The report is made by research experts Reima Helminen and Minna Alhosalo in Centre for Maritime Studies, part of Brahea Centre at the University of Turku. Estonian part of the research was conducted by Katrin Suursoo and her team from KT Europroject Management. The authors want express their gratitude to all parties that took part to the surveys & interviews and workshop, or provided material for the study.

Turku 20th November 2018

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SUMMARY

The aim of the study is to analyse the freight potential between Eastern Finland and Eastern Estonia. The specific focus is on the trucks and semi-trailers, which could be transported with the anticipated ferry line between the port of Loviisa in Finland and port of Kunda in Estonia. The study results are based on both statistical analysis, surveys and interviews to transportation companies, forwarders and cargo owners. This report is made as a part of the project Reinforcing Eastern Finland – Estonia Transport corridor (REFEC) funded mainly from the Interreg Central Baltic programme of the European Union.

The ro-ro volume between Finland and Estonia has grown strongly over the ten last year. The annual average growth has been well over 7% and the number of ro-ro units has grown up to 387 000 of which 96% are trucks (2017). The trade with the Baltic states (using FI-EE ferries) has grown modestly while the cargo transiting the Baltics to/from CEE countries and beyond has increased strongly. The logistics industry believes that the growth will continue although in lower level. The factors affecting to increasing volumes are the on-going transfer and growth of production in eastern and southeastern Europe, and the increasing use of semi-finished products in general. Raising standard of living in these regions increases consumption which translates into more cargo transports in Via Baltica. Rail Baltica will be ready 2026 generating more transport demand over the Gulf of Finland as well.

The transport corridor area was defined to eight eastern counties in Finland and four northeastern counties in Estonia based on the distance analysis to the ports of Loviisa and Kunda. The analysis concerning the freight potential of the Finnish part of the corridor indicates that the export volumes are considered favourable (forest and metal industry) being about ¼ of the national value of exports. Forest industry could export roughly 20 000 - 25 000 units from the corridor area and through Via Baltica using the anticipated Loviisa – Kunda connection. This could provide a base cargo for the envisioned ferry connection. The import potential was considered to be more limited (8,5% of national value) since the import to Finland is channeled currently a lot via Helsinki. The cargo potential in Estonian part of the corridor is much lower due to the difference in the size of economy and the marginal transit via Finland. Based on the interviews it would make around 5 500 trucks per year (import and export). However, if the Uusimaa county is, even partly, included in the corridor analysis (Loviisa is located in eastern Uusimaa) the cargo potential would be considerably larger.

The industry is rather content with the current ro-ro services, but the congestion is seen as a significant challenge in capital cities. The possible policy decisions for steering heavy traffic from the city centres can provide opportunities for alternative ro-ro routes like Loviisa-Kunda. Specializing into niche cargoes (hazardous goods, oversize cargo etc.) in the market where the overall volumes are growing is seen also as a possibility for a new ferry service. The Estonian commuters in the corridor area can be considered as an important user group of the foreseen Loviisa-Kunda connection.

Based on the estimations of the current cargo potential and the positive expectations for the roro market over the Gulf of Finland, and including the possible policy changes affecting the cargo routing, the Loviisa-Kunda ferry connection can be considered a future alternative for Finland-Estonia roro transports.

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1 INTRODUCTION

1.1 Background and aim of the study

The heavy vehicle traffic (trucks and trailers) on ferries over the Gulf of Finland has been ever increasing and the trend is estimated to continue. At present there are two ferry routes between Finland and Estonia (Helsinki-Tallinn and Hanko-Paldiski). Considerable part of this heavy vehicle traffic takes place between Eastern Finland and Eastern Estonia. Currently the trucks need to drive via Helsinki-Tallinn, or via Hanko-Paldiski, even longer route. One alternative to make the Eastern Finland - Eastern Estonia transport corridor more efficient is to establish a ferry connection between ports of Loviisa in Finland and Kunda in Estonia (Figure 1.1). This connection is practically in direct north-south axis (54 sea miles). Moreover, there is no Russian territorial water in between.

The REFEC project aims at reinforcing the establishment of Eastern Finland – Estonia transport corridor. The project outputs are focused mainly on concrete measures to support Loviisa-Kunda ferry connection. The cargo potential of the corridor is analysed and the impact of the developed corridor is verified. Furthermore, different other activities are made during the project. These include business model(s) with potential shipping companies, port operative and investment plans, roadmap to comply the needed licenses and regulatory requirements, best practices transferable from similar connections in the BSR, ferry scheduling and route option plans, marketing plan and events to promote the connection. The results of the cargo potential study are introduced in this report.

In addition to the faster and seamless transports between eastern parts of Finland and Estonia, there are other beneficiaries of the activated transport corridor. The traffic to/from Eastern Finland that uses Via Baltica would benefit from more direct connections as well. Another major advantage is relieving the pressure of growing heavy traffic (traffic jams, emissions, noise, dust) in the city centres of Tallinn and Helsinki. The decreased mileage in transports means also less CO₂ emissions.

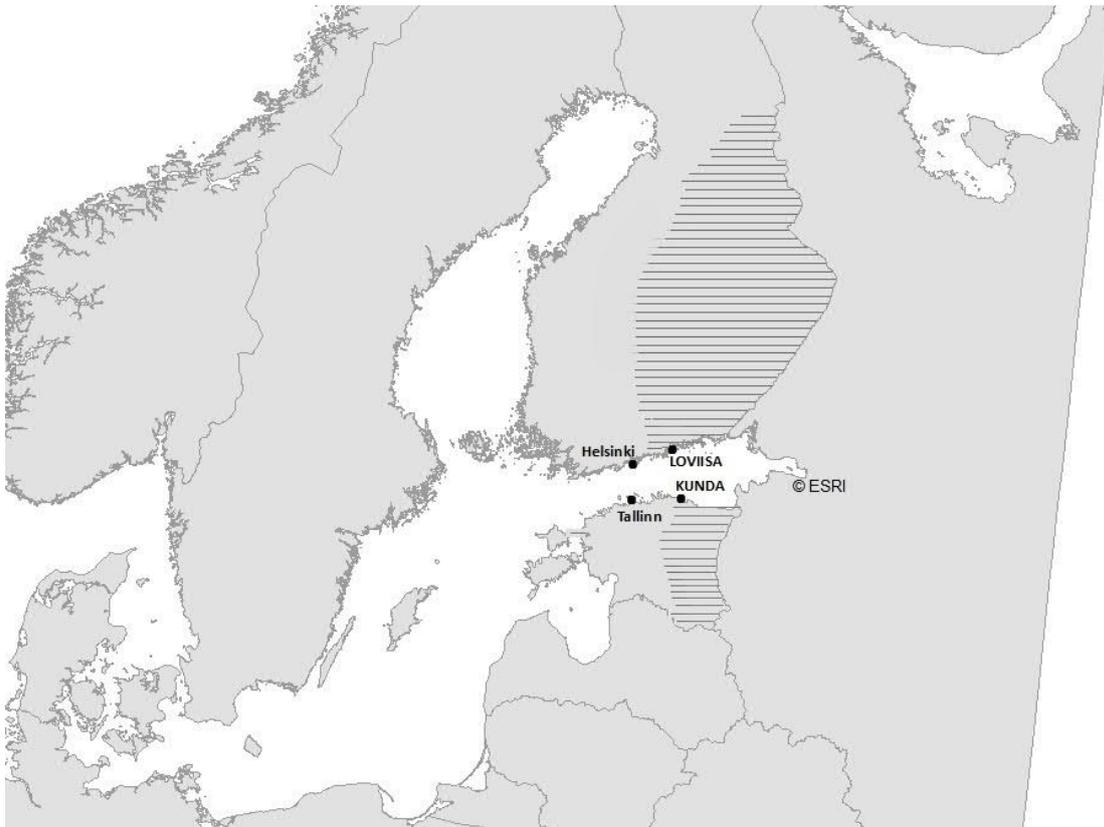


Figure 1.1. The tentative REFEC corridor area.

1.2 Scope of the study and research approach

A statistical analysis was conducted on Finnish-Estonian seaborne trade (Finnish Customs) and Finnish-Estonian seaborne cargo transports (Finnish Traffic Agency) to

- find out the evolution of transports over the last 10 years
- trace the role of Estonia as a transport destination or origin, and the rest of the countries where Finnish foreign trade uses ro-ro ferry connections to Estonia
- to learn on the commodities transported in ro-ro units over Gulf of Finland

Thereafter, the study delineates the Eastern Finland and Eastern Estonia transport corridor area in detail in both countries. The survey and interviews complemented the statistical analysis on the cargo potential of the corridor and other prerequisites for the ferry connection. This was further elaborated in a workshop of which results are reported. Finally, the Estonian commuters' passenger car potential is analysed based on the statistics from different sources.

1.3 Previous studies related to aim and content of REFEC project

Some studies have been conducted earlier to estimate the cargo potential between Eastern Finland and Estonia & Russia. In 2007-2008 Kymenlaakso University of Applied Sciences (KYAMK) realized a project called RAMAPOT, whose aim was to study cargo and passenger potential between Kotka and Sillamäe ferry line¹. In order to estimate the potential from Eastern Finland, surveys and interviews were made. According to the results of the project the ferry line would be most suitable for full truck loads transporting raw materials and products from industry (paper, cardboard, sawn wood, furniture, metal products). In addition, it was estimated that the amount of imported and exported goods could be doubled or even tripled of the level of 2007 which would translate into 14 000-22 000 units. Meanwhile, the roro total volume between Finland and Estonia since the RAMAPOT study has doubled. Suitable timetables, the number of daily departures and pricing were regarded as significant factors when decisions of cargo routings are made. The catchment area for cargo was estimated to be east of Loviisa – Lahti – Jyväskylä – Vaasa in Finland and in Via Baltica and eastwards from it in Estonia.

Another research project TRIK - Passenger and cargo potential analysis between Kotka, Kunda and Kronstadt² was conducted also by KYAMK in 2013. In the TRIK project the preconditions, interests and need for passenger and/or cargo transport from Kotka to the Port of Kunda in Estonia and to the port of Kronstadt in Russia were explored. The basis for the analysis was to study the triangle route between the three ports and to evaluate cargo and passenger transport potential from Kotka to the both ports. The study indicated that there were only patchy interest for the planned route, and the potential between these three ports was considered to be quite limited. Instead, the separated routes from Kotka to Kunda or to Kronstadt were considered as feasible under certain conditions. According to the results, strong emphasis should be put for marketing the new line, and activities of a shipping company should be persistent in order to find out whether the line is feasible or not.

These both reference studies differ from REFEC project whose main emphasis is on the cargo transports and the approach is based on corridor development between Eastern Finland and Eastern Estonia. The passengers and their cars are seen as an additional service in the corridor activation. Furthermore, the transport connection is planned between the port of Loviisa in Finland and port of Kunda in Estonia – a novel, and distinctly shorter sea connection than in previous projects.

In addition to above mentioned studies, there exists a HLJ report which concentrates on the freight traffic in the passenger ferry ports of Helsinki and Tallinn³. Interview-based survey

¹ Eho, J. & Haikonen, M. (2008). Rahti- ja matkustajapotentiaali Kotka-Sillamäe laivaliikenteessä. RAMAPOT hanke. Loppuraportti. Kymenlaakson ammattikorkeakoulu. 39s.

² TRIK-HANKE. Kotkan, Kundan ja Kronstadtin välisen laivareitin matkustaja- ja rahtipotentiaalin selvitys.

³ Rätty, P., Planting, A., Määttä, A., Kantele (2013). HLJ 2015 Freight traffic in the Helsinki passenger ferry ports in autumn 2012.

showed that 54,2% of shipments from Helsinki to Tallinn originate outside Uusimaa county. With regard to freight traffic from Tallinn to Helsinki, 46,4 % have a destination in Finland outside Uusimaa. The shipments were not symmetrical, because shipments from Helsinki included, besides Tallinn, also routes to Stockholm and St. Petersburg, but shipments from Tallinn did not include these two origins of shipments. The main volumes are, however, between Helsinki and Tallinn.

Another study that concentrates on the development of transport, the hinterlands and the forelands of coastal ports of Finland was made in 2017. In the Study on the hinterlands of the Finnish sea ports⁴ the situation between the period 2009-2012 and the period 2013-2015 was compared. The hinterland means the municipalities with straight road and rail routes from the port, port municipalities, port areas and their neighboring areas. According to the study, the total cargo transport of Finnish ports decreased from 104,8 million tons per year (average of 2009-2012) to 103,7 million tons per year (average of 2013-2015). Overall, the shares of the three main types of goods (general cargo, dry bulk and liquids) remained nearly the same. The quantity of cargo transported between ports and their hinterlands decreased by approximately 3,2 million tons between the time periods, from 46,5 to 43,3 million tons per year. The cargo transported to and from port areas and their neighboring areas increased approximately by two million tons per year in the latter time period. The study includes also data related to the foreign transportation of goods which showed that the cargo transported by sea between Finland and foreign ports increased from 91,9 to 94,0 million tons per year. In conclusion, the importance of coastal areas, volume-wise, grew compare to the hinterlands. Measured by the quantity of cargo transported, the largest foreland countries were Germany (in exports), Russia (in imports) and Sweden.

⁴ Salanne, I., Jaakkola, E. & Tikkanen, M. (2017). Suomen satamien takamaatutkimus. Liikenneviraston tutkimuksia ja selvityksiä 55/2017. 98s.

2 STATISTICAL ANALYSIS OF THE TRADE AND CARGO VOLUMES CROSSING THE GULF OF FINLAND

The development of seaborne cargo volume in Finnish-Estonian trade has fluctuated between 3 and 3,8 Mt in 2008-2017 (Figure 2.1) with exception of the year 2009 where the financial crisis affected to the volumes strongly. During the same period the cargo transports between Finnish and Estonian ports were about twice as large (growth rate 2008-2017 on average 4,5%) as the trade between the two countries in tons. The difference has shown a steady growth over the 10 year period (grey line). In 2015 the Finnish transit cargo surpassed the Finnish-Estonian trade volume. The trend anticipates that the Finnish cargo transiting Estonia has an increasing role in the maritime transport between the countries.

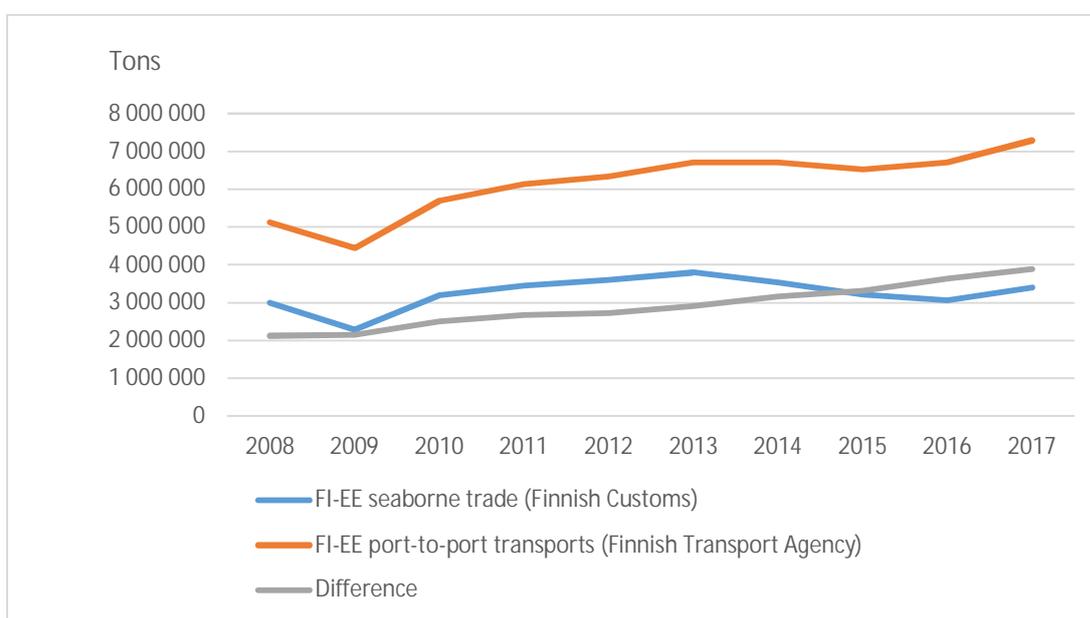


Figure 2.1. The development of seaborne trade and port-to-port transport volume between Finland and Estonia in 2008-2017.

All in all, the total cargo volume in tons between Finnish and Estonian ports has grown 42% between 2008 and 2017, while the trade between the two countries has grown only 13%.

2.1 Finnish-Estonian seaborne trade (Customs statistics)

The seaborne trade between Finland and Estonia has been annually around 3,0-3,8 Mt besides the recession year 2009 (2,3 Mt). Since 2011 the import volume from Estonia to Finland has decreased and Finnish export gradually grown (Figure 2.2). In 2014 the Finnish export in tons exceeded the import from Estonia.

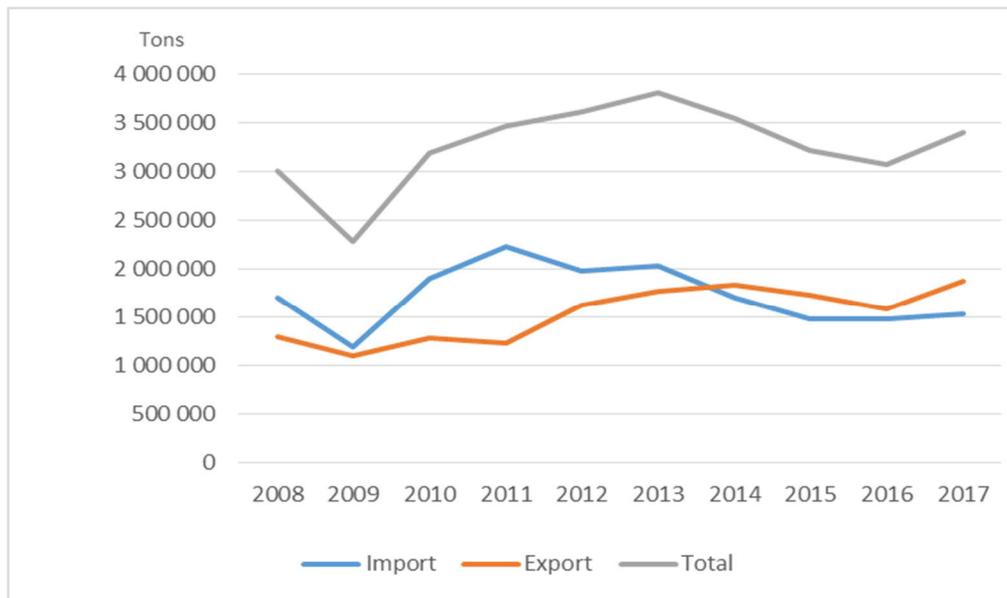


Figure 2.2. Finnish seaborne import and export with Estonia 2008-2017 (source: Finnish Customs).

Much of the variation in trade volume is based on the crude materials which until 2013 accounted around 60% of the tons, and since then around 50% of the tons (Figure 2.3). Besides basic manufactures and mineral fuels, the rest of the commodity groups have remained fairly stable over the 10 year period. The basic manufactures has gradually grown from the collapse in 2009 (0,3 Mt) due to the economic recession. In 2017 it has nearly achieved the level of year 2008 (0,6 Mt). The mineral fuels has been growing from 0,1 Mt in 2008 peaking in 2014 in 0,6 Mt, and recently remaining around 0,4 Mt annually.

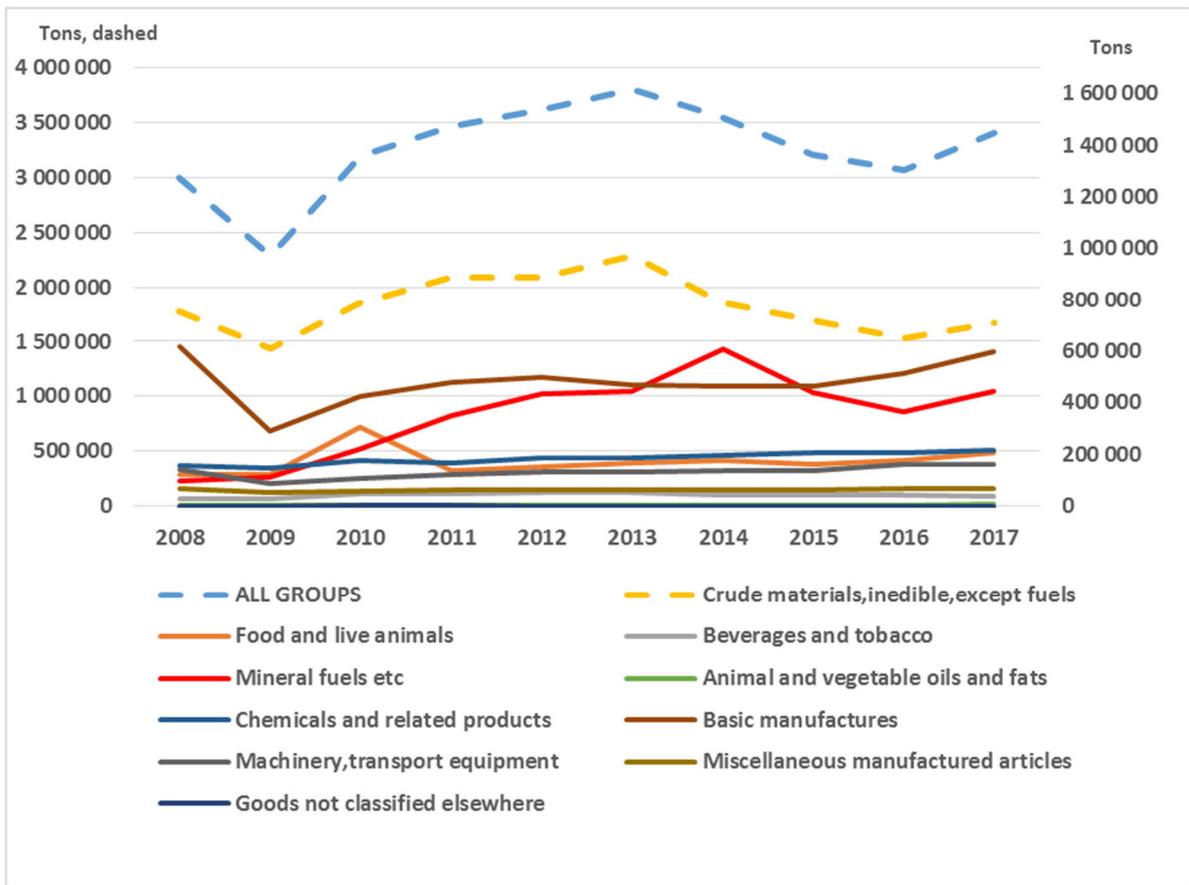


Figure 2.3. Finnish-Estonian seaborne trade cargo volumes (source: Finnish Customs).

In the seaborne import from Estonia to Finland the crude materials is the major commodity group accounting 50-75% of import over the period (Figure 2.4). The decreasing crude volumes have had an impact on total import volume which has been 1,5 Mt/y during the recent years. The major commodities in crude materials group have been raw (round) wood and wood chips which account for on average 3/4 of the import. While the import of wood chips has remained fairly stable (0,2-0,3 Mt/y) the raw wood has decreased from 0,5 Mt (2011) to 0,15 Mt (2017). Most commodity groups have remained on fairly low and stable level. However, there has been modest growth in machinery and transport equipment and food imports. The basic manufactures, largest group after crude materials, has fluctuated a lot but has grown since 2014 to the same level it was in 2008 (0,6 Mt).

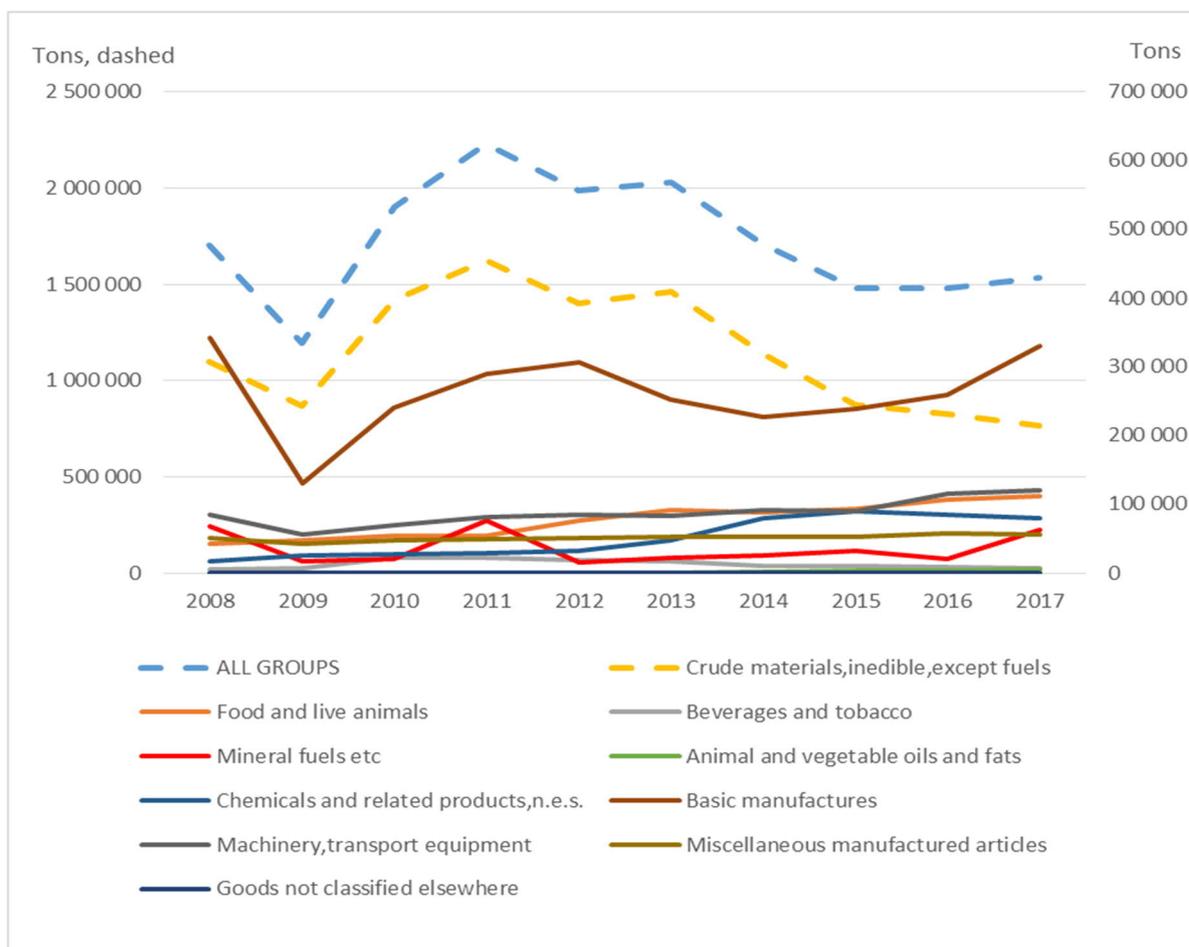


Figure 2.4. Seaborne import from Estonia to Finland (source: Finnish Customs statistics).

The export from Finland to Estonia has grown from 1,3 Mt in 2008 to 1,9 Mt in 2017 although there has been minor decreases in some years (Figure 2.5). In export like in import, the main volume is in the crude materials fluctuating between 1/3 and 1/2 of the total export volume. The main commodity in crude materials is stone, sand and gravel accounting since year 2015 around 2/3 of the crude volume. The sawn wood is the other major commodity which has steadily grown from 0,02 Mt to 0,2 Mt over the period. Together these minerals and sawn wood account for more than 4/5 of Finnish crude materials exports to Estonia. The basic manufactures group has grown steadily since 2009 from 0,16 Mt to 0,27 Mt in 2017. The mineral fuels exports were increasing strongly from 0,03 Mt in 2008 to 0,58 Mt in 2014, then coming down to 0,38 Mt in 2017. The other commodity groups volumes have been on quite low and stable level the chemicals being the largest group with just over 0,1 Mt per year.

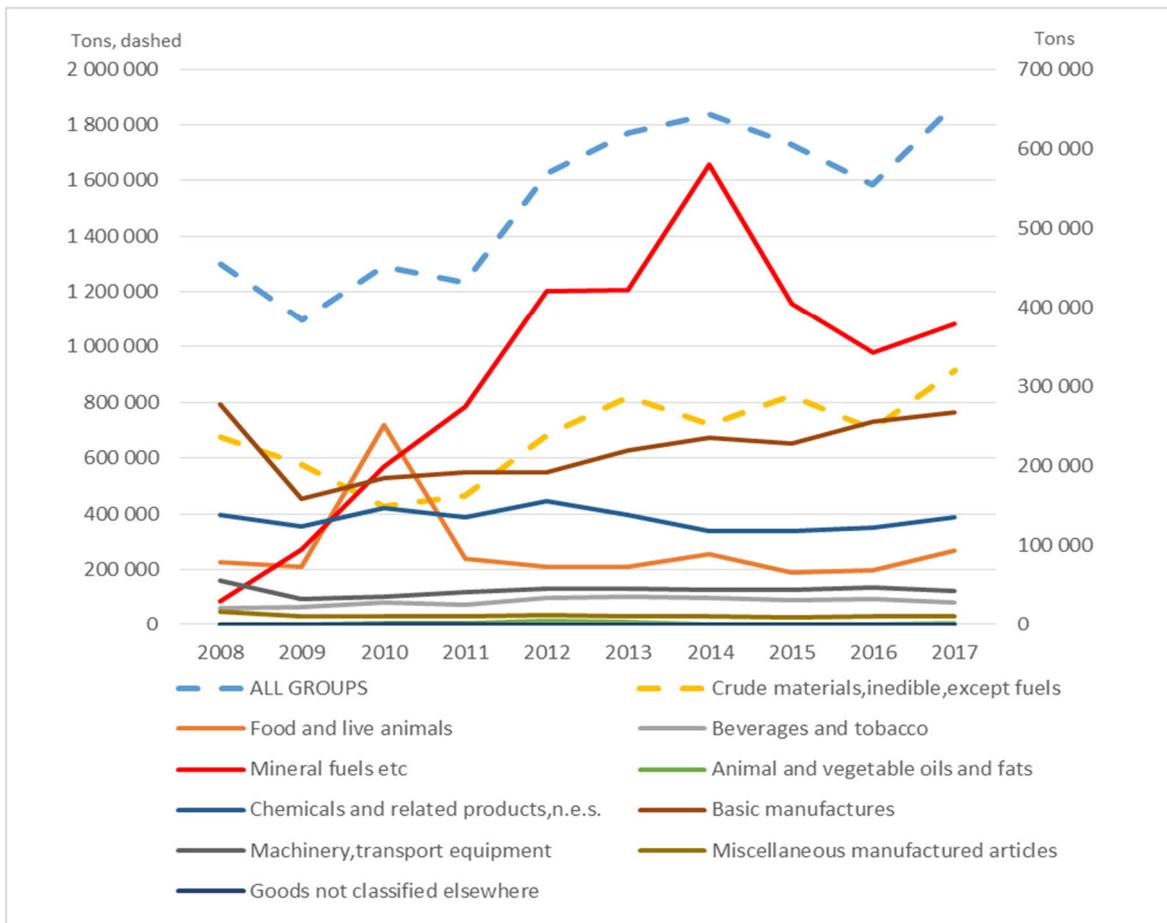


Figure 2.5. Seaborne export from Estonia to Finland (source: Finnish Customs statistics).

2.2 Finnish-Estonian seaborne cargo transports (Finnish Transport Agency)

The seaborne cargo traffic (departing and arriving) between Finnish and Estonian ports has varied between 4,4 Mt in the recession year 2009 to 7,3 Mt in 2017 (Figure 2.6). The trend is pointing towards growing volumes. The general cargo is by far the greatest commodity group, and it has been growing steadily since 2009. General cargo accounted 58% (4,2 Mt) of all cargo in 2017. The second largest group is timber which has decreased from the top year 2013 (1,2 Mt) to 0,8 Mt in 2017. Crude minerals and cement has had a more stable development reaching also to 0,8 Mt in 2017. The oil products has been decreasing since the year 2013 (0,8 Mt) being 0,5 Mt in 2017. The next largest group, paper, has grown steadily from 0,1 Mt in 2008 to 0,4 Mt in 2017. The rest of the commodity groups have been below the 0,2 Mt volume during the recent years.

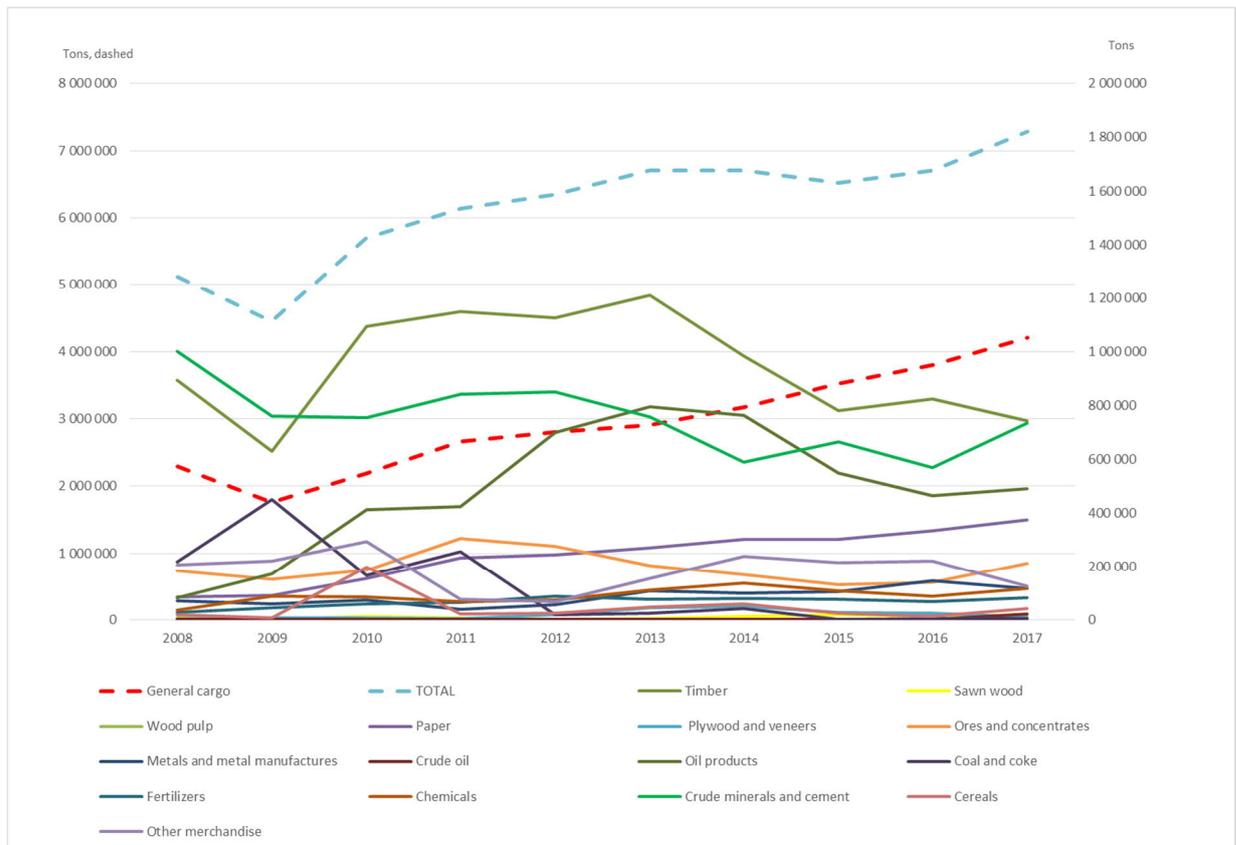


Figure 2.6. Seaborne cargo volumes (t) between Finnish and Estonian ports (source: Finnish Transport Agency).

The volume of arriving cargo (import) from Estonia to Finnish ports grew rapidly until the year 2011 to 3,5 Mt where it has remained more or less since then (Figure 2.7). The largest group has been steadily growing general cargo which has doubled its volume from 1 Mt to 2 Mt over the 10 year period. The second largest group is timber which peaked in 2013 in 1,2 Mt, then decreasing to 0,7 Mt in 2017. The import of other commodities has been relatively small and remained under the 0,2 Mt per year since year 2014.

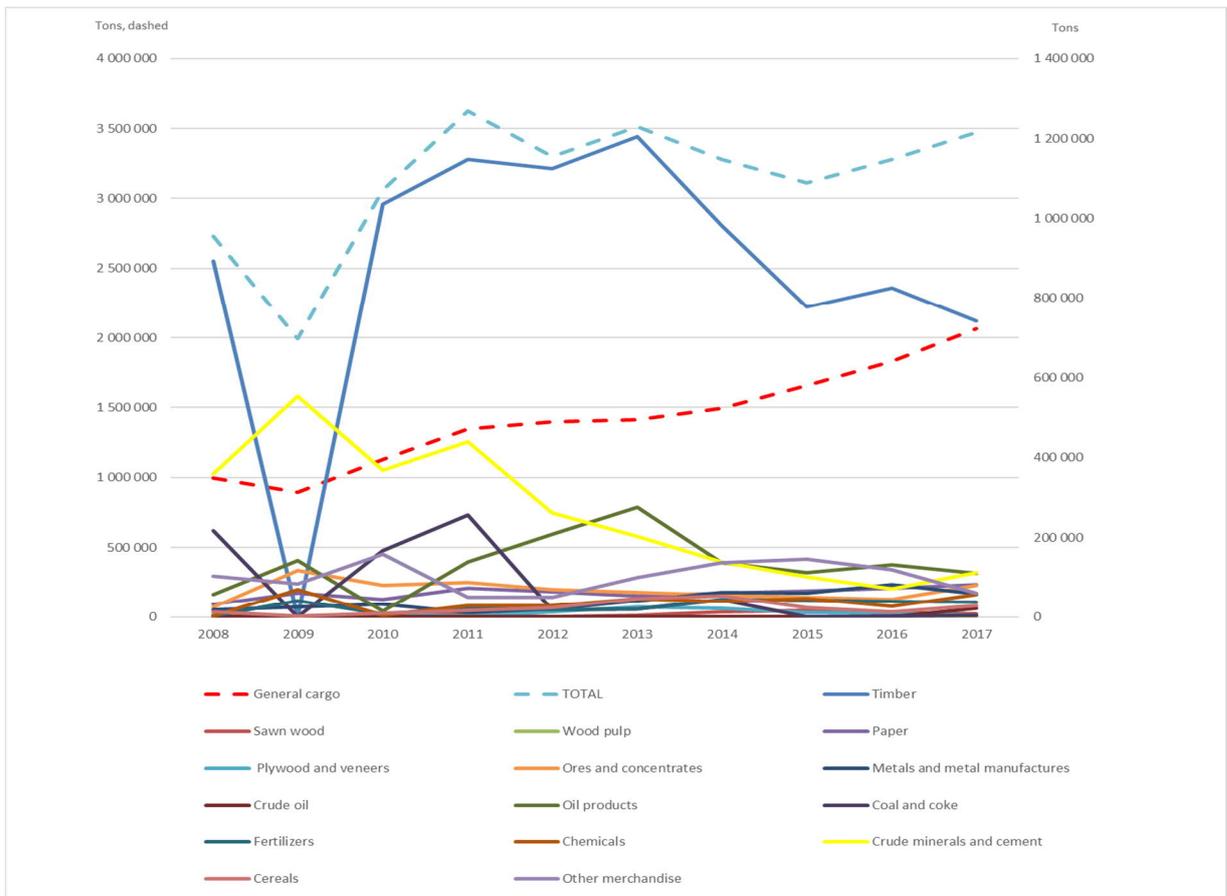


Figure 2.7. Seaborne cargo volumes (t) from Estonian to Finnish ports (source: Finnish Transport Agency).

The volume of departing cargo (export) from Finnish ports to Estonia has grown steadily over the whole period besides a minor decrease in 2011 (Figure 2.8). Like in import, general cargo has been the largest group growing from 0,9 Mt in 2009 to 2,1 Mt in 2017. The second largest group crude minerals and cement has remained around 0,5-0,6 Mt since 2012. The third group oil products grew since 2011, peaked in 2014 in 0,6 Mt, then decreasing to 0,4 Mt in 2017. The fourth group, paper has grown steadily from under 0,1 Mt to 0,3 Mt in 2017. The rest of the commodity groups have remained below 0,2 Mt since year 2013.

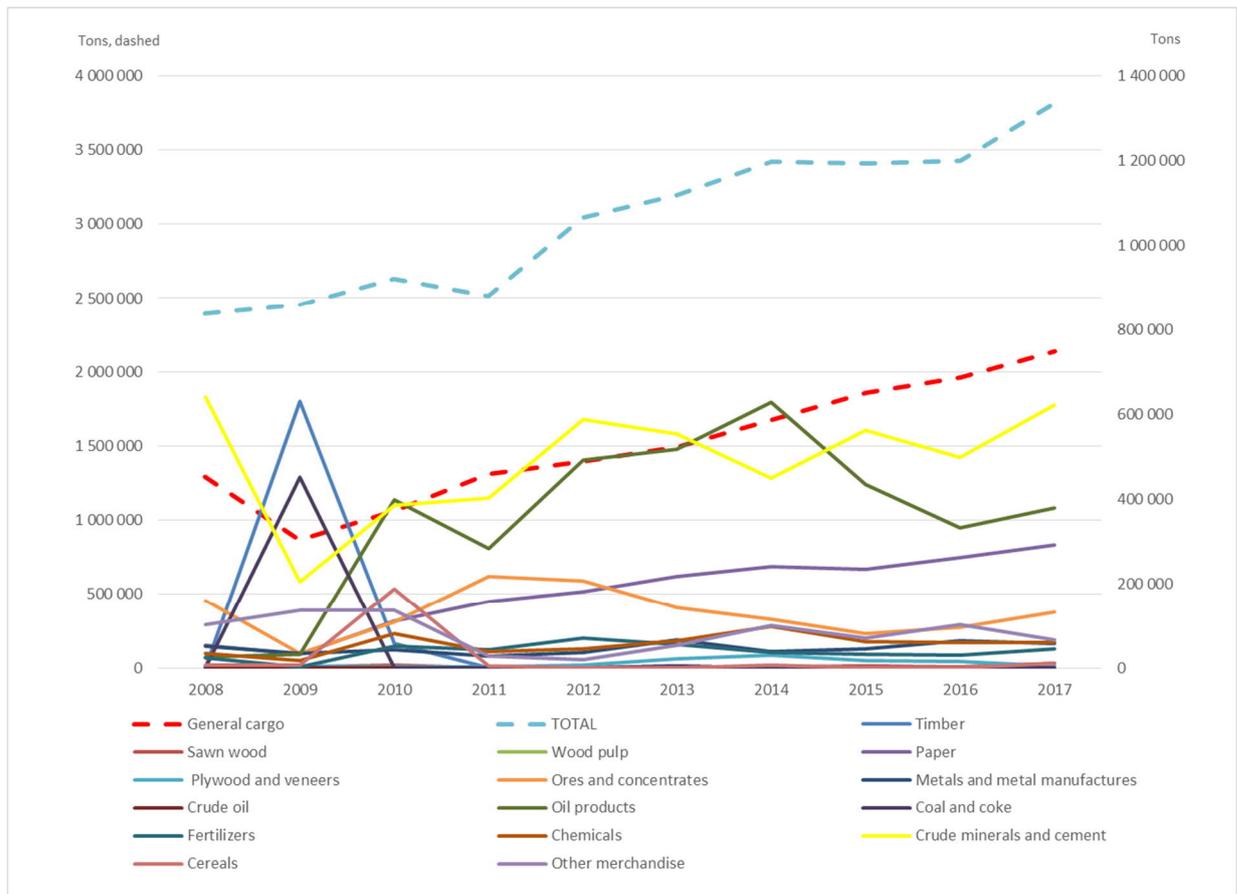


Figure 2.8. Seaborne cargo volumes (t) from Finland to Estonian ports (source: Finnish Transport Agency).

2.3 Comparison of Finnish-Estonian seaborne trade volumes and cargo transports

Finnish foreign trade is using Estonian ports for its export and import. Thus, a certain part of the transports are transiting Estonia, mainly towards/from south of the country. In spite of some differences in Finnish Customs and Finnish Transport Agency methods to compile statistics (see appendix 1.) the figures indicate that the Finnish foreign trade transiting Estonia was about 2,1 Mt in 2008. This volume has gradually grown up to 3,9 Mt in 2017 meaning that Finnish foreign trade via Estonia has increased more than its trade with Estonia itself (see Figure 2.1. above).

The figure 2.9 shows that the growing gap in FI-EE trade vs. FI transports via EE ports is based on the growth of Finnish export and import via Estonia over the period 2008-2017. The export to Estonia itself has also grown but less than the transit volumes, while the import is showing slightly decreasing trend.

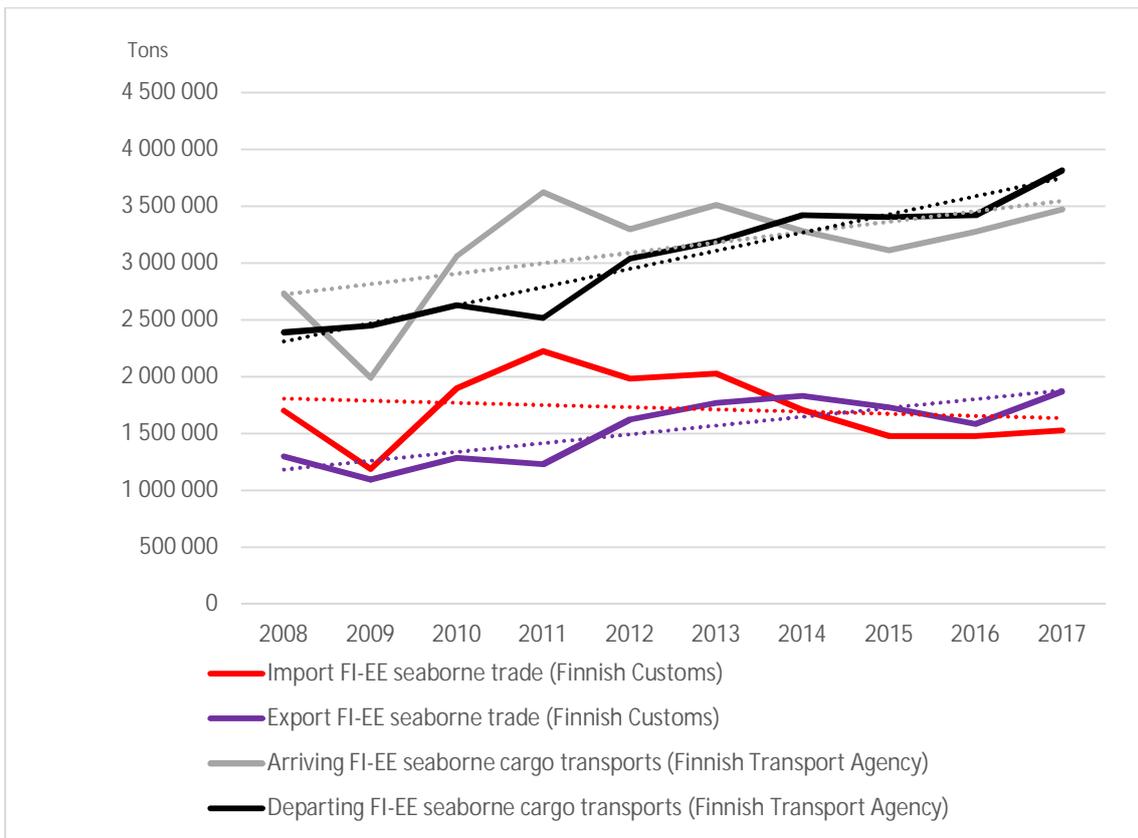


Figure 2.9. Finnish-Estonian seaborne trade volume and Finnish-Estonian port-to-port cargo volume broken into import and export (trendline dashed).

2.4 The development of unitized cargo in seaborne transports between Finland and Estonia

Unitized cargo between Finland and Estonia is based on trucks and semi-trailers. In practice there is no container traffic, besides containers on trucks, which is then classified as truck traffic in statistics. The number of roro units has been growing since 2008 from 210 000 units to 387 000 units in 2017. The average annual growth has been 7,4%. The financial crisis temporarily affected the 2009 figure which was negative but the recovery started already in the following year (Figure 2.10).

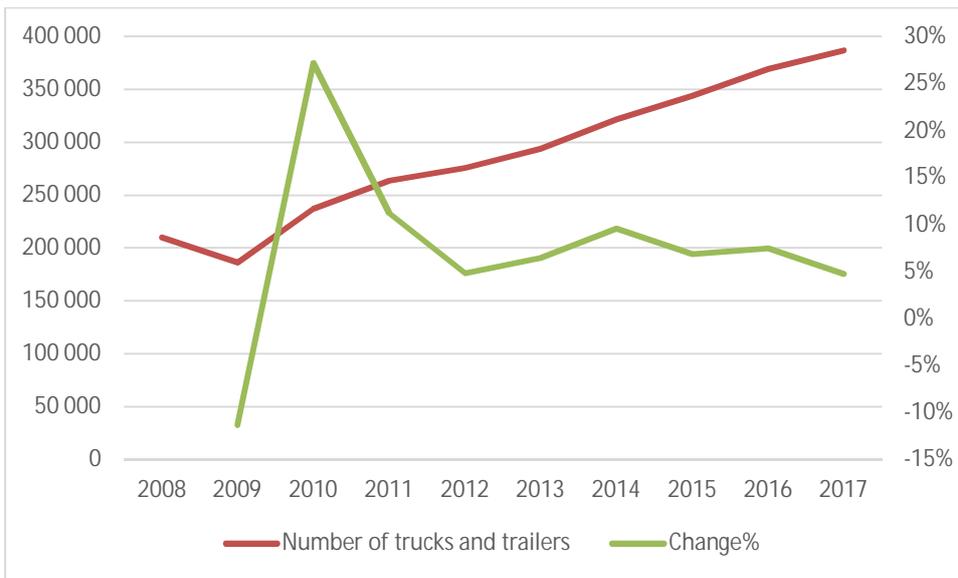


Figure 2.10. The evolution roro units in Finland-Estonian maritime transport (source: Finnish Transport Agency).

Finland-Estonia roro traffic is based currently on two routes: Helsinki-Tallinn and Hanko-Paldiski. The latter connection has been fully operational since 2013. The annual number of units in Hanko-Paldiski has been on average about 42 000 per year which is about 12,6% of the whole Finland-Estonia roro traffic (Figure 2.11). The average annual growth of FI-EE traffic has been around 20 000 roro units. Thus, the market has grown during two years approximately as much as annual the volume in the Hanko-Paldiski route.

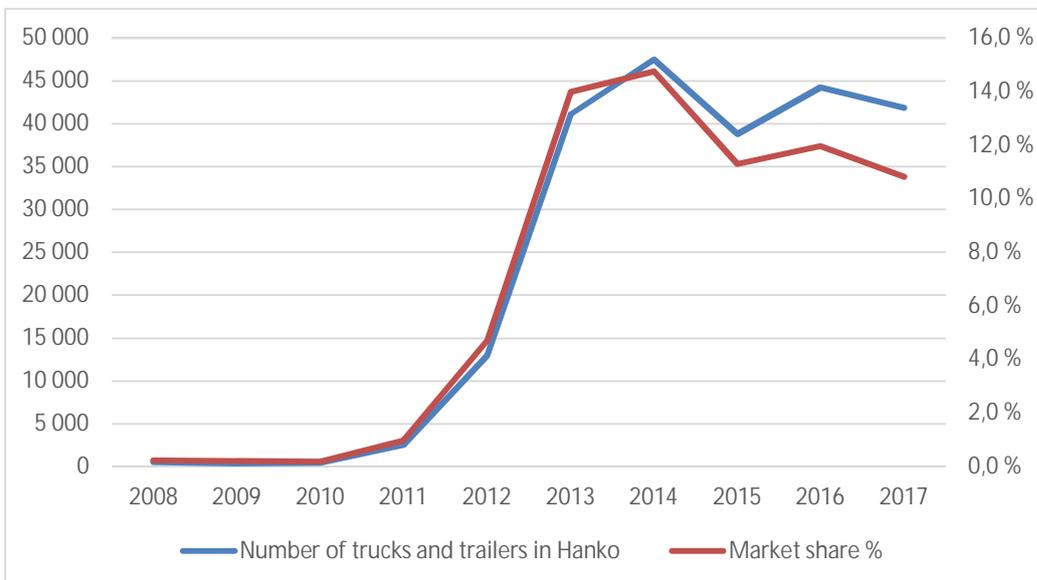


Figure 2.11. Evolution of Hanko-Paldiski roro unit volume and the share of total FI-EE roro volume (source: Finnish Transport Agency).

The volume transported in trucks and trailers has doubled since 2008 up to 4,8 Mt in 2017 (Figure 2.12) . The volume is mainly transported with trucks (96% of tons in 2017) while the share of semi-trailers has been low and decreasing besides a minor upturn in 2017.

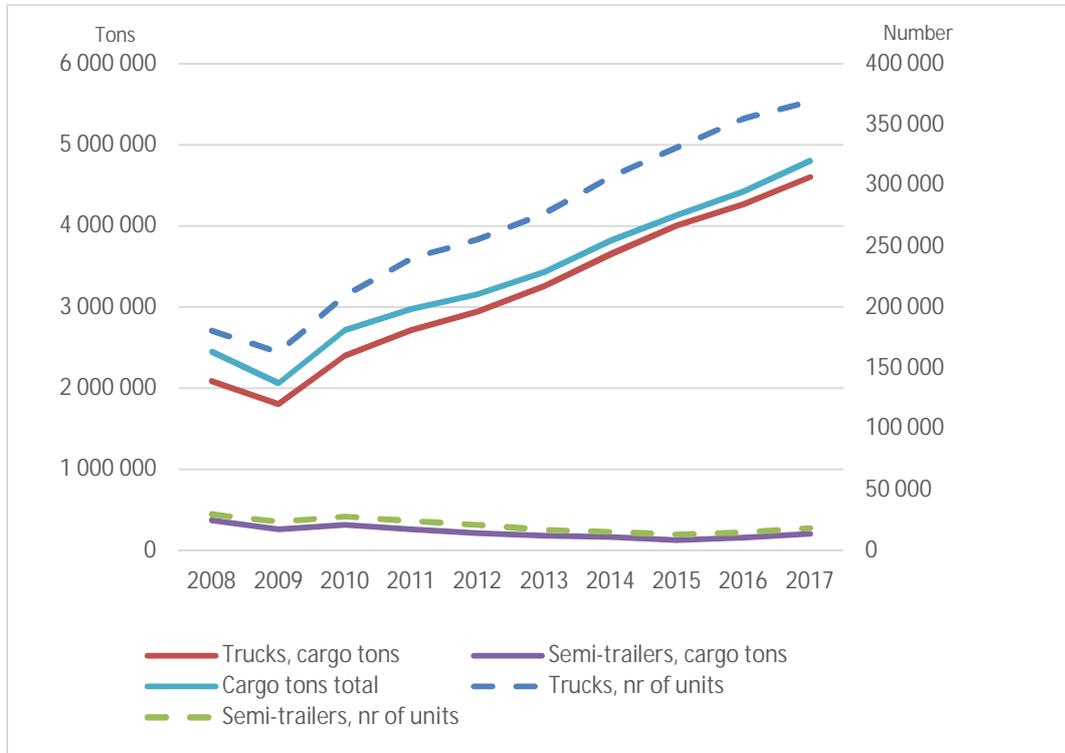


Figure 2.12. Development of FI-EE truck and semi-trailer transport 2008-2017 (source: Finnish Transport Agency).

The share of truck and trailer volume of all cargo volume has been about half of the volume until 2013, then growing up to about 2/3 of the total cargo (Figure 2.13). Interestingly, the volume transported in other modes decreased, especially in 2014-15, but the truck and trailer volume grew at a rate which kept the overall volume in growth trend.

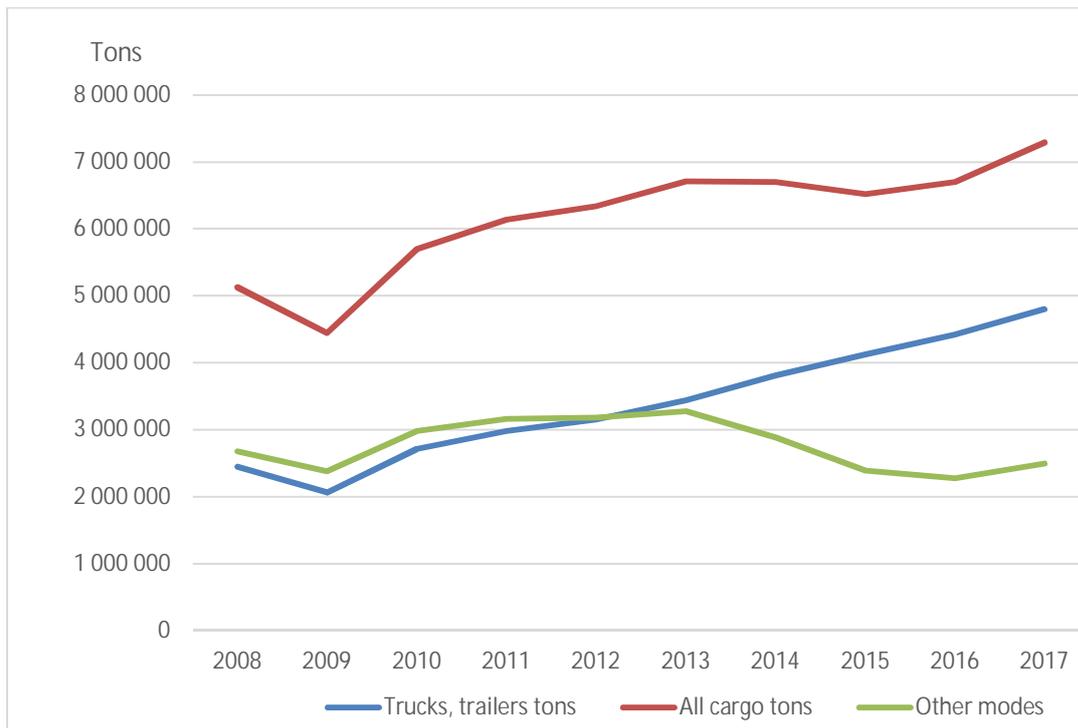


Figure 2.13. Volume of unitized cargo (trucks and semi-trailers) compared to all cargo between Finland and Estonia (source: Finnish Transport agency).

Finnish Transport Agency statistics is compiled of 16 different commodity types. The classification is based very much on different bulk type goods which are not usually transported in units, at least not in large quantities. The only group where "the unitization" is common is the general cargo. The development of ro-ro cargo tons is following much the growth of the general cargo in Finnish-Estonian seaborne transports (Figure 2.14). However, the gap between the shares of ro-ro tons and general cargo have remained over the period indicating that also other cargo types are transported in ro-ro. One component affecting the evolution is the general unitization trend which plays a role in many commodity types. This trend will probably continue although at slower pace than in the past.

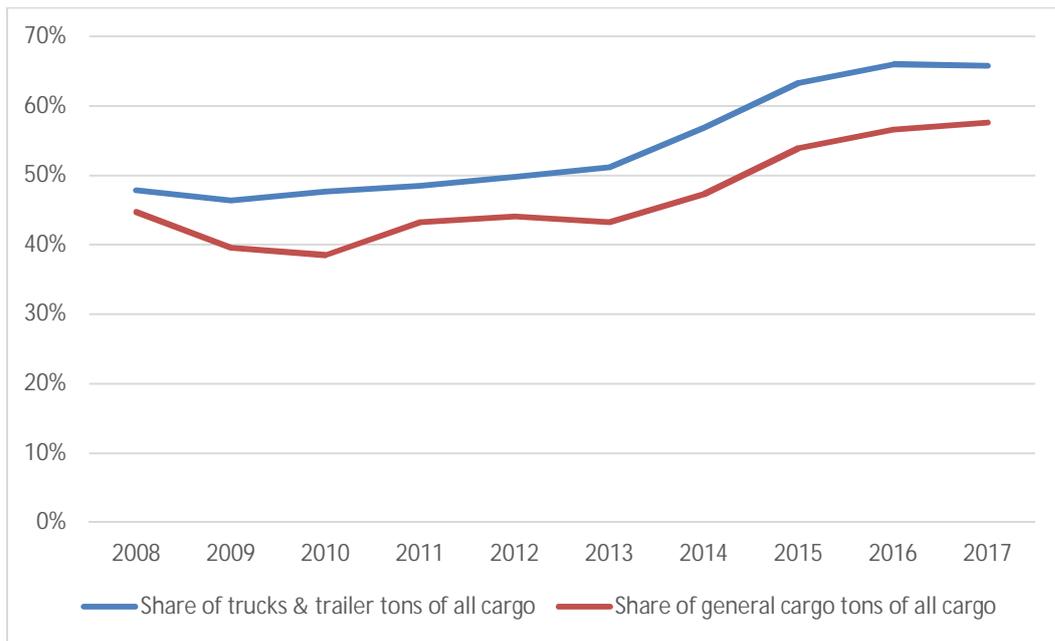


Figure 2.14. Evolution of the share of truck and trailers and general cargo of all seaborne traffic (tons) between Finland and Estonia (source: Finnish Transport Agency).

2.5 The volume of unitisable cargoes of Finnish foreign trade with the Baltic states (using in FI-EE ro-ro ferries)

The focus of the study is on the cargo transported on ro-ro vessels. Finnish Transport Agency statistics the only cargo type which is dominantly unitized cargo is “general cargo” which is not very helpful in analyzing what is transported in ro-ro vessels over the Gulf of Finland. Therefore, the only alternative is to explore the Finnish Customs statistics which has more detailed data on commodity types. In order to analyse the commodity types that use Estonia-Finland ro-ro ferries the commodities which are normally transported in bulk shipping are removed from the trade statistics. Thus, the remaining cargo can be classified as ro-ro cargo (there is no container traffic between FI-EE). The method is specified in more detail in appendix 2. Latvia and Lithuania are supposed to be fully using FI-EE ro-ro connections for trucks and semi-trailer transports since there is no direct ro-ro lines to these countries from Finland. A similar procedure cannot be followed for Poland and the more southern countries since the trucks and trailers transported on the direct ro-ro connection between Finland and Poland would complicate the analysis.

Figures 2.15-17 show the estimated quantity of unitized (ro-ro) cargo and commodity types that are transported between Finland and Estonia, Latvia and Lithuania on ro-ro ferries between Estonian and Finnish ports.

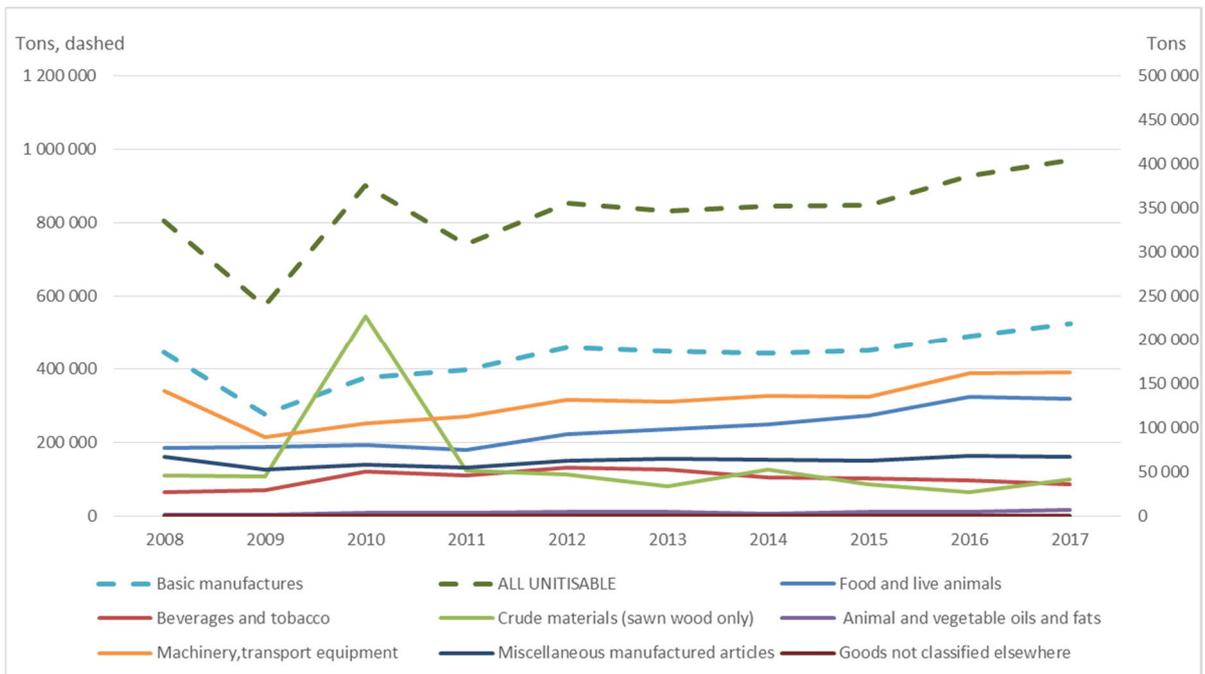


Figure 2.15. Commodity types and volume of Finnish-Estonian trade transported on ro-ro ferries (source: Finnish Customs).

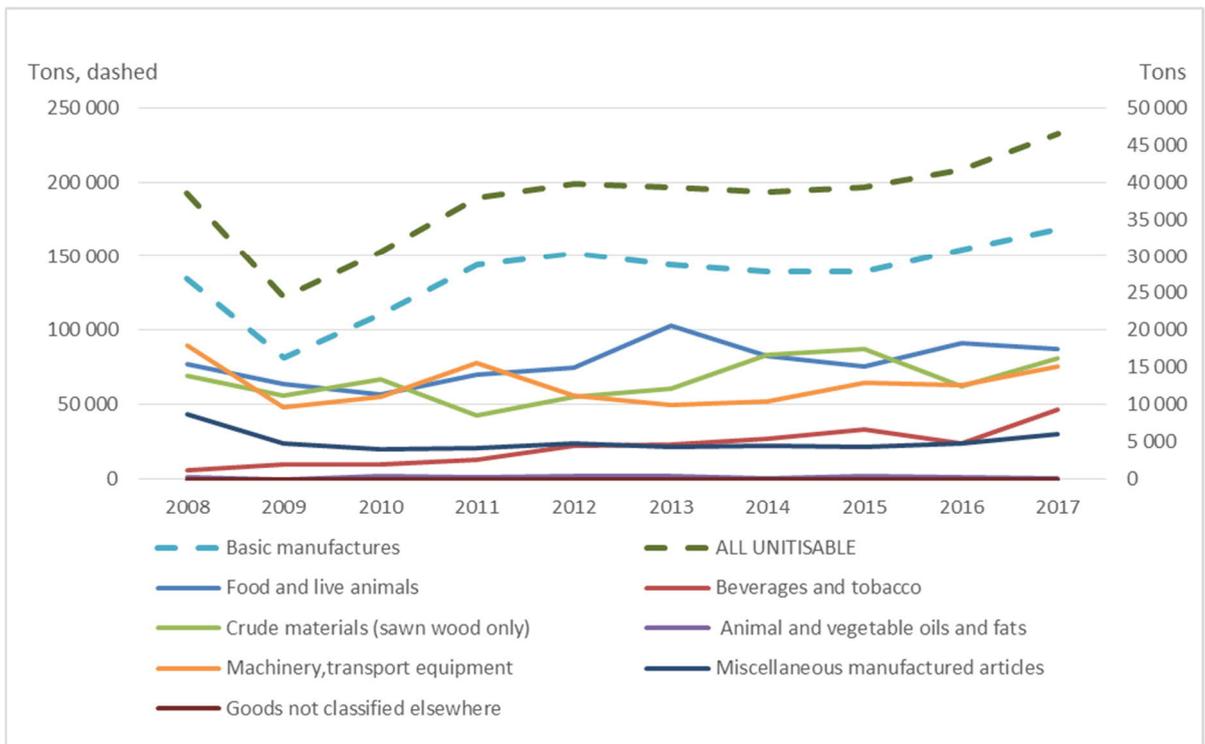


Figure 2.16. Commodity types and volume of Finnish-Latvian trade transported on ro-ro ferries (source: Finnish Customs).

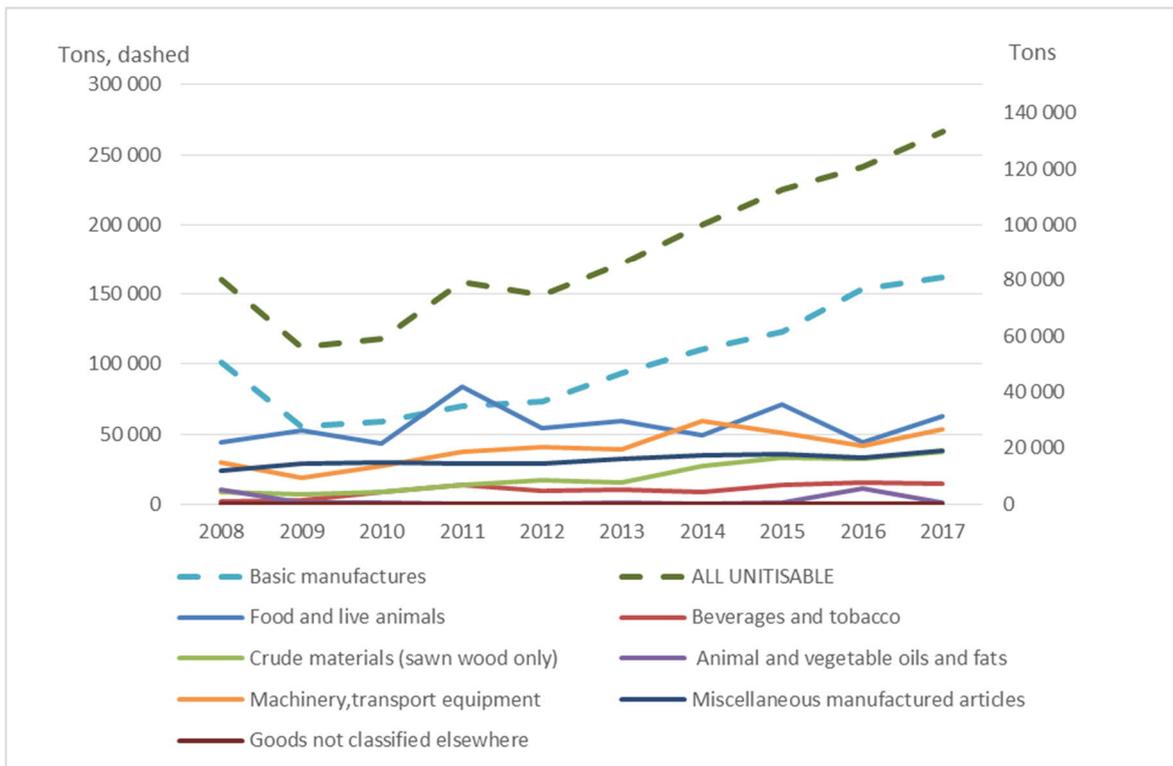


Figure 2.17. Commodity types and volume of Finnish-Lithuanian trade transported on ro-ro ferries (source: Finnish Customs).

The Estonian trade volume is twice as large (1 Mt) as Latvian and Lithuanian volumes together (0,5Mt). The major commodity type for all Baltic states is basic manufactures wherein the wooden manufactures, paper, basic metal products are dominant. Basic manufactures account a bit more than half of the all volume in tons. The second largest commodity type is machinery, transport equipment and food and live animals⁵ (especially in Estonia). A common feature for these countries is a modest average increase of unitisable cargo during the 10 years in Estonia and Latvia, and somewhat stronger growth in Lithuania. The rank order of commodity type by volume is also fairly similar in all three countries.

Figure 2.18 compares the volume recorded in the Finnish Transport Agency statistics and the unitisable commodity groups elaborated from the Finnish Customs statistics. The figure indicates that 2/3 of the current volumes in tons would transit all the Baltic states. It is important to note that the tons here do not linearly translate into the number of trucks and semi-trailers which is the eventual aim of the study. Most likely the number of trucks to/from the Baltic states (and especially to/from Estonia) is larger than their share of tons since LTL⁶ is a more common in shorter distances. There can be also truck traffic to Estonia (e.g. laundry transports) where the cargo is not included in the customs statistics.

⁵ Live animals is a marginal segment in the group.

⁶ Less than truck load.

However, the trend which is seen in the figure is in line with the previous observations and highlighted also in industry interviews made in the study – the share of Finnish roro cargoes in transit through the Baltics has been remarkably growing during the ten last years.

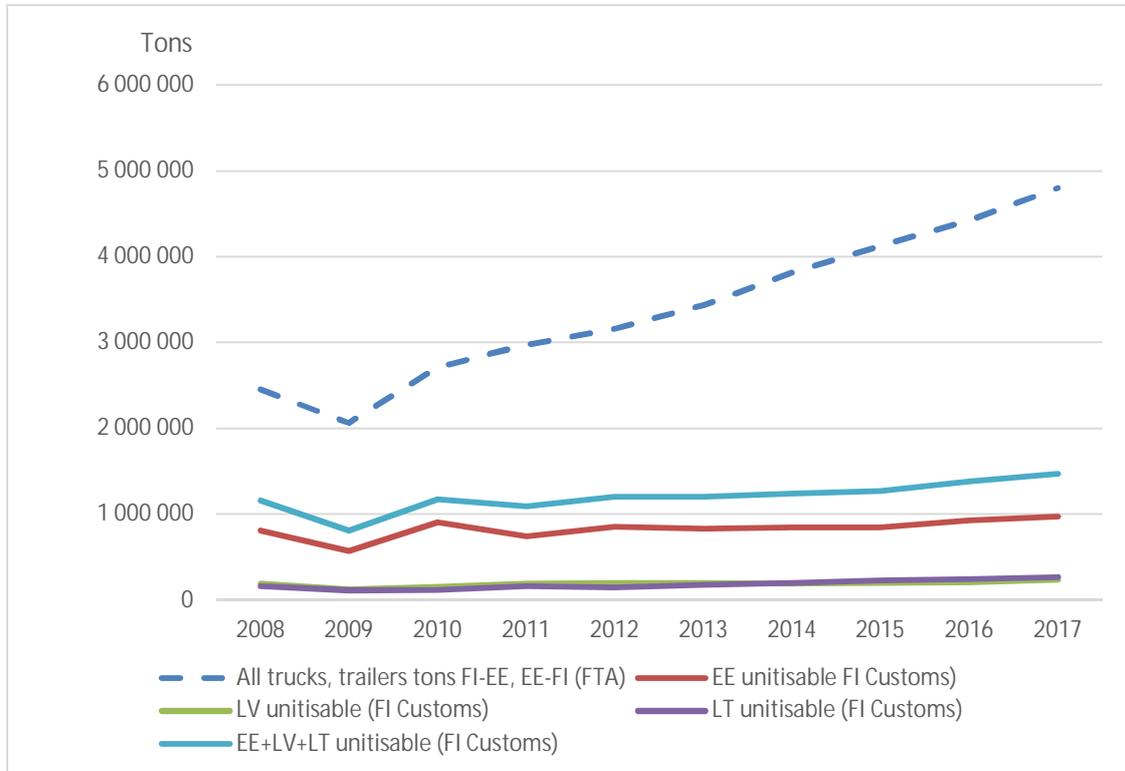


Figure 2.18. The evolution of roro cargo tons (Finnish Transport Agency) and unitisable cargo in the Baltic states (Finnish Customs).

2.6 Summary of statistical analysis

The two statistical sources Finnish Customs and Finnish Transport Agency (FTA) provide complementary perspectives on the seaborne transportations between Finland and Estonia. The overall volume of the cargo has increased 42% from 2008 to 2017. At the same time the trade volume in tons between Finland and Estonia has increased only 13%. In 2008 the Finnish trade with Estonia accounted about half of the volume transported between the ports of these two countries, thus the rest of it being transit trough Estonia. By 2017 the share of transit has grown.

When comparing the Finnish export and import to Estonia to the arrival and departing cargo tons between FI-EE ports the major finding is that import from Estonia to Finland has decreased over the ten years. The other three components have grown.

In Finnish-Estonian trade the majority of ton volumes (2/3 of the trade) were Crude materials and Basic manufactures (Finnish Customs). Meanwhile, in FTA statistics General cargo was the

largest group reaching up to 58% of the volume. Paper has grown its share as well but the volumes have been smaller.

The Finland-Estonia unitized cargo consists of trucks and semi-trailers. The volume has grown from 210 000 to 387 000 units in 2008-2017 resulting 7,4% annual growth. The share of trucks is dominant, 96% in 2017. There are currently two connections: Helsinki-Tallinn and Hanko-Paldiski. The market share of Hanko-Paldiski is 12-13%, about 42 000 units per year, while the annual growth of the market on average has been 20 000 units per year over the last ten years.

The share of trucks and semi-trailers of all cargo volume on Finland-Estonian maritime transports has increased from 1/2 to 2/3 in 2008-2017. This is partly due to the decreased volumes in bulk volumes but the roro volumes have grown each year (besides 2009).

The Finnish foreign trade with three Baltic states use exclusively the Finnish-Estonian roro connections. Based on Finnish Customs statistics the roro volume to/from Estonia is around one million ton and Latvian and Lithuanian combined volume around half of it. As for commodity groups, basic manufactures account for a bit over 50% of the tons. Machinery, transport equipment and Foods were the next largest groups. The volumes have been growing modestly over the last ten years.

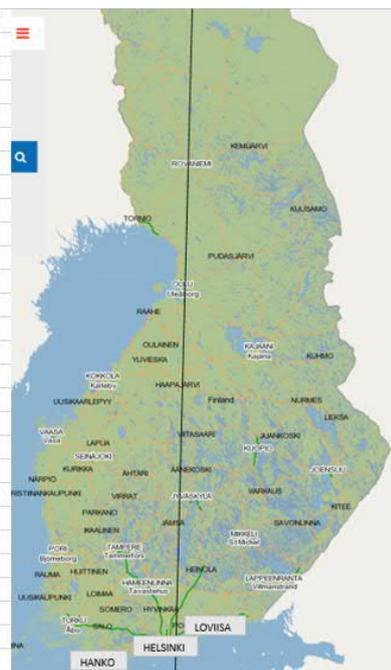
3 EASTERN FINLAND PART OF THE CORRIDOR

3.1 Defining the corridor area

The straightforward method of defining the corridor was chosen - the distances and travel times from various Finnish towns to the port of Loviisa (Valko). This was compared to the similar data of ports which currently provide ro-ro connections to Estonia (Helsinki and Hanko). To initiate the measurements, Finland was firstly divided into two parts with a north-south line from Helsinki via Jyväskylä and Oulu to Rovaniemi. There are various map based tools to measure distances and travel times. Google Maps was chosen since its accuracy was considered sufficient for the work. From the eastern side of the line distances and travel times were calculated from 26 towns to Port of Valko in Loviisa and to West Harbour in Helsinki⁷. The results are presented in Table 3.1. The towns are not in a specific order, but generally selected from south to north. Despite one town, Hyvinkää, the travel times are shorter to Valko than to Helsinki West Harbour from the chosen cities. Distances and travel times to the Port of Hanko were measured as well. In comparison to Hanko the catchment area of the port of Loviisa is even larger.

Table 3.1. Times and distances from 26 towns from eastern part of Finland to the ports of Loviisa (Valko), Helsinki (West Harbour) Hanko.

| "Fastest route" | Valko, LOVIISA | | West Harbour, HELSINKI | | Port of Hanko, HANKO | |
|-----------------|----------------|--------------|------------------------|--------------|----------------------|--------------|
| | time | distance, km | time | distance, km | time | distance, km |
| Porvoo | 33min | 42 | 38min | 40 | 2h 19min | 180 |
| Kotka | 41min | 53 | 1h 45min | 136 | 3h 8min | 261 |
| Hyvinkää | 1h 17min | 104 | 57min | 57 | 2h 3min | 149 |
| Lappeenranta | 1h 48min | 150 | 2h 55min | 227 | 4h 13min | 352 |
| Heinola | 1h 34min | 117 | 1h 51min | 140 | 3h 6min | 249 |
| Mikkeli | 2h 21min | 177 | 2h 53min | 232 | 4h 8min | 341 |
| Jämsä | 2h 44min | 203 | 3h | 225 | 4h 8min | 325 |
| Savonlinna | 3h 40min | 305 | 4h 15min | 334 | 5h 29min | 443 |
| Kitee | 3h 49min | 325 | 4h 57min | 400 | 6h 13min | 527 |
| Jyväskylä | 3h 7min | 249 | 3h 23min | 271 | 4h 39min | 380 |
| Varkaus | 3 h 27min | 266 | 3h 59min | 321 | 5h 14min | 430 |
| Äänekoski | 3h 36min | 291 | 3h 53min | 313 | 5h 9min | 422 |
| Joensuu | 4h 33min | 382 | 5h 29min | 439 | 6h 43min | 548 |
| Kuopio | 4h 15min | 338 | 4h 47min | 392 | 6h 1min | 501 |
| Viitasaari | 4h 14min | 345 | 4h 30min | 368 | 5h 48min | 477 |
| Juankoski | 5h 4min | 397 | 5h 35min | 452 | 6h 49min | 561 |
| Lieksa | 5h 44min | 475 | 6h 39min | 530 | 7h 54min | 639 |
| Nurmes | 5h 48min | 464 | 6h 18min | 519 | 7h 33min | 628 |
| Haapajärvi | 5h 22min | 435 | 5h 36min | 457 | 6h 55min | 566 |
| Kajaani | 6h 15min | 505 | 6h 44min | 560 | 7h 59min | 669 |
| Kuhmo | 6h 46min | 541 | 7h 14min | 595 | 8h 30min | 704 |
| Oulu | 7h 12min | 588 | 7h 27min | 610 | 8h 45min | 719 |
| Pudasjärvi | 8h 13min | 670 | 8h 27min | 693 | 9h 42min | 802 |
| Kuusamo | 9h 5min | 752 | 9h 32min | 806 | 10h 37min | 915 |
| Rovaniemi | 9h 46min | 790 | 10h 1min | 812 | 11h 15min | 921 |
| Kemijärvi | 10h 46min | 891 | 10h 58min | 893 | 12h 15min | 1002 |



⁷ The measurements were made with Google Maps 5.4.2018 (Helsinki) and 25.4.2018 (Hanko).

Based on the measurements eight counties were finally selected for delineating the Finnish part of the transport corridor (Figure 3.1). The county borders were chosen for corridor delineation due to readily available statistics on the county level.

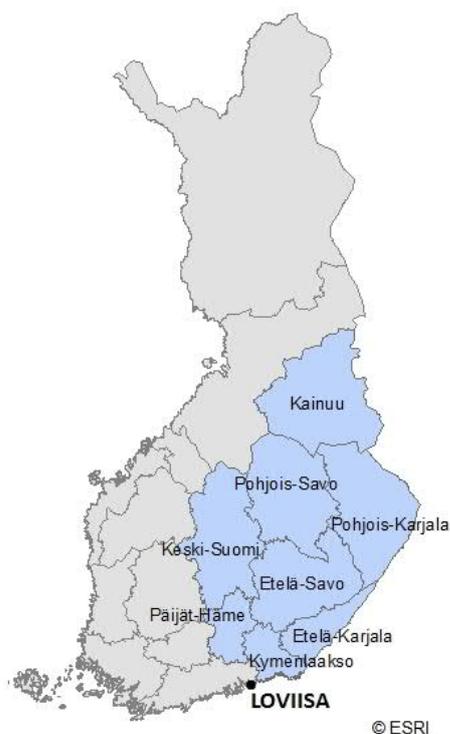


Figure 3.1. The corridor area in Eastern Finland consists of the eight counties.

3.2 Foreign trade of the corridor area

The import and export of Eastern Finland Corridor was compared to the import and export of the whole Finland by using Finnish Customs' foreign trade statistics (euros). The value of exported goods was 59,6 billion euros and of imported goods 62,1 billion euros in 2017. Uusimaa county which includes the capital region of the country has a dominant position (Figure 3.2). There is imbalance between Uusimaa and the rest of counties in export and import. Uusimaa's value of import is larger whereas in the rest of the counties the value of export is larger.

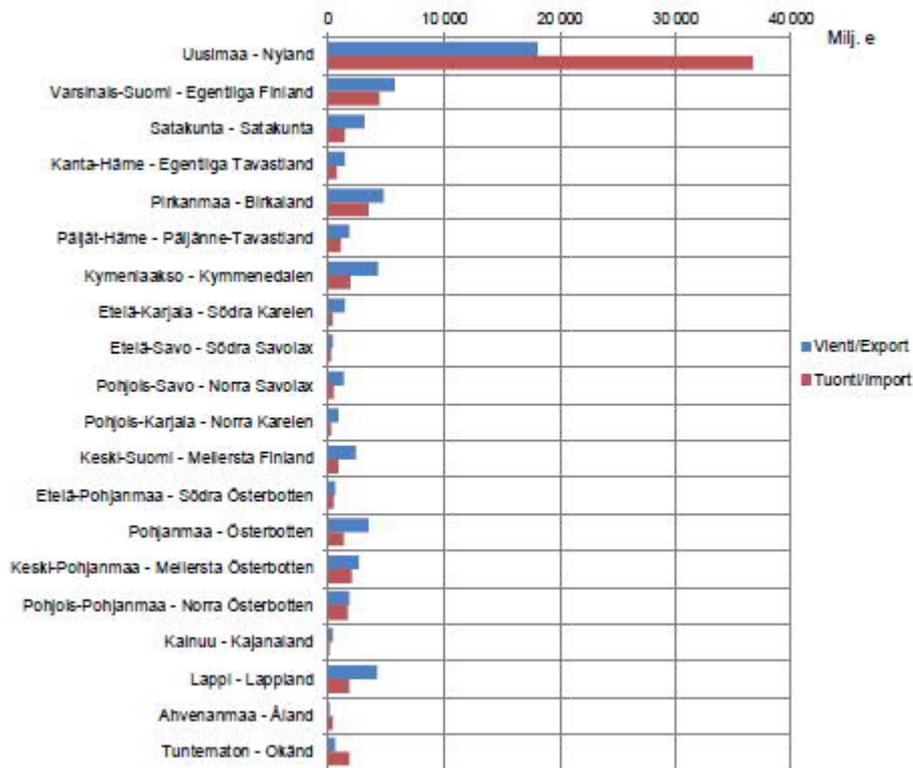


Figure 3.2. Export and import (million euros) by county in 2017 (source: Finnish Customs).

As can be assumed from the county level statistics there is a remarkable imbalance between the value of import and export of goods in corridor area. Value (billion euros) of exported goods is almost three times larger compared to the value of imported goods (Figure 3.3). Mean value of three years of imported good was 4,6 billion euros while the value of exported goods was 12,6 billion euros. The reason for imbalance is that the import is concentrated where the emphasis of consumption, i.e. the population is, and thus the major logistics centres.

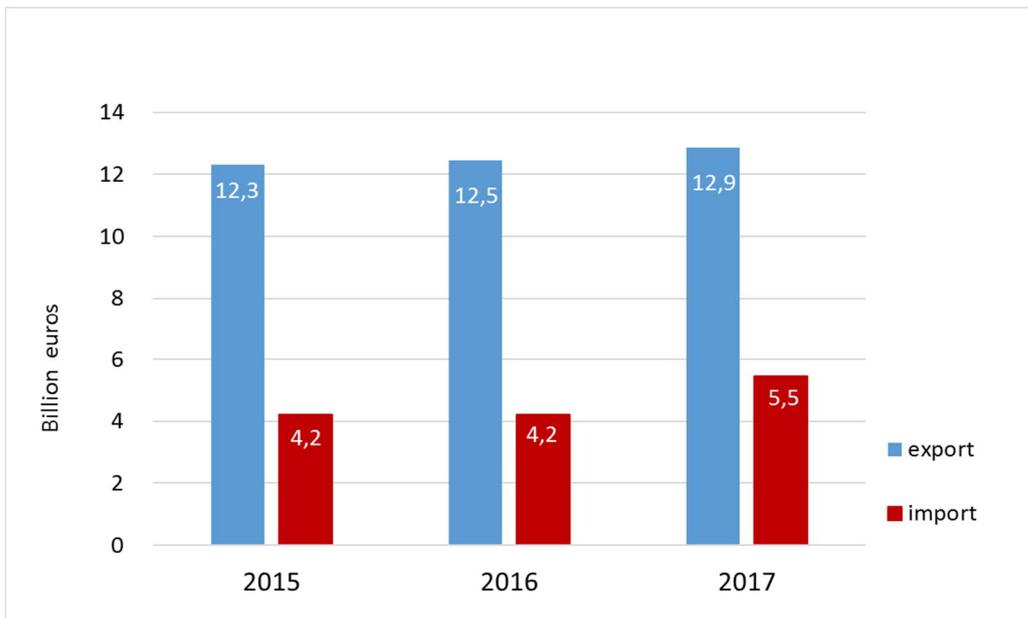


Figure 3.3. Import and export of goods of Eastern Finland Corridor in billion euros.

Calculations concerning the value of transported goods in the corridor are based on Finnish Customs statistics where data is divided to the three main field of industrial activities:

- manufacturing (C)
- trade (wholesale and retail trade; repair of motor vehicles and motorcycles (G))
- other industries (the rest of the categories)

The above aggregation is based on Standard Industrial Classification, TOL 2008 (Figure 3.4) used by Statistics Finland. Data is not publicly available on county level for individual industries since confidentiality issues might appear in some cases. Only few companies may in certain industries have foreign trade in some counties.

| Standard Industrial Classification TOL 2008 | | |
|---|--|---------|
| From top level to detailed structure: | | |
| A | Agriculture, forestry and fishing | (01-03) |
| B | Mining and quarrying | (05-09) |
| C | Manufacturing | (10-33) |
| D | Electricity, gas, steam and air conditioning supply | (35) |
| E | Water supply; sewerage, waste management and remediation activities | (36-39) |
| F | Construction | (41-43) |
| G | Wholesale and retail trade; repair of motor vehicles and motorcycles | (45-47) |
| H | Transportation and storage | (49-53) |
| I | Accommodation and food service activities | (55-56) |
| J | Information and communication | (58-63) |
| K | Financial and insurance activities | (64-66) |
| L | Real estate activities | (68) |
| M | Professional, scientific and technical activities | (69-75) |
| N | Administrative and support service activities | (77-82) |
| O | Public administration and defence; compulsory social security | (84) |
| P | Education | (85) |
| Q | Human health and social work activities | (86-88) |
| R | Arts, entertainment and recreation | (90-93) |
| S | Other service activities | (94-96) |
| T | Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use | (97-98) |
| U | Activities of extraterritorial organisations and bodies | (99) |
| X | Industry unknown | (00) |

Figure 3.4. Standard Industrial Classification of Statistics Finland, TOL 2008.

The data of the eight corridor counties is combined for each three industrial category and then compared with the corresponding national figure (value in euros). Data was chosen for three years (2015, 2016 and 2017) of which mean value was taken in order to level off the annual variations in trade volumes. Calculations show that the average of manufacturing of exported goods in the corridor is $\frac{1}{4}$ of the whole Finnish export trade. The share of trade is about 13% and the other industries share is about 15% of export trade (Figure 3.5. each year figure are given).

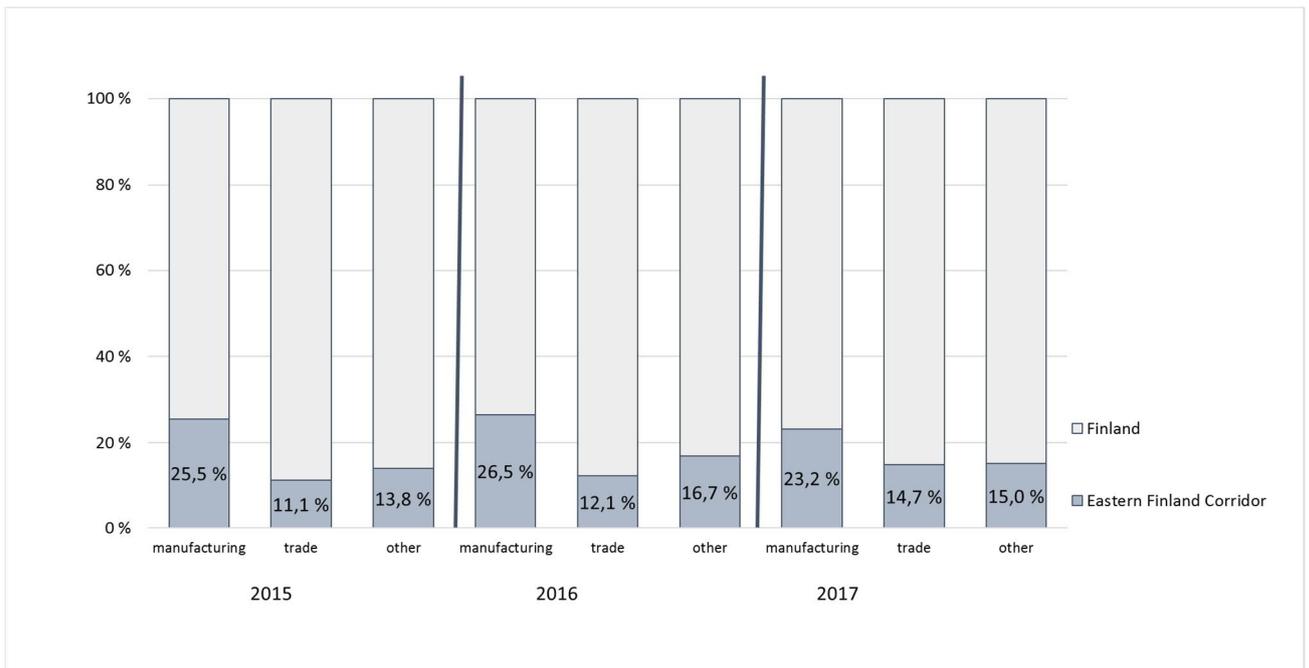


Figure 3.5. The share of export of goods (€) from Eastern Finland Corridor 2015 - 2017.

Shares of imported goods from Eastern Finland Corridor are fairly low compared to the export figures. Approximate mean percentage of three years in manufacturing is 12%, for trade 5% and for the other industries 10% (Figure 3.6).

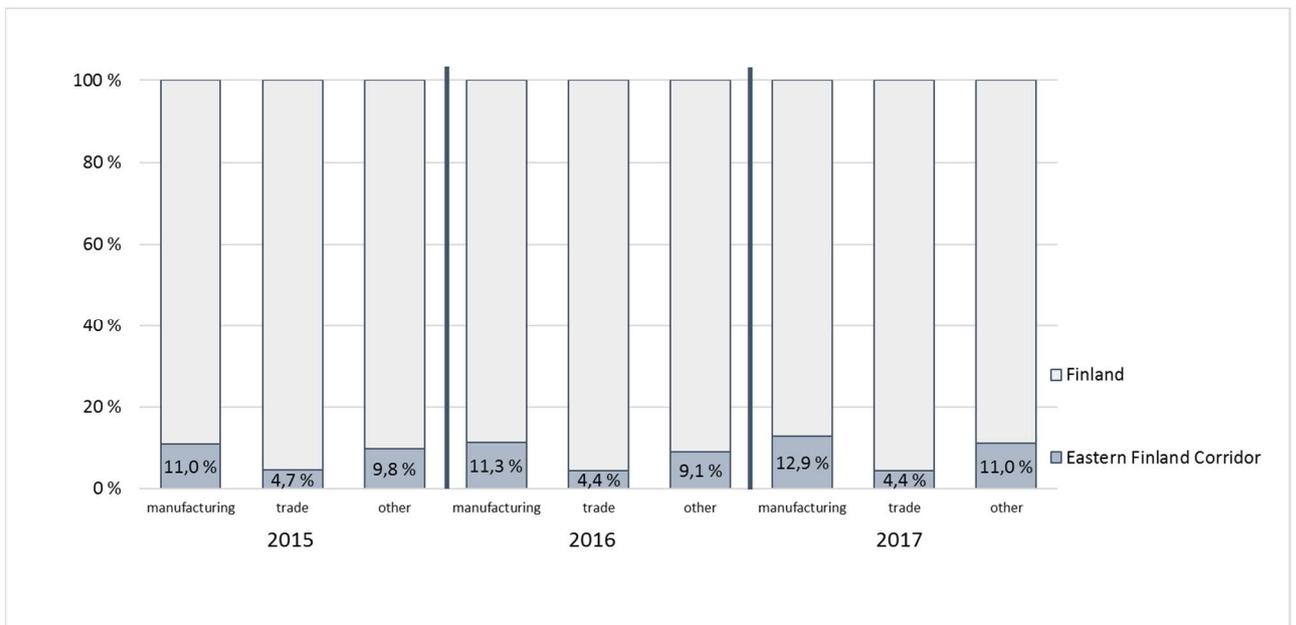


Figure 3.6. The share of import of goods (€) from Eastern Finland Corridor 2015 - 2017.

In total, the average share of the corridor area in all Finnish export (value in euros) in 2015-2017 was 23,5% and in import 8,5%.

Uusimaa county was originally excluded from the Eastern Finland Corridor area. However, Loviisa is part of eastern Uusimaa and, thus Uusimaa cargo volumes can be at least partly considered as cargo potential for the Loviisa-Kunda connection. Consequently, similar calculations were made including Uusimaa to the data (Figure 3.7). Uusimaa has a significant importance for the whole Finnish foreign trade. In manufacturing the share of exported goods (euros) from Uusimaa is about 1/4, which is almost the same volume as in the corridor area of eight counties. However, the shares of trade and other industries are much larger, the former nearly the half and the latter is well over the half of the whole Finnish export.

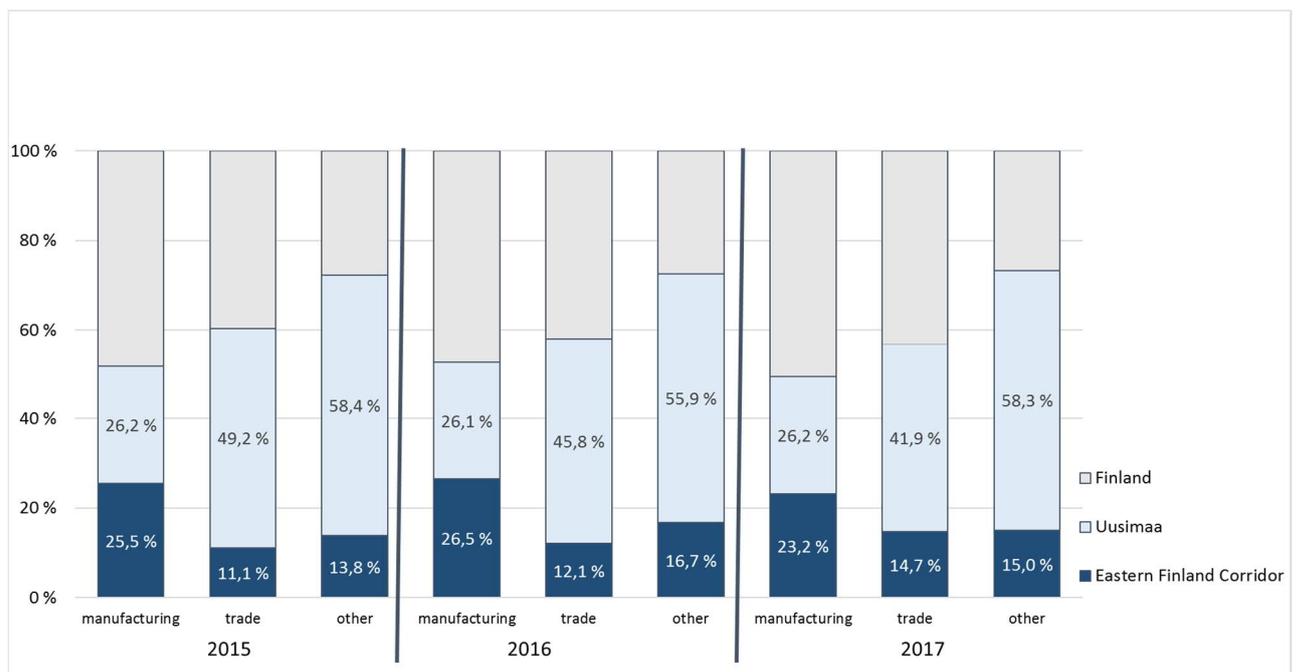


Figure 3.7. The shares in export of goods (€) from Eastern Finland Corridor and Uusimaa.

Uusimaa county is even more dominating in Finnish import. Its share of three year average is 46% in manufacturing. In trade it is approximately $\frac{3}{4}$ and in other industries is 62% (Figure 3.8).

Including Uusimaa volumes in analysis balances the presumable gap between import and export in the corridor. Although not originally outlined into the corridor area the Uusimaa volumes would probably partly be channeled via Loviisa and Kunda if the connection were available.

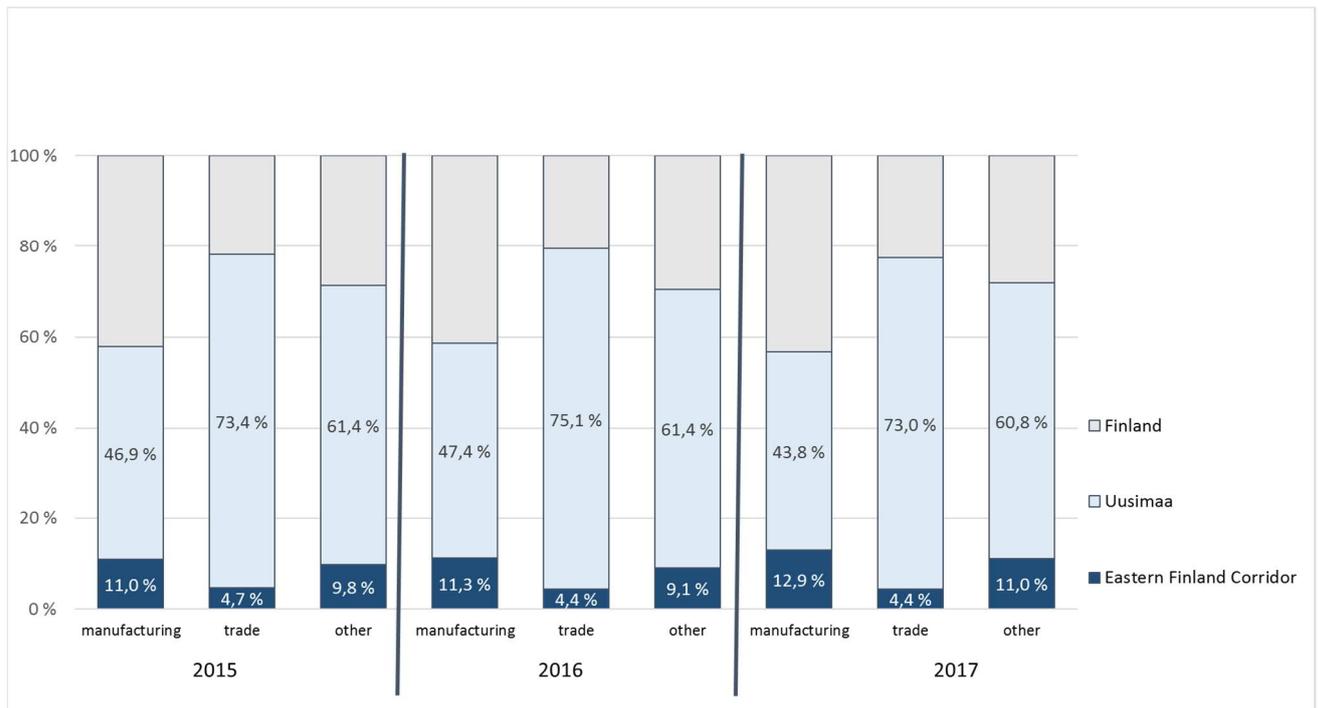


Figure 3.8. The shares in import of goods (€) from Eastern Finland Corridor and Uusimaa.

The above analysis is based on the value of customs foreign trade statistics. For benchmarking, the results of the study on destinations and origins of truck traffic to and from Helsinki passenger ports are presented⁸. The data is based on the survey carried out in autumn 2012. Like in the trade statistics Uusimaa county is dominating in both directions. The shares of each county of trucks arriving and departing the passenger ports of Helsinki is in the table of appendix 3. The figures 3.9-10. show the shares of trucks by destination and origin to the passenger ports of Helsinki. The "export" figure of arriving trucks from the corridor to Helsinki is 22,1% which is well in line with the customs statistics having ¼ of the Finnish export in value. Interestingly, the "import" figure 17,6% of trucks heading from the Helsinki passenger ports to the corridor area is not even nearly as low as the share of corridor import in value (8,5%). The survey conducted in passenger ports of Helsinki was fairly extensive. In total 1,179 drivers were interviewed for the survey, which accounts for 73% of all freight traffic on the survey days. However, some reservations need to be taken account of when comparing the figures. The figures do not include Hanko volumes (12-13% of FI-EE roro market). The years of statistics and the survey are different although large difference cannot be assumed. In spite of these limitations the survey results indicate that the imbalance between import and export may not be as large as expressed in trade statistics.

⁸ Rätty, P., Planting, A., Määttä A., Kantele (2013). HLJ 2015 Freight traffic in the Helsinki passenger ferry ports in autumn 2012.

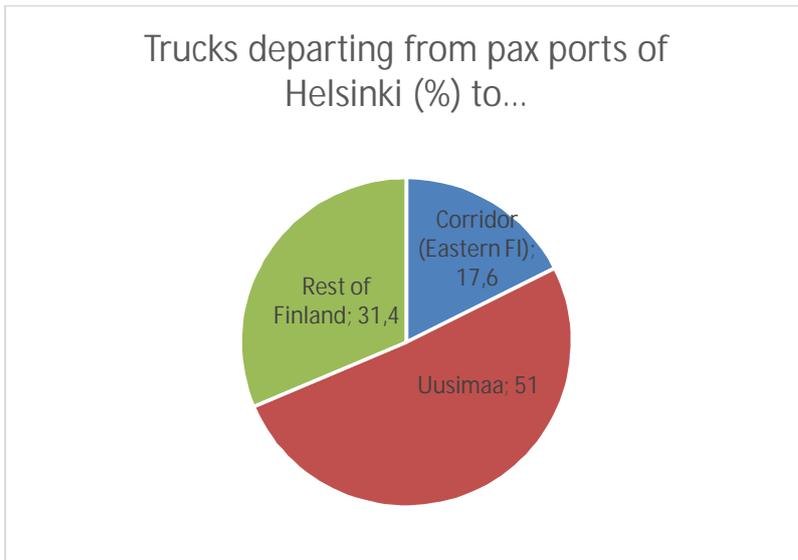


Figure 3.9. Share of trucks departing from the passenger ports to different areas (source: Rätty, P. et. al.(2013)).

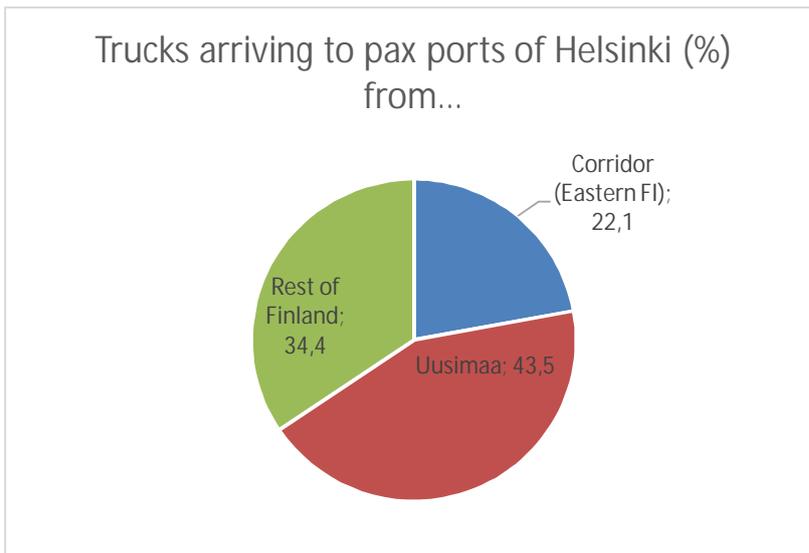


Figure 3.10. Share of trucks arriving to the passenger ports to different areas (source: Rätty, P. et. al.(2013)).

3.3 The goods transports by road between the corridor and current FI-EE ro-ro ports

Statistics Finland provides a data concerning the transported amount of goods (tons) by road between different municipalities and logistics nodes like ports. Data is based on annual inquiries⁹

⁹ Statistics on goods transport by road describe the transport activity of lorries registered in Finland for both private and licensed transport in Finland and abroad. International transport refers to transportation from Finland abroad (exports), from abroad to Finland (imports), from abroad to another

to Finnish lorry owners. This is the major weakness in the data since much of the Finnish export and import roro volumes is transported by foreign companies, and thus not covered in the data. Another limitation is the assumption that the detected road cargo types are evenly arrived/departed from Estonian ports compared to other locations. There is no way to know where the next/previous loading/unloading port is located since this information has been poorly represented in the survey data. However, the available data was analysed to get an idea on what kind of goods are transported between the corridor and the ports which currently have a roro connection to Estonia.

Cargo between Finland and Estonia is currently transported via ports of Helsinki and Hanko. The following figures 3.11-12 show the amount of goods transported to/from the corridor area to these two ports.

The data used was obtained from Statistics Finland (45 different commodity groups) and from Finnish Transport Agency (16 different commodity groups). In calculations concerning goods transport by road 45 different groups of Statistics Finland were combined so that they matched with Transport Agency's groups¹⁰. In line with the previous analysis with the Customs' statistics, the data includes years 2015, 2016 and 2017. Mean values of the three years is used in diagrams and in text.

The goods types transported between the port of Helsinki and the corridor area are displayed in Figure 3.11. The amounts are drawn from the statistical data but due to the limitations described above the attention should be mainly on relative amounts of different cargo types. From the Corridor area to the port of Helsinki paper was the most transported goods group and the second largest was sawn wood. The amounts of the transported general cargo was almost the identical in both directions. From the port of Helsinki to the corridor area "other merchandise" was largest group of all transported goods whereas to the opposite direction it was just about 1/3. The general cargo group included goods like textiles, cloths, shoes and packing materials, and recycling material / waste paper, which were transported from the corridor to Helsinki. From Helsinki to the corridor household and electrical appliances, packing materials, flowers, seedlings, garden products etc. were transported (Figure 3.11).

foreign country (transit) and within a foreign country (cabotage). The statistical unit is a lorry. The statistics are based on a sample survey conducted quarterly as an electronic inquiry. Each year, the inquiry is directed to altogether 10,000 lorry owners asking them to provide data on their lorries and their use over three or four consecutive survey days. The results of the statistics derive from the data obtained with this inquiry about lorry trips, which are then inflated with statistical calculation methods to correspond with the whole sampling frame and quarter.

¹⁰ "Sawn wood and plywood plus veneers" includes in the group "sawn wood" which means that there are 15 classes in diagrams. Correspondence table in appendix 4.

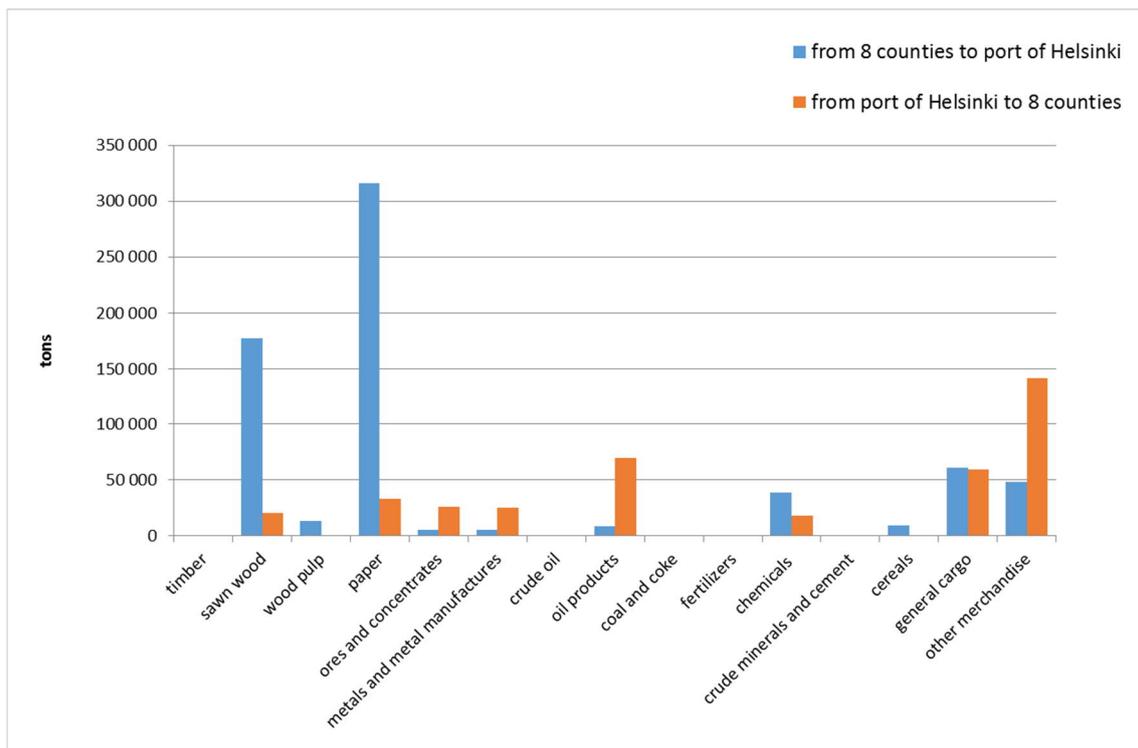


Figure 3.11. Amount of commodity groups transported between eight counties and port of Helsinki. A mean value of years 2015, 2016, 2017.

The most transported goods from the port of Hanko to corridor area was “other merchandise” group. This group, and also general cargo, includes all the rest of the goods that do not fit to the strictly defined categories. Other merchandise group included various goods such as beverages and food (meat, fish, meal, fruits vegetables etc.). From the corridor “other merchandise” group was a lot smaller and included for example living animals, plastic and rubber industry products. The most transported goods from corridor area to the port of Hanko were sawn wood and paper. General cargo was in third place and included such goods as textiles, cloths, shoes and packing materials. From Hanko to the corridor the general cargo included for example household and electrical appliances and packing materials (Figure 3.12).

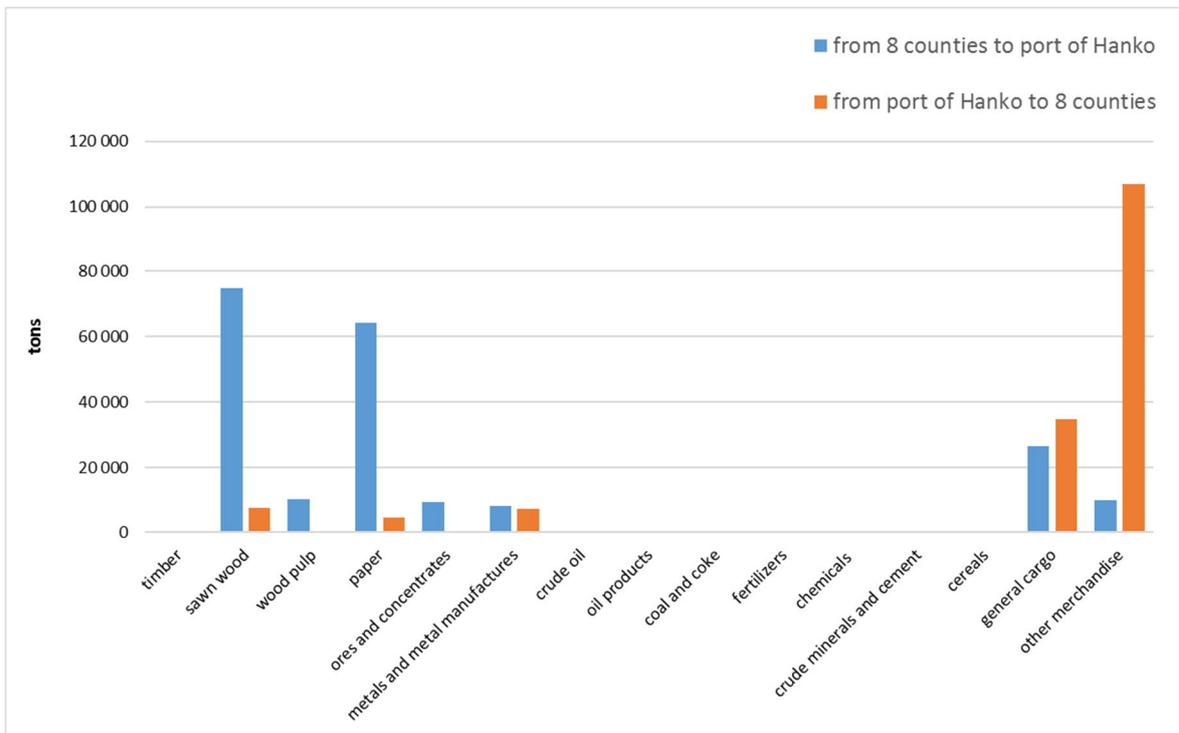


Figure 3.12. Amount of commodity groups transported between eight counties and port of Hanko. A mean value of years 2015, 2016, 2017.

In summary, the goods transport by roads statistics (Statistics Finland) gives a crude overview of the goods types transported between the corridor and ports which currently provide EE-FI roro connections. The major articles arriving to the ports are paper and sawn wood followed by general cargo and other merchandise. The major cargo heading from the ports to the corridor are other merchandise and general cargo.

4 SURVEY AND INTERVIEW RESULTS IN FINLAND

Although there exist extensive and accurate data available in Finland, all information is not possible to gain from statistical sources. For example destination countries of transported goods in trucks is not collected systematically. In order to gain a wider picture of the situation concerning the truck transportations between Finland and Estonia, a web-based survey and interviews among different stakeholders were made.

4.1 Web-based survey and interviews

Two surveys were made with a slightly different content and emphasis. The other was targeted to transportation companies and the other to forwarding companies. Responses were gained from 23 transportation companies and only three from forwarding companies. Response rate was low in both surveys. Despite of the slight differences in two surveys, the responses are handled together. Most of the respondents were managing directors, and the companies were small and medium size companies, more precisely the amount of personnel was mostly under 50 persons. The responded companies had a fleet of 2500 vehicles (trucks, vehicle combinations and trailers) altogether. The origins and destinations of transportations are not collected systemically, and therefore it was tried to cover this deficiency by asking it in the survey. The survey included a map of Finland with four regions (Figure 4.1) and a map of Estonia with two regions (Figure 4.2) where the respondents could choose origin of their transports. There was also a list of countries where to mark the destination of transport (Latvia, Lithuania, Poland, Czech Republic/Slovakia/Belarus/Ukraine, Germany/Austria and Other). Similar questions were also asked concerning return transports from Europe/Estonia to Finland. The answers concerning destinations and origins were so incoherent that a summary for this part is omitted.

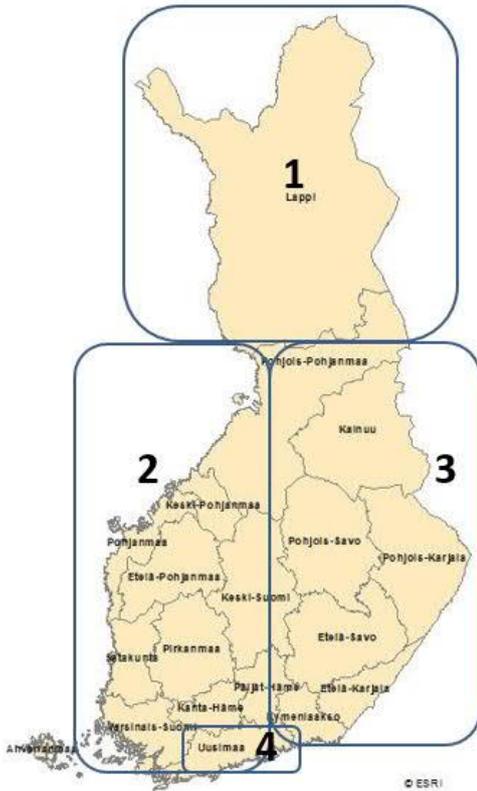


Figure 4.1 A map of Finland with four regions where the respondents of the survey could choose origin & destination of their transports.

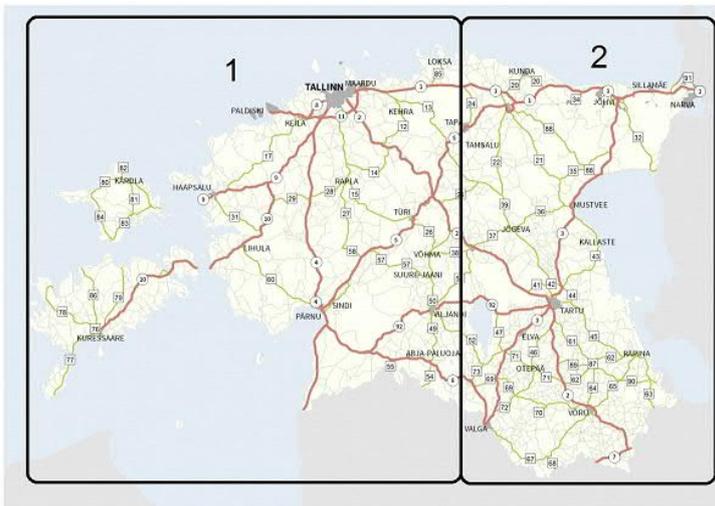


Figure 4.2 A map of Estonia with two regions to mark the origin & destination of the transportation.

In addition to the survey, interviews were made among transport and forwarding companies, and also among shippers/consignors of relevant industries and industry associations. The number of interviews were increased from what was originally planned (15 companies) due to

the low response rate of the survey. The interviews covered 12 transport companies, 11 major truck and trailer forwarders, 39 shippers/consignors of metal, forest, grocery and wholesale industry and two industry associations. In total, 64 enterprises and organisations were interviewed by phone or face-to-face. Around half of the interviewees could provide input for the study. For example, in routing the cargo, the cargo owners are not necessarily aware of the routing of cargo since only they buy the transportation service.

The survey and interview results are reported jointly. According to the contacted organizations, the number of truck and semi-trailer departures and arrivals in ferries between Finland and Estonia varied from 94 000 to 110 000. Statistics from Finnish Traffic Agency shows, that there were 368 975 trucks and 18 067 trailers, which makes 387 042 in total, departing and arriving FI-EE ferries across Gulf of Finland in 2017. This means that contacted companies covered approximately $\frac{1}{4}$ of the roro traffic between Finland and Estonia. The share and the responses indicate that the roro market is very fragmented and operated by many transport and forwarding companies who have often direct arrangements with cargo owners and are not based (no office) in Finland.

4.2 Current situation of transports

4.2.1 Goods imported and exported

In general, the type of goods that respondents import and export using FI-EE ferries are quite similar to goods in the Finnish statistics (Customs, Statistics Finland and Finnish Transport Agency).

According to the respondents, their export cargo includes basic Finnish export goods like forestry products such as timber, sawn wood, paper and wood pulp. The transfer from paper to cardboard production is under way. Besides forestry products, metal and chemical industry products are exported. In addition to traditional export products some niche segments were specified like waste transports. It is exported and handled in Estonia due to the lack of treatment capacity in Finland.

Various types of goods can be imported to Finland under general cargo classification. Respondents brought out that import can for example include consumer goods from Estonia, steel products from Poland and products and spare parts of motor industry from Germany. There is seasonal variation among some of the imported goods. For example seasonal products like tree plants and flowers are transported from Benelux countries. According to some responses, 80% of imported goods are unloaded to Helsinki metropolitan area, and forwarded then to other parts of Finland.

4.2.2 Destination and origin of the transports

Various destination countries were brought up in the responses. For example there are transports to Poland (Gdynia), which are arranged through the port of Hanko although a lot of Polish cargo is also transported in Via Baltica. If the destination is in Western or Southern Europe the route is usually either through Scandinavia or German (Lübeck, Rostock, Travemünde). As for the transports to Eastern or Central Europe Via Baltica is used. It was highlighted that importance of Via Baltica has grown during the last years, and it was seen as important transport route as the more traditional routes via Sweden or direct calls to Continental ports. Estonia was seen often seen as a transit country mainly due to its small size according to many respondents. The routes from Finland are often the same as to Finland with some variations.

4.2.3 Outsourcing of the transports

Most of the respondents confirmed the well-known fact that transports between Finland and Estonia have been widely outsourced. A cargo owner gives a destination and a time when goods should be in the destination while the forwarding and transporting companies decide the rest of the routing. Combinations also exists where a cargo owner manages some part of the transports and the forwarding and transport companies other parts of the transport chain. One example is that the cargo owner handles containers himself and outsources the truck and trailer transports. The number of the companies that are used varies but many of the respondents told that they are using even dozens of forwarders and transporting companies. In addition to regular contracts, some informed that they have “extra contracts” for occasional transports. Subcontractors are both Finnish and foreign companies. It was also highlighted that shipping company role is essential in the whole transport chain.

Plenty of the transport companies using ferry lines between Finland and Estonia are Estonian, but also Latvian and Polish drivers are used according to the respondents. One example of the logistic chain is that a Finnish driver picks up the cargo from the factory, transports the semi-trailer to the port in Helsinki. Then, after a sea leg, another driver picks up the trailer in the port of Tallinn and transports it to the final destination. Some companies responded that trailers are used only in transports between Helsinki and Tallinn, but if the cargo continues further from Tallinn region trucks are mainly used.

4.2.4 Fragmented market

There is large number of actors in the transport market. Cargo owners are using several companies from different nationalities, thousands of transporting companies of different size etc. which makes the market very fragmented. The market share of the Finland based forwarding companies in FI-EE ro-ro transports is from one third to well below half according to an estimation by one respondent. An additional challenge to the whole logistic chain comes from client side where the requirements for delivery times are short. It was pointed out that larger

companies can drive sometimes with empty trailers, but especially for smaller companies it would be important to get backloads in order to maintain business profitable.

4.2.5 Status of current ferry lines

Most respondents seemed to be content with the current transport services. Factors affecting the transport chain such as timetables, services, frequency, are working satisfactorily and cost-efficiently. The ferry capacity between Finland and Estonia was seen adequate and improved during recent years. Maintenance of ships (docking) could cause sometimes problems with capacity but actors have adapted to the situation. The functionality of Vuosaari port in Helsinki was highlighted as a positive factor, especially the quick unloading was appreciated. Although the capacity is considered in general sufficient there are busier ferry departures in the beginning (to Finland) and end (from Finland) of the work week where the capacity issues may appear.

When selecting a ferry line, the most crucial factor that respondents mentioned was a timetable and price. Prices can vary significantly between departures but not that much between different shipping companies. In addition to suitable timetable and price, the frequency was considered important. High frequency is appreciated especially in case of delay in road transport. Other mentioned factors were services including well-functioning IT services, security issues and a geographical location of a port.

Congestion of the ports and cities was mentioned as a major challenge in the current situation. Especially the situation in West Harbour in Helsinki (also in Katajanokka) was considered very problematic. Tallinn was also mentioned, but the congestion there was not considered as challenging as in Helsinki. Routes near the port were seen as extremely problematic. There have been some plans to ease the situation, but so far the achievements have been limited. There exists a remote park outside the port where drivers could wait, but its use was not considered reasonable. The driver's rest time is discontinued in a remote park whereas in the port terminal the driver can drive to the vessel without starting the driving (working) time again. Although the congestion problem exists mostly in city ports, it affects the functioning on the whole transport chain including ferry lines.

Another challenge in addition to congestion which the respondents brought out was one ferry operator having dominant position in the market. Other players were hoped to enter the market in order to create more competition. Despite need for increased competition the general opinion was that the ferry prices are rather reasonable although some opposite opinions were also expressed. As for Via Baltica, the most respondents reported that safety has improved significantly during the last years. Other observed challenges were the tourist seasons and docking periods, which were anyhow considered minor problems compared to congestions in cities. It was also brought out that hazardous goods are transported from Hanko.

4.3 Feasibility and potential of Loviisa-Kunda roro ferry line

4.3.1 Factors affecting the routing decisions

Transferring volumes to the other port is a complicated issue, which is affected by different factors such as price, frequency and facilities in the port and in the vessel. Flexibility, accuracy and services were valued among respondents. Based on a cheaper price, the transportation could be transferred to a more distant port. This was mentioned as a reason for transporting cargo from eastern Finland to Hanko. On the other hand, it was highlighted that the total costs over the whole transport chain is an important factor when decisions are made. The imbalance between import and export can also affect the decisions. The triangle traffic between three ports can sometimes be a solution to the imbalance problem.

Various opinions existed on the anticipated Loviisa-Kunda roro route. Positive views were given by some respondents who had transports to and from the eastern corridor. In these cases the transport distance to Loviisa were shorter than to Helsinki and especially to Hanko. Similarly, in Estonia the shorter distances to Kunda than Tallinn was seen as a positive factor. This naturally implies less road mileage and thereby less costs. Furthermore, the congestion in cities of Helsinki and Tallinn were mentioned as an issue which could push transport to other less congested locations and ports like Loviisa and Kunda. Another positive aspect for new service would be increased competition which was welcomed by many respondents.

Besides the positive attitude towards a new planned route there existed also doubtful views. The anticipated volumes were regarded too small. Furthermore, the current routes were considered functioning well enough, and therefore new route was seen groundless. One opinion referred the port of Loviisa hinterland to be smaller than the eight counties which was originally considered to be the cargo catchment area. There is reasonable amount of export from the corridor area but not import to the same extent, which might complicate arranging the transports. Weak employment situation was mentioned as a general factor affecting the overall economic development of the region and therefore also to transport demand. The condition of roads was mentioned as a factor affecting routing of transports.

4.3.2 Planning of Loviisa-Kunda ferry line

According to the most respondents, there is no need for many departures per day, mostly two per day would be enough. The more departures per day, the more competitive Loviisa would be in relation to other ports. Nevertheless, the right timing of the departures is even more important. According to many respondents, departures should take place in the morning and in the evening.

It is normal that the demand for the cargo capacity can be sometimes well above supply, but on the other hand, there can be also some quite empty departures. This should be taken into

consideration when a new route is planned so that supply could respond flexibly to the demand. The interviewees recommended that Loviisa-Kunda should focus on its competitive advantage (also in marketing) and provide cargo capacity when there is demand. This implies the possibility to adjust the frequency if needed. The use of railway was suggested as one possible asset for the new connection.

Although the focus is in eastern counties of Finland it was pointed out that it would be worth considering the cargo potential of Uusimaa¹¹ and Kanta-Häme/Pirkanmaa counties as well. There could be volumes to be channeled via Loviisa. A slightly longer distance to the port was not seen as a problem if the route is otherwise suitable, i.e. the connection to the port is efficient and timetable suitable. There are a logistics centers in Kouvola, Lahti and Sipoo which are suitably situated in relation to Loviisa. It was brought out that these cargoes are transported throughout the year and they could form the regular basis for the traffic.

Policy developments and regulation can affect the operating environment (for example policies to solve congestions¹²). According to the respondents, it is difficult to say how the new connection would affect the whole ro-ro transportation market, but it is known that competition is hard and many risks exist. Many respondents also pointed out, that although the new connection would not be suitable for them, there would be beneficial for other users.

4.3.3 Potential of Loviisa-Kunda connection

Two important factors of Loviisa-Kunda route's feasibility emerged in the course of interviews. The first related to financial issues and the second to certain specific goods. According to respondents, the price level should be "right" which means that it should be the same as in current routes or preferably less. It was also highlighted that companies are constantly calculating the total costs of the transportations, and decisions concerning routes are made based on them. Another important factor that was raised related to special goods which could be transported in Loviisa-Kunda connection. Hazardous goods, other special goods and oversized cargo were pointed as an example of cargo types could be transported via Loviisa-Kunda.

The basis for the use of Loviisa-Kunda connection would most likely be in the Finnish forest industry. According to estimations based on the interviews there could be a potential from 20 000 to 25 000 units transported via the anticipated ferry connection. Also products of metal and other basic industries are important goods that are exported from the area. The estimations concerning the shares that could be transferred to Loviisa-Kunda connection from the corridor area ranged from small shares up to half of the export. The shares concerning the import were

¹¹ Uusimaa included, see chapter 3.2.

¹² Port of Helsinki introduced truck charges in rush hours to steer traffic to Vuosaari and "just-in-time" check-in for heavy traffic in November 2018.

considered much lower. It was argued that extra potential could be attained from Uusimaa county volumes which are large. Eastern Finland Corridor is a strong export region in Finland. The challenge is to organize import to balance the transports. Even if the export is dominating, there exists also import to the region, for example raw materials.

4.4 The growth scenarios on Gulf of Finland roro transports

It was estimated that the growth of the transport sector is continuing in the future. There were, however, differences related to the extent of the growth. Some respondents estimated that the growth exist, but it is gradually slowing, while others thought that that volumes are constantly growing. Especially the amount of unitized cargo was believed to grow in the future. However, the respondents pointed out that the transport as a derived demand based activity, is dependent on economic cycles. Some respondents have long-term contracts providing some stability in prospects.

The political decisions, such as taxes, road tolls, environmental fees etc. affect the whole transport sector. Other mentioned issues were decisions concerning infra and development of railway connections which probably affect the organisation of transports. There were some estimations concerning the goods categories where the transportation will grow in the future: cheap raw materials, building materials, semi-finished products, food, automotive components, hazardous goods. Also different types of waste could be transported in the future due the lack of sufficient handling capacity in Finland. It was also estimated the use of Via Baltica will increase due to transfer of production and growing of standard of living in Eastern and Southeastern Europe. The lower costs is also the reason why consumer goods are produced in Estonia and imported to Finland. Production is still cheaper in Estonia than in Finland although cost level in Estonia is rising.

Much of the growth of transports in recent years is due to an economic growth in Poland. Also warehouses, which were formerly located in Western Europe, have been now established to Poland. Poland has also an importance in manufacturing of daily consumer goods. Transports to and from Poland have increased the importance of Via Baltica over the past few years instead of direct shipping. Baltic transportation companies use also Via Baltica for example in transportation of groceries, such as fruits and vegetables, from Spain and the Netherlands. These developments are expected to continue.

Besides Poland, which was regarded as the most important market, respondents mentioned Ukraine, Czech and Slovakia as growing markets. The transfer of production will have an effect for the whole market. Meanwhile, the Western Europe markets are considered mature, in some segments like paper consumption, even decreasing.

5 EASTERN ESTONIA PART OF THE CORRIDOR

5.1 Foreign trade in Estonian corridor area

The comparison of Estonian and Finnish economies gives indication of where the main potential of the cargo for roro connections is located. The size of Estonian national economy is around 10% of the Finnish economy (Figure 5.1). Another important fact is that Finnish foreign trade uses Estonia as a transit country while the transit via Finland plays a marginal role in Estonian foreign trade flows.

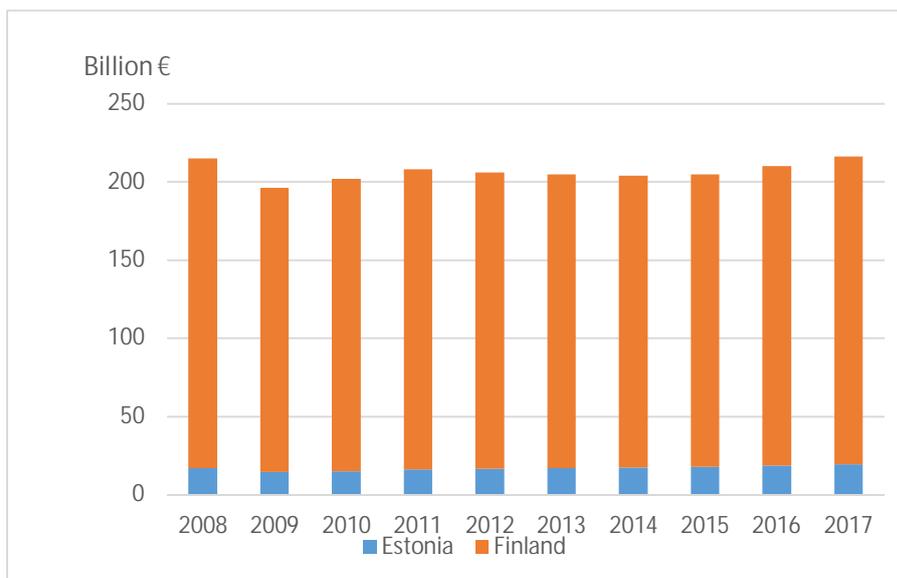


Figure 5.1. Comparison of Estonian and Finnish GDPs (Eurostat, chain linked volumes).

For Estonia, Finland was the main foreign trade partner in 2017 accounting for 16% of Estonian export and 14% of the import¹³ while Sweden, Germany and Latvia were the next largest trade partner countries. Hence, the roro ferries to Finland are presumably an important channel for Estonian foreign trade.

The Port of Kunda hinterland, and thus, the primary Estonian part of the transport corridor in this study is defined to the four northeastern counties of the country: Lääne-Viru, Ida-Viru, Järva and Jõgeva counties (Figure 5.2).

¹³ Statistic Estonia, foreign trade.



Figure 5.2. The hinterland of the port of Kunda i.e. primary corridor area in eastern Estonia.

The share of the foreign trade of these four counties has been on average 12,4% of export and 6,3% of the import in 2008 – 2017 of all Estonian foreign trade (Table 5.1. Foreign trade of the Estonian corridor area (1000€, source: Statistics Estonia). The imbalance between export and import is similar to the Finnish part of the corridor. The export is strong while the import is showing lower figures since the import to the corridor area moves via the capital of the country. Ida-Virumaa is the largest county accounting nearly 60% (2017) of the foreign trade in the corridor area.

Table 5.1. Foreign trade of the Estonian corridor area (1000€, source: Statistics Estonia).

| Export | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------------|------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|
| Lääne-Viru county | 318 002 | 250 537 | 296 841 | 352 996 | 359 717 | 354 140 | 380 509 | 384 856 | 385 055 | 413 893 |
| Ida-Viru county | 600 790 | 536 184 | 692 783 | 1 114 754 | 978 292 | 835 784 | 756 492 | 715 734 | 648 142 | 842 004 |
| Jõgeva county | 54 420 | 36 779 | 52 988 | 59 822 | 71 193 | 91 935 | 97 660 | 102 920 | 109 439 | 112 530 |
| Järva county | 151 632 | 106 231 | 115 954 | 137 881 | 99 945 | 134 246 | 136 358 | 127 251 | 127 469 | 145 674 |
| 4 counties total | 1 124 844 | 929 731 | 1 158 566 | 1 665 454 | 1 509 147 | 1 416 105 | 1 371 019 | 1 330 761 | 1 270 104 | 1 514 101 |
| Estonia total | 8 470 053 | 6 486 935 | 8 743 007 | 12 003 360 | 12 521 146 | 12 288 157 | 12 006 029 | 11 575 290 | 11 904 771 | 12 860 984 |
| Share (%) | 13,3 | 14,3 | 13,3 | 13,9 | 12,1 | 11,5 | 11,4 | 11,5 | 10,7 | 11,8 |
| Import | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| Lääne-Viru county | 164 118 | 101 121 | 124 727 | 143 532 | 148 329 | 141 188 | 153 800 | 158 403 | 175 510 | 205 834 |
| Ida-Viru county | 295 419 | 316 620 | 448 859 | 799 626 | 713 663 | 489 022 | 525 741 | 463 558 | 432 401 | 496 953 |
| Jõgeva county | 50 239 | 19 174 | 29 060 | 40 020 | 56 495 | 56 041 | 46 593 | 47 510 | 50 752 | 56 004 |
| Järva county | 91 268 | 51 368 | 58 317 | 78 586 | 62 341 | 64 749 | 63 511 | 74 675 | 80 731 | 88 892 |
| 4 counties total | 601 044 | 488 282 | 660 962 | 1 061 764 | 980 828 | 751 000 | 789 646 | 744 146 | 739 394 | 847 683 |
| Estonia total | 10 896 441 | 7 269 935 | 9 268 276 | 12 726 811 | 14 096 542 | 13 902 508 | 13 788 058 | 13 096 664 | 13 513 849 | 14 733 711 |
| Share (%) | 5,5 | 6,7 | 7,1 | 8,3 | 7 | 5,4 | 5,7 | 5,7 | 5,5 | 5,8 |

5.2 Results of the survey and interviews

In Estonia the web-based survey was responded by 17 transportation companies and 18 logistics and forwarding companies were interviewed. Furthermore, 16 cargo owners were interviewed.

In all 11 respondents had transports to/from Finland. Six of them would start using the Kunda-Loviisa ro-ro line, if the ferry ticket and port fees were equal to the current ferry services. Two respondents did not know and three would not use the service. The destinations and origins of cargoes were asked but the response rate was not high enough to form a justified view of the situation.

Most of the respondents would be content with 1-2 ferry departures per day. As for the issues to be considered when planning the new ro-ro connection the respondents mentioned price, frequency, port infra and possibility to transport IMDG (IMO) goods. Option to passengers and their cars was also mentioned although the survey was aimed at cargo sector.

A short interview round was made to logistics and forwarding companies (18). They were asked if they are interested in a new ro-ro connection. Only one responded positively. The outcome was much based on the view that companies already have functional network, and they would re-consider the situation when the new service starts to take form. Many factors would affect the routing decision of trucks like destination/origin of cargo, price and scheduling.

The cargo owners in the corridor area which were assessed to have business with Finland were interviewed. The sectors presented were the food products, mineral products, wood products (like furniture and building components), metal products, machinery and building materials.

Only one of the 16 companies told that they are not interested in the Kunda-Loviisa ferry line. The overall attitude was very positive although in many cases the cargo owner had outsourced the transports, and thus not responsible for routing of trucks.

In total the cargo owning companies reported having on average 74 trucks to Finland per week. Since the companies were focusing on exports the volume of returning cargo was at lower level - 29 trucks. This is in line with the trade statistics where the import is much concentrated to the capital regions. On the other hand this would help balancing the flows since the export potential is also larger than import in the Finnish corridor area. However, for truck owners finding cargo back to Estonia remains a challenge.

6 RESULTS OF THE WORKSHOP ANALYSING FUTURE DEVELOPMENTS IN GULF OF FINLAND RORO CARGO AND POTENTIAL OF LOVIISA-KUNDA FERRY CONNECTION

REFEC project organized a workshop, which was held in 13th of September 2018 in Helsinki. There were in total 24 participants both from Estonia and from Finland. The idea of the workshop was to find out factors which would affect the future of Finnish-Estonian roro traffic and prospective Kunda-Loviisa connection. Besides the presentations related to the issue, a PEST (political, economic, social and technical) –method was used among the participants in order to collect their ideas concerning these four thematic issues concerning the current and anticipated ferry connections.

The thematically listed crucial findings from the workshop concerning the scenarios of Gulf of Finland transportation are listed below.

6.1 Political considerations

Finnish – Estonian ro-ro traffic

- Political decisions concerning infrastructure: Rail Baltica ongoing, HKI-TLL tunnel?
- EU decisions about feasible connections, what are the options; smaller or wider corridors?
- National and municipal decisions about fees, driving bans, (congestion), tolls
- Road infrastructure (national decisions)
- Legislation differences between Finland and Estonia
- Workers (trade) unions: working conditions etc.
- Environmental issues: legislation, decisions, restrictions

Kunda – Loviisa connection

- Influence of strong operators: preferring Tallinn and other existing connections
- Kunda – Loviisa line needs a strong operator
- Port ownership (both ports), how does this affect?
- Funding and other incentives like guarantees in EU, national and regional level
- Relations with local authorities, particularly in Estonia
- Political situation in Russia. For example Suursaari issue affecting optional Kotka – Sillamäe connection

6.2 Economic considerations

Finnish – Estonian ro-ro traffic

- GDP will increase in both countries and areas beyond. This leads to increased cargo volumes.
- Development in Belarus and Ukraine must be taken in consideration (potential for cargo), not only the Eastern Europe in the EU
- How to get the import – export balance to work, now a lot of Estonian trucks return empty from Finland

Kunda – Loviisa connection

- Services, costs, frequency and capacity must fulfil the demand and quality expectations – new route will require a lot of marketing which must be directed to all parties (especially in Eastern European, especially in Poland)
- The benefits of the route should be advertised (e.g. being shorter)
- Spacious terminal areas would be an asset in Loviisa and Kunda
- Are the port municipalities willing to invest in port connections and port related areas in return of growing business based on new cargo flows?
- An option for specific cargo, e.g. dangerous goods with smaller vessels
- How to promote the connection to China: railway via Kouvola once a week. Traffic to Loviisa-Kunda connection is possible via Lahti.

6.3 Social considerations

Finnish – Estonian ro-ro traffic

Labour

- Employment situation (labour available) in Finland and Estonia affects movement between countries
- Commuting from Estonia to Finland will still grow in the future
- There will be more and more mixed (FI and EE) families; school, social aid etc. affect to the decision where family should live
- In Estonia there is already homes for elderly people, and it already happens that Finnish pensioners go there to spend some years (Estonia could replace Spain as a place to spend retiring period) > more labour is needed in caring industry > in Estonia there is already a lack of workforce (this type work is not well paid). New workforce is coming for example from Ukraine -> increases movement between FI-EE-FI
- Strikes

Tourism

- In the future people want to see more than only centers of Tallinn or Helsinki.
- In the future people are looking for experiences, not only for example goods to buy
- HKI-TLL twin city will probably attract more tourists in the future: the tourists will come from Asia/China to HKI-Vantaa airport, and from there to Tallinn/Estonia
- People from Tallinn/Estonia are using HKI-Vantaa airport, much more connections than in TLL airport
- Opposite opinion: tourism does not increase in the future so rapidly from Finland to Estonia. One reason for that is higher prices than before in Estonia. On the other hand, people may use Estonia as a transit country further to different parts of Europe. Cargo is already transported via Estonia to more distant countries.
- Possible tax decisions (for ex. alcohol tax) may affect to passenger transport.

Other issues, such as consumer buying patterns

- eBay, Amazon etc. versus local production (ecological point); food is more and more locally bought, but for ex. cloths are ordered from China > price is a decisive factor > transport of goods is growing
- Money and time affect > most reasonable alternative is chosen, concerns both cargo and passenger traffic.
- In the future robotisation will replace people, which may decrease the need for transporting people and cargo.

- Increased traffic in vicinity of ports > congestion > conflicts with inhabitants.
- Threat of terrorism

Kunda – Loviisa connection

- Operator has a significant influence, ie. what kind of vessel will/could be placed to LOV-KUN route.
- LOV – KUN connection: a possibility to local people, if there would be LOV-KUN route, people do not have to go through Helsinki-Tallinn.
- The tourism is still expected to grow in Helsinki and Tallinn. This could lead to a situation where there is not enough capacity for cargo (in ports or/and in ships) > transfer of goods transportation to other ports (to LOV-KUN route perhaps).

6.4 Technical considerations

Finnish – Estonian ro-ro traffic and Kunda – Loviisa connection

Compatibility of port and vessel capacities

- Readiness for providing electric power plug-in charging for electric vehicles.
- Automated mooring system for vessels.

Smart solutions based on digitalization

- Automatic 100 % scanning of goods in trailers, containers and vans.
- Easy booking system for a voyage.
- Using of Open Source Data via truck driver app to choose less congested port terminal (ca 200-300 km before arrival).
- Precise time forecast of discharging your truck from the Ro-Ro vessel, a mobile app.

Compliance with handling of dangerous goods

- ADR rules on trucking side and IMO rules on maritime side.
- Consideration of dedicated voyages only for dangerous cargo.

Other issues related to safety and suitability

- Seaworthiness of the vessel in strong wind or ice conditions – a safety issue.
- Passenger friendly vessel – an issue for carrying buses with people or private cars.
- Project cargo suitability for the vessels – responding to the demand of mapped industries.

7 PASSENGER CAR POTENTIAL OF THE CORRIDOR AREA

The main focus in the study is on the cargo transport on ro-ro vessels between Finland and Estonia and the feasibility of Loviisa-Kunda ro-ro connection. However, the passenger cars could form a suitable additional service for the shipping company and add also to the economic viability of the service.

The passengers can be divided into different classes based on different criteria. The aim of the travel is one. Travel can be based on tourism/vacation, shopping, seeing friends and relatives, work or transit (TAK Research 2016). The focus chosen for passenger car potential is in this study the work related travel, more specifically Estonians who commute from Estonia to Finland to work and are not registered as residents in Finland.

There are 52 000 Estonians living permanently in Finland (registered residents) according to Statistic Finland¹⁴. The latest statistics about the number of Estonians who work in Finland (unregistered) is from the census in 2011 (Statistics Estonia). That year 15 140 Estonians¹⁵ worked in Finland but were registered residents in Estonia and can thus be classified as commuters. Since then the commuting has increased. The estimations¹⁶ vary from 15 000 to 30 000 but there are no reliable statistics on the issue. There is either no clear definition on how many trips or what frequency makes a person as a “commuter”.

TAK Research has made interviews on the departing non-Finnish passengers in port of Helsinki in 2015 and 2016. Work was the reason to travel for nearly 40% in 2015 and nearly 50% of Estonians (TAK Research 2015 and 2016). Nearly 1,2 million Estonians departed the port of Helsinki in 2016 of which nearly 600 000 were on work related travel. Increase from year 2015 was 80 000 trips. This indicates that commuting does not show any signs of decreasing although the migration from Estonia to Finland has stabilized¹⁷.

Bank of Estonia is composing a quarterly statistics of Estonian residents traveling abroad based on mobile positioning data¹⁸. This data excludes the trips where the main aim of the travel is work or studying. This statistics shows that Estonian residents made such 703 000 trips to Finland in 2016. This figure is fairly well in line with the TAK statistics where the 50% of 1,2

¹⁴ https://www.tilastokeskus.fi/tup/maahanmuutto/maahanmuuttajat-vaestossa/ulkomaan-kansalaiset_en.html

¹⁵ Statistics Estonia (2012). Employed persons abroad by country of the workplace, sex and age group, 31 december 2011. <https://www.stat.ee/population-census>.

¹⁶ See <https://politiikasta.fi/viro-100-liikkeella-viron-ja-suomen-valilla/> and <https://yle.fi/uutiset/3-7766064> and <https://yle.fi/uutiset/3-9758938>. Interview of specialist Jere Päivinen in Ministry of Economic Affairs and Employment 2.10.2018: nr of commuters is estimated to be 15 000 – 20 000.

¹⁷ Statistics Finland (2018). Nationality according to age and sex by region in 1990 to 2017. http://pxnet2.stat.fi/PXWeb/pxweb/en/StatFin/StatFin__vrm__vaerak/statfin_vaerak_pxt_008.px/?rxid=c2f304fc-5935-4ff6-80dd-17b41104d94a

¹⁸ <https://www.eestipank.ee/en/press/eesti-pank-starts-publishing-international-travel-statistics-06032012>

million Estonians' trips (i.e 0,6 million) were work related traveling and 50% was not (i.e 0,6 million).

The Estonian commuters work mainly in construction and cleaning & maintenance sector. A common schedule of Estonian construction workers who commute to Finland is 10 days work followed by 4 days break at home. This would result to two trips per month and 22 trips per year (1 month vacation). On this basis there would be around 27 000 Estonians¹⁹ involved in the commuting.

The 600 000 annual work related trips is taken as a basis for calculation. Majority of the commuters are outside Tallinn since the unemployment or low income level on the rest of the country is a major reason for working in Finland. Therefore, the assumption is that the trips are made with private cars. For calculation basis we use on average of three persons per car. Table 7.1 shows two calculations, one based on commuting to the REFEC corridor area in Finland, and another including also commuting to the Eastern and Northern Uusimaa county. The shares of commuting are based on the locations (counties, municipalities) of registered Estonians in Finland. It is assumed that the commuting is proportional to the areas where the registered Estonian citizens are living Finland.

Table 7.1. Calculation of passenger (commuter) and car potential for Loviisa-Kunda connection (source: TAK Research 2016, Statistics Finland).

| | | | |
|--|---------|------------|--------------------|
| Annual Estonians' work trips | 600 000 | | |
| Persons per car | 3 | | |
| | | Nr of cars | Cars per day (365) |
| A. Estonians living in REFEC corridor | 9,4 % | 18 844 | 51,6 |
| A + Estonians living in Eastern & Northern Uusimaa* | 34,1 % | 68 243 | 187,0 |
| *Askola, Hyvinkää, Kerava, Myrskylä, Mantsälä, Nurmijärvi, Pornainen, Porvoo, Pukkila, Tuusula, Vantaa | | | |

The calculation gives a rough indication on the commuter car potential which could be indicatively somewhere between 50 to 190 vehicles on average per day. Passenger car potential can be translated into vessel lane meters by multiplying with 5 meters (shipping company set max length for pax cars) resulting to 250 to 950 lane meters per day. The commuters who live in Eastern Estonia and work in Eastern Finland would most likely use the service. Commuters from other areas in Estonia (outside Tallinn) and working in target area might opt using Loviisa-Kunda in order to avoid driving through the two capital cities and thus saving some time. The figures provided here are on average calculations while the commuting is characterized at least with some seasonality.

¹⁹ 600 000/22=27 273.

8 CONCLUSIONS - FREIGHT POTENTIAL OF THE EASTERN FINLAND – EASTERN ESTONIA TRANSPORT CORRIDOR

This report is made as a part of the project Reinforcing Eastern Finland – Estonia Transport corridor (REFEC) funded mainly from the Interreg Central Baltic programme of the European Union. The REFEC project aims specifically at supporting the establishment of the Loviisa-Kunda ro-ro ferry line.

The aim of the study was to analyze the freight potential of the Eastern Finland – Eastern Estonia transport corridor. The specific focus was on the ro-ro (trucks and semi-trailers) volume which could be transported with the anticipated ferry line between the ports of Loviisa (FI) and Kunda (EE).

The corridor area was defined being eight eastern counties in Finland and four northeastern counties in Estonia based on the distance analysis to ports of Loviisa and Kunda. The Finnish corridor area exports 23,5% and imports 8,5% of the value of goods in Finnish foreign trade. Especially in manufacturing segment (forest and metal industries) the corridor has strong position, about ¼ of the national export in value.

The main driver in ro-ro transport demand is Finnish foreign trade due to the size of its economy. However, the ro-ro connection is also important for Estonian foreign trade since Finland is the largest trade partner of the country.

The ro-ro volume between Finland and Estonia has grown strongly over the ten last year. The annual average growth has been well over 7% and the number of ro-ro units has grown up to 387 000 of which 96% are trucks (2017). This makes around 20 000 additional units per year. The current market is shared between Helsinki-Tallinn and Hanko-Paldiski routes where four shipping companies operate. The latter route was fully operational in 2013 and has had an annual market share of 11-15%.

Statistical analysis on goods transport by road between the Finnish corridor and the ports (Helsinki, Hanko) currently having ro-ro connection to Estonian ports was made. The major goods types arriving to the ports (to be tentatively exported) were paper and sawn wood, followed by general cargo and other merchandise. The goods types leaving the port to the corridor (presumably import goods) were other merchandise and general cargo. The data on goods transportation by road did not render more detailed analysis possible.

Surveys and interviews to transportation companies, forwarders and cargo owners were conducted to complete the information gained in statistical analysis. The transport market in using the ro-ro vessels in the Gulf of Finland is very fragmented. There are even thousands of transporting companies of different sizes involved with the transportations. Many of them do not even have an office in Finland, and are therefore difficult to reach for research intentions. Responses were gained from the companies representing about a quarter of the FI-EE ro-ro volume. Transportation is extensively outsourced today and individual cargo owners very often use several transportation/forwarding companies for their logistics.

Interviews did not reveal any specific deviation in cargo profile of Finnish-Estonian trade compared to the statistics of all foreign trade of Finland. The Via Baltica route is used, in addition to the Baltic states, also to Poland, rest of the CEE countries and southwestern Europe all way down to Turkey. Via Baltica has emerged as a major transport route alongside the Swedish route and direct Continental shipping in roro transports.

General cargo has grown its share of FI-EE port-to-port volumes from 1/2 to 2/3 of the tons. This is partly due to decreased bulk volumes but also increased volumes of "traditional" unitized cargo. Furthermore, some commodity types have been also transferred from bulk shipping to trucks.

Only part of the transport demand on roro ferries is based on Finnish-Estonian trade. More than half of the trade is transit through Estonia to/from Finland. Transit through Finland to/from Estonia is marginal. The statistical analysis shows that importance of transit cargo through Estonia, Latvia and Lithuania has grown more than Finnish trade with the Baltic countries.

Unitised cargo trade between Finland and the Baltic states uses exclusively FI-EE roro ferry lines. This helps to sort out the main commodity groups which most probably are transported as a roro cargo (Customs statistics). Basic manufactures account a bit over half of the ton volume. Machinery, transport equipment and food were the next largest groups. The volumes have been growing modestly over the last ten years.

The industry was fairly content with the current roro services but the congestion was seen a challenge in capital cities. A dominant position of one shipping company was also raised as an issue.

The interviews and a workshop were dealing with the anticipated developments affecting the quantity and other expectations of the Finland-Estonia roro volumes within the 5-10 ten year time horizon and the feasibility of Loviisa-Kunda roro connection. The outlook was elaborated in workshop by considering political, economic, social and technical factors affecting the development.

Main results and conclusions

- The transfer and growth of production to Eastern and Southeastern Europe will continue while also the rising standard of living in the region will increase consumption in general. Both developments increase transport volumes in Via Baltica, and consequently on roro ferries between Finland and Estonia. Also positive development in Belarus and Ukraine can increase transports.
- Rail Baltica is ready 2026. It will affect cargo demand positively on FI-EE roro transports. The tunnel option is insecure and in any case far in the future beyond the set time horizon.
- The transports of semi-finished products will increase. This will increase the transported volumes, also over the Gulf of Finland.

- Hazardous goods, oversize transports and other special goods could provide opportunities to Loviisa-Kunda connection.
- The growth rate of roro volumes is expected to somewhat slow down from the recent years but growth is expected to continue. The emphasis of the growth is anticipated in the volumes transiting the Baltic states. Poland has been the key driver in the transport demand during the last ten years. There is some uncertainty does it maintain its role during the next ten years.
- The balance of import and export needs to be ameliorated. Less empty driving is desired especially in Finland-Estonia transports.
- Commuting from Estonia to Finland could still even grow. It provides possibilities for Loviisa-Kunda connection as an additional service along with the cargo transport.
- Congestion in city centres will supposedly transfer cargo traffic to other locations.
- Political decisions can play an important role in many contexts. Funding, infrastructure decisions and support from different administrative levels can affect the feasibility of Loviisa-Kunda connection.
- Industry opinions indicate that 2 departures per day in Loviisa-Kunda connection would be enough with price level not exceeding the current services.

When considering the freight potential of the Finnish part of the corridor the export volumes are considered good (forest and metal industry), about ¼ of the value of exports. Forest industry could export roughly 20 000 - 25 000 units from the corridor area and through Via Baltica using the anticipated Loviisa – Kunda connection. This could provide a base cargo for the ferry connection. The industry prognosis²⁰ provides positive outlook for consumption of forest industry products in Eastern Europe which most probably would use Via Baltica for transport. The import potential was considered to be less since the import is channeled currently much via Helsinki. The corridor share of foreign trade import in value was 8,5%. However, Loviisa, having good road connections, is not far from Helsinki and its distribution centres. If even part of Uusimaa county potential is included to the cargo potential of Loviisa-Kunda route, its share increases considerably. Moreover, the Helsinki passenger ferry ports freight study in 2012 had 17,6% of the trucks leaving from the port to the corridor area (i.e. the import share) while the arriving share was 22,1%. This may imply that the import potential may not be that low as the value of import in statistics indicates. The cargo potential in Estonian part of the corridor is much lower due to the difference in the size of economy and the marginal transit via Finland. Based on the interviews it would make around 5 500 trucks per year (import and export).

Loviisa-Kunda connection could be a reasonable option for commuters from Estonia to Finland in case they work or live in the corridor area. Commuters do not normally expect tourist level facilities onboard. On the basis of the calculation the commuters could occupy on average

²⁰ Pöyry (2016). Suomen metsäteollisuus 2015-2035.
https://tem.fi/documents/1410877/2772829/P%C3%B6yry_Suomen%20mets%C3%A4teollisuus%202015-2035.pdf/ac9395f8-8aea-4180-9642-c917e8c23ab2.

around 10-20 % of the vessel capacity. This would improve the economic viability of the service. The potential of the tourist traffic was not included in the study.

Another approach is to compare the potential of the Loviisa-Kunda connection to the existing connections. Hanko-Paldiski annual volume has been around 40 000 units per year (12-13% of the current market) which has been approximately the growth of the FI-EE roro market in two years. The vessel in operation has capacity of 1400 lane meters with 9 departures weekly from both ports. This gives the average load factor of about 50% for the vessel²¹. The vessel size with 1200-1400 lane meters could be a feasible solution for Loviisa-Kunda aiming to approximately the same cargo volume. This vessel size would even allow also some flexibility for growing volumes in the future.

Based on the above estimations of the current cargo potential and the positive expectations for the roro market, and including the possible policy changes affecting the routing, the Loviisa-Kunda ferry connection can be considered a future alternative for Finnish and Estonian foreign trade.

²¹ 17 meters per unit used for calculation.

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APPENCIDES

Appendix 1.

Differences in statistics of Finnish Customs and Finnish Transport agency

Finnish Customs and Finnish Transport agency use different methods in compiling the statistics. The major difference is in recording the weight of the cargo. The Customs uses net weight while the Transport Agency uses gross weight of the cargo. Gross weight contains packages and e.g pallets but, however, not the vehicle or trailer weight. The significance of this difference is quite low.

In intra-EU trade, the customs statistics do not include the volume in tons of minor companies. The threshold value in 2017 was 550 000 euros in import and 500 000 euros in export²². This, however, do not distort the figures much since the industries with heavy goods (forest and metal industry) normally operate well above the threshold values.

The differences in compiling the statistics cannot be considered that large that it would distort the results significantly. In general, the Transport Agency statistics can be considered more reliable since their focus is ton volumes (no value recorded) while the Customs is more focus on the value of the trade. In any case, these two statistics are the only ones available for overall analysis of transports over the Gulf of Finland.

²² Finnish Customs (2017). Intrastat in Finland 2017.

Appendix 2.

Method for extracting unitisable cargo from Finnish Customs statistics in trade with the Baltic states and Finland.

Finnish Customs web site has statistics of Finnish foreign trade (<http://uljas.tulli.fi>). Logistics statistics includes weight of the commodities in SITC classification. Commodity volumes are sorted out by transport mode. Naturally, only sea transport data was selected. SITC comes in 5 hierarchical levels. Level 1 has 10 commodity types and the most detailed level 5 has nearly 3000 commodity types. The elimination of cargo types was started on level SITC 1 where the category 3 (mineral fuels) was considered bulk cargo on the whole. Three other adjustments were made into group 0 Food and live animals, group 2 Crude materials, inedible, except fuels and group 6 Basic manufactures. The adjustments are listed in the table below.

Table appendix 2. Adjustments on SITC1 categories for extracting unitisable cargo from Finnish Customs statistics.

| SITC classification Rev. 4 ; level 1 | | |
|--------------------------------------|---|--|
| Code | Text | Adjustments |
| 0 | Food and live animals | SITC 2 group 04 Cereals and cereal preparations as mostly bulk was removed |
| 1 | Beverages and tobacco | |
| 2 | Crude materials, inedible, except fuels | removed besides the SITC 3 group 248 Wood, simply worked, and railway sleepers of wood |
| 3 | Mineral fuels etc | removed completely |
| 4 | Animal and vegetable oils and fats | |
| 5 | Chemicals and related products, n.e.s. | |
| 6 | Basic manufactures | SITC 3 group 661 Lime, cement, and fabricated construction materials (except glass and clay materials) removed |
| 7 | Machinery, transport equipment | |
| 8 | Miscellaneous manufactured articles | |
| 9 | Goods not classified elsewhere | |

After the removal of obvious bulk commodity types the remaining commodities are considered as unitised cargo. Since there is no container shipping between Finland and Estonia this cargo is transported in trucks and trailers, i.e. roro cargo. The method adopted is an approximation. By doing the analysis on more precise SITC 5 level the figures may have changed a little but it was not considered to worth the effort considering the aims of the study.

Appendix 3.

Share of trucks arriving and departing the passenger ports of Helsinki (source: HLJ 2015 Freight traffic in the Helsinki passenger ferry ports in autumn 2012).

| County | Trucks arriving to the port of Helsinki (%) | Trucks departing from the port of Helsinki (%) |
|----------------------------|---|--|
| Uusimaa | 43,5 | 51 |
| Kyminlaakso | 8,6 | 3,7 |
| Pirkanmaa | 5,5 | 6,7 |
| Päijät-Häme | 5,8 | 5,1 |
| Kanta-Häme | 5,6 | 1,9 |
| Varsinais-Suomi | 7 | 8,1 |
| Pohjois-Savo | 2,6 | 3 |
| Pohjanmaa | 2,7 | 2,3 |
| Satakunta | 2,9 | 1,9 |
| Keski-Suomi | 1,1 | 3,3 |
| Pohjois-Pohjanmaa | 2,3 | 2,1 |
| Etelä-Pohjanmaa | 1,5 | 1,8 |
| Etelä-Karjala | 2,2 | 0,6 |
| Lappi | 1,6 | 0,9 |
| Pohjois-Karjala | 0,7 | 1,1 |
| Etelä-Savo | 0,8 | 0,8 |
| Keski-Pohjanmaa | 0,7 | 0,6 |
| Kainuu | 0,3 | 0 |
| Ulkomaat | 4,2 | 2,3 |
| No data | 0,4 | 2,8 |
| Total | 100 | 100 |
| Corridor (Eastern Finland) | 22,1 | 17,6 |

Appendix 4.

Correspondence table Statistics Finland (45 different commodity groups) and Finnish Transport Agency (16 different commodity groups).

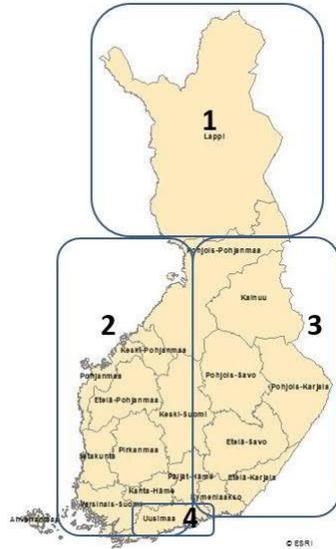
| tilastotavararyhmä, LIV | LIV:n koodi | Tavaralajit Tilastokeskuksen luokittelu | LiVi:n tavaralajit |
|--------------------------------------|-------------|---|--------------------------------------|
| vilja | | | |
| | 40 | Viljat: | |
| raakapuu, hake | 20 | Tikki- ja kuitupuu | timber |
| raakapuu, hake | 20 | Puru, hake | sawn wood |
| raakapuu, hake | 20 | Energiapuu, polttopuu, kannot, risut, metsähake yms. | wood pulp |
| sahatavara/vaneri, muut puuraaka-ain | 21, 24 | Mekaanisen metsäteollisuuden tuotteet, sahatu puutavara, paneelit, levytuotteet, talolemenit puusta yms. | paper |
| selluloosa, puuhioke, jättepapere | 22 | Paperimassa, selluloosa | *vaneri, muut puuraaka-ainelevy |
| papere, kartonki | 23 | Papere, kartonki, painotuotteet, muut tuotteet paperista ja kartongista | plywood and veneers |
| kiivihiihi, koksi, polttoturve | 33 | Kivi- ja ruskohiili, (raaka)hiili, luonnonkaasu | ores and concentrates |
| kiivihiihi, koksi, polttoturve | 34 | Koksi, briquetit, pelletit yms. kiinteät polttoaineet | metals and metal manufactures |
| öljytuotteet | 32 | Nestemäiset polttoaineet ja voiteluaineet, kaasumaiset ja kiinteät öljytuotteet | crude oil |
| öljytuotteet | 32 | Asfaltti, öljyora, bitumi | oil products |
| malmit, rikasteet | 26, 27 | Metallimalmit ja niiden rikasteet | coal and coke |
| malmit, rikasteet | 26, 27 | Raakeräs, rautaharkot, metallilevyt, -tangot ja -putket yms. puolivalmiit | fertilizers |
| raakamineraalit, sementti | 39 | Betoni, tiilet, elementit, sementti, kaikki yms. rakennusmateriaalit | chemicals |
| raakamineraalit, sementti | 39 | Sora, hiekka, kivet ja muut maa-ainekset, suola, lannoitemineraalit, kuona, tuhka, kasvuturve | crude minerals and cement |
| lannoitteet | 35 | Lannoitteet ja typpihioitteet | vilja |
| kemian teollisuustuotteet | 36, 37 | Peruskemikaalit; hapot, lipeä, hiilikemikaalit yms. | kappaletavara |
| kemian teollisuustuotteet | 37 | Lääkkeet, puhdistusaineet, maalit, räjähteet ja muut kemianteollisuuden tuotteet | muu tavara |
| metallit, metallituotteet | 29, 29.1 | Autot, ajoneuvot, kulkuvälineet sekä niiden osat | * is included in sawn wood -category |
| metallit, metallituotteet | 29 | Maa- ja metsätaloukskoneet, muut koneet ja laitteet sekä niiden osat | |
| metallit, metallituotteet | 28 | Metallirakenteet, metallisäiliöt, -työkalut, aseet, muut metallituotteet | |
| kappaletavara | 47 | Tekstiilit, tekstiilihuudut, vaatteet, jalkineet | |
| kappaletavara | 48 | Lasi, lasivalmiit ja keramiikka | |
| kappaletavara | 28 | Kodin- ja kontorikoneet, elektroniikka, sähkölaitteet ja niiden osat | |
| kappaletavara | 37 | Konitit, joiden sisältö ei ole tiedossa, muut ei-tiedossa olevat tavarat | |
| kappaletavara | 38 | Tyhjät konitit, kuormalavat, rullakot, palautuspullit ja muut pakkausmateriaalit | |
| kappaletavara | 39 | Muutokorvat, rakennustallineet, korjattavaksi vietävät tai hinattavat ajoneuvot yms. | |
| kappaletavara | 40 | Huonekalut, myymälä-, toimisto- ja keittiökalusteet | |
| kappaletavara | 42 | Eriytyneet tavarat, joita kuljetetaan samanaikaisesti | |
| kappaletavara | 43 | Muut tavarat (kuin luokissa 1-42) | |
| muu tavara | 41, 42 | Sokerijuurikas, perunat, juurekset, tuoreet vihannekset ja hedelmät | |
| muu tavara | 43 | Elävät eläimet | |
| muu tavara | 05 | Raaka maito, raaka kala, villa, raat turkinahat, yms. maa- ja kalataloustuotteet, | |
| muu tavara | 12 | Juomat, viivitusjuomat, oluet, viinit, alkoholit | |
| muu tavara | 13 | Liha, valmistettu kala, maito, voi ja muut helposti pilaantuvat elintarviketeollisuuden tuotteet | |
| muu tavara | 14 | Jauhot, sokeri, kahvi, valmistetut hedelmät ja vihannekset, muut ei helposti pilaantuvat elintarviketeollisuuden tuotteet, ruokaöljyt | |
| muu tavara | 44 | Jalostetut eläinten ruoat ja rehut | |
| muu tavara | 34 | Muovi- ja kumiteollisuuden raaka-aineet ja tuotteet | |
| muu tavara | 04 | Kukat, taimet, siemenet, öljykasvien siemenet, kuitu- ja rehuksavit yms. puutarhatuotteet | |
| muu tavara | 35 | Taloustuotteet, muut jätteet, lumi | |
| muu tavara | 36 | Kierrätysmateriaalit, keräyspaperi yms. | |
| muu tavara | 41 | Postilähetykset, pakettit yms. | |
| muu tavara | 44 | Tyhjiä | |
| muu tavara | 45 | Kunnossapito, huoltoajo yms. toiminnot | |

Appendix 5. Webropol questionnaire

PART I: BACKGROUND INFORMATION

1. Name of the respondent
2. Position of the respondent in the company
3. Size of the company. The number of following units:
 - trucks
 - vehicle combinations
 - trailers
4. Amount of personnel
 - under 5
 - 5-10
 - 10-20
 - 20-50
 - 50-100
 - 100-200
 - over 200
5. Do you use FINLAND-ESTONIA (FI-EE) ferry connections in your transportation?
 - No. If selected, jumps to Q 15
 - Yes. How many units (trucks and semi-trailers) you transport/send over weekly from Finland to Estonia ?
6. What cargo do you mainly transport?
 - products from technology industry (incl. electronics and electrotechnical, mechanical and metal products)
 - products from chemical industry
 - paper and carton
 - sawn timber
 - other building materials besides sawn timber
 - products from textile and clothing industry
 - products from food & beverage industry
 - dangerous goods (ADR/IMDG)
 - other, what ?

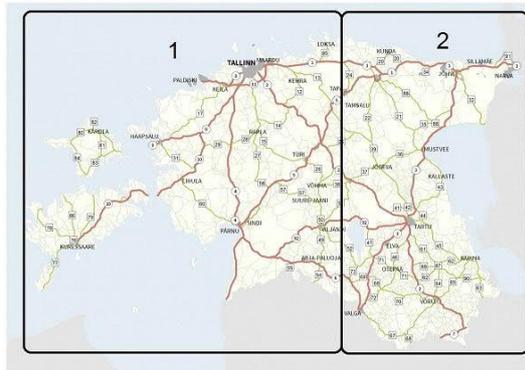
7. The origin of the cargo from Finland. Please select the area (alternatives under the map) and approximate share (%). Make sure the total is 100%.



0-20% 21-40% 41-60% 61-80% 81-100%

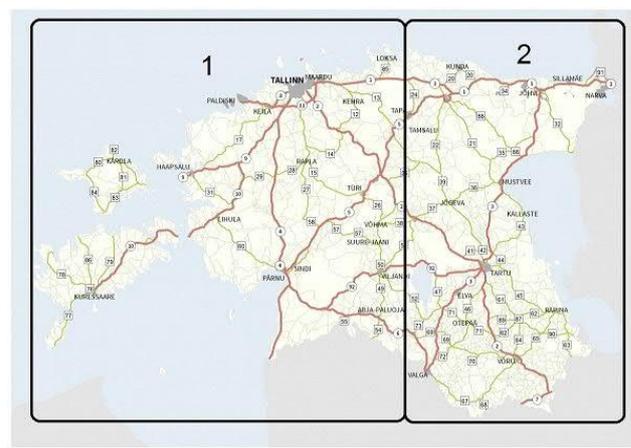
| | | | | | |
|----------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Region 1 | <input type="radio"/> |
| Region 2 | <input type="radio"/> |
| Region 3 | <input type="radio"/> |
| Region 4 | <input type="radio"/> |

8. The destination of the cargo departing Finland. Please select the area (alternatives under the map) and approximate share (%). Make sure the total is 100%.



| | 0-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Region 1 | <input type="radio"/> |
| Region 2 | <input type="radio"/> |
| Latvia | <input type="radio"/> |
| Lithuania | <input type="radio"/> |
| Poland | <input type="radio"/> |
| Czech Rep. Slovakia, Belarus, Ukraine | <input type="radio"/> |
| Germany, Austria | <input type="radio"/> |
| Other | <input type="radio"/> |

9. The origin of the cargo destined to Finland. Please select the area (alternatives under the map) and approximate share (%). Make sure the total is 100%.



| | 0-20% | 21-40% | 41-60% | 61-80% | 81-100% |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Region 1 | <input type="radio"/> |
| Region 2 | <input type="radio"/> |
| Latvia | <input type="radio"/> |
| Lithuania | <input type="radio"/> |
| Poland | <input type="radio"/> |
| Czech Rep. Slovakia, Belarus, Ukraine | <input type="radio"/> |
| Germany, Austria | <input type="radio"/> |
| Other | <input type="radio"/> |

14. What time/departure alternatives would suit you best from Kunda?

- 6-9
- 9-12
- 12-15
- 15-18
- 18-21
- 21-24
- 24-3
- 3-6

15. If you would not use the planned route, do you think that it would be useful in general level or/and to other stakeholders?

- Yes. Comments.
- No. Comments.
- I don't know.

16. What issues should be taken into consideration in planning the route between Loviisa and Kunda?

17. Possible other comments concerning Finland-Estonia ro-ro ferry traffic.

Appendix 6. Interview form

REFEC Interview topics/questions

0. Do you transport in EE/FI ferries ? (if No > would you consider to transport in future, esp. if Loviisa-Kunda route were available ?)

General

1. What issues are essential in choosing the ferry route if the sea transport cost (ferry charge and port fees) is the same between different options ?
2. Problems/challenges in current FI-EE ferry connections? now and in future..

FI-EE ferry transports

3. How do you see the development in EE-FI ferry transports (coming&going) in general/your company perspective within 5-10 year time frame?
 - o Which countries are the most important (origins/destinations from/to Finland, shares if possible) ?
 - o Are there different cargo types to/from different countries ?
 - o What country/cargo type has grown most recently and which are growth perspectives?
 - SO2 directive – has it had impact in using Via Baltica?
 - o Challenges in future
4. How many units (nr of trucks and single trailers, total figure) you transport weekly in FI-EE ferries?
 - o How much in the corridor area (share)?

LOVIISA – KUNDA ferry connection

5. Which share (Q4) could be transferred to Loviisa-Kunda route (if the price (sea+port fee) were the same ?
6. On which terms/conditions you were willing to use Loviisa-Kunda route?
 - For what cargo type, volume?
 - Which cargo has most growth perspectives in future
7. What issues should be noticed when planning Loviisa-Kunda route?
 - E.g. nr of departures, frequency...
 - What risks you see in Loviisa-Kunda service?
8. Which other stakeholders might be interested in using the Loviisa-Kunda route ?
 - Would it be useful in general?
9. Any other comment regarding REFEC



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