



Sustainable transport methods in logistics

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<p>Sammandrag:</p> <p>Klimatfrågor är alltmer aktuella i dagens läge och logistiksektorn är skyldig till en stor del av utsläppen. I detta examensarbete undersöks hur logistik- och speditorsföretag har anpassat sig till ökande hållbarhetskrav för logistik industrin, som kommer från diverse myndigheter. Därpå undersöks hur yrkeskunniga inom industrin ser på hållbara transporters framtid. Forskningsfrågorna som besvaras i detta arbete är: Är det enkelt för ett företag att välja hållbara transportalternativ? Erbjuder transportföretag transporter enligt hållbarhet? Har erbjudandet av hållbar transport ökat?</p> <p>I denna undersökning behandlas enbart transporter som omfattar Finland. Metodiken som används är kvalitativa intervjuer med personer som jobbar inom transportindustrin. Intervjuerna genomförs med hjälp av Zoom på grund av den rådande pandemisituationen. Resultaten varierar till en viss mån, men flera likheter bland de intervjuade finns angående logistikindustrins framtid. De intervjuade anser att efterfrågan på hållbara transporter kommer att öka. Variationen av svaren beror till stor del på att alla av de intervjuade inte arbetar med samma transportfordon. Av den orsaken föreslås att fortsatt forskning skulle undersöka företag som arbetar med samma transportmedel. Därpå borde enskilda transportmedel undersökas mera utförligt.</p>	
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<p>The climate crisis is a more pressing issue now than ever before and the logistics sector is responsible to a hefty amount of the emissions. This thesis looks into how logistics and forwarding companies have adapted to the ever-increasing requirements set by several authorities and to get a view on the future of sustainable transport from a professional's point of view. The research questions that are answered in this thesis are: Is it easy for a company to choose an environmentally friendly transport? Do shipping companies offer shipping options according to environmental considerations? Has the offering for sustainable transports increased? The thesis solely focuses on transports that are made from, made to, or made in Finland. The method that is used to create this thesis, is a semi-structured interview with industry professionals and the interviews were conducted using Zoom, because of the ongoing pandemic. The results of the research vary to an extent on some questions, but many similarities are found regarding the future of the logistics industry e.g., an increase in demand for sustainable transport. The variation in the results is mainly caused by the fact that the respondents work with different modes of transport and that is why I suggest for future research that only one mode of transport is researched and analyzed rather than all modes at once.</p>	
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FOREWORD

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Helsinki May 2021

Hannes Paulin

1 INTRODUCTION

Logistics has an impact on every person's life in one way or another, most people in the modern world shop online a lot from overseas via the internet and get it shipped right to their door. With the increased demand of transportation another question arises, can the planet handle the inevitable emissions that are caused by the increase in transportation. In order to preserve our planet and halt global warming, more sustainable ways of transportation have to be implemented. Logistics companies have a burden on their shoulders to come up with ways of more environmentally friendly shipping options that match their budgets and schedules.

1.1 Topic background and problem statement

The logistics industry is one of the biggest contributors to global warming in the modern world, with a contribution of twenty three percent of the planet's emission. The industry has grown exponentially in the past 50 years and the number of deliveries daily has increased significantly. Amazon has been an innovator in the field of package deliveries with their drone delivery systems and maybe someday there will be the possibility to ship individual containers in a similar manner. The biggest contributor to these high emissions is the usage of fossil fuels, road transport alone is guilty of seventy-five percent of the transport greenhouse gas emissions in the world (Conservative Energy Future).

Sea freight and rail transport are a more sustainable and decarbonized way to transport freight than air freight and road transport. In order to achieve a more sustainable way of operating transports, an increase in sea- and rail transport has to be implemented. The European Union for example, has invested in rail, inland waterways, and port infrastructure. In addition, the EU has provided rail and water-borne services with financial support. There are however problems with both sea- and rail transport, including flexibility and accessibility, in addition, sea freight suffers from slow transit times. According to

Professor Alan McKinnon there is also a bias towards particular modes of transport when purchasing freight options. (LogForum 2010).



Figure 1: Carbon dioxide emissions by mode of transport (msc 2019)

Sea freight is already the most carbon efficient mode of transport and it is constantly evolving in an even more environmentally friendly manner. (UniversalCargo 2015) As illustrated in figure 1, sea freight has the least emissions and the sea shipping industry has already reached multiple milestones, including a ten percent reduction in total carbon dioxide during 2007-2012, a carbon neutral growth and a twenty percent decrease in carbon dioxide per ton/kilometer since 2005. (ICS 2015)

International chamber of shipping (ICS) claims that other achievements are under way including that ships that are built after 2025 will be thirty percent more efficient, more fuel efficient and a fifty percent carbon dioxide reduction by the year 2050. (ICS 2015)

Finland is considered an island according to an old saying, this however, is still true since majority eighty percent, to be precise, of the Finnish foreign trade is conducted by sea (Meriliitto 2020).

Are the current methods of shipping freight as sustainable as they can be, or can they be improved by opting for a different shipment method or a combination of different shipment methods to reduce the total emissions?

1.2 Research aim

The aim of the thesis is to research which possibilities companies have when choosing mode of transport. It is well known that sustainability is a new area that interests companies and can be used for competitive gain in the logistics sector, since awareness within environmental fragility among consumers and companies has grown massively in the past decades.

1.3 Research question

Is it easy for a company to choose an environmentally friendly transport? Do shipping companies offer shipping options according to environmental considerations? Has the offering for sustainable transports increased?

1.4 Limitations

Limitations in this paper include the geographical aspect, which means that this paper focuses on transports to and from Finland. This paper discusses exclusively business transports and not leisure transports.

1.5 Research method

The methods used in this thesis include a qualitative interview with four different logistics companies as well as secondary data from various authors.

1.6 Structure

This thesis includes 5 chapters which consist of the following, an introduction, a theoretical framework, the method, a presentation of the results and finally a closing discussion.

2 THEORETICAL FRAMEWORK

This chapter covers the theory part of the thesis. The chapter consists of the history of Finnish import, EU regulations and the logistics sector as a contributor to climate change.

Even though the logistics and transportation sector are responsible for a total of twenty-three percent of all carbon emissions, insufficient attention has been laid on carbon management practices (Herold & Lee 2017).

In order to sustain the permanent economic growth, the logistics sector has to keep up with the increased demand for transport services. According to OECD trade projections, the amount of international freight will grow up to three times the amount. It is projected that an increase of one hundred and sixty percent in global freight will be imminent unless additional measures are taken. This in turn is largely because of the increase in road transport, especially in countries that lack proper rail links, for example countries in South-East Asia. (ITF 2017)

2.1 Road transport

When discussing transport methods excluding air freight, road transport is the most pollution heavy method of transporting. In 2014, of all carbon dioxide emissions the

transport industry as a whole was responsible for 23% and of that percentage, road transport alone was responsible for twenty percent (Santos 2017).

Road transport refers to trucks and lorries also known as heavy-duty vehicles. The major problem with road transport is the less than truckload (LTL) shipments. This means deliveries through truck that have multiple orders in one truckload. This method results in more air being shipped and more emissions since the truck does not usually drive straight from point A to B, instead it must be transported into different hubs using different trucks. Full truckloads (FTL) on the other hand are far more lucrative and environmentally friendly, because there is less risk involved in shipping a full truckload since it is harder for the freight being delivered to get damaged because of the weight, and finally driving shorter distances are better for the environment and more cost efficient. (Baltic Fleet Management 2020)

As road transport and fossil fuels are the major issue with the transport sector, several EU-regulations have been implemented to halt the environmental inefficiency of these methods, this will be further discussed in chapter 2.7.

2.2 Rail transport

The economic times describes rail transport as one of the most safe and secure modes of transport. Unlike road-, air- and sea transport, rail transport is not as hindered by the climate. Trains are a very good method of transport, since it can out rule some force majeure, including fog and rain. (The Economic Times 2020) In Finland, a rather small percentage of foreign trade is conducted through railways, to be precise, for export 6,3 percent and for import 7,4 percent, as seen in figure 3 (Tulli 2020).

While rail transport is not the most favored method of transport in Finland, countries like the United States, China and Russia are the leading three for transporting freight using rail transport. (Timperley 2019)

Currently, an estimated seven percent of all freight globally is moved by rail. According to IEA there is an ongoing shift from rail transport to road transport, which is caused by the increased demand for fast deliveries for high-value and lighter goods. (IEA 2020)

In comparison rail transport uses roughly ninety percent less energy compared to road transport in terms of per unit of freight. (Timperley 2019)

However, the energy-efficiency of rail transport is largely based on whether the rail is electrified or if the train utilizes diesel, if the rails are electrified the emissions are reduced by 20-35%. (The Guardian 2012) Sustainable rail transport is dependent on infrastructure and is currently only available in places where suitable rails have been constructed.

2.3 Sea transport

Sea transport is the oldest way of international shipping in the history of humankind. Even after decades, sea transport remains to this day the most used mode of transport in international trade. Sea transport has a dominant standing in the transportation sector with a ninety percent share of all international trade. The biggest advantage that sea transportation has, is the capacity the huge vessels possess and the amount of cargo they can transport at once. (Mihlfeld & Associates 2018)

Seventy one percent of the earth's surface is covered in water, so this enables ships to get anywhere. However, there is a clear downside to sea transport, which is the very slow transition times that the huge vessels suffer from. To put this into perspective, the

average ship has a speed of 15 knots, which equals to twenty-eight kilometers per hour, which means that an average ship can travel 575 kilometers per day. This when compared for example with road transport, where trucks can drive at a speed of anywhere between 60-100 kilometers per hour shows the difference in the speed of sea transport compared to other modes of transport. (Mithlfeld & Associates 2018 & Rodrigue & Notteboom 2020)

On one hand sea transport suffers from slow transition times but on the other hand it is a very ecological way of transportation. In fact, it is the most ecological one, and it is responsible for a mere 2,5 percent of the global greenhouse emissions, which is genuinely very little considering the size of the sea transport market. (European Commission and Transport & Environment) Furthermore, sea transport compared to other modes of transport has set huge goals for the future in terms of operation and emissions, with the biggest being a vaulting fifty percent reduction in carbon dioxide by the year 2050. The measures taken to achieve this include speed management and new innovative technologies within the industry. (International Chamber of Shipping 2015)

Sea transport does have its safety issues as well. The risks come in different forms, some can be hindered by precautions and some cannot, piracy for example can be taken precautions for but harsh weather conditions, also known as force majeure, cannot. Thankfully, there are different organizations that provide transportation companies with guidelines and solutions to minimize the risk of transporting by sea. An example of an organization like this is the International Maritime Organization, also known as IMO. IMO was originally founded in 1948 and the main objective was to regulate sea transport to achieve a more safe and effective way of shipping. Today IMO still does the same as it did back in the 1940's, but also provides regulation on environmental aspects, such as sustainability and emission regulations. (International Maritime Organization 2020)

2.4 Air transport

Air transport is without question, the fastest way to transport goods. It is a favored method of transportation in industries where commodities lose value over time. An example of this is the fashion industry, where companies want to provide their customers with the latest fashion as quickly as possible. Other products often transported by air are high value goods and perishable goods. On one hand, air transport is the fastest mode of transport, but on the other hand, it is the most expensive one and the most environmentally unfriendly.

Air transport is also usually the choice if the product being transported is of high value. According to Airports Council International (ACI), there are a wide range of reasons why this is the case, and it varies depending on the goods being transported. As already mentioned, if the product is time sensitive this is a good way of transportation, but that is not the only benefit of air transport. The security aspect is also considered as the safest of all transport methods, air transport provides the best protection for a product in terms of theft, loss, and damage. Inventory costs and cost of capital are also mentioned as factors affecting the choice of air transport. If the product shipped has big interest costs, the haste of air transport can reduce the cost of upkeep. (Airports Council International 2020)

2.5 Comparison of transport modes and emissions

In the previous chapters emissions have been discussed, but they have not been compared to each other, in this chapter the author will discuss the emissions from different modes of transport and look at which mode is responsible for the most emissions in the transport sector.

Emissions by Mode of Transport

g CO₂/ton-km^{1,2,3}

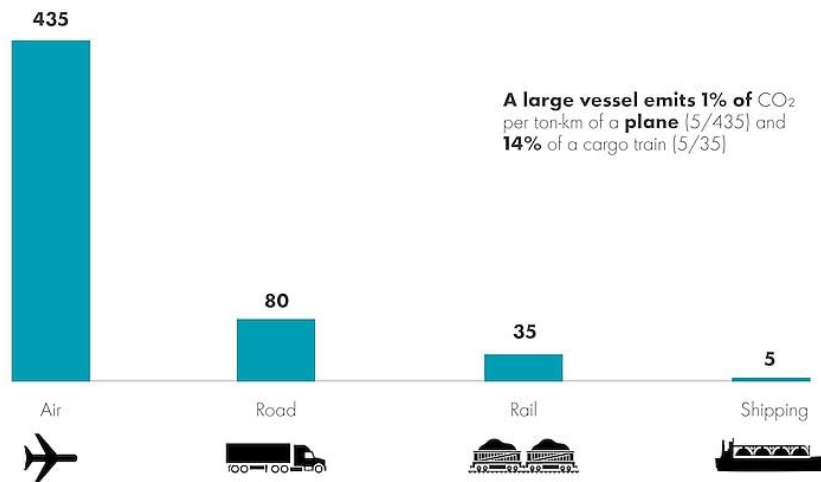


Figure 2 Emissions by Mode of Transport (Shell 2020)

In figure 2 the emissions of different transport methods are displayed in grams of carbon dioxide per ton-kilometer. As previously stated in the earlier chapters, air transport is the most emission heavy way of transport while sea transport is the least. Figure 2 depicts the number of emissions these transport modes have, but what do the numbers look like in reality, which transportation method emits the most greenhouse gases, i.e., which transportation method is used the most.

2.6 Finnish import/export by transportation mode

The old saying that Finland is an island has kept its meaning throughout the years since to this day a clear majority, almost 90% of Finnish foreign trade is conducted by sea (Finnish Shipowners' Association 2020).

Kuvio 1. Vientikuljetukset kuljetusmuodon mukaan (milj. tonnia; osuus %)



Kuvio 2. Tuontikuljetukset kuljetusmuodon mukaan (milj. tonnia; osuus %)

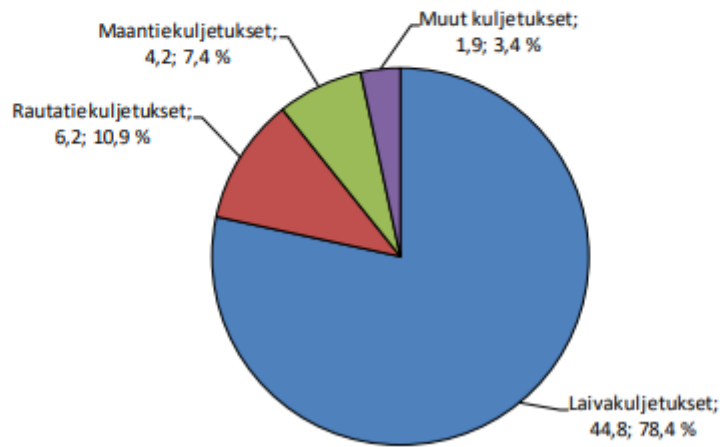


Figure 3 Finnish import/export by mode of transport in 2019 (Tulli 2020)

As seen in figure 3 a clear majority of Finnish foreign trade is conducted by sea transport. Over ninety percent of Finnish export is transported via the sea and it has stayed almost the same in 2019 as it was in 2018. (Tulli 2020)

Table 1 Import and export by country and by mode of transport in 2018 and 2019.

Taulu 3. Tuonti lähetysmaittain ja vienti määrämaittain vuonna 2019

Tuonti	Laivakuljetukset			Muut kuljetukset					Kuljetukset yhteensä (2018)	Kuljetukset yhteensä (2019)	Muutos % 2018-2019	Osuus % 2019
	Meri	Sisävesi	Yhteensä	Rautatie	Maantie	Lento	Posti	Muu 1)				
	1000 t	1000 t	1000 t	1000 t	1000 t	1000 t	1000 t	1000 t	1000 t	1000 t	%	%
Venäjä	15 313	293	15 606	6 185	3 661	0	0	1 695	27 636	27 147	-2	47,5
Ruotsi	6 404	0	6 404	1	344	1	177	0	7 477	6 926	-7	12,1
Saksa	2 937	0	2 937	0	0	2	4	0	3 077	2 943	-4	5,2
Norja	2 567	0	2 567	0	127	0	0	0	3 740	2 695	-28	4,7
Alankomaat	2 550	0	2 550	0	0	1	0	0	2 619	2 551	-3	4,5
Viro	1 846	0	1 846	0	0	0	0	0	2 032	1 846	-9	3,2
Belgia	1 438	0	1 438	0	0	1	0	0	1 361	1 439	6	2,5
Latvia	1 417	13	1 430	0	0	0	0	0	1 315	1 430	9	2,5
USA	1 148	0	1 148	0	6	4	0	0	1 028	1 159	13	2,0
Puola	1 034	0	1 034	0	0	0	1	0	1 301	1 035	-20	1,8
Ranska	976	0	976	0	1	0	0	0	993	978	-2	1,7
Kanada	767	0	767	0	0	1	0	0	819	768	-6	1,3
Tanska	764	0	764	0	0	0	0	0	859	764	-11	1,3
Espanja	659	0	659	0	0	0	0	0	719	659	-8	1,2
Iso-Britannia	568	0	568	0	0	1	1	10	677	580	-14	1,0
Muut	4 072	0	4 072	13	73	18	2	8	4 500	4 184	-7	7,3
Koko tuonti	44 460	306	44 765	6 198	4 214	30	185	1 713	60 153	57 106	-5	100,0
Vienti	1000 t											
Ruotsi	5 564	6	5 570	13	1 303	1	1	1	6 657	6 888	3	13,6
Saksa	5 089	1	5 090	5	0	2	0	75	5 305	5 172	-3	10,2
Alankomaat	3 585	17	3 602	0	0	0	0	0	4 457	3 602	-19	7,1
Avomeri	3 380	0	3 380	0	0	0	0	0	613	3 380	452	6,7
Kiina	2 926	0	2 926	20	1	9	0	0	2 570	2 955	15	5,8
USA	2 624	0	2 624	0	0	10	0	0	2 104	2 634	25	5,2
Iso-Britannia	2 610	12	2 621	0	0	0	0	0	3 104	2 623	-16	5,2
Belgia	2 404	0	2 404	0	0	0	0	0	2 124	2 404	13	4,7
Venäjä	507	5	512	207	1 223	0	0	0	1 458	1 943	33	3,8
Puola	1 409	25	1 434	0	0	0	0	0	1 495	1 434	-4	2,8
Viro	1 372	3	1 374	0	0	0	0	0	1 970	1 375	-30	2,7
Italia	927	0	927	0	0	0	0	185	980	1 113	14	2,2
Egypti	1 091	0	1 091	0	0	0	0	0	958	1 091	14	2,1
Ranska	1 063	14	1 077	0	0	0	0	0	984	1 077	9	2,1
Espanja	1 066	1	1 067	0	0	0	0	0	953	1 067	12	2,1
Muut	11 007	15	11 022	65	690	263	0	20	12 517	12 061	-4	23,7
Koko vienti	46 622	98	46 720	311	3 217	287	1	282	48 249	50 818	5	100,0

1) itsenäisesti liikkuneet lentokoneet ja veneet, putkikuljetukset

In terms of ecology Finland is on the right track with sea transport as the favored mode of transport and the minimal usage of air transport as can be seen in table 1. It is logical that sea transport is the most used mode of transport in Finland because of geographical reasons. Air transport was only used for 317 000 tons of cargo in 2019 while sea freight was used for 89 082 000 tons respectively, as seen in table 1.

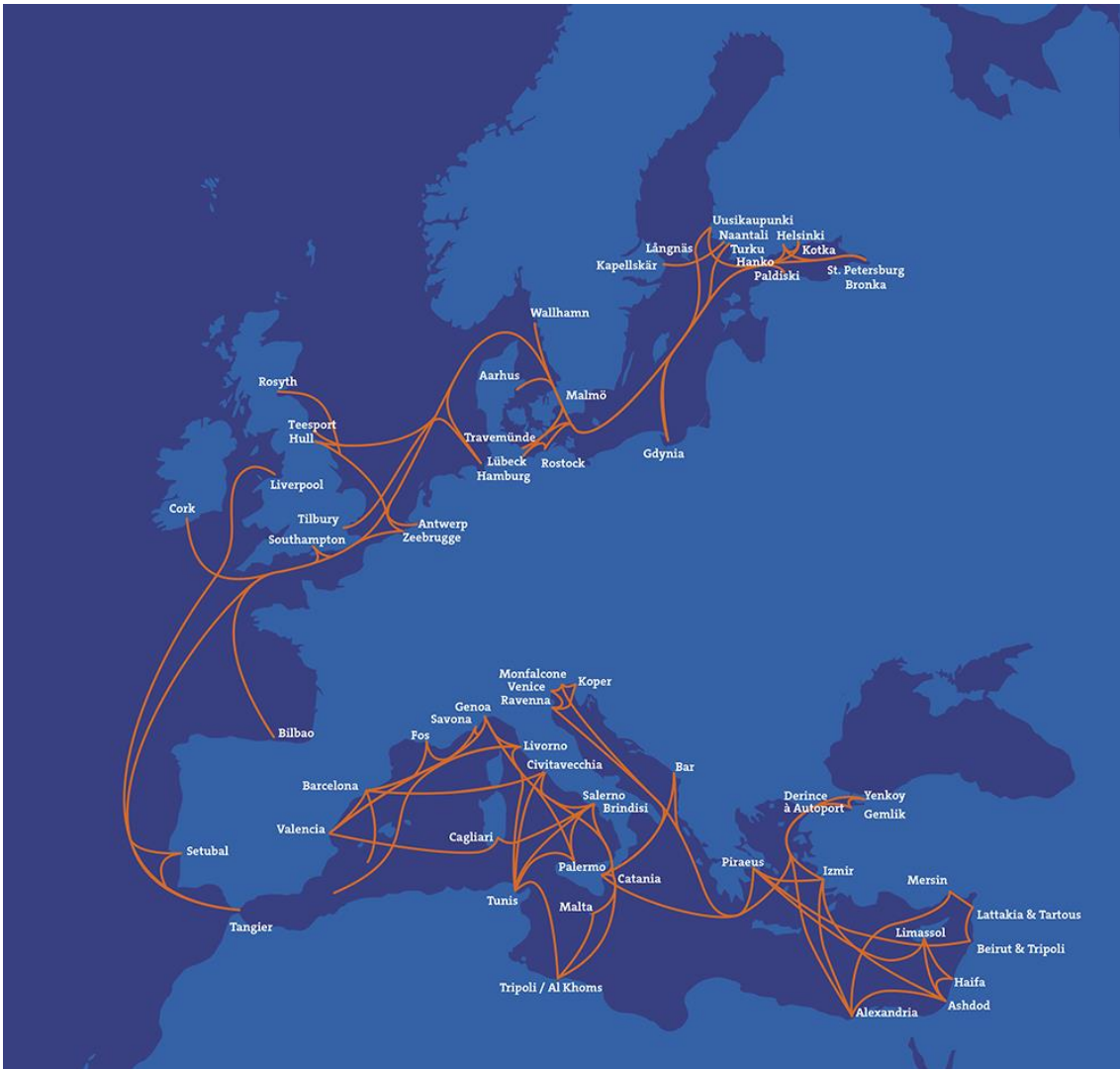


Figure 4 Finlines traffic area in Europe (Logistiikan Maailma 2020)

Figure 4 depicts the most commonly used seafaring routes in Europe including parts of the Middle East and Africa as well as the names of important port locations. As seen on figure 5 and table 1, the top three countries that Finland trades with are Germany, Sweden, and Russia. At a closer look at figure 4, we can see that Germany and Sweden are easiest accessible through sea transport while Russia is easily accessible by either road- or rail transport.

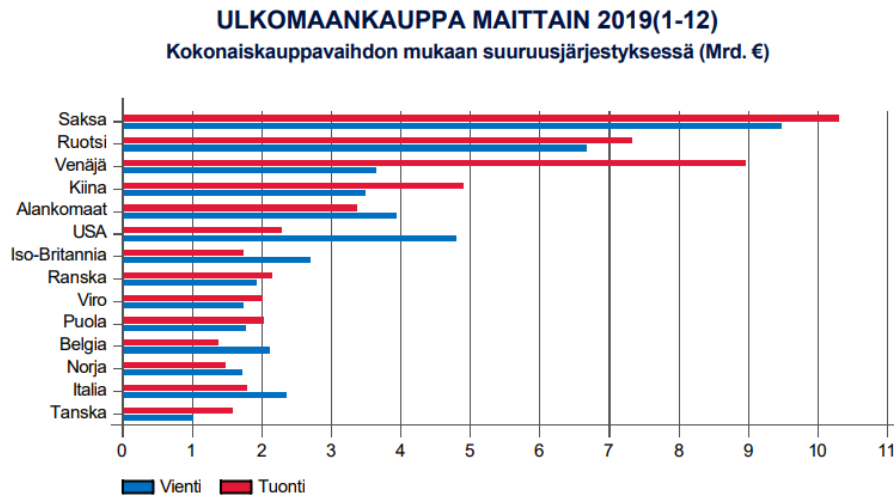


Figure 5 Finnish foreign trade by country in 2019 (Billion €), (Tulli 2020)

Figure 5 illustrates Finnish foreign trade in terms of import and export sorted by country. As already mentioned earlier in the paper and as can clearly be observed in the figure, Germany is by far Finland’s biggest trade partner, followed by Sweden, Russia and China.

2.7 EU regulations on transport

As the transport sector is such a huge contributor to the total greenhouse gas emissions, it is a given that an international institution, as the like of EU is going to give regulations and guidelines.

A climate neutral EU by 2050. This is the ultimate goal of the European agencies such as the European Commission (EC). The 2030 Climate Target Plan is a proposal made by EC that in short proposes that countries in the EU should cut their greenhouse gas emissions by at least 55% compared to 1990 by 2030. (European Commission 2020a) This is intended to make the goals set for 2050 easier to achieve and to raise ambition to do so. The proposal is stated to be in line with the Paris Agreement, which is an interna-

tional treaty between nations where the aim is to keep global warming under two Celsius, preferably at 1,5 Celsius. (United Nations 2020)

The European Commission has envisioned a climate-neutral European Union and in March of 2020 a proposition for a European Climate Law was set. It is a proposal to convert the climate neutral EU by 2050 from a vision to a law, and it would be the first of its kind. The law would have four main objectives including: providing predictability for investors, creating a method to monitor progress, to set directives for travel, and to make sure that the transition to climate neutrality is permanent. (European Commission 2020b)

The transport sector is responsible for roughly a quarter of Europe's greenhouse gas emissions, and the main culprit for air pollution. In turn, within the transport sector, road transport is emitting more than seventy percent of all greenhouse gases. (European Commission 2020c) The EU has set out to tackle this problem by cutting emissions by no less than sixty percent by 2050. The strategy that is used to achieve this goal, is divided into three categories. Steering away from fossil fuels and trying to implement more environmentally friendly methods of fueling transport, such as electricity and bio-fuels. Encouraging the use of lower emission transport modes and the development of zero-emission vehicles. (European Commission 2020c)

As for the individual transport modes, heavy-duty vehicles that are built after 2025 and 2030 are required to have less emissions and the greenhouse gases from fuel have to be cut by ten percent by 2020. (European Commission 2020d) In sea transport, the International Maritime Organization (IMO) is setting standards and goals for the sector. Their plan is to cut shipping emissions by a minimum of fifty percent by 2050 compared to the levels of 2008. (European Commission 2020e) Air transport, which is the most emission heavy mode of transporting and as of 2008 is also subject to EU emissions trading system, which means that air transport has to contribute to the greenhouse gas emissions reductions in 2020 and 2030. (European Commission 2020f)

3 METHOD

This chapter describes the methodology for the research and how data was collected and analyzed.

3.1 Qualitative and quantitative research

When conducting research, a method for the research must be picked. It can either be a quantitative or a qualitative research method. The difference between these two research methods is described as quantitative research being deductive; testing of theory and qualitative research being inductive; generation of theory. (Bryman & Belle 2011)

As described by Alan Bryman and Emma Belle “Qualitative research is a research strategy that usually emphasizes words rather than quantification in the collection and analysis of data.” (Bryman & Belle 2011)

Interviews are the most commonly used method in qualitative research. The reason for this is the flexibility that an interview beholds. (Bryman & Belle 2011) Based on this existing research the author decided to conduct their research through a qualitative, semi-structured interview.

3.2 Interview as a method

The research method used in this thesis is a semi-structured interview since an unstructured interview would yield far too broad answers that would be hard to analyze, to compare the answers and draw conclusions from.

An unstructured interview is an interview where the interviewer does not have many questions, it may consist of just one and the interviewing process acts almost like a normal conversation where the interviewee answers the first question freely and the interviewer can make remarks and follow up questions based on the response from the interviewee. (Bryman & Belle 2011)

A semi-structured interview is an interview where the researcher has a set of questions that aim to get an answer on some specific topics but allows the interviewee to freely answer the questions. It differs from an unstructured interview so that while letting the interviewee respond freely, a set of pre picked questions will be answered rather than just one. While both a semi-structured and a unstructured interview were viable options for this research purpose, the author opted for the semi-structured interview. (Bryman & Belle 2011)

3.3 Structure of the interview

The interviews are based on an interview guide which is attached as appendix 1 in the appendix section of the paper. The data was collected from four different respondents who all worked for different logistics companies, all of the respondents worked within freight forwarding. The interviews were conducted both in person and through calls because of the ongoing Covid-19 pandemic. All of the interviews were recorded and later transcribed.

3.4 Data analysis

All of the interviews were transcribed. This enabled the author to easily look for differences and similarities in the data. The data was then later presented with the help of visual aids, in the form of tables.

3.5 Validity and reliability

“Validity refers to whether ‘you are observing, identifying, or “measuring” what you say you are’.” (Bryman & Belle 2011) Reliability refers to if the results of the research are repeatable, which means that if someone were to conduct the same research, would they receive the same results. (Bryman & Belle 2011) The interviewees are people who work with logistics and have an insight on the matter to ensure both the validity and reliability of the research.

4 RESULTS

This chapter summarizes the collected data. Each question used in the interviews is presented as a subheading followed by an analysis of the data gathered, in form of a discussion. The interviewees are Robing Hagberg from Varova, Eric Sundqvist from Swissport, Bengt Lodenius from FREJA road transport and one person who wanted to stay anonymous who works in sea freight and road transport. The interviewees have all been made anonymous and are referred to as respondents A, B, C, D. The interviews are translated from Swedish to English.

4.1 Definition of sustainable transport

All the respondents were familiar with the concept and defined sustainable transport in short as a method of transport which is conducted in an eco-friendly manner. Carbon dioxide emissions were mentioned in three out of four interviews, and a common consensus was that the aim of sustainable transport methods is to achieve smaller emissions. However, the procedures applied to achieve more sustainable methods of transport varied among the respondents, which was as expected since the respondents worked with different modes of transport.

Respondent A said that sustainable transport is a concept that is getting constantly more popular. The methods they themselves at the company are using for a more sustainable transport is by planning the delivery routes, to avoid driving around in with an empty

truck and consolidation. Respondent B mentioned similar methods with an emphasis on strategic planning, this in turn includes what respondent A mentioned, not driving empty truckloads, and consolidating when possible. Respondent C states that they are not that familiar with the concept, but they look at the concept as a whole, meaning the production of the machinery used in all phases of the transport added on top of the transport itself. Respondent D in turn defines sustainable transport additionally as a long-term way of transportation. In addition, respondent D states that within the logistics sector companies tend to discuss the concept of sustainable transport more than they act on it.

4.2 Sustainable transport alternatives in logistics companies

Respondent A brings up the climate crisis and the responsibility that logistics companies must take with regulations from both Finland and the EU. Respondent A also brings up that in some cases it can be a selling point from a marketing perspective to be climate friendly. Respondent A states that they have never stumbled upon a customer who had asked how eco-friendly the method of transport was, but respondent A believes that customers want to keep it as eco-friendly as possible unless it generates additional costs. “Customers do not want to spend money on logistics in general” respondent A states lastly. Respondent B explains that from a logistics agency’s perspective they try to find a transportation company that performs accordingly to the deadlines and does not cause additional charges for the customers’, in addition they do not opt for companies that do not have a proper strategic planning and drive around with an empty truck. Respondent B also mentions that there are several delivery companies that conduct more sustainable transport, but it is not always an option since they transport cargo of big size, and to handle cargo of that size requires cranes and other machinery that are not considered to be eco-friendly. Respondent B says however, that they have tried to switch to more eco-friendly methods of transport such as railway and sea-freight when possible.

Respondent C explains that last summer they developed a model for optimization for the transport of materials and baggage to the airplanes, which lead to a reduction in driven distances which in turn reduced the emissions. However, this was a by-product

of the optimization of the company's resource management. Respondent D says that their way of providing an eco-friendly method of transport is strategic- and route-planning, which as earlier mentioned includes driving full truckloads and avoiding unnecessary driving in general, this is also from an economic point of view beneficial for the company. Respondent D also emphasizes that the whole supply-chain must be functional to be eco-friendly, for example that sea freight ships must be eco-friendly. They also mention multimodule transports in central-Europe where a combination of different transport methods, where railway transport is used rather than road transport, which is an eco-friendlier way of transport.

The common consensus among majority of the respondents was that strategic planning is the current way of reducing emissions in transport and in addition to that usually beneficial for the company itself as well.

4.3 The importance of sustainable alternatives to customers

Respondent A says that they have never stumbled upon a customer who would have demanded sustainable transport, or anything related to sustainability. Respondent A says that sustainable transport is more of a selling point for logistics companies but states that, in general when doing business with smaller clients consolidating is what they offer. Respondent B explains that the only sustainable transport method they can provide currently is route planning to and from their main terminal. Respondent C says that sustainable transport methods are not a selling point for their company, but they can impact the flow of materials into and from their terminal and opt for more eco-friendly methods in the process. Respondent D says that their bigger clients require in their contracts a standard, which is evident for Respondent D and their company, respondent D also mentions that they do not have two different transport modes where one is sustainable and the other is not and that they have different price tags on them. Respondent D also mentions if a company does not comply to the requirements, they fall off the market.

4.3.1 The most sustainable way of transport

Respondents A and B said that electrified railway transport is the most sustainable way of transport. Respondent A added that it also depends on the amount of goods you are transporting. Respondent C said that narrow body short haul flights are the most sustainable since the freight transported onboard is transported using electrified machinery. Respondent C also added that in air freight it is hard to make the flights themselves sustainable and that they recycle as much as they can. Respondent D says that multimodule transports are the most sustainable way of transport for them.

4.3.2 Sustainable transport vs traditional transport

Respondent A says that on one hand it depends on the technology, but on the other hand the technology needs big investments and that the investments are not justified unless there is profit in the investments. Respondent B says that currently sustainable transport is a lot more expensive but also mentions the same as respondent A that through technological advances within the field it will become competitive. Respondent C believes that sustainable transport methods are competitive with traditional transport methods and it will become even more so as the discussion about the topic in general increases. Respondent D says that they do not view sustainable- and traditional transport methods as two different options. Respondent D also mentions that in logistics companies tend to “greenwash” which means that instead of controlling the emissions they later donate to an organization that advocates for reduced emissions.

4.4 The current demand for sustainable transport and the future of sustainable transport solutions

Respondent A believes that the demand has increased, respondents C and D second this and respondent C motivates this with the fact that sustainable transport is talked about more than before and says that as more innovations within the sustainable transport field

are introduced the demand for them will increase. Respondent D says that the transport industry is also a part of society and must deal with climate change alongside other industries. During their 15-year career in the transport industry a clear trend has been noticed that the demand has increased as have the requirements. Respondent B does not think it has increased, referring to that the customers are not that conscious about the environmental aspects. If the customer needs something fast, the only thing that matters is the swiftness of the transport.

All respondents agree that the demand of sustainable transport solutions will increase in the future and new innovations and technology regarding the subject will emerge. Respondent A says that today's youth will be the salvation for the transport industry, meanwhile respondent B believes that the demand for sustainable transport solutions will increase through better strategic planning, which in turn will make it more attractive for customers. Respondent C brings up the uncertainty within the field as an obstacle for change, is it worth for a company to invest in electric cars now, or will they be redundant within three years. Respondent D says that the requirements for transport methods in general will get stricter in terms of eco-friendliness. They also say that the future of sustainable transport will come from both innovations within the field and through political decisions and global development.

5 CLOSING DISCUSSION

The purpose of this thesis was to find out how logistics companies have adapted to climate change and the demands set by EU and other authorities. In addition, I wanted to know what the future looks like for the logistics industry and how companies view the future and possibly how they adapt and have already adapted to the increased requirements within the field. As expected, all the respondents were familiar with the concept

of sustainable transport and had encountered it at work in one form or another. I was, however, surprised by the variation in the answers to the question about customer demand for sustainable options, since it is a matter that is discussed a lot in media and society in general.

Even though all respondents worked with different transport methods in the transport industry, the definition of sustainable transport was the same, “transport with less impact on the environment”. While researching the subject, I focused mainly on the impact that the modes of transport have, rather than the whole process of transporting goods from point A to point B. This was a sort of eye-opening thing that I realized while conducting the interviews, that if a mode of transport is sustainable, it does not necessarily mean that the whole transport process is sustainable. It was also interesting to learn that sustainable transport methods such as electric cars and hydrogen cars are not yet powerful enough to transport cargo, which tramples the possible argument of just using them instead. In addition, it is curious that according to respondent D even though different authorities regulate the transport sectors emissions, they do not feel pressured by them and that companies tend to discuss emissions more than they act on them. The respondents that worked with road transport all mentioned similar sustainable transport methods that were discussed in the theory section. Strategic planning, route planning and consolidation seem to be the best alternatives for now, since as mentioned above, neither electrical- or hydrogen cars are powerful enough to transport heavy cargo. The current offering of sustainable transport methods has been a by-product to majority of the respondents of an optimization of their transports, this of course is a great start, but I believe as some of the respondents do as well, that it will not be enough to meet future requirements on the industry. Three out of four of the respondents said that in the future sustainable transport methods will be more competitive with traditional transport methods and that the technology in the field is constantly making it more competitive, which is also why all respondents view the future of sustainable transport as viable and believe that it will be competitive with the current methods, and at some point, it will be favored over the current methods, it just needs the proper funding and decision making from authorities.

In short, the industry has already started to adapt to the needs of the planet by providing some sustainable options, leaning towards a more sustainable future, which is good news. For sustainable transport methods to be realistic competitors in the field, technological advancements and global trends must be set for the industry. Looking back at the research process I could have directed my research at only one of the modes of transport e.g., road transport or sea freight to get a deeper understanding of why some options are viable and some are not. When it comes to further research, I would encourage that each mode of transport would be looked at individually and thoroughly rather than all at once.

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APPENDICES



Thesis Interview
Guide.pdf

APPENDIX 1: Interview Guide

English

1. Name, company, position/time at the company
2. How would you define sustainable transport and how familiar are you with it?
 - a. different certificates
 - b. co2 emissions/transport modes
3. How common is it for logistics companies to utilize sustainable transport and which alternatives are there?
4. When offering transport solutions to your customers how important are sustainable alternatives and how can you customize transport solutions?
 - a. What are the most sustainable transport solutions?
 - b. Are the sustainable transport solutions compatible with traditional transport solutions?
 - c. Describe the difference between sustainable- and traditional transport solutions.
5. Viewing back how has the demand for sustainable transport changed?
6. In the future, will there be a higher demand for more sustainable transport solutions?

Svenska

1. Namn, företag, position på företaget / hur länge du jobbat på företaget
2. Hur skulle du definiera hållbar transport och hur bekant är du med det?
 - a. Diverse certifikat
 - b. koldioxid utsläpp/transportsätt
3. Hur vanligt är det för logistik företag att utnyttja hållbar transport och vilka alternativ finns det?
4. Då du erbjuder transport lösningar åt kunder, hur viktiga är hållbara alternativ och hur kan du modifiera transport lösningarna?
 - a. Vad/vilka är de mest hållbara transportmetoderna
 - b. Är hållbara transportsätt konkurrenskraftiga med traditionella transportsätt
 - c. Beskriv skillnaden mellan hållbara och traditionella transportsätt
5. Jämfört med tidigare hur har efterfrågan av hållbar transport förändrat?
6. Kommer det att finnas en större efterfrågan för hållbara transport lösningar i framtiden?