HAAGA-HELIA
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Export of US Energy Utilities Equipment to Finland

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Abstract

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This bachelor's thesis was commissioned by the Embassy of the United States of America in Helsinki, and primarily by its Commercial Section in January 2015. The writing process took place between February and May of the same year.

The thesis examines the business potential of the target market Finland for US companies that operate in the energy utilities industry. The basis of information of this thesis is founded primarily on the theories of International Business, subjects that are closely affiliated with it, general knowledge on the subject, and on the most essential features of the energy industry. The main area of examination is on the trade of these commodities from the United States to Finland. However, the business to the opposite direction is limited from this study, as the permissible length of a bachelor's thesis is limited.

This thesis focuses also on the production of electricity, as these two industries are inseparably close to each other. Especially in the case of the target market, the industries are presented simultaneously.

The thesis is in two parts. The first one is theoretically oriented, and the second is an export guide. The theoretical part commences with an introduction, and by defining the concept of Energy Utilities Industry. After this the core elements of international business are contemplated, such as the global volume of international trade, the internationalization process of companies, the main factors of market success, the significance of logistics in world trade, and the importance of funding, to name a few.

The target market Finland is analyzed in the following chapter. The equivalent situation of the energy industry in the neighboring countries is also examined, to shed light on the wider geopolitical region. The primary point of view in this chapter is divided into the Macro and Micro environments of the industry, with the help of a PESTE-analysis approach.

The export guide is enclosed as an attachment after the theoretical part. The guide contemplates the current business potential of Finland for the above-mentioned companies, and analyzes the target markets business opportunities of the near future. Essential figures of the industries of electricity production and energy utility are presented in this part.

Keywords
Energy, Export, Finland, International Trade, United States, Utilities

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1 Introduction

The initial idea for this thesis came from the fact that the entire energy industry, including all of its sub-branches, is currently undergoing a fundamental transformation. Old methods that have been utilized for hundreds of years are no longer the optimum. Especially the challenges set by the changing conditions of the global living environment, and the finite number of fossil fuels in the world, compel societal factors and private companies to incessantly search for new sources of energy.

Technological innovations have provided a possible remedy for the distress – with them the production of power could one day be emission-free and would not even require crude material of input. The challenges, however, are in the required initial capital for equipment implementation, and the occasional conservative attitudes of local governments.

Accelerating globalization has lowered the walls between the markets of the world, and emphasized the significance of international trade. Especially to a relevantly small nation like Finland its importance is vital. In this thesis the subject of international business brings its own perspective to the analysis of the energy utilities industry.

1.1 Objectives of the Thesis

The main objectives of this thesis are

- To produce an export guide to Finland for US companies operating in the energy utilities equipment industry.
- To contemplate the current business potential of the target market.

The secondary objectives of the thesis are

- To define the main factors affecting international trade.
- To determine the most likely prospects of the target market's near future.

The entire energy industry is a massive factor in the global economy, with various, ever-changing business sectors. For this reason some of these branches will be delimited from this study. The main focus will be in the overseas trade of physical commodities of the energy utilities industry from the United States to Finland. The hypothetical mode of business trade is B2B.

In other words, the following topics will not be contemplated in this thesis: the export of raw materials, trade of services, establishment of subsidiaries, and B2C-trade, to name a few. Also, the export of the aforementioned goods from Finland to the United States will be excluded.

1.2 Thesis Structure and Key Concepts

The thesis is in two parts; the first theoretical one focuses on international business as a whole, including core aspects like export, risks, logistics, and funding. The market potential of the target market will also be analyzed in this first part. The second empirical part is the actual export guide to Finland for companies operating in the energy industry utilities sector in the United States, which is presented in attachment 1.

Key Concepts

B2B trade
An acronym meaning Business to business –trade. Commercial transaction between two businesses, in most cases a manufacturer and a wholesaler, or a wholesaler and a retailer. Similitude to Business to customer –trade (B2C), and Business to Government –trade (B2G).

BRICS Countries
An abbreviation of five countries: Brazil, Russia, India, China and South Africa. These five are all populous nations, with very large economies. In the future their significance in world politics and economy is believed to become much greater than now. (BBC. 2014.)

Devaluation
The political decision to decrease the value of a national currency. The main aim is to increase the export potential of the country to receive economic benefits. In a joint currency, like the Euro, devaluation is not an option for a single member state. In contrast to revaluation.

Oligopoly
An economic situation where a handful of companies control a significant amount of the market of a commodity or a service. For consumers this is a negative phenomenon due to the fact that the businesses are able to set the prices high, and free competition does not exist. If a single company controls the market, the market situation is referred to as a monopoly.

SMEs

An abbreviation of small or medium-sized enterprises. In the United States this usually refers to a company that employs less than 500 individuals. In the European Union the term is standardized to be same in every member state. The number of staff is less than 250. (Euro. 2015.)

Watt (W)

A watt is a derived unit of power. It expresses the amount of energy transferred in a certain physical action. Originally, one watt was depicted to be the equivalent amount of energy needed to raise an apple to a height of one meter (3.28 feet) in one second. A watt can be further derived into larger units with a factor of one thousand; Kilowatts, Megawatts, Gigawatts and Terawatts. (Thompson. 2008).

Watt hour (Wh)

A watt hour depicts how many watts of energy is consumed or produced in a time period of one hour. It is most commonly used by electric power companies to measure the amount of electricity a customer has consumed in a certain time period, or to define the production capability of an energy generating facility. In the consumer market the most common unit is a Megawatt hour; larger macro-economic entities measure their energy fluctuations in Terawatt hours. The scale of comparison is as follows: 1 TWh = 1,000 GWh = 1,000,000 MWh = 1,000,000,000 kWh = 1,000,000,000,000 Wh. (Thompson. 2008).

2 Energy Utilities Industry

The term ‘Public Utility’ describes an infrastructural commodity, which benefits all members of a society. Some of these are funded by the government with the collection of taxes from businesses and individuals, and others maintained by private companies operating in the market. The most familiar ones are electricity, water, sanitation and gas. These are delivered to consumers from power stations, water treatment facilities and other manufacturing establishments via power lines, sewerage and plumbing. Items like energy meters, solar panels and other related equipment are also considered as an essential part of the utilities industry. (Legal Dictionary. 2008.)

A common feature to all the various industries of the different utilities is the importance of the channel of distribution; the product has to be delivered to a vast number of consumers in large quantities regardless their physical location. Bad condition and low efficiency of the network can be a major detriment. This is true especially in the electricity industry – the efficiency of the power transmission grid is real cost factor. For example, it was estimated that in 2012 the total electricity loss in the Finnish power grid was 2.55 TWh, which is approximately three per cent of the total energy consumption of 85.1 TWh. To compare, the figure is five times larger than the entire output of every single wind power facility (0.494 TWh) in the country during the same year (VTT. 2015; Energia.fi. 2013a).

In the United States the wastage is even greater; estimates claim that about six per cent of the total energy consumption was due to losses caused by the electricity network’s poor efficiency. With an annual electricity consumption of 4,095 TWh in 2012, this means that 245 TWh of power went to transmission and distribution losses. Investments into an efficient network could bring major savings not only in energy but in monetary-aspects as well. The next chapter focuses on the state and capacity of the existing power transmission grid in the target market Finland. (EIA. 2014a; EIA. 2014b.)

2.1 Transmission Grid in Finland

Even though Finland’s urbanization level of 83.7 percent is quite high on international standards, a large amount of the population still lives in more secluded areas. Their energy needs are met with a very extensive power transmission grid of nearly 250,000 miles (or 400,000 km). There are three types of grid: main, regional and distribution. The main difference between them is the purpose they serve. (Energia.fi. 2012; WFB. 2015a).

The main grid is used in long-distance transmission with a very high voltage levels between 110 and 400 kilovolts – the aim of this is to minimize transmission losses. The regional networks transmit electricity from the main grid to specific areas, from which it continues via distribution network to the end users. The total lengths of the three network types are presented in figure 1, and further illustration of the Finnish power transmission grid in attachment 1.

Grid Type and Lenght (miles)					Grid Above Ground	
Voltage	Main	Regional	Distribution	Total	Above	Under
High, 400 kV	2 863	23	0	2 886	100 %	0 %
High, 220 kV	1 589	0	0	1 589	100 %	0 %
High, 110 kV	4 631	985	4 156	9 773	100 %	0 %
Medium, 1-70 kV	0	0	86 379	85 758	87 %	13 %
Low, >1	0	0	148 684	148 684	61 %	39 %
Total Lenght	9 083	1 008	239 219	249 311		

Figure 1. The Length and Type of the Finnish Power Grid in 2012 (Energia.fi. 2012.)

The companies maintaining the networks face problems during the winter time on yearly basis. Heavy snowfall ads weight on the wooden electricity poles, which then grumble under the pressure. Consumers can be cut off of power from days on end, which in subzero temperatures can be quite the detriment. This problem only occurs in medium and low voltage networks of the rural areas; in urbanized areas the upkeep is more frequent and the snow does not have time to pile up as much, whereas the pillars of the high voltage networks are so massive that even heavy snow fall does not affect them.

Due to these annually occurring black outs, the companies maintaining the networks have started to move the grid underground. Although the construction and maintenance costs can be slightly larger with this mode of operation, it is ultimately better for the contentment of the consumers and reliability of the network. Furthermore, moving the wiring underground could free up some space for other uses in densely populated areas. In 2012 a vast majority, 71 percent, of the low and medium voltage networks were still above ground, but according to the Association of the Finnish Energy Industries the transition is underway. It has estimated that 44 percent of the network would be under ground by the end of 2019. (Energia.fi. 2012.)

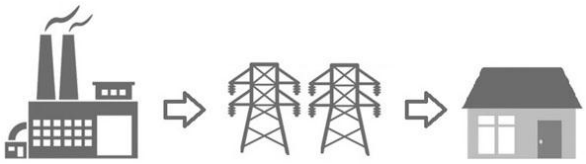
This preceding chapter focused on the target market's existing power grid, which primary function is to transfer energy from large manufacturing facilities to the end-users. The next chapter introduces an alternative type of grid, and opposes the question, could the decen-

tralization of energy production and storage bring cost-effective benefits to all members of a society.

2.2 Smart Grids

In a traditional power grid, electricity is transferred from large facilities to the households using it. Information regarding the transaction is collected only at the start of the line, at the generative facility. Some actions regarding the grid can only be based on estimates, because real-time information from the consumers is unattainable. At times, heavy fluctuations in supply and demand occur, which can result in inefficiency and loss of power. All monitoring and recovery procedures are done manually.

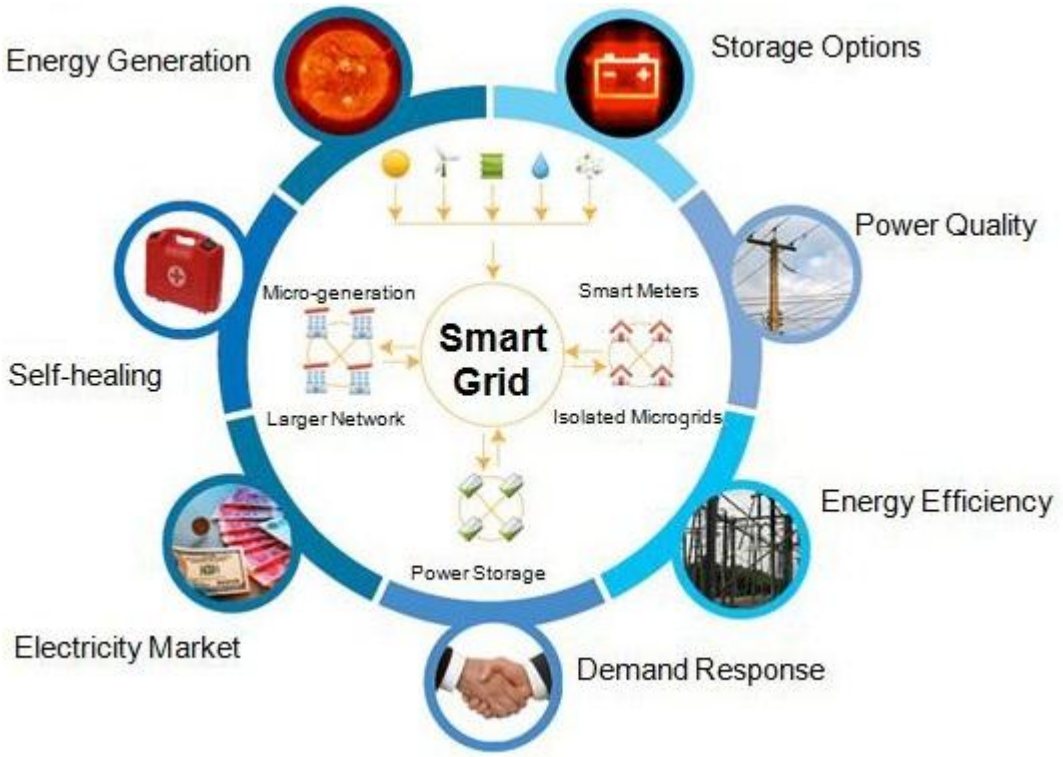
As the excess energy is stored at the same facility producing the power, a locally occurring blackout can have drastic consequences to a massive area. One of these took place in 2003 when the entire north-eastern part of North America lost their power; the grid was unable to isolate a small, locally occurring problem to its original location, and it started to spread like wildfire across the entire area. (CNN. 2003.)



Picture 1. Traditional Transmission Grid (GeorgiaTech. 2014).

In the so-called smart grid, the collection of information is continuous. Households have smart meters that send real-time information to the companies maintaining the transmission grid. The majority of the monitoring and recovery operations are done automatically, which saves man-hours. (Energy.gov. 2015.)

In this grid the flow of information goes both ways; it is possible for consumers to attain information regarding the transmission process. For example, businesses can pinpoint the times when the price of electricity is at its lowest, and set the operations of heavy machinery to these hours. The electric company can smooth the differences of supply and demand by adjusting the price of energy in different times of day – a true win-win situation. The European Parliament has stated that the implementation of the smart grid is the best way to save energy and improve transmission efficiency (Europarlament. 2010).



Picture 2. The Advantages of the Smart Grid (Vettecorp. 2015).

As the grid is self-monitoring, occurring problems can be quickly isolated to their original locations, or even prevented. The power generation can also be decentralized in the smart grid: in addition to the large generating facilities, wind turbines and solar panels can be connected to the grid to give free, zero-emission energy. This way, private consumers can affect the production and consumption of energy of their household. As the amount of production can occasionally exceed the consumption, the surplus can be sold back to the reciprocal electric company. (Energy.gov. 2015; Tekniikka ja Talous. 2012.)

Some consumers have complained that they would rather store the produced excess energy and use it later themselves, than sell it back to the grid. This would be better in efficiency as well; whenever energy is transferred from one physical place to another, wastage occurs. Storing the energy to the place of production would cut down this inefficiency over 60 percent. Some experts have even claimed that the difficulty of storage is the main obstacle against the implementation of the smart grid. (Hs.fi. 2015b.)

One recent example of energy storage is from a German town of Feldheim. As the country recently decided to abandon nuclear fission altogether by the year 2022, states and municipalities have been contemplating the potential of new energy sources. Feldheim constructed the largest storage battery in the world, and several wind and solar power installations. Most of the year the amount of produced energy is so massive that the town only

uses one percent itself, and stores or sells the remaining 99 percent. This course of action might be a glimpse into the future of the energy industry. (Yle.fi. 2015a.)

Although, the previous case is a fine example of smart grid potential, a massive project like that can only be done with governmental investment. Private households are usually unable to invest as much. Furthermore, the capacity level of consumer storage batteries has traditionally been rather low. A company called Tesla Motors informed in May 2015 that it was developing a lithium ion battery called the Powerwall to tackle these problems. Unlike many other existing ones, this commodity was to be designed for private consumers. According to the company, the market price would be significantly lower than the ones of the competitors. A working innovation like this could be the answer in removing the last hindrances of the implementation of the smart grid for individual households. (Hs.fi. 2015b; Forbes. 2015b.)

3 International Trade

The term international trade means a commercial transaction between two economic entities, which are situated in different national countries. Thanks to accelerating globalization, the amount of commodities moving from one continent to another has never been greater. The three most important commodity groups of international trade comprise a hefty amount of the total export value – over 40 percent. The top three are all affiliated with the energy utilities industry, as represented in chart 1. (ITC. 2015.)

Rank	Commodity	Value: MUSD and %	
1	Mineral fuels, oils, distillation products, etc.	3,209,605	18 %
2	Electrical, electronic equipment	2,068,102	12 %
3	Machinery, nuclear reactors, boilers, etc.	2,003,451	11 %
Total Value of Export 2013		17,974,395	100 %

Chart 1. Most Traded Commodities, Global Export Value in 2013 (ITC. 2015.)

The economic crisis of 2008 quickly collapsed the economy to the level of 2005, as presented in chart 2. In 2015 the recession is slowly loosening its grip; Forbes magazine reported that the US economy had grown by 2.4 percent during the previous year, which is the largest amount since the start of the recession. According to the OECD the two BRICS countries of Asia, China and India, were the fastest growing major economies in the entire world. Even though the global economic downturn has strained export-driven China, it still reached a commendable yearly growth of 7.4 percent in 2014. (Forbes. 2015a; DW. 2014; Reuters. 2014.)

Although the US and the rising economies of Asia are on a path of growth, the European economy is at a standstill. Trade restrictions with neighboring Russia, Eurozone unemployment rate of 11.3 percent in 2014, and crisis hubs like Spain and Greece, have had a negative effect on the entire macroeconomic development of the area. The prospects of the near future do not seem to bring any change on this matter. (Europarlament. 2015; telegraph. 2014.)

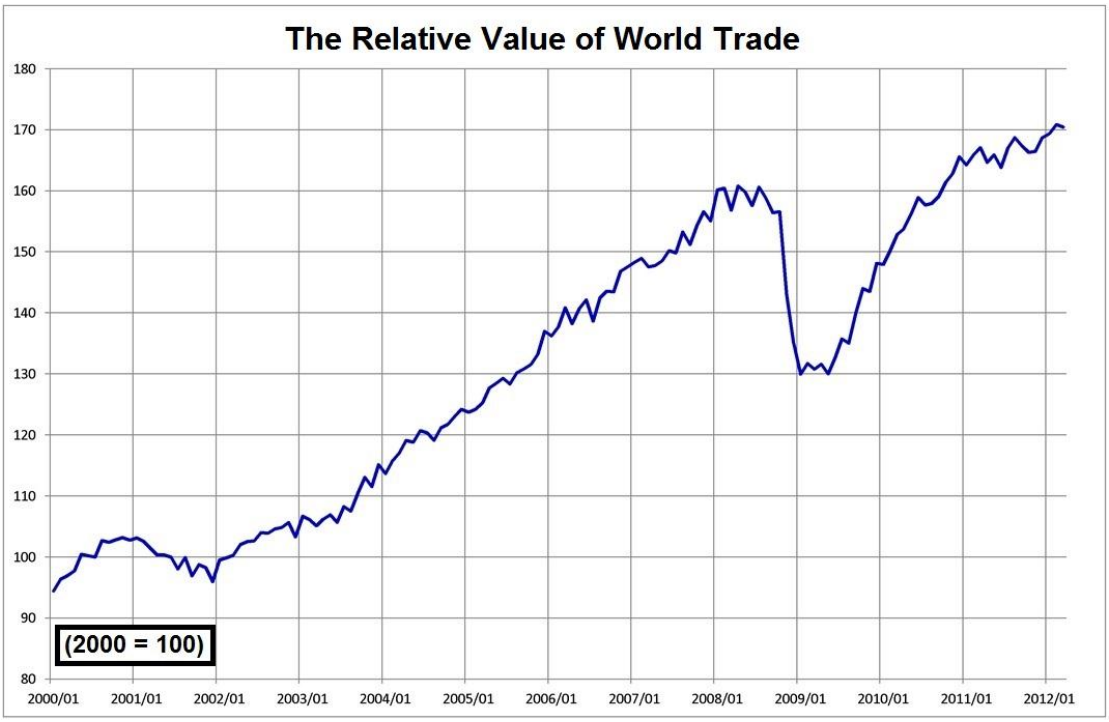


Chart 2. The Relative Value of World Trade (CPB. 2013; WTO. 2014).

To a small nation, like Finland, the importance of international trade is vital. Its share of the GDP is significant, roughly half. The downturn is straining the Finnish economy, as the yearly growth has been in deficit for the last two years. As Russia has always been one of the most important export destinations of Finnish products, the imposed trade restrictions have been quite the poison for the economic development. Some factions have even suggested that Finland should mitigate a few of the most burdensome sanctions, or even abandon them completely. This would of course be against the joined policy of the European Union, and thus has not attracted support from political authorities. (Europarlament. 2015; Uusisuomi. 2014; Vahvaselkä. 2009, 36-38.)

This chapter reviewed the current value of international trade in the global scale. The next two examine what different modes of export there are, and what components are involved in the actual trade process itself.

3.1 Modes of Export

When companies decide to take the first initial step to new foreign markets, it is usually in the form of export. There are four different forms of export activity: direct, indirect, immediate and other. (Selin 2004, 23-24.)

Indirect export is often the best one for a company that is just starting its path to become an international enterprise. The export process is handled through a domestic forwarding

agent, which specializes in foreign trade. In a sense, the trade is almost like operating in the home market for the company, as the subcontractor takes care of all the needed phases. A typical product of this type of export is bulk or other raw material.

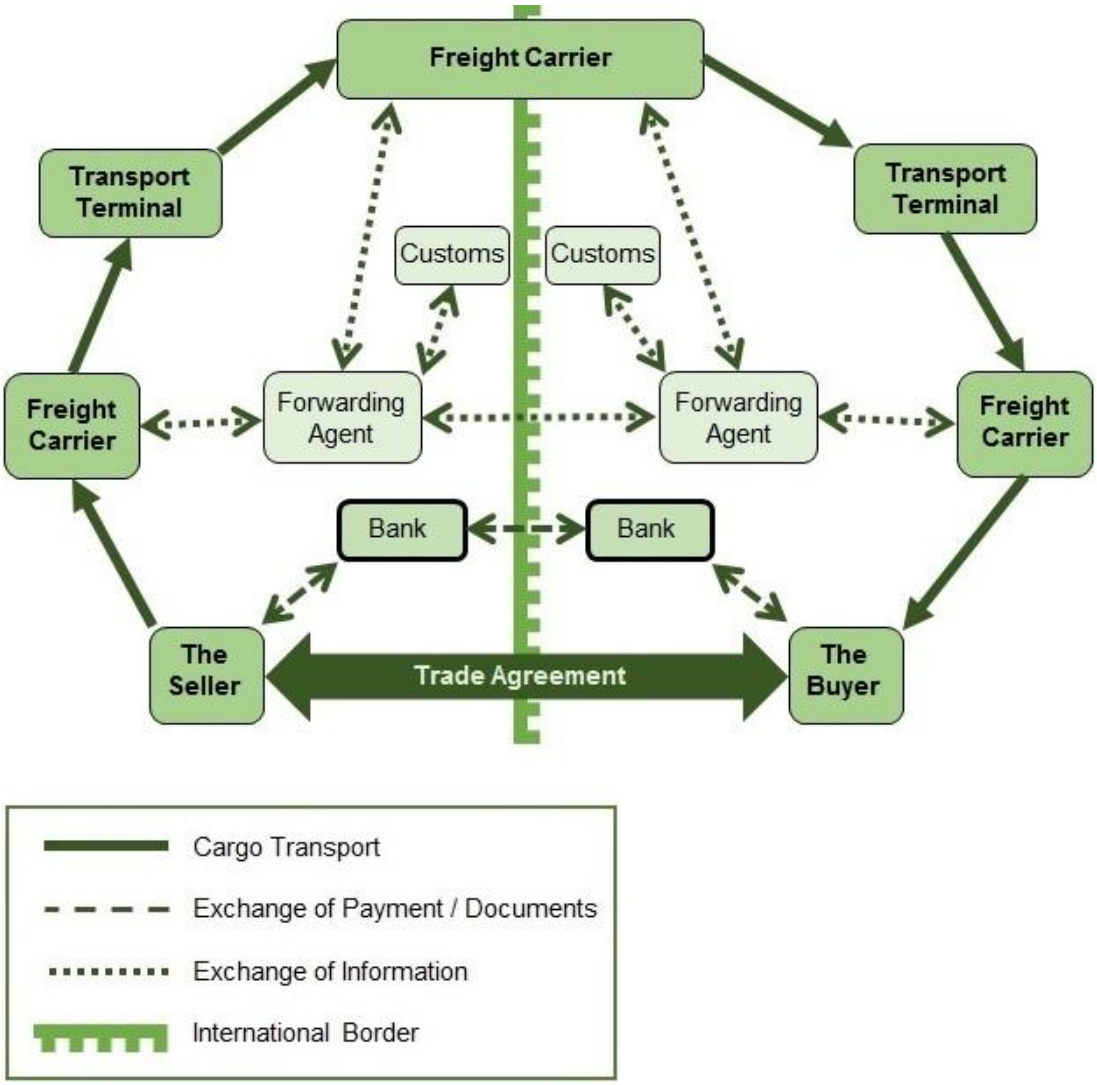
Direct export is very close to the previous one, but the partner of cooperation is located in the target market abroad. The supplier is usually an import company or a wholesaler. This form of export demands a bit more empirical knowledge and understanding of the process itself. Typical products are usually consumer goods.

It is worth considering that when the intermediary companies take care of the customer relations in the target market, it usually results in lower gross margins of sales. This is why the **immediate export** can be the best option, but it is also the riskiest one too. In this export the company sells directly to customers, cutting out all middlemen. It suites for companies that have operated in the international export business for decades, and have a strong knowledge of the target market.

Any other form of export falls into the **other** category. An example could be the export of projects, in which a company that regularly operates in its home market decides to participate in a business undertaking abroad, such as a building project. Especially the development of the European Unions joined market area has increased these kind of activities, since tenders of national governments are open to competition.

3.2 Trade Process

In the export process of international trade three components will move – the sold merchandise, the flow of information, and financial capital. In the example presented in picture 3, the hypothetical counterparts are SMEs, which are located in two different national countries. The form of export in this example is indirect.



Picture 3. An Example of an International Trade Process (Vahvaselkä 2009, 269).

The entire process starts from a trade agreement. The two parties, the seller and the buyer, have reached a mutually satisfactory conclusion. The freight carrier will take possession of the merchandise from the custody of the seller. It is then transported to a terminal, in other words to an airport or a harbor. A forwarding agent handling the documentary functions of the trade will be in contact with the customs officials. There can be more than one agent covering the deal, and also more than one company freighting the goods. (Vahvaselkä 2009, 264-276.)

After crossing the border, the items are transported to the terminal of the target country, and the forwarding agent in question will take care of the needed import operations, such as the customs clearances. The goods are then taken to their intended location, to the custody of the buyer.

The collaborative banks will handle all the transaction of money. In international trade, this exchange is usually managed through the form of a documentary credit agreement. Further information on this subject is presented in chapter 6.2.

As previously mentioned, the entire process will simplify if some middlemen are left out of the picture, like the forwarding agents or the logistics companies. It is the responsibility of the company itself to determine what amount of risk it is willing to accept in its export functions.

4 Internationalization and Market Success

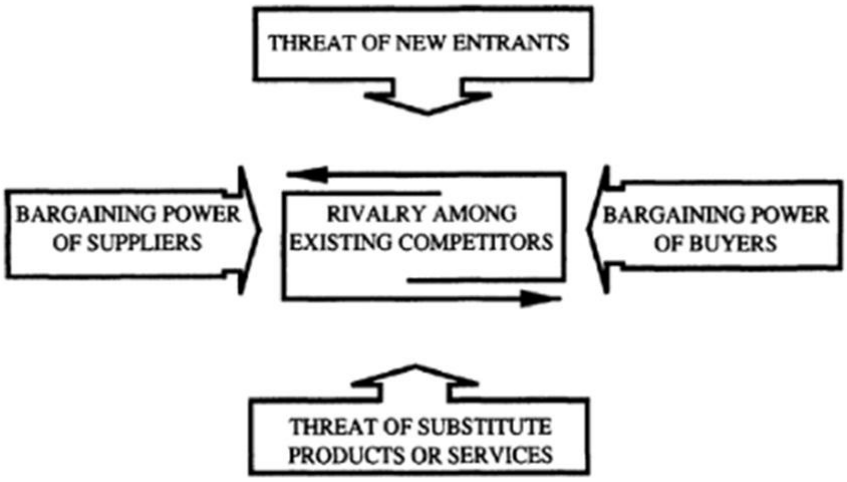
It is often the case that companies start as small, with market operations concentrated on the domestic market. As the business grows, the national market may start to feel too small. The initial tinder to go to new foreign markets abroad can either be internal or external. External factors are macroeconomic phenomena, which the company cannot control directly. These include undersized domestic market and a secluded location, also known as the pressure factors. The so-called suction factors, like size and openness of the target market, or the positive development of the GDP, can make the foreign market seem more tempting. (Vahvaselkä 2009, 61-63.)

Internal factors derive from the company itself. They include matters like the age, size and operative industry of the company. The leadership may also have strategic connections, certain set of skills, or other empirical knowledge that can have an impact on the operative decisions. Also, a personal preference to certain surroundings, like a city or a country, can influence the planning. (Vahvaselkä 2009, 61-63.)

Whatever the reason may be on going abroad to new market areas, the key element to success is to find a business environment that's desirability is ideal for the company. What are these factors affecting market desirability? Michael E. Porter describes the favorability of a theoretical market to be defined by five competitive forces:

> The five competitive forces determine industry profitability because they shape the prices firms can charge, the costs they have to bear, and the investment required to compete in the industry. The threat of new entrants limits the overall profit potential in the industry, because new entrants bring new capacity and seek market share, pushing down margins. Powerful buyers or suppliers bargain away the profits for themselves. Fierce competitive rivalry erodes profits by requiring higher costs of competing (such as for advertising, sales expense, or R&D) or by passing on profits to customers in the form of lower prices. The presence of close substitute products limits the price competitors can charge without inducing substitution and eroding industry volume. (Porter 1990, 35.)

This means that selling the product in a market with the most suitable conditions will bring the largest amount of profit, whereas operating in a market with adverse ones will eventually lead into business failure. In different industries the weight of each competitive force may vary - some conditions can be beneficial and others not. It is also a possibility that conditions will change over time.



Picture 4. Porter's five competitive forces model (Porter 1990, 35)

The intensity of the **rivalry among the existing competitors** in the market is the first thing to consider. If the product has a certain competitive advantage compared to other products in the market, it can charge more money from the customer. In most cases the competitive advantage is acquired by selling the same product cheaper than anyone else, or having the same price with an added value (Vahvaselkä. 2009, 82).

In cases where a completely new product is invented, competition does not exist. The company can charge the customers with a massive profit margin, also known as 'Skimming'. However, profitable product designs are quickly copied, and lucrative market potentials lure new companies to try and get a piece of the pie. This **threat of new entrants** forces the existing companies to cut down margins, decreasing profitability for everyone. In the so-called 'perfect competition' no company is able to charge abnormal profit rates - for consumers this is ideal. Sometimes larger existing companies may try to prevent the market entry of newcomers. Cutting down prices even below profitability prevents smaller companies on getting a foot hold in the market. This 'predatory pricing' is prohibited in most economies, and offenders are fined intensely.

The **threat of substitute products** forces the companies to consider the potential competition from other commodities that the consumer might choose instead. For example, if a municipal government decided to make public transportation completely free in a certain city, every single taxi company there would lose market share. This is true, even though a tram line is not a direct competitor to a taxi service. (Porter 1990, 35-36.)

The two last forces are the **bargaining power of buyers and suppliers**, also known as the markets of input and output. In markets where customer loyalty towards a certain brand or product is low, buyers react to price changes sensitively. Some companies have

developed customer loyalty campaigns, and other 'buy-more-get-cheaper' -programs, to reduce this bargaining power. In markets where buyer loyalty is low, the price is a decisive factor, and commodities are usually cheaper. The **bargaining power of suppliers** usually includes raw material prices, labor wages and other services, such as logistics and transport costs. This can have a significant effect to the consumer price of a commodity. For example, if a company is planning an entry to a new market area where there is only one wholesaler or a distributor, the company has to do business with it, regardless the price. (Porter 1990, 35-36.)

Porters Five force model has also attracted some criticism. Some of it is due to the fact that the model does not take into consideration matters like societal conditions and war, competition legislation, and trade and monetary policies - these factors are sometimes called the sixth force (Rao. 2009). Nevertheless, it is safe to say that the idea of potential economic success in foreign markets keeps companies in constant lookout of potential future success, and is the force amplifying international trade at a global scale.

All performance, be it commercial or other, always withholds the possibility of an unwanted consequence. The next chapter focuses on the potential risks a company may face when operating in a certain market area.

4.1 Potential Risks

The Oxford English Dictionary defines the term 'risk' as "the possibility of loss, injury, or other adverse or unwelcome circumstance" (Oxford. 2015a). As the number of these can be quite extensive, a perfect, bulletproof list with every single possible one is impossible to come up with. There are a few most common ones with similar characteristics, however. The Gahin Model of Risks, chart 3, divides the potential risks into Business risks and Accidental risks, on the basis of their level of acuteness. (Suominen 2003, 12.)

Operational Activities of the Company					
Accidental Risks			Business Risks		
Liability	Personal	Property	Financial	Political	Social

Chart 3. The Gahin Model of Risks (Suominen 2003, 13).

Accidental risks appear suddenly, do not include the opportunity to generate profit, and always cause the company loss of assets. At times, an occurring accidental risk can be unpreventable. In the worst case scenario it may cause the company to go bankrupt.

A **personal risk** means the negative consequences the actions of a single employee can cause the company. The sudden injury or death of a key individual may inflict harm to the entire work place. This is also the case if the said member of staff decides to quit, and starts working for a competitor. For a self-employed entrepreneur a personal risk means regression of general well-being, for example a burnout.

Property risk, or the risk of items, can be operating errors in manufacturing machinery, unsalable produce, or other inventory obsolescence, to name a few. The causes can include water damage, fire, mischief or theft. In certain areas of business property risks impose a major expense. In Finland the total loss of salable merchandise in markets and stores is the largest in Europe, 1.49 percent, which is produced by 60 percent of sheer wastage and 40 percent of theft (yle.fi. 2014b).

The **risk of liability** may inflict the culpability of the company. This can include consequences that the company's actions or products have caused to consumers or the environment. National legislations are usually regulated to protect consumers against deceptive or dangerous products, like the Consumer Safety Act in Finland (Finlex. 2011; Selin 2004, 90.)

Financial risk is a vast concept. Unlike the accidental ones, a financial risk may include a possibility to earn profit. An international company that operates with several different currencies has to pay attention to their ever-changing values. As the exchange rates fluctuate, the company may be able to purchase goods from a subcontractor with a more cost-effective price by using the most favorable one. On the other hand, if the currency of the business deal has already been agreed upon, and later the rate tumbles, the company has to pay more than was originally intended. (Suominen 2009, 14.)

Financial risk also includes the changes of interests, the values of shares, and the global demand of the product that is being sold. These are also sometimes called the market risk.

The **Political risk** is heavily depended on the country the target market is in – it is usually the case that the less developed the country, the higher the risk. Then again, riskier markets do not lure as much competition, so the potential gains can be far greater than in the safer ones. Societal turmoil, declining foreign relations, or a sudden change in national leadership in the target market can cause the company to suddenly find themselves in a heap of trouble. (Suominen 2009, 17-18.)

The political risk also withholds a possibility of pecuniary advantage. Countries which are not part of a larger economic trade coalition, such as the European Union, have the option to devaluate their national currency. A far-sighted company may exchange their uncommitted floating capital into other, more stable ones. After the devaluation, changing the currency back to the national one will result in direct monetary gain.

Social risks of the company are intrinsically associated with its staff. High valuation of employee rights in the target market may cause industrial actions, such as strikes. If the level of unemployment is low, the competition for skilled, professional personnel increases. Workers soon realize this and are able to demand more wages. In countries where societal conditions are not appealing, educated individuals may decide to go work abroad. This phenomenon, called the 'brain drain', makes it harder for the company to find decent staff. (OECD. 2001.)

Although the appearance of risks is sometimes unpreventable, it is still possible for companies to prepare for them in a necessary fashion. The next chapter examines how the risks could be managed.

4.2 Risk Management

When planning evasive actions against the potential risks, it is good to determine their possible consequences. There are two important aspects to consider: what is the probability of the risk actually occurring, and what would be the severity of it to the business operations, as presented in chart 4. (Suominen 2003, 20-21.)

Risk Assessment Table		
Level	Effect	Probability
1	Minor	Extremely Rare
2	Moderate	Rare
3	Major	Possible
4	Catastrophic	Common

Chart 4. Risk Assessment Table (Suominen 2003, 21).

The numerical values of the level of risk in effect and probability are inversely proportional – the more severe the risk, the smaller the chance it will happen. This means that the odds for a catastrophic event to take place are extremely rare, whereas minor problems are quite common, and are actually more of a hindrance. An extremely rare risk occurs

approximately once in two hundred years, and a common one several times a year. (Suominen 2003, 21.)

Now that the risks have been assessed, the question remains: how should they be tackled? The company has four options: avoidance, division, reduction and insurance. The avoidance of risk can be done with better trade agreements, for instance. A poorly drafted contract creates confusion, with which the counterpart can exploit the situation. In international business, a punctual waterproof deal is a must. The division of risk can also be contract-based. A preferable mode of payment and better terms can adjust the possible risk more equally to both parties. This way an occurring risk is not as devastating to one counterpart. (Kananen 2009, 18.)

The reduction of risks requires forethought on all applicable activities. It is usually the case that accident-prone operations can be allayed with proper gear and code of conduct. These will not remove the risk completely, but can lower the severity level of outcome. If the risk seems inevitable, acquiring insurance can reduce the magnitude. Especially in international shipments, insuring the merchandize is often a contractual stipulate. Most Incoterm-clauses withhold a precondition of 110 percent insurance amount of the total merchandize value. (Exportinsurance. 1999; Kananen 2009, 19.)

In addition these four, the company can also take a chance, and do nothing about the risks. This is usually the case in situations where risk is very unlikely, or the outcome insignificant. Systematic risks like an economic recession, or a Force majeure -phenomena like an earthquake or declaration of war, are also matters which a single company is unable to predict, let alone control. It is good to keep in mind that all business activity always contains some form and level of risk. However, a proper degree of preparation can lower their significance immensely, especially in international trade. (Kananen 2009, 19.)

5 International Transport

As the global trade has boomed during the past century, so has the amount of transported goods. A vast majority, nearly 95 percent, of the traded merchandise is carried as maritime transport. The most important factor for this is the so-called ‘revolution of the container’ in 1968. This made intermodal transport, such as rail-to-ship or rail-to-truck transport, significantly more efficient. Today, these intermodal containers are widely used all-over the world, and have also received the ISO 6346 Standard. There are over 17 million containers used in the global markets today. Their implementation has made it possible to move massive amounts of cargo from one continent to another with very affordable prices. When the vessels reach their intended ports, the containers are transferred to trucks or trains. This way intermodal transport has made it possible to do business worldwide, regardless of physical location. (Kuljetusopas. 2015; WSC. 2015.)

The total amount of traded merchandise is very depended on the global economic situation, as is usually the case in logistics. In 2009 after the beginning of the economic crisis, the amount of traded tons dropped. This was the first time since 1990 that the volume was smaller than the number of the previous year, as presented in figure 2. However, this drop was not very substantial, and the number returned to its ascending path the following year. This believed to be thanks to the growing Asian markets. In fact, the ten most used sea ports of the world are located in Asia, mainly in China. (Acea. 2011; Selin 2004, 189; Statista. 2015.)

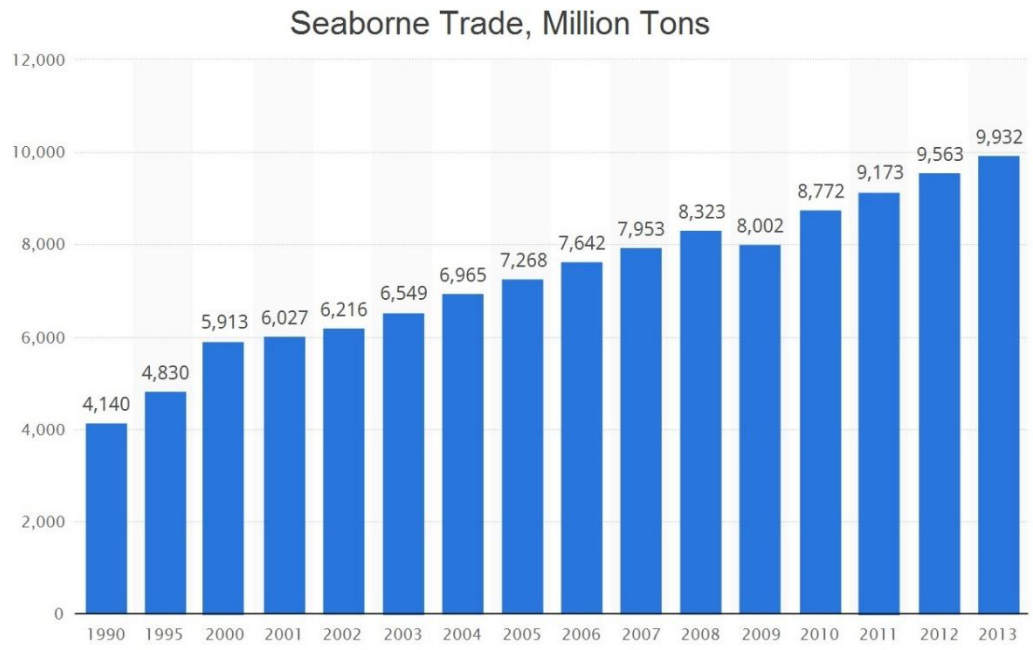


Figure 2. The Global Amount of Seaborne Trade 1990 - 2013 (Statista. 2015).

Although seaborne trade is the most favored mode of transport when moving large amounts of heavy merchandise over a longer period of time, it does not suite all needs. Especially with commodities which are light in weight but valuable in the price of one unit, air transport is the best mode of freighting. It is also significantly faster than a cargo ship – when a voyage from China to Central Europe takes several months for the ship, an air-craft will arrive during the same day. The increasing online shopping of private consumers has also increased the popularity of air cargo. As individuals purchase smaller amounts at a time and want their goods delivered a lot quicker than companies, air transport is more suited. Also, private companies operating in the courier and express freight business use air craft to deliver items to customers on different continents. (HS.fi. 2015a; Selin 2004, 188-191.)

Inland transport is carried out with railways and roads. Especially in countries of large physical size the importance of rail transport is greater, as it is usually more cost-effective than the use of trucks. This is true especially with heavy and bulky merchandise, which is transported with high-tonnage consignments. In international rail transport the so-called 'rail gauge' is an important factor. It means the width of the actual tracks which the train uses to move. If the gauge is different in the country of destination, the train is unable to cross the border. Obviously the cargo can be transferred from one train to another, but this takes unnecessary time and resources. Globally the most common one, also known as the 'Standard Gauge', is four feet, eight and a half inches, or 1.435 meters. This one is also used the United States. (Archive. 2015; Selin 2004, 191.)

Thanks to the worldwide implementation of the internet, it is possible for some corpora-tions to sell their products online, for instance software companies. This way no logistics expenses of any kind are required. An online trade can be significantly preferable for both business partners, especially in target countries with high import tariffs and impractical customs proceedings.

5.1 Transport in Finland

Finland is surrounded by water in the south and west; 94.7 percent of the merchandise tons of international transport arrive by ship. The country has a unique problem: all naval ports freeze over during the winter time. Otherwise this would stop all commercial and civil maritime traffic, as vessels are unable to move in thick ice, but the country has resolved the problem with a fleet of ice breakers. The total amount of transport in Finland was 413 million tons in 2013, as presented in chart 5. (Arctia. 2015; Baltic. 1997; Selin 2004, 189.)

Transport in Finland 2013	Million Tons
Total Amount	413.1
Domestic	311.4
- Railway	36.4
- Road	269.5
- Water	5.4
- Air	0.06
International	101.7
- Road and Railway	5.2
- Water	96.3
- Air	0.19

Chart 5. The Amount of Transported Tons, Finland 2013 (Stat.fi. 2014).

The rest of the international transport is road and railway cargo with eastern neighbor Russia. The aforementioned rail gauge is almost the same in these two countries: Russia has four feet and 11 27/32 inches, or 1.520 m, and Finland exactly five feet, or 1.524 m. The difference is so insignificant that it does not prevent rail transaction between the countries. However, as the gauge in Central and Western Europe, as well as in other Nordic countries, is the same as in North America, Finnish trains cannot be used there. The Baltic countries in the south have the same gauge as Russia. (Dimesioninfo. 2015; Logistiikka. 2012.)

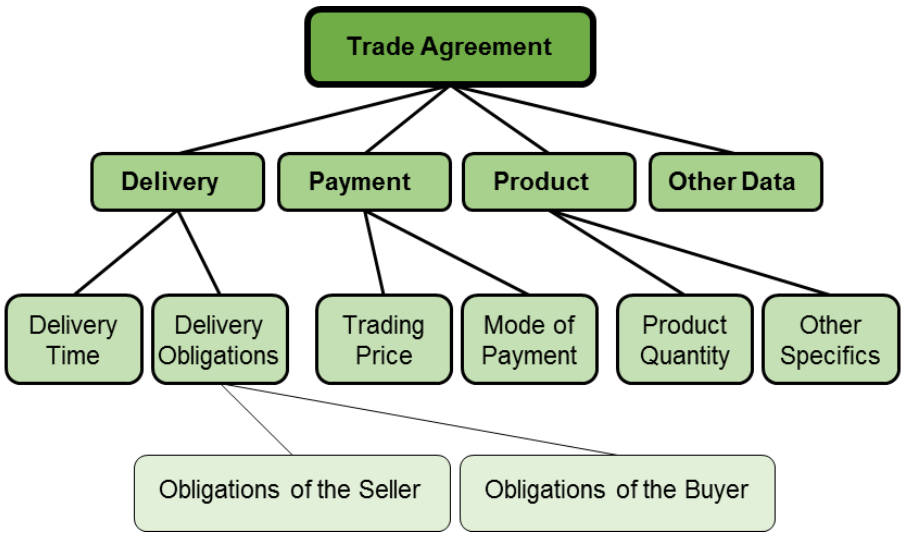
In the past Finland had several different track gauges all-around the country, but standardization put an end to this impracticability by 1967. Some particular areas, however, have a so-called ‘four track system’, in which two different gauge tracks are built at the same location. This way, trains of both systems can move in the area. Good examples of this are the Turku Harbor area, and the Tornio-Haaparanta track area near the Swedish border. There are also some vehicles which have the ability to move in tracks of different gauges, with the help of a double axles system called a ‘bogie’ or a ‘truck’. (Logistiikka. 2012; Oxford. 2015b.)

There is also some transit traffic through Finland, in which the transported goods only use Finnish infrastructure to move to another location. In 2013 the total amount of this transport was 14,558 tons. The majority is once again in maritime transport, 52 percent, but railways are used as well, 37 percent. The rest eleven percent are road transport, as the use of air space is not counted in this figure. (Stat.fi. 2014.)

This and the previous chapters examined the amount of merchandise transported internationally in the global markets, as well as in Finland. The next chapter reviews what factors should be taken into consideration before signing an international trade agreement.

5.2 Incoterms: Terms of Delivery

When doing business in an international and global scale it is very important to draw up a contract to suite both parties optimally. The key aspects include terms for delivery, payment, product itemization and other essential data, as presented in picture 5. As the cultural differences in doing business can be quite different in various places around the world, a good and trustworthy set of rules is certainly necessary. Especially in delivery, misunderstandings are prone to happen if a consensus is not reached.



Picture 5. The Key Components of a Trade Agreement (Logistiikka. 2015b).

The International Chamber of Commerce maintains a defined set of terms for international trade called the Incoterms. These are updated every decade – the newest one is from 2010. Their use is not mandatory, but recommended. The three most important aspects of this process are to determine:

[1] Which party is responsible for essential functions, like handling documentation and customs clearances in the national borders. What is the intended destination of the cargo.
[2] Who will cover the costs of freight carriers and forwarding agents. There can be several different subcontractors taking part in the process.
[3] Will the consignment be insured, and if so, who will cover these costs. In which physical point of the journey will the liability change from one party to the other.
(Selin 2004, 153.)

There are eleven options to choose from, four of which are only for maritime transport, as presented in chart 6. The opposite ends of the spectrum are EXW and DDP. Ex Works actually means 'from the factory', and leaves all the responsibilities, payments and duties to the buyer. In it, the merchandize is collected from the custody of the seller, after which all liability of this party ceases to exist. In Delivered Duty Paid the seller will bring the goods to any location desired by the buyer. Although this might seem laborious and expensive, it is good to note that this is also excellent service. Many customers are willing to pay a little extra in order to avoid bothersome customs clearances, which in turn frees up more time to concentrate on the core business itself. (ICC. 2010; Vahvaselkä. 2009, 276.)

Incoterms 2010		
Name of Term		Transport
EXW	Ex Works	Intermodal
FCA	Free Carrier	Intermodal
CPT	Carriage Paid	Intermodal
CIP	Carriage and Insurance Paid	Intermodal
DAT	Delivered At Terminal	Intermodal
DAP	Delivered At Place	Intermodal
DDP	Delivered Duty Paid	Intermodal
FAS	Free Alongside Ship	Maritime
FOB	Free On Board	Maritime
CFR	Cost and Freight	Maritime
CIF	Cost, Insurance and Freight	Maritime

Chart 6. Incoterms 2010 (ICC. 2010).

In terminology, the difference between a Terminal and a Place is quite extensive. Especially in countries in which import customs are considered troublesome, like China or Russia, getting the merchandise across the border can be more difficult than it sounds. Sometimes it is better to leave this clearance for the responsibility of the buyer, as domestic duty procedures are likely more familiar to them. Also, the intended destination of the cargo is to be mentioned in the contract with the decided term, for example DAT London, or CIF Rotterdam. (ICC. 2010; Selin 2004, 153.)

Although incoterm contracts are highly detailed, there are two exceptions which have the ability to release a counterpart from liability: Force majeure clause and Hardship clause. As was in risk management, incoterm contracts usually withhold an exception for Force majeure situations, like the occurrence of a natural disaster or the break out of a revolution. The Hardship clause means a smaller scale misfortune, like the sinking of a freight ship. For the companies, these phenomena are inevitable and impossible to predict, and

thus relieve both counterparts from their liabilities. If however, the new circumstances do not directly prevent the completion of the deal, some aspects of it can be renegotiated, if both parties agree. (Logistiikka. 2015a.)

Documentation of the trade process is vitally important. The next chapter examines these documents used in international business.

5.3 Transport Documents

All forms of transportation require a document of some sort. The most common ones are affiliated with logistics – the merchandize can only be obtained from a freighter in exchange for a specified, predetermined document. There are five possible ones: bill of lading, sea waybill, air waybill, rail waybill and a certificate of posting. (Kananen 2009, 87.)

Bill of lading is the most common one. As the majority of transport is multimodal, the popularity of this document is the largest. In a letter of credit mode of payment, a bill of lading is a necessity. Most incoterm clauses also recommend the drafting of this document. In a delivery of just one mode of transport, sea, air and rail waybills carry out their intended functions. Their adherence to proper form is often less accurate than the one of the bill of lading. With merchandise that is light in weight but valuable in unit price, the use of mail is an option. In a case like this, the trade agreement usually necessitates a certificate of posting; if the cargo is misplaced during the shipment, neither counterpart is liable for damage. (Kananen 2009, 87; Vahvaselkä 2009, 292.)

Some modes of payment, or an incoterm of choice may require the use of additional documentation. These include certificates of origin, insurance, inspection and invoice. Especially if the counterpart of trade is unknown, their proper shape is vital. Also with special merchandise, like ammunition, historical artifacts or eradiating material, specific certification is required. (Kananen 2009, 86; Selin 2004, 216-219.)

6 Funding of International Trade

As the international operations of the company may require rather large investments, it is important to consider carefully all the options available. The need of capital in the short and long term plans of action is vital; if the money runs out, the business is good as gone. The sources of funding defer by the company's role in the trading process – some choices are better for sellers, and others are more suited for buyers. It is the responsibility of the company itself to determine the right approach for them. The first initial trade transaction to a new foreign market creates a need for working capital – the export process, fees of the subcontractors, and the granted payment period for the counterpart often require monetary assets. (Vahvaselkä 2009, 295-296.)

In the **factoring** approach the seller can sell the receivables to a factoring company, while waiting for the buyer's payment. The amount is often 80 percent of the total value of transaction, and the rest 20 percent act as collateral. When the payment is finally made, the rest 20 percent is given to the seller – minus commission and other expenses of course. Factoring contracts are usually long term agreements between the company and the financier, which cover all monetary transactions. Although factoring gives capital to the seller a lot quicker, and may also reduce the business risks, it is also very expensive. (Kananen 2009, 99-100.)

Unlike the previous example, **forfaiting** only focuses on one single business transaction at a time. In it the seller receives the entire amount of the purchase price from a financial institution straight away. Hereafter the remainder of receivable is between the buyer and the financier. Forfaiting is only used in situations where the price of the contract is exceedingly high, payment time is long, and the business risk for the provider of capital is low. (Kananen 2009, 100-101.)

One possible way of covering the costs of trade is to create a **bill of exchange**. It is an instrument of credit where the buyer promises to pay the agreed amount to the holder of the contract. The document is salable on the secondary market, which means its possessor is able to sell it forward to receive funding. The document can be sold to anyone, after which the new owner becomes the creditor. A bill of exchange is fast and cheap, but does not guarantee the acquisition of the receivables for the vendor. (Vahvaselkä 2009, 297.)

As the global market is massive in size, there are also other means of receiving direct and indirect funding to cover the costs of international business. One option, called the **countertrade**, does not directly mean the exchange of capital. In it the seller agrees to buy

commodities and services from the buyer's country with the value of the business transaction, or even accepts produced merchandise as a mean of payment. Countertrade is ordinarily used with destitute developing nations, as their monetary assets are extremely low. Also, the Finnish acquisition of Hornet-aircraft from the United States in 1992 was a countertrade arrangement, as the US agreed to buy commodities from Finland with the same value of price. (Kananen 2009, 109.)

Although potential risks were analyzed in chapter 4.1 as market potential debilitating phenomena, they also affiliate international funding. The societal conditions where the company is located determine how easily funding can be obtained from financiers; the bigger the risk, the heavier the interest. International credit rating agencies, like Moody's, Standard & Poor's and Fitch, observe these risks constantly, and have created different scales to determine the systematic risk. To give an example, Finland's credit rating in April 2015 was the second highest AA+ in the Standard & Poor's credit rating scale. Some experts have mentioned that Finland's location next to Russia, and the current trade sanctions relating to it, may be a factor decreasing the interest of foreign investors. (Kananen 2009, 105; Uusisuomi. 2015.)

6.1 Role of Societal Institutions

Societal institutions are a major source of funding for international companies in the world. They receive capital from national governments – the aim of this is to increase employment and provide jobs to generate additional tax revenues. It is estimated that there are over one hundred societal institutions providing finance in the world. Because the distortion of free competition is forbidden in all OECD countries, the actions of the institutions are carefully regulated. Also the fact that they use tax payer money to operate gives them a special set of rules from their national governments. (Kananen 2009, 104; Vahvaselkä 2009, 299.)

The support is often in the form of an export credit. The maximum amount is 85 percent of the total value – the remaining 15 percent is to be paid as assurance by the buyer. The interest rate is fixed and is set when the export contract is drawn. The total period of credit is determined by the trading price, the merchandise in question, and the country of destination, but is usually at least two years or more. (Trade.gov. 2008.)

There are also other forms of credit a company may receive. If it appears that the business deal in question will benefit both national countries, two institutions may provide funding for it. This way the risk for one is smaller. Institutions that cooperative frequently

can draft the so-called Standard Settlement Instructions, or SSI, to determine fixed rules for operations. The SSI will make the process a lot faster and simplify it for all counterparts, including the participating companies. (Nordea. 2015; Vahvaselkä 2009, 299.)

In the United States the government subsidizes export companies in order to increase domestic tax revenue. This is usually granted in the form an opportunity for a tax reduction. A downright offer of working capital is not generally a good code of conduct as it may lead to inflation; a sudden increase of funds may create pressure for a pay raise in the staff. In addition to the financial support, the institutions of international trade can also provide important information, networking opportunities, and other services for the company. (Gutenberg. 2002.)

The last two chapters contemplated the importance of acquiring capital for business operations, and the role of societal institutions in finance. The next chapter examines the most common modes of payment in international business.

6.2 Payment

As the world of international business is far and wide, so is the number of ways to trade. One feature is common to all of them: in transaction operation with two counterparts, one submits a commodity or a service, and the other gives a remittance in return. In payment, the four most used ways of doing this are payment in advance, open account, cash against documents and letter of credit. (Selin 2004, 144-147.)

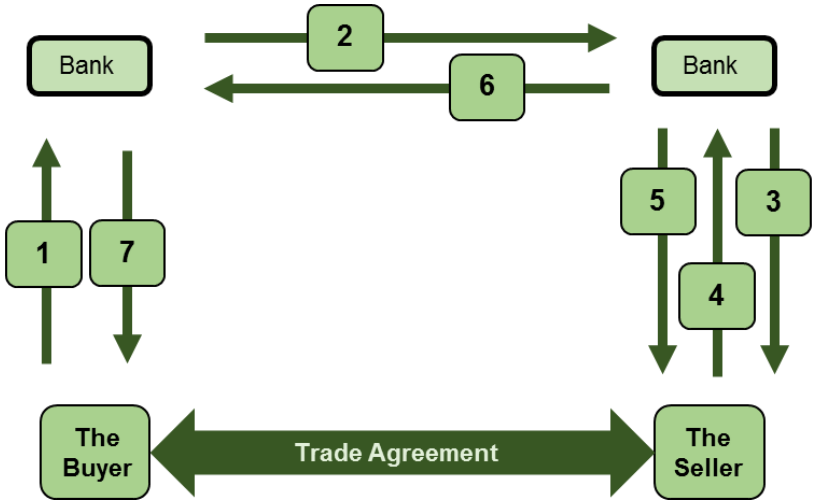
A **payment in advance** is exactly as it sounds; the seller wants to receive the total payment before sending the merchandize. For it the trade is risk free, and the amount of working capital increases. However, if a company insists on payment in advance, it will most likely drive away potential customers. For the buyer, this kind of payment is the least favorable option. Because the counterpart risk is inevitable, this mode of payment only suites trading partners that know and trust each other. It also gives a better bargaining position for the buyer. (Kananen 2009, 61.)

An **open account** means the opposite of the previous option; the goods will be paid once they arrive to their intended destination. The buyer's need of working capital will decrease, but so will the bargaining position. Although this form of payment is quite risky for the seller, it is a good way to increase product demand significantly. (Kananen 2009, 59-60.)

Cash against documents will include two participating banks, one from each counterpart. After the trading partners have reached a business agreement, the seller will contact the bank in liaison. The bank will contact the cooperative bank abroad, which in turn will inform the buyer that the opportunity of payment has emerged. After the merchandize has been paid for, the goods will be sent. By paying for the merchandise the buyer gets control of certain documents, with which it is able to receive the items from the freight carrier. (Selin 2004, 145.)

In cash against documents trade, the seller will not receive money before sending the items and the buyer will not possess them before the payment; this way the risks are more evenly shared than in the two previous options. It is good to note that in this mode of payment, the participating banks will not grant a guarantee for the business transaction. If for any reason, one counterpart decides not send or pay for the merchandise as agreed, the other will quite likely suffer a loss. Also, the banks will charge a commission from their services. (Selin 2004, 146.)

A very common form of payment in international trade is a **letter of credit**. It has a lot of the same characteristics as the cash against documents one, but it is a lot more profound. The risks of trade are the lowest for both parties, but it is also very laborious. Further illustration of this process is presented in picture 6.



Picture 6. Letter of Credit (Vahvaselkä 2009, 293).

[1] After the trade agreement has been established, the buyer will contact the bank of liaison to establish a letter of credit agreement. The price of service will also be decided. Decisive factors include total value of trade, product in question and target country. [2] The letter of credit is sent to the bank of the buyer. [3] The seller will be informed of the establishment of the contract. [4] The seller dispatches the goods with the agreed mode of

transport. After the goods have been sent, the seller presents the relevant documents of shipment to the bank. [5] The bank pays the intended price to the seller. [6] The documents are sent to the bank of the buyer. [7] The buyer will pay the bill and attain the needed documents. Once the merchandize arrives to their intended destination, the buyer will present the documents to the freighter and receive the purchased items. (Vahvaselkä 2009, 293.)

A letter of credit is usually very expensive. The price range may be a certain percent of the trade value, which usually means a four-figure number or more. However, as the trade arrangement is guaranteed by the banks, the risks for the two counterparts are next to nothing – even if the other decides suddenly to bail out, the other will receive what was originally promised. There are dozens of different versions of letters of credit available. Some have more documentary requirements, are limited to a certain time period, or can limit the size of a freighted unit. It is pretty safe to say that the seller and the buyer can write down almost anything in a letter of credit contract, as long as they both agree upon it and the legislation does not forbid it. (Selin 2004, 147.)

Mode of Payment	For the Seller (exporter)	For the Buyer (importer)
Open Account	+ Increases product demand – Increases credit risk – Increases the need of working capital	+ Decreases the need of working capital – Decreases bargaining position
Cash Against Documents	+ Ensures merchandise control – Does not ensure payment	+ Ensures merchandise delivery + May increase period of payment
Letter of Credit	+ Ensures payment – Form of contract very precise – Expenses of the participating bank	+ Ensures merchandise delivery + Ensures the delivery time – Form of contract very precise – Expenses of the participating bank
Payment in Advance	+ Decreases the need of working capital + Decreases credit risk – Decreases product demand	+ Increases bargaining position – Increases counterparty risk

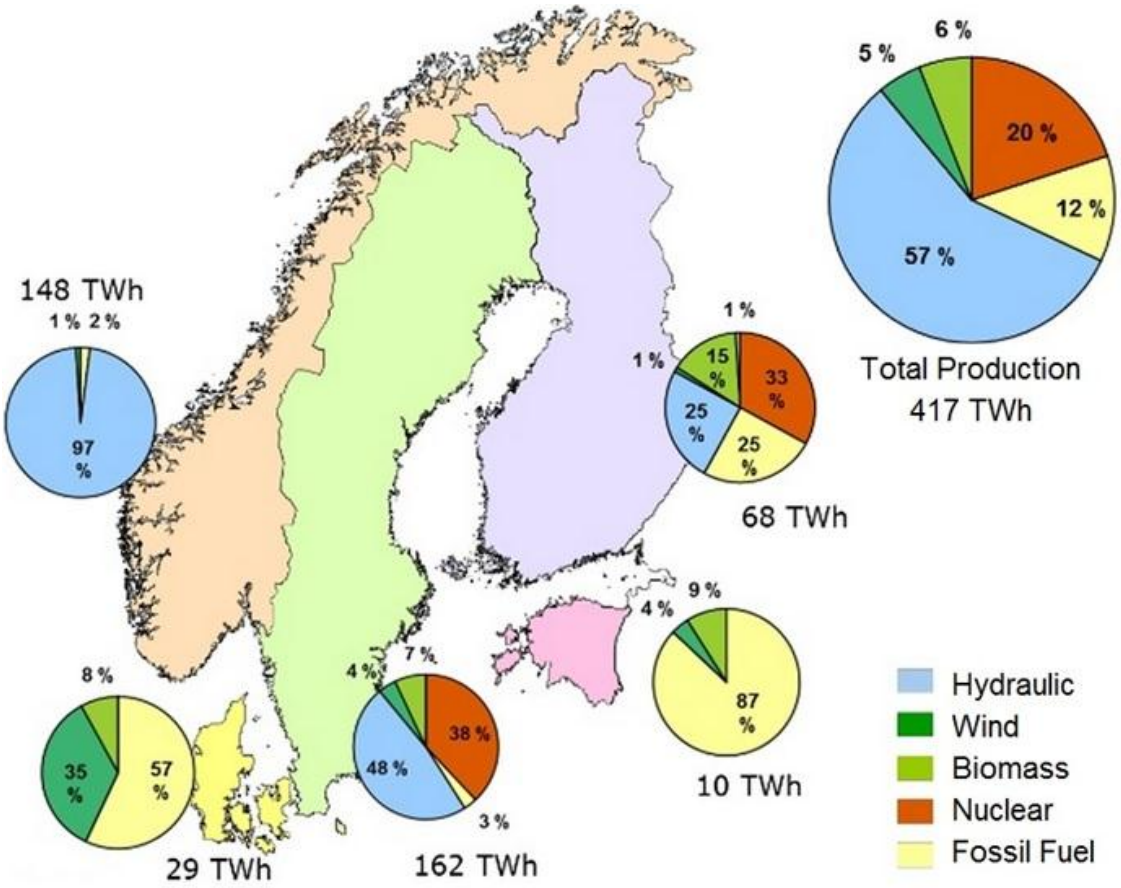
Chart 7. The Pros and Cons of the Different Payments (Kananen 2009, 59-88).

In chart 7 the points of view of the seller and the buyer are compared in relation to the different modes of payment. As all the different ones have different characteristics, it is important for the company to decide what form of payment is the right one for them for each individual business deal. Even though a letter of credit is one of the most common ones, it still might not suite every possible transaction that comes along.

7 Target Market Analysis

The target market Finland is a relatively small country of 5,479,329 inhabitants (vrk.fi. 2015). It is situated in the northernmost part of Europe, together with Sweden, Norway and Denmark - also known as the Nordics. These countries have a combined population of 26 million. Of all the European, non-CIS-countries, Finland's border with Russia is the largest. In the south Finland's neighbor is Estonia.

Finland is the ninth largest importer of energy in the world, with an approximate amount of 19 TWh yearly (WFB. 2015b). Traditionally, Russia has been the biggest trading partner, but recent world events have made it somewhat of an unreliable counterpart. Since 2011, a vast majority of the purchased energy has been from the other Nordic countries instead. There is also a small amount of export; as the emissions trade limitations of the European Union have hit hard on coal-relying Estonia, small-scale import of Finnish energy started in 2012. (Energia.fi. 2014.)



Picture 7. The Nordic Energy Production in 2013 (Energia.fi. 2014).

The combined energy production of the Nordic countries was 417 TWh in 2013. To compare, the United States produced 4,058 TWh of energy during that same year. Although

culturally the Nordics have a lot of similarities, in the production of energy they could not be more different. Mountainous Norway is scattered with rivers and fjords, which give it an advantage in hydraulic power. The country also consumes a lot more energy than its small population would incline – this is due to heavy manufacturing, including metal industry and aluminum production. (Hydro. 2014.)

Denmark has a past as being the largest consumer of fossil fuels, but has recently started to invest heavily in wind. The country is very small in size, so the facilities are usually constructed to open sea. Sweden meets its power needs with hydraulic and nuclear energy. In fact, Sweden and Finland are currently the only two countries of the bunch with nuclear power reactors. Sweden has five facilities, but only three are currently in use. These three contain ten operational reactors. At times, the country has even contemplated on abandoning nuclear fission altogether. (WNA. 2015a.)

Finland has the most variety in the production of energy. EU emission restrictions, decline of Russian trade, and the societal strive for more sustainable energy production have reduced the use of fossil fuels in the country. The popularity of biomass, such as the use of peat and wood pellets, has increased during the past years. The use of wind and solar power as an energy source is still quite unsubstantial, but new facilities are constructed every year with an accelerating pace. (Energia.fi. 2014.)

Unlike neighboring Sweden, Finland is actively investing in nuclear power. The country has four active reactors, and one is currently under construction – the building operations started in 2005. One new reactor is in the planning phase. It is very likely that in the future Finland will be the largest producer of nuclear power in the Nordic hemisphere. (WNA. 2015b.)

This has also attracted a lot of resistance from various different societal entities. The environmental organization Greenpeace commented in 2010 that after the new reactors are finished and fully operational, Finland will become the largest producer of nuclear waste per capita in the world (Greenpeace. 2010). As there is currently no way of getting rid of the used fuel, it is stored in an artificial underground cavern, which is mined into the bedrock to the depth of 0.31 miles, or 500 meters. The time of disposal is determined by the intensity of the radiation; the uranium used in the nuclear power facilities becomes harmless in two hundred thousand years. (TVO. 2015.)

Lately researchers have contemplated the idea of shortening this half-life time of the radioactive waste. If successful, the first company to develop this method as a commercial

commodity into the global energy industry would have an abundance of business opportunities all over the world, including in Finland. (Physicsworld. 2006; GDR. 2015.)

7.1 Macro Environment

In this chapter the target market Finland is analyzed using the PESTE-analyze approach. The abbreviation PESTE includes five different macroeconomic viewpoints: Political and legal, Economic, Sociocultural, Technological, and Ecological and ethical.

7.1.1 Political and Legal Factors

Finland's corruption level is one of the lowest in the world. According to a Transparency International study in 2014, Finland is the third least corrupted country in the world. The minor amount that does exist is considered to be at the very top level of corporate management, especially in the municipal sector. As the level of corruption is so low, the Finns have sometimes been criticized of being oblivious and naive towards the small amount that does exist. (Transparency International. 2014; Yle.fi. 2013.)

Finland has been part of the European Union since 1995. One of the basic fundamental privileges of the Union is the joint economic area. This means that internal customs between the member states do not exist – once the importer has paid the needed tariffs the merchandise is free to move inside the area regardless of national borders. The charge has to be always the same, no matter in which country the goods are declared.

The amount of duty to be paid is regulated by the European Commission. The declared value is based on the specific features of the imported item, such as materials, purpose of use, pricing, origin, etc. These values are constantly modified to suit the needs of the Union. The Commission maintains an online database called the Integrated Tariff of the European Communities, or TARIC, in order to make business transactions with the member states as transparent as possible. Energy utility equipment and similar commodity items are located in SECTION XVI, in groups 84 and 85. (TARIC. 2015.)

The long term energy goal of the European Union is to diminish all national political barriers from its energy industry: the Union has been striving for the creation of a joint, borderless energy market within its borders. Estimates say that a bold endeavor like this would be a massive investment, and that the plan is quite unrealistic, as the EU member countries do not currently have real political desire on the matter. The implementation of smart meters is part of this long term plan. (Europarlament. 2010.)

A more realistic EU related project, however, is the planned Transatlantic Trade and Investment Partnership –treaty, or TTIP, with the United States. It has been estimated that the implementation of it could boost up exports with a whopping 28 percent, and could also cut down the price of energy. As the rising economies of Asia are growing steadily, and the ones in the EU and the USA are not, TTIP could really give the needed momentum to the growth rate of the two economies. Another important aspect of the treaty for the EU is the decline of dependency on Russian energy, as the political situation with the large eastern neighbor is still quite difficult. (Energypost. 2013; Eurative. 2015.)

In legal aspects Finland, as well as most of Europe, follow the so-called civil law system, in which implementation of legislation is based on a set of written laws that the legislative body has agreed upon. The common law system of the United States, which bases its functions on precedent adjudication to determine the right mode of implementation of law, differs slightly from the European one. In international business this highlights the importance of the congruent preparation of trade agreements. If problematic situations occur the international trade law of the United Nations, the CISG, is ordinarily applied. (Ottawa. 2015; UN. 2015.)

7.1.2 Economic Factors

The consumer price of energy varies regionally quite a lot. As is in different states in the US, the divergence between national countries in Europe is significant; in 2012 the price of electricity in Bulgaria was nine cents per kWh, but the same quantity in Denmark was over four times more expensive, 33 cents. Although, the monetary amount may seem meagre, for companies using lots of energy, the effect of this difference to gross margins is considerable. (Energia.fi. 2013c.)

The price itself derives from several different factors – in the Nordic countries taxation is a major one. In Finland, the value added tax for electricity is debited when the product is sold and energy tax when it is produced. Their combined amount is approximately one third. The other cost factors derive from generation expenses, transmission and the amount of average profit margins, as presented in chart 8. (Energia.fi. 2011a.)

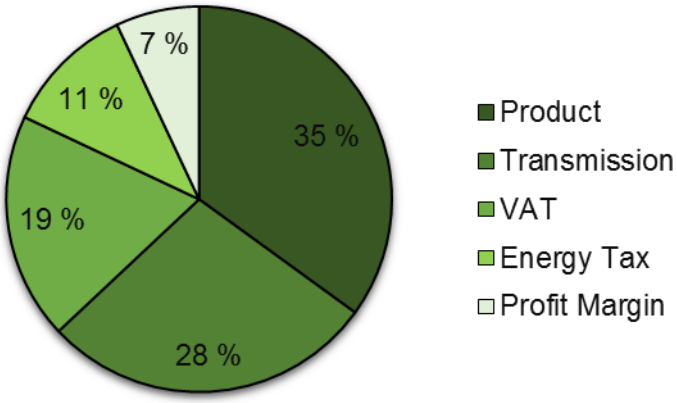


Chart 8. The Formation of the Price of Electricity in Finland (Energia.fi. 2011a).

In 1997 the Finnish Government decided to grant consumers the option to be able to bid the electricity providers against each other, which reduced the consumer prices. Before this, the electricity company was determined by the physical location of the customer. In transmission this is still true, due to the fact that the capacity of the distribution network is quite limited. In one sense, the local electric companies have a monopoly in power transmission in areas where only a single one exists. (Energia.fi. 2011b.)

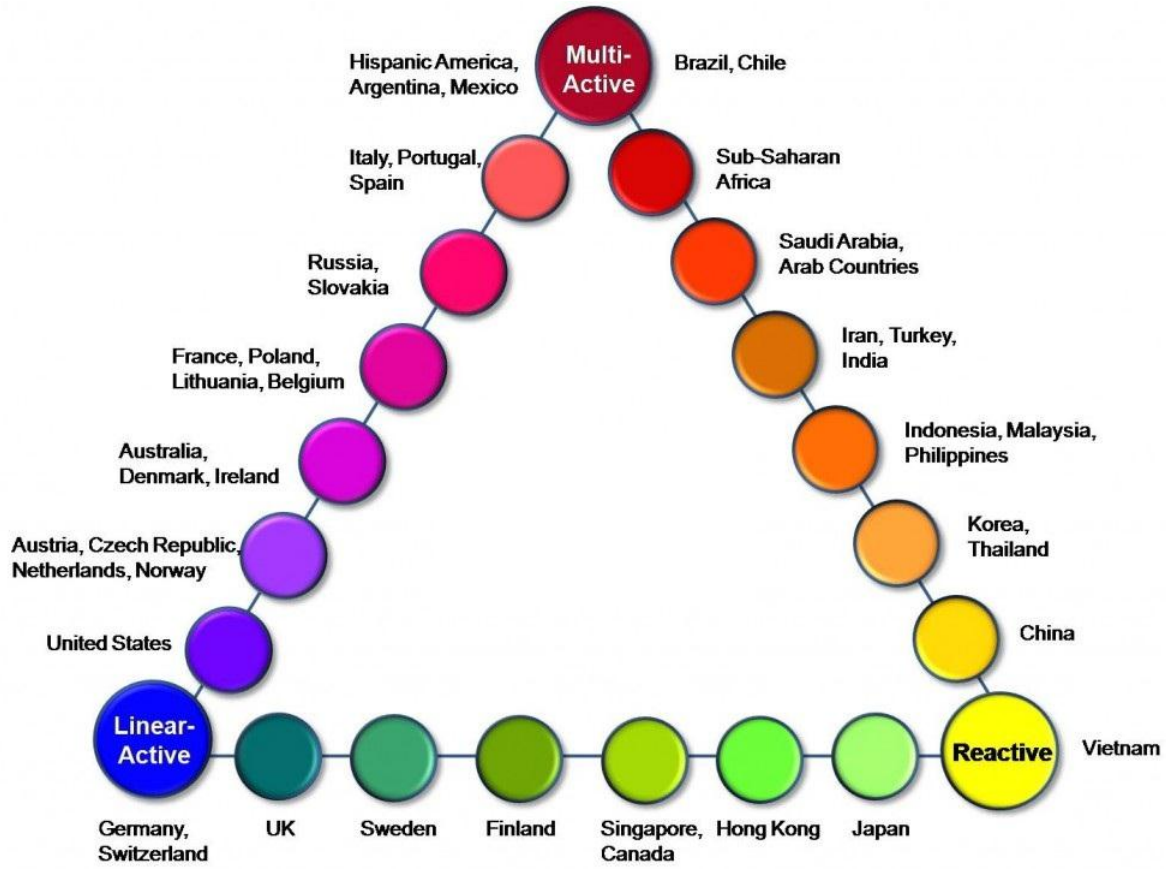
Another cost factor is the current market situation; the Nordic electricity market is said to be in stage of oligopoly. The production and sales of electricity is controlled by a handful of very large companies. The European Union has tried to find and implement measures to increase the economic competition, but so far the problem remains. The completed implementation of the smart grid and efficient transmission capabilities could possibly solve it. (Finvac. 2015; Kilpailuvirasto. 2007.)

In energy production several European countries have implemented feed-in tariffs to increase and subsidize certain energy sources. In Finland, companies of wind and bio energy are granted this incentive. So far solar energy is excluded from it, but it is very likely that this will change in the future. The feed-in tariffs are cost neutral for the state, as the amount of subsidy is charged from the consumers in the electric bill, and is directed onwards back to the government. The main idea of this is to provide funding for favorable target companies and give initial capital for newcomers. (TEM. 2007.)

7.1.3 Sociocultural Factors

Even though the theorization of cultural differences is quite hard, and can sometimes lead to unnecessary stereotyping, there are a few doctrines that divide the national cultures

into their own sectors by certain traits and norms. The Richard Lewis Model of Culture is a frame with three corners: Multi-active, Reactive and Linear-Active. In it the largest national and regional cultures are arranged by their characteristics; most of the cultures are not absolutes, but diverse combinations of the three, as presented in picture 8. (Business Insider. 2013; Lewis. 2015.)



Picture 8. The Lewis Model of Culture (Business Insider. 2013).

The nearest for both the United States and Finland is the Linear-Active side. Cultures near this area are depicted to be prone on organizing and planning schedules. Logical thinking is appreciated, as well as punctuality and rationalization. Linear-Active cultures prefer doing business with others who share their own points of view; cultures near the Reactive and Multi-Active sides can even get irritated by their task oriented mindset and the lack of desire to invest in personal relationship building when doing business.

According to Lewis, Finland's culture is a few steps closer to the Reactive side compared to the other Nordic countries, or to the United States. Cultures near this area are more suppressed, especially when it comes to personal expression. The majority of communication is listening, not talking, and confrontation is avoided. However, the individuals from

these cultures are persistent when doing business, and will work hard when trying to establish a deal with a trading partner to find a satisfactory, mutually beneficial result.

The interesting thing about the Lewis theory is that there does not seem to be any national cultures which would have characteristics from all three areas. Furthermore, the temperature of the climate seems to have an effect on a global scale; most Linear-Active cultures are situated in wintery areas, whereas Multi-Actives ones are not. (Business Insider. 2013; Lewis. 2015.)

Although the business cultures of the US and Finland may have a few small differences according to the Lewis theory, it is good to keep in mind that every individual business relation between two companies is its own story. However, the Culture Model Theory may help to prepare for some certain features before doing business in a new environment.

7.1.4 Technological Factors

The Finns have a somewhat technologically oriented world view; new gadgets and innovations are usually greeted welcomingly, and household expenditure on machinery and equipment is greater than in Central and Southern Europe. The implementation of smart meters has reached a vast majority of households, and was 80 percent in the end of 2013. The European Union is striving for its goal to have this precise percentage in all residential real-estate by the year 2020. (Europarlament. 2010; TEM. 2009.)

The importance of the Cleantech industry is believed to increase in the future in Finland. The overall revenue of all the industries related with the cleantech sector was approximately 29 billion USD in 2013, and the annual growth rate 15 percent (Invest.fi. 2015). Cleantech is closely intertwined with the so-called ‘Internet of things’ –phenomenon, in which certain machinery and equipment can be set to carryout particular tasks automatically without a separate action from an employee. To give an example, new garbage containers in public locations are equipped with a sensor that automatically monitors to amount of content inside, and informs the operative if need be. This saves man-hours and enhances efficiency. There are other commercial possibilities as well. For instance, markets can implement shelves and companies warehouses, which continually monitor the amount of salable merchandise, and order more produce if need be.

As mentioned in previous chapters, Finland is currently investing in nuclear power to meet its future power needs. This decision has attracted opposition, but some critics admit it is a ‘necessary evil’ for the transitional phase before better energy sources are developed. A

possible one is nuclear fusion – a method of producing energy without pollution or radiation – which has been a long-time dream of researchers all over the world. If successful, it could replace all polluting and radiation-producing energy sources. (Sciencedaily. 2015.)

Even though this might sound like science fiction, it may not be as farfetched as it may seem; a US company called Lockheed Martin reported in October 2014 that it had developed a prototype of a working fusion reactor that was so small it could fit into a back of a truck. Although the news was welcomed with extensive incredulity by the science community, it still gives a glimpse of light of a possible future where all fission and fossil based energy sources would become obsolete. (Lockheedmartin. 2014; the Guardian. 2014.)

The company later informed that it might be possible to start producing small, hundred megawatt reactors to the global commercial markets within a ten years' time. Some critics responded by saying that the time period was way too optimistic, and that the development would take at least fifty more years. (Hs.fi. 2014.)

7.1.5 Ecological and Ethical Factors

Currently the biggest ecological mega trend in Finland is the production of energy without carbon emissions, or using the ones that decrease their amount. The primary means are wind and solar energy, and the use of peat and wood pellets.

The production of Finnish wind energy began in 1991, but power output and the installation of new facilities has been quite sluggish. During the present decade, however, production has been significantly more substantial than in the previous years before that. In four years' time the output tripled, from 0.29 TWh in 2010 to 1.11 TWh by the end of 2014, as presented in chart 9. The same trend is believed to continue: it was recently reported that the largest wind energy park is to be constructed to western Finland by the end of 2015, which will raise the total production output by over 20 percent. It is worth consideration that as Finland is a country with lots of coastal areas, the potential amount of energy that could be produced with wind is significantly more than this. The construction of the new facilities has attracted some opposition, as well. The skeptics insist that the effects of the new facilities have on the scenery of the landscape is too distracting. Also, complaints of noise have been heard from individuals living near the generators. (TVY. 2015; Yle.fi. 2014c.)

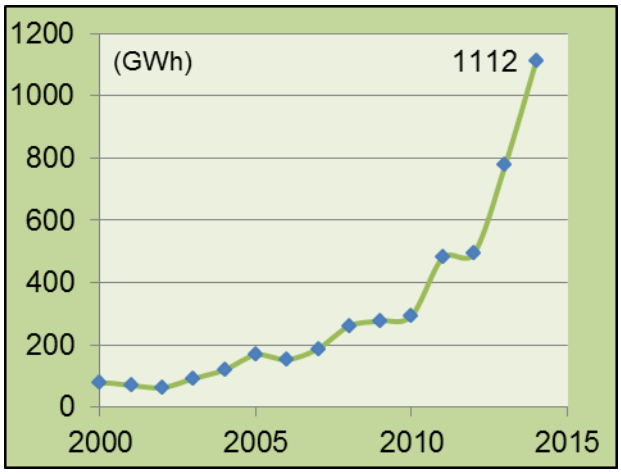


Chart 9. Wind Energy Production in Finland 2000-2014 (TVY. 2015).

Compared to wind power, the amount of the produced solar energy in Finland is significantly smaller. The total amount of the yearly production in 2014 was 10 MW (aurinkoenergia.fi. 2015). The largest amount of production is from private companies; many have decided to make use of extra outdoor areas, such as roof space, with the implementation of solar panels to reduce the electric bill. Domestic households have also noticed the benefits of this method, and have started to acquire the panels as well – in Finland the self-generated, unused excess power can be sold back to the electric company, which can then be used somewhere else. This course of action was made possible with the implementation of the smart grid. Do to the fact that solar power is a cost-free source of energy in itself, some electric companies have even started to loan solar panels with very affordable prices to consumers. This way, domestic premises can also be harnessed to serve as locations of producing energy. (Helen. 2015; Tekniikka ja Talous. 2012.)

In the global scale the yearly solar energy production is considerably higher than in Finland: the amount was 257 TWh in 2013 (EWEA. 2014). As the production has grown over the recent years, more producers have entered the solar panel market, which in turn has decreased their price significantly. Technical development in panel technology has also enhanced efficiency of output. The interest of investors has arisen; it was recently reported that the largest solar energy production facility of Northern Europe is to be constructed to Finland in 2016 (yle.fi. 2014a). In other parts of the world this trend has proceeded even further. Since the 2011 Fukushima disaster, all Japanese nuclear reactors were run down, and have remained cold since then. Japan tripled its production of energy from alternative sources, mainly with the implementation of new solar energy facilities and panels. This dropped the consumer price of electricity to less than half in just four years' time. The Japanese example presents a good illustration what the actual potential of these 21th century energy sources is. (Reuters. 2015.)

In Finland, the use of coal as an energy source is not only frowned upon by some consumers, but is also a lot more expensive than before, due to EU regulations. Some Finnish energy companies have started to add wooden pellets to the burning process since 2014 to reduce emissions and coal use (Helen. 2014). A few societal entities in Finland have also been striving for the declaration of the status of peat as a renewable energy source, mainly because the supply of this material is abundant. So far the Committee of the Environment of European Union has not granted the permission to do so. The main reason for this is the carbon emissions that are released when peat is burned to produce energy. (Energia.fi. 2015; SLL. 2009.)

In ethical aspects, the strongest opposition of using fission as an energy source claims that nuclear power should be made obsolete for this reason as well; a possible accident could have drastic measures on the lives of the entire population. A worst case scenario meltdown would also affect the future generations; a contaminated area would be totally uninhabitable for thousands of years to come. This fact makes the critics ask the question: are the gains really worth this risk?

7.2 Micro Environment

The micro environment comprises of smaller commercial factors, and particular important epicenters of the market in question. This primarily refers to the companies operating in the target market and the largest residential hubs.

The ten largest energy affiliated companies of Finland are listed in chart 10. Most of them are electricity companies, with at least some degree of governmental ownership. The Fingrid Corporation manages the Power Transmission Grid of Finland. The Finnish government has a majority of its ownership, 53 percent, and the rest is owned by other private companies. Several parts of the distribution network are handled by smaller local companies. The number of these is over a hundred. (Energia.fi. 2013b.)

Rank	Company	Revenue, MUSD
1	Fortum Corp.	6,810
2	Helsinki Energy	1,008
3	Fingrid Corp.	596
4	Turku Energy Ltd	281
5	Elenia Ltd	250
6	RAO Nordic Ltd	249
7	Jyvaskyla Energy Ltd	245
8	Energy Brokers Ltd	197
9	Lahti Energy Ltd	174
10	Suur-Savo Electricity	171

Chart 10. The Largest Finnish Electricity Related Companies in 2014 (Largest.fi. 2015).

There is also a bunch of foreign companies operating in the Finnish energy industry. Especially with large construction operations, which are usually quite expensive, several enterprises from all over the world take part in the consortium. A good example of this, are the new nuclear reactors which are currently under construction in Finland. The Olkiluoto-3 reactor, which is estimated to be completed in 2018, is built by Areva from France and Siemens from Germany. The project has also received an administrative handout; when the tender was announced in 2002, Areva was given a 640 MUSD export subsidy from the French government. Once the undertaking is completed, the actual operator of the finished facility will be Teollisuuden Voima Corporation. It has been estimated that the output of this new reactor is going to be one of the largest in the world. (BBC. 2009; Kananen 2009, 105.)

Another fission related undertaking is the Pyhäjoki nuclear power plant project in northern Finland. The principal decision to build this completely new establishment was given by the Finnish government in December 2014. It immediately attracted strong opposition, and almost brought down the entire administrative cabinet of the country. The main reason for this strong resistance is not only the increasing reliance on nuclear power in Finland, but also that the Fortum Corporation in charge of the undertaking was going to team up with Rosatom, which is owned and controlled by the Russian government. Some critics yelped that a collaborative company like this would not be acceptable, taking into account the events of the world politics, and current Russian leadership. However, the plan was allowed to proceed, and the finished facility is estimated to finish in 2024. (Taloussanomat. 2014; Yle.fi. 2014d.)

The most important residential hub in Finland is the urban area of the capital city of Helsinki. In its governance, the Green party is the second largest in the municipal government. This is seen in energy aspects as well – it was recently reported that the city is con-

templating a significant reduction of coal as a source of energy, and would invest heavily in solar power instead. The impact of the improved energy efficiency from smart building will be contemplated as well. (Yle.fi. 2015b.)

8 Discussion

It is safe to say that the entire energy industry, including the field of utilities, is undergoing a monumental transformation. For instance, the amount of energy output from alternative sources has multiplied in just a few years' time, not only in the target market, but elsewhere as well. New technology has brought an endless pool of opportunity with which the level of efficiency, amount of output, and reciprocal involvement of private consumers, can reach an unprecedented level. The challenge is in the commencement – as new equipment requires initial capital, national governments and private investors hold the keys of the future.

The energy industry is enormous in size, and offers a bunch of business opportunities. Accelerating globalization contributes in this, as working codes of conduct can quickly be implemented elsewhere. An innovation developed in California can be introduced to almost any other market in the world, including in Finland, and a groundbreaking discovery can make any company world famous.

As a commodity, energy is an essential product which will always be needed. Proper support can make all the difference; political decisions of governing bodies and choices of the end users will determine which mode of production and particular item will become the new norm of the industry.

8.1 Evaluation

In order to contemplate the value of the received results of this study, it is a good code of conduct to compare them to the initial objectives. The core idea of conducting a study on this particular subject was to determine the potential business opportunities of the energy utilities industry in Finland. The fundamental theories regarding international trade gave the topic their unique perspective – conducting a study on the market of energy alone would have produced a completely different looking results. In one sense, this thesis can work as a manual for anyone who works in the industry of international trade, especially in the energy utilities and energy sector. It may also serve as a good basic introduction to the industry for individuals not formerly acquainted with it.

The structure of the thesis is design to meet the request of the client as well as possible. The initial request was to write a brief but fact-filled package, without extensive specifications or other verbosity. This is why the theoretical part of the thesis is significantly larger than the guide at the end. In a sense, the empirical part almost works as brochure for the

macro environment of the energy industry in Finland, while the theoretical one supports it with additional data and indications to the original sources of information. Therefore it is safe to say that the original objectives of the thesis have been met.

The used source material includes several written publications, and articles from numerous online publications of Finnish and international newspapers. Due to the fact that the general theme is quite topical at the moment, the amount of these was abundant. All information is not presented as completely new; the main point was to update existing data and give further knowledge on the matter. As the thesis also has to be comprehendible for individuals that are new to the industry, some basic rudiments had to be included in the theoretical part. This also helps in creating a full and complete overall image on the subject in question.

One challenge of the writing process arose from the shear fact that the energy industry, although extremely interesting, is quite massive in size. The amount of available information in publications and the number of sources online was resounding. Taking into account the limited number of time, defining what was essential for the thesis and what was not, was truly a challenge. Furthermore, the primary viewpoint of the study was in energy utilities equipment, not directly in the sale of electricity as a product – at times distinguishing these two was impossible, due to the fact that the industries are quite often inseparable from each other. In other words, in order to understand the fundamental idea of a commodity of the utilities industry, one must take into account the core substance that it is interlinked with.

For the author, the writing process of the thesis brought a ton of new information on the subject, and deepened the proficiency and knowledge of international business as a whole. The core theme of the study brought ‘meat on the bones’ to the subject in addition to the knowledge that was acquired whilst studying this major as a student.

8.2 Recommendations

One obstacle related to the writing process of this thesis was that, although abundant in number, some sources felt quite biased and thus unreliable. Especially in the case of energy production, a few informants were strongly one-sided to a particular mean of production, especially in the case of wind and solar energy, and also when regarding nuclear fission. Since the subject is presently quite current, it can evidently resonate flagrant opinions: at times certain publications were rather like personal opinions of a single individual, not academically valid data. This was true only in the case of a few online sources, and

not with the printed ones. Due to this fact, some information had to be discarded from this thesis.

Another challenge rose from the shear fact that the entire electricity production and energy utilities industry is currently undergoing a tremendous transition. In the long run, some information depicted in this study might not be accurate anymore. For this reason the author recommends a revised study on the subject at a later point in time. It could be of great importance, as it might help to depict which information on this thesis is still true, and also predict the future business potential of the industry in the target market Finland.

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Attachments

Attachment 1. The Export Guide to Finland for US Energy Utility Equipment Companies

Basic Information on Finland

Capital City	Helsinki
Population	5,479,329
Languages	Finnish 89 %, Swedish 5 %, Others 6 %
- English is a commonly spoken language	
Area	130,596 sq mi
Land Border with	Sweden, Norway and Russia
Urbanization Level	84.1 %
GDP estime of 2015	$224 billion
GDP/Capita	$40,838
Total Value of Import	$73 billion
Currency	The Euro: (€) or (EUR)
Electricity Consumption	81.06 billion kWh
Electricity Production	67.69 billion kWh
- Ninth largest importer of electricity in the world	

Finland is situated in Northern Europe along with Sweden, Norway and Denmark, also known as the Nordics. The country has been part of the European Union since 1995. The most important trade partners are other European countries, Russia and the United States.

The Sources of Energy in Finland 2013

Thermal Nuclear	33 %
Fossil Fuels	25 %
Biomass (Peat, Wood)	25 %
Hydraulic	15 %
Wind	~1 %
Solar	~1 %

The use of wood as an energy source has tripled in the past two decades. Energy companies add wooden pellets into the burning process of coal to cut down material costs and emissions. In hydraulic energy, almost all non-recreationally oriented localities in the country have been harnessed. The political desire to construct new man-made reservoirs for energy production exists. In general, it is likely that the share of all other means of power generation will increase in the future, while the amount of fossil fuels diminishes.

Nuclear Fission Facilities in Finland

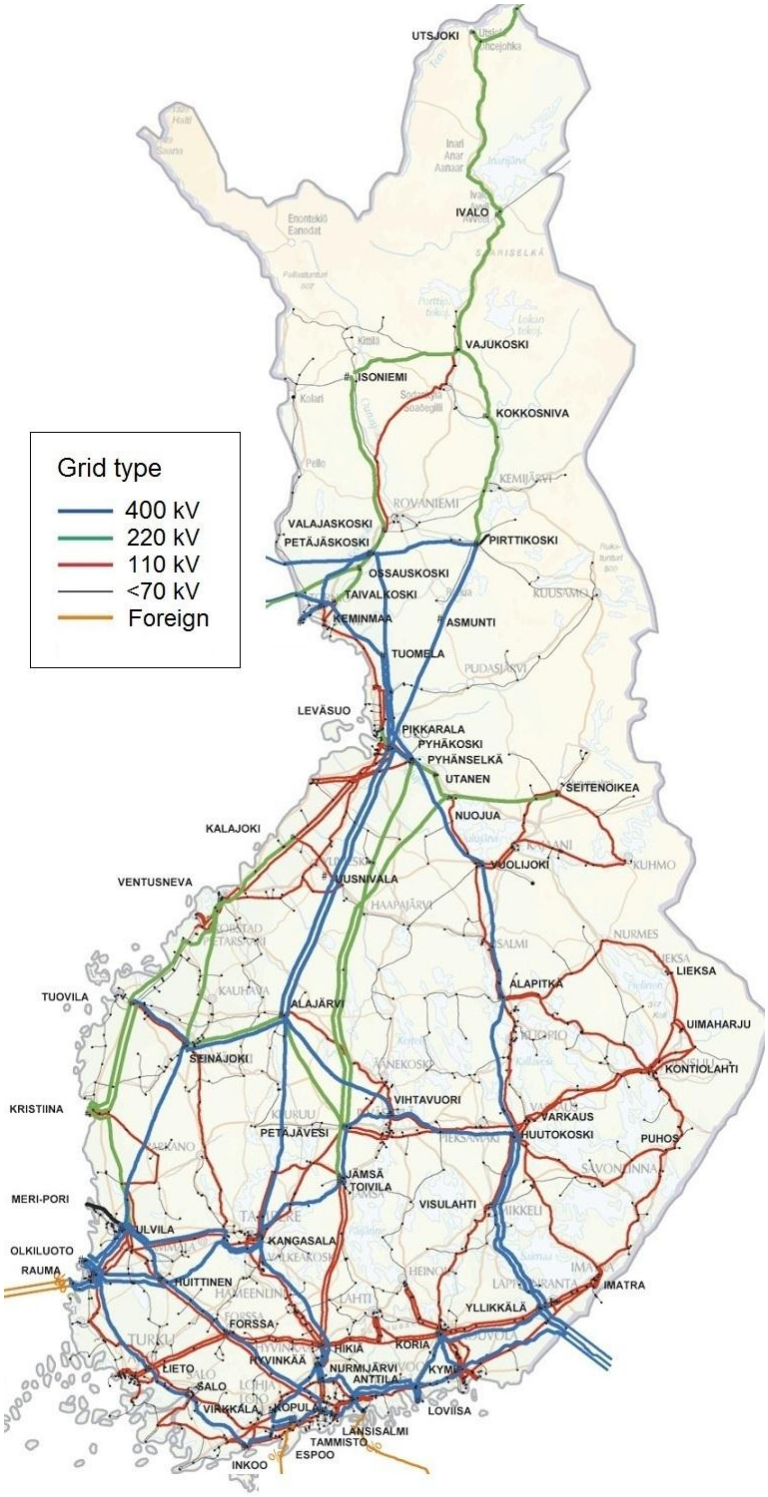
Name	Constructed by	Type of Facility	Capacity	Completed	Obsolete
Loviisa-1	Atomenergoexport	VVER-440 PWR	496 MW	1977	2027
Loviisa-2	Atomenergoexport	VVER-440 PWR	496 MW	1981	2030
Olkiluoto-1	ASEA-Atom	BWR	880 MW	1979	2039
Olkiluoto-2	ASEA-Atom	BWR	880 MW	1982	2042
Olkiluoto-3	Areva & Siemens	EPR	1 600 MW	~ 2018	-
Hanhikivi-1	Rosatom	AES-2006	1 200 MW	~ 2024	-

The Loviisa and Olkiluoto Facilities are located in the Southern coast of the country. The new Hanhikivi facility will be constructed to Pyhäjoki in Northern Finland. The construction of an additional reactor to the Olkiluoto facility, called the Olkiluoto-4, was planned but the project is currently on hold.

Future Prospects of the Energy Industry

Although the percentage amounts of wind and solar energy are currently quite meagre in the country, their relevance will increase significantly in the coming years. The implementation of new wind power facilities properly began in 2010, and has continued with an increasing pace in the following years. The amount of interest from private households is amplifying the amount of the generated solar power. The recent decrease in the consumer price of solar panels has also had an effect. Several private companies, with extra open airspace, have purchased panels in order to cut down on electricity expenses. Furthermore, an interest to acquire a suitable storage unit for the extra power exists, e.g. a battery of some sort, once a proper one appears on the market.

The Power Transmission Grid in Finland



The power transmission grid is divided into three sections by the purpose it serves: main, regional and distribution network. The entire main grid is built as overhead lines above ground, but the other two are currently in process of becoming underground cables. In 2012 only 29 percent of this grid was underground, but the number will increase in future; the estimated amount of 2019 will already be 44 percent.

The Smart Grid

On average, the implementation of the smart grid has progressed further in Finland than elsewhere in the European Union. In 2013, over 80 percent of households had a smart meter in them. Several electricity companies provide private households with an opportunity to acquire solar panels, the price of which is later deducted from the electric bill of the consumer. The grid is able to direct occurring energy surges to locations with the largest needs, and the extra amount can be stored for later use.

SWOT-analysis Chart: Finland and the Energy Utilities Industry

Strengths	Weaknesses
- High level of education - Long history of international trade - Linguistically skillful workforce - High level of GDP/capita	- High taxation - Small population - Economic situation stagnant
Opportunities	**Threats**
- Appreciation of new technology - Cleantech an important sector in the future - Advanced smart grid implementation - Current political desire to increase domestic energy production	- Worsening political situation in neighboring Russia - Increasing trade restrictions - Exacerbating recession